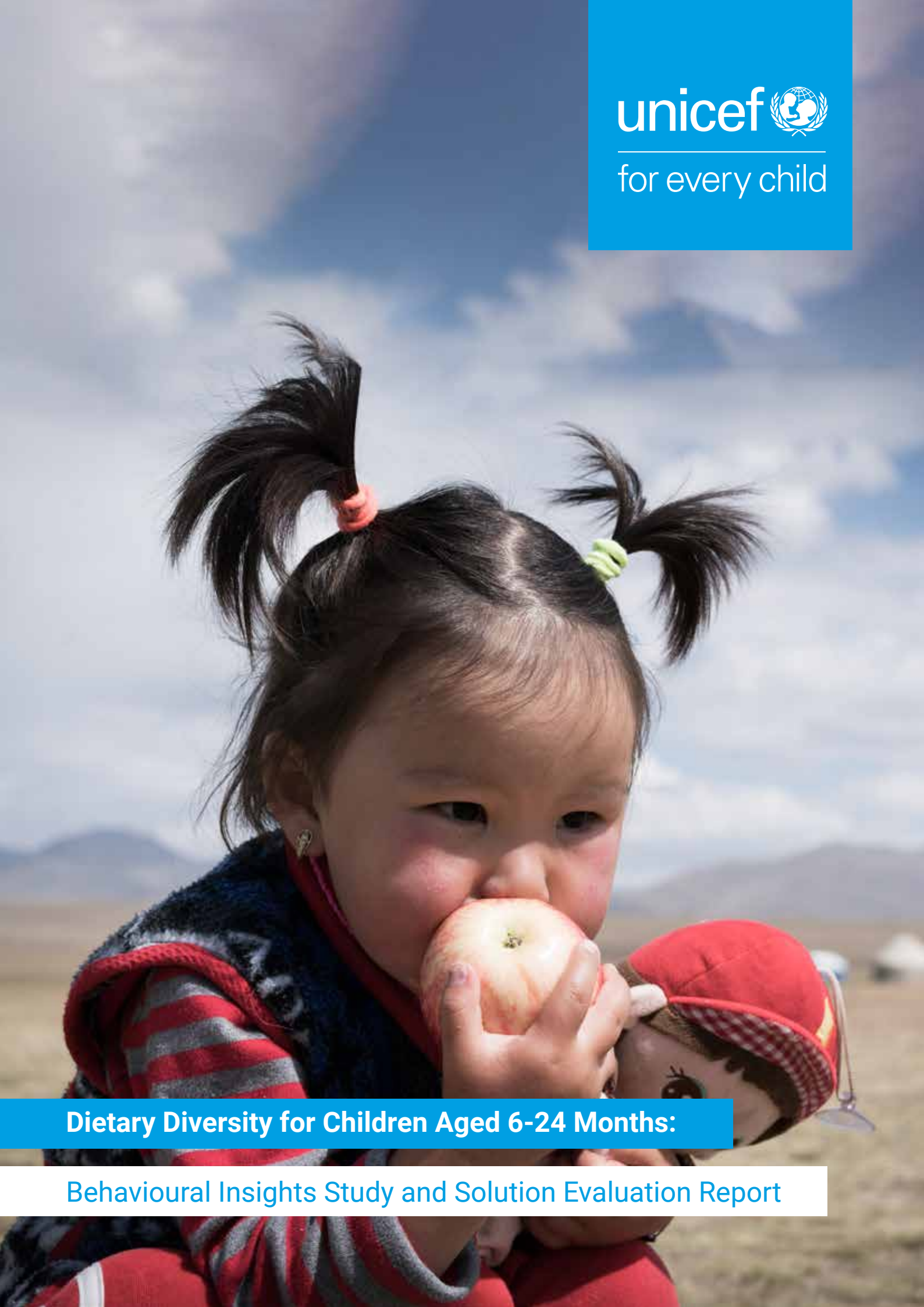

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Dietary Diversity for Children Aged 6-24 Months:

Behavioural Insights Study and Solution Evaluation Report

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Dietary Diversity for Children Aged 6-24 Months: Behavioural Insights Study and Solution Evaluation Report

Dr K. Jailobaeva, Dr T. Jailobaev, Dr K. Diaconu, and Ms G. Baialieva

Dietary Diversity for Children Aged 6-24 Months: Behavioural Insights Study and Solution Evaluation Report, B.:2024 – xxx p.

This Report presents the findings of the first behavioural insights study on nutrition in Kyrgyzstan. The Study investigated enablers and barriers to child nutrition, primarily focusing on children under two years of age. The Report also informed the development of solutions which were subsequently evaluated.

The research was conducted by Empirica, an international research and consultancy company. Empirica specializes in both quantitative and qualitative research methodologies, offering expertise in data collection, analysis, and indicator development. Its areas of focus include education, child nutrition, child protection, migration, women's empowerment, rehabilitation and reintegration, urban resilience, economic empowerment, gender-based and other forms of violence, and youth engagement.

The Report has two parts: Part I. Behavioural Insights Study Report and Part II. Solution Evaluation. Part I presents factors influencing malnutrition, including beliefs, perceptions, social norms, taboos, gender dynamics, intrahousehold relationships, market accessibility and seasonality. Part II presents the outcomes of the testing and evaluation of two solutions to promote dietary diversity among children aged 6–23 months.

The Report is meant for specialists in public health and nutrition.

Disclaimer:

The opinions expressed are those of the authors and do not necessary reflect the policies or views of UNICEF.

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CONTENTS

Abbreviations 5

Acknowledgments 6

PART I. Behavioural Insights Study Report 7

1. Executive Summary 8

2. Background 15

3. Study methodology 17

Objective and research of the study 17

Design of the study 18

Data collection methods 18

Data analysis 21

Ethical Considerations 21

4. Findings 24

4.1 Social norms and taboos 24

4.2 Gender and intrahousehold dynamics 27

4.3 Knowledge and access to information 29

4.4 Market access and seasonality of food availability 31

4.5 Access to clean water and proper sanitation 32

5. Conclusion 33

PART II. Solution evaluation report 35

Executive summary 36

1. Background 37

2. Solution Implementation Process 38

2.1. Preparatory Activities Prior to Solution Implementation 38

2.2. Implementation of Solution 1 39

2.2 Implementation of Solution 2 41

3. Methodology of Solution Evaluation 42

3.1. Evaluation of the Implementation and process of Solution 1 42

3.2. Evaluation of the Implementation and process of Solution 2 43

3.3. Data analysis 44

4. Solution Evaluation Results 44

4.1. Solution 1 44

4.2. Solution 2 54

5. Conclusion and recommendations 61

References **64**

Annex 1: Presentation slides used at the workshops 67

Annex 2: Three key issues around child nutrition identified at the FGDs with mothers and caregivers as well as community leaders and activists 70

Annex 3: Top three barriers to child nutrition for children aged 6–23 months and the solutions, as identified by FGD participants 71

Annex 4: Workshop Programme 81

Annex 5: Introductory text for sending the WhatsApp groups 83

Annex 6: Introductory text for giving out brochures 84

ABBREVIATIONS

BI	Behavioural insights
FGD	Focus group discussions
HCD	Human-centred design
NIMAS	National Micronutrient and Anthropometric Survey
SBC	Social and behaviour change
WASH	Water, sanitation and hygiene

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PART I. BEHAVIOURAL INSIGHTS STUDY REPORT

Part I presents the findings of the behavioural insights (BI) study that was launched in October 2023 to investigate the enablers and barriers to child nutrition, primarily focusing on children under 2 years of age. The National Micronutrient and Anthropometric Survey in Kyrgyzstan (NIMAS, 2021) showed that nationally only a quarter of children have at least minimal dietary diversity. Specifically, the proportion of children with at-least minimal dietary diversity increases with age and is highest in children aged 18–23 months. Minimal dietary diversity is also significantly higher in rural children (NIMAS, 2021). Further, the Multiple Indicator Cluster Survey in 2018 showed that only 22 per cent of children were being breastfed by 2 years old and 46 per cent were exclusively breastfed for their first 6 months of life. Based on this, the following outputs and outcomes were set out:

- Outcome: Reduction of the prevalence of micronutrient deficiencies and anaemia among children.
- Output: Increased proportion of children under 2 years old who have minimum dietary diversity that includes 1) breast milk; 2) grains, roots and tubers; 3) legumes, nuts and seeds; 4) dairy products (milk, yogurt, cheese); 5) meat products (meat, fish, poultry, liver or offal); 6) eggs; 7) vitamin A-rich fruits and vegetables (carrots, dark green leafy vegetables, pumpkin); and 8) other fruits and vegetables.

The BI study explored the factors influencing malnutrition, including beliefs, perceptions, social norms, taboos, gender dynamics, intrahousehold relationships, market accessibility, and seasonality of food availability. These components are the key sections in the Findings section.

The report draws on the primary data collection in Bishkek City, Chui Province, and Jalal-Abad Province, which were selected based on the results of NIMAS in Kyrgyzstan (NIMAS, 2021), which found these regions to have the highest level of child malnutrition. For this BI study, the following specific locations were selected: Belek village (Sokuluk District of Chui Province), Suzak village (Suzak District of Jalal-Abad province), Jalal-Abad City, and Bishkek City. Thus, the study was conducted in two rural settings and two urban settings.

The fieldwork involved two stages. In the first stage, eight focus group discussions (FGDs) were conducted with mothers, caregivers, and key stakeholders (such as community leaders, health workers, village committee heads, school and nursery staff, and social workers) in the communities. Two FGDs were held at each research site. In addition, 12 interviews were conducted with primary caregivers (three interviews per research site), 12 families were observed (three observations per research site), and four interviews were conducted with key influencers such as health workers, community leaders, heads of women's committees, and village health committees (one interview per research site). The collected data were analysed. In the second stage, the findings were presented at workshops in each research area to validate them, select three key barriers (out of several presented) to the nutrition of children aged 6–23 months, and discuss and identify three solutions for each of the three key barriers identified (see presentation slides in Annex 1). In total, eight workshops were conducted.

1. EXECUTIVE SUMMARY

Summary of key findings

Social norms and taboos

UNICEF has defined social norms as *"the perceived informal, mostly unwritten, rules that define acceptable and appropriate actions within a given group or community, thus guiding human behaviour. They consist of what we do, what we believe others do, and what we believe others approve of and expect us to do. Social norms are therefore situated at the interplay between behaviour, beliefs and expectations"*.[1] Drawing on this, the study identified that mothers and caregivers generally believe that children should actively eat solid food after they turn 1 year old. Before this age, study participants said that children are mostly breastfed, with solid food introduced in small amounts and mainly in mashed or pureed form. It emerged that after their first birthdays, children are fed the same food as the rest of the family. Meanwhile, the general practice in the communities in the research is to consume meat and dough-based dishes and bread, with limited vegetables and fruit. In Suzak and Jalal-Abad, rice is also common in people's diets. Furthermore, there are misconceptions – particularly in rural areas – about what constitutes 'good food' for children. Some mothers, especially in rural areas, still feed their infant children bylamyk, a traditional porridge that involves frying flour and mixing it with water or milk. The porridge provides limited nutritional value to children. However, mothers and grandmothers believe that it keeps the child full. Finally, caregivers like to treat their children with fast food on holidays and give sweets and sugary products for good behaviour including eating.

Key barriers:

- Mothers and grandmothers hold varied beliefs and perceptions about breastfeeding and introducing solid food. Commonly, they believe that children should primarily be breastfed until the age of 1. After the child's first birthday, breastfeeding significantly decreases, leading to weaning (which happens abruptly).
- Mothers, grandmothers, and fathers do not know about the benefits of continued breastfeeding after the child is over 1 year old.
- Mothers believe that breastfeeding would ruin their body shape.
- Children between 6 and 23 months are not provided with dietary diversity because they are fed the same food as the whole family. Family diets are dominated by meat and dough-based dishes, with limited intake of diverse vegetables, fruit, legumes, a variety of meats (including fish) and dairy products. This is connected to culture, traditions, history, and a sense of masculinity.
- Mothers believe that other family members, particularly their husbands, expect them to cook dishes with meat and dough/pasta.
- Fathers believe that other fathers consume meat and traditional dishes, because these types of food give strength.
- Family members do not know about alternatives to sugary products for motivating a child to engage in various activities, including eating.
- Family members do not know about the harm of children's excessive consumption of sugar and sugary products.

1 UNICEF, 2021. www.unicef.org/media/111061/file/Social-norms-definitions-2021.pdf

Desired behaviour:

- Mothers continually breastfeeding their children until they are 2 years old,[2] with complementary feeding of diverse solid food.
- At 6 months, introducing children to age-appropriate, nutritious and safe complementary foods while continuing breastfeeding. The diet during this period should be rich in nutrients, without excessive energy, saturated and trans fats, free sugars, or salt.[3]
- Mothers, grandmothers and fathers cooking and preparing snacks and dishes for children aged 6–23 months that contain ingredients from the following food groups:
    - Cereals, root crops, and tubers
    - Legumes, nuts, and seeds
    - Dairy products, such as milk, yogurt, and cheese
    - Meat products, including meat, fish, poultry, liver, or other organs
    - Eggs
    - Vitamin A-rich fruits and vegetables (carrots, dark green leafy vegetables and pumpkin)
    - Other fruits and vegetables.[4]
- Mothers with support from other primary caregivers, notably grandmothers and fathers, feeding their children aged 6–23 months in accordance with the WHO recommendations on minimum daily meal frequency:
    - Twice a day with solid, semi-solid, or soft foods for breastfed children aged 6–8 months
    - Three times a day with solid, semi-solid, or soft foods for breastfed children aged 9–23 months
    - Four times a day with solid, semi-solid, or soft foods (or milk) for children aged 6–23 months who are not breastfed, with at least one meal including solid, semi-solid, or soft foods.[5]
- Mothers, grandmothers and fathers cooking together and involving children aged 1 to 2 in cooking with diverse types of food to enhance their interest in food and encourage them to eat a diverse diet, instead of offering sugary products as an incentive for eating.

Gender and intrahousehold dynamics

Intergenerational living arrangements are common, which is a part of national culture. Hence, grandmothers play a significant role in childcare. Power dynamics and conflicts between mothers-in-law and daughters-in-law affect feeding practices. Family members' dietary preferences influence the food consumed by infants and toddlers. Mothers often face challenges due to negative relationships and conflicts within extended families. Mothers express concerns about a lack of support and understanding from husbands and family members. Mothers have many responsibilities in the household, which limits the time they have available to cook diverse food for children.

2 WHO, Infant and young child feeding. Available at www.who.int/data/nutrition/nlis/info/infant-and-young-child-feeding; https://raisingchildren.net.au/toddlers/nutrition-fitness/daily-food-guides/dietary-guide-1-2-years

3 WHO Guidelines, Feeding Infants and Children Aged 6–23 Months, 2023, https://iris.who.int/bitstream/handle/10665/373358/9789240081864-eng.pdf?sequence=1

4 WHO Guidelines, Feeding Infants and Children Aged 6–23 Months, 2023 https://iris.who.int/bitstream/handle/10665/373358/9789240081864-eng.pdf?sequence=1

5 UNICEF, Improving Young Children's Diets During the Complementary Feeding Period, 2020, www.unicef.org/media/93981/file/Complementary-Feeding-Guidance-2020.pdf

Key barriers:

- Mothers are culturally expected to heed the guidance of other key family members, notably husbands and parents-in-law, including on matters related to child feeding.
- Mothers lack the time to prepare diverse food for their children due to their work and household chores, particularly in households where families live inter-generationally (that is, with their in-laws).
- Grandmothers believe that daughters-in-law cook and work less in the house because they are lazier and more selfish than the grandmothers' generation.
- Grandmothers believe that they should not praise their daughters-in-law (in general) in order not to spoil them.
- Grandmothers expect daughters-in-law to follow the traditions (that is, do as the grandmother did).

Desired behaviour:

- Grandmothers and fathers supporting mothers and helping them with household chores, which may also include cooking, so that mothers themselves have more time to cook diverse food for their child aged 6–23 months.
- Grandmothers and fathers supporting mothers, or they themselves taking the initiative, to introduce new affordable recipes into the diet of the children aged between 6 and 24 months, incorporating various ingredients such as fruits, vegetables, starchy foods, dairy, animal-origin proteins and fats.
- Grandmothers providing positive emotional social support (for example, by providing praise and positive reinforcement) for mothers cooking dishes that support a diverse diet and contain all the different food groups: fruits, vegetables, dairy, grains, and lean meat, eggs, nuts, butter, and legumes.

Knowledge and access to information

Study participants in various research areas consistently highlighted a lack of up-to-date knowledge among mothers and primary caregivers, including grandmothers, regarding the nutrition of children aged 6–23 months. Despite acknowledging this knowledge gap, participants emphasized the crucial importance of a diverse diet for the overall physical and mental development of children.

Social media – particularly platforms like Instagram and YouTube – have become significant outlets for obtaining information on child nutrition. Although mothers find the accessibility of information valuable, parents express concerns about the risk of information overload and the need for credible sources. However, a noticeable generation gap is evident, with younger caregivers actively using social media for information, while grandparents primarily rely on life experiences. In addition, data indicate that most women from Uzbek communities in Suzak lack smartphones, limiting their access to online information.

Across all research areas, paediatricians and health workers were identified as crucial influencers providing essential information on infant feeding and the introduction of solid foods, and overall nutritional guidance. However, mothers typically turn to health-care professionals during periods of illness or specific health concerns, seeking detailed advice on feeding practices. Thus, the guidance from paediatricians and health workers tends to be reactive, focusing on troubleshooting rather than providing comprehensive information on nutrition to all mothers and caregivers. In other words, while mothers seek advice during episodes of illness, a systematic approach to educating mothers and caregivers on nutrition, especially in the critical early stages of child development, is lacking. Finally, the social networks of mothers and caregivers, as well as personal experiences, emerged as key sources of information for feeding children aged 6 to 23 months.

Key barriers:

- Mothers and other key caregivers in the family – notably fathers and mothers-in-law – lack practical knowledge about how to diversify their family diet with locally available products and how this diversified diet can positively affect their child under 2 in the long run.
- Grandmothers and fathers do not know about the risks to a child's health caused by a lack of a diverse diet, as they prefer fatty and filling food and also feed it to the child.
- Health workers are minimally involved in nutrition advice for parents. They offer guidance on feeding in response to enquiries from mothers about specific health concerns concerning their children. Consequently, guidance from health workers tends to be reactive, concentrating on troubleshooting rather than providing comprehensive information on child nutrition to all mothers and caregivers.
- Mothers have limited access to trusted information on nutrition. They consult social media, and occasionally also health workers, but are expected to follow the advice of older generations.

Desired behaviour:

- Mothers, grandmothers and fathers learn about the importance of diverse diets for their children and the whole family.

Market access and the seasonality of food availability

The data showed diverse trends in food market accessibility across research sites in rural, semi-rural, and urban contexts. While rural areas rely on district centres to access markets and food, urban cities like Bishkek have much easier and more convenient access to markets and food. Study participants across all research sites said that they lacked financial means to diversify their diets. This is because purchasing various food items – such as different fruit and vegetables, various types of meat, and legumes – would require additional financial means. Nonetheless, some participants, particularly nutritionists, stressed that it is feasible to maintain a healthy diet for children on an average budget.

Key barriers:

- Mothers and other key caregivers in the family, notably fathers and mothers-in-law, believe that maintaining a diverse diet is expensive and beyond their financial means.

Desired behaviour:

- Families purchase fruits, vegetables, dairy, grains, eggs, nuts, lean meat, butter, and legumes, rather than prioritizing (fatty) meat, bread, pasta and dough- and pastry-based products.

Access to clean water and hygiene

The analysis also revealed disparities in access to clean water and sanitation across the research sites. While Bishkek enjoys reliable water infrastructure, rural areas grapple with inconsistent and muddy water sources. The lack of access to clean water, like in the village in Sokuluk district, leads to community members resorting to offering their children fizzy drinks or boiled water with jam. It should also be noted that new settlements around Bishkek city also have challenges with water supply. Handwashing is a common practice, though use of soap depends on the activity that people are engaging in.

Key barriers:

- In some areas, families have limited access to clean water, affecting the health of children under 2 years.
- In areas with poor-quality water, families often give children sugary drinks instead of water because they believe sugary drinks are safer.

Desired behaviour:

- Families install a water filter in their house / flat or purchase affordable water filter pitchers to provide clean water to children aged 6–23 months.
- Mothers and other primary caregivers, notably grandmothers and fathers, use filtered water while cooking for children aged 6 – 23 months.

Priority behaviours and key barriers

Given the above-stated key outcomes of the NIMAS in 2021 and MICS in 2018 in Kyrgyzstan, showing that continued breastfeeding remains low and only one-quarter of children up to 2 years old have a minimum dietary diversity, two behaviour focuses have been prioritized:

- Continued breastfeeding beyond the age of 1, combined with complementary feeding
- Cooking and eating (as a family) a nutritionally diverse set of snacks and main dishes each day

Table 1 maps out specific behaviours, as set out above, for each of the two priority behaviours, giving target population groups and specific barriers. These behaviours were selected based on expert judgment, taking into account feasibility and the likelihood of changes in the context of Kyrgyzstan. In other words, these behaviours were deemed to have the potential to have the most significant impact. They are also considered feasible to change within Kyrgyzstan's context. Additionally, these behaviours take into account gender imbalances in current roles and responsibilities within households, particularly concerning the feeding of children aged 6-–23 months.

Table 1: Specific behaviours, target population groups, and specific barriers

Priority focus	Specific behaviour	Population	Specific barriers
Continued breastfeeding beyond the age of 1 and up to age 2, combined with complementary feeding	Mothers continuingly breastfeed their children until they are 2 years old with complementary feeding of diverse solid food	Mothers	• Mothers and grandmothers hold varied beliefs and perceptions about breastfeeding and introducing solid food. Commonly, they believe that children should primarily be breastfed until the age of 1. After the child's first birthday, breastfeeding significantly decreases, leading to weaning (which happens abruptly). • Mothers, grandmothers, and fathers do not know the benefits of continued breastfeeding after the child's first birthday. • Mothers believe that breastfeeding would ruin their body shape.
Cooking and eating (as a family) a nutritionally diverse set of snacks and main dishes each day	Mothers, grandmothers and fathers, cook and prepare snacks and dishes for children aged 6–23 months that contain ingredients from the	Mothers, grandmothers, fathers	• Children between 6 and 23 months are not provided with dietary diversity because they are fed the same food as the whole family. Family diets are dominated by meat and dough-based dishes, with limited intake of diverse vegetables, fruit, legumes, a

	following food groups: • Cereals, root crops, and tubers • Legumes, nuts, and seeds • Dairy products such as milk, yogurt, and cheese • Meat products including meat, fish, poultry, liver, or other organs • Eggs • Vitamin A-rich fruits and vegetables (carrots, dark green leafy vegetables, pumpkin) • Other fruits and vegetables.		variety of meats (including fish) and dairy products. This is connected to culture, traditions, history, and a sense of masculinity. • Mothers believe that other family members, particularly their husbands, expect them to cook dishes with meat and dough/pasta. • Fathers believe that other fathers consume meat and traditional dishes because these types of food give strength. • Mothers are culturally expected to heed the guidance of other key family members, notably husbands and parents-in-law, including on matters related to child feeding. • Mothers lack the time to prepare diverse food for their children due to their work and household chores, particularly in households where families live inter-generationally (that is, with in-laws). Meanwhile, grandmothers believe that daughters-in-law cook and work less in the house because they are lazier and more selfish than the generation of grandmothers. • Grandmothers expect the daughter-in-law to follow the traditions (that is, do as grandmother did). • Grandmothers and fathers do not know about the risks to a child's health caused by a lack of a diverse diet, as they prefer fatty and filling food and feed it to the child as well. • Mothers and other key caregivers in the family, notably fathers and mothers-in-law, lack practical knowledge about how to diversify their family diet with locally available products and how this diversified diet can positively affect their child under 2 in the long run. • Mothers and other key caregivers in the family, notably fathers and mothers-in-law, believe that maintaining a diverse diet is expensive and beyond their financial means.
	Families purchase fruits, vegetables, dairy, grains, eggs, nuts, lean meat, butter, and legumes, rather than prioritizing (fatty) meat, bread, pasta, and dough- and pastry-based products.		
	Families reduce consumption of beef and lamb and dough-based dishes and increase consumption of other types of food, including grains, legumes, nuts, dairy products, various types of meat (chicken and fish), eggs, fruit and vegetables.		
	Mothers, grandmothers and fathers cook together and involve children aged 1 to 2 in cooking with diverse types of food to enhance their interest in food and encourage them to eat a diverse diet, instead of offering sugary products as an incentive for eating.		

2. BACKGROUND

Proper nutrition plays a vital role in the physical growth and cognitive development of children. Diets lacking in essential nutrients have been linked to reduced cognitive and academic progress, behavioural issues, and increased susceptibility to non-communicable diseases such as type 2 diabetes, hypertension, and heart disease among children.[6] Providing nourishing meals to children below the age of 2 is a significant responsibility, given that this phase of infants' growth is marked by the swift development of their brains. To illustrate, approximately 75 per cent of each meal consumed by infants is dedicated to nurturing their brain development.[7] Studies have indicated that early childhood nutrition plays a pivotal role in enhancing academic performance, fostering improved socio-emotional, cognitive, and motor development, promoting better health, and ultimately increasing earnings in adult life.[8] Indeed, some have contended that investing one dollar in a nutrition programme for early childhood in a developing nation could yield a return of at least three dollars or possibly even more in enhanced academic achievements.[9] For the first 6 months, infants should be exclusively breastfed. The introduction of solid foods can begin when babies reach 6 months of age, at which point various food items from different food groups can be incorporated into their diet (such as animal products: milk, dairy, eggs, meat, fish, and poultry; legumes: chickpeas, lentils, or peas; nuts; and orange and green vegetables and fruit).[10]

Healthy eating and dietary quality are essential for ensuring health and preventing diet-related chronic diseases. In discussions of child nutrition and diets, public health specialists often refer to the triple burden of malnutrition (Otunchieva, 2023): undernutrition, overnutrition and micronutrient deficiencies.

Undernutrition occurs when individuals do not receive enough essential nutrients, calories, and vitamins necessary for growth and development, leading to conditions such as stunting (impaired growth in children) and wasting (severe thinness);

Overnutrition is an excessive intake of calories, often leading to obesity and diet-related chronic diseases such as diabetes, heart disease, and certain types of cancer. It is characterized by an imbalance between energy intake (calories consumed) and energy expenditure (calories burned).

Micronutrient deficiency occurs when people lack essential vitamins and minerals. This can happen even if children consume enough calories. Most often, this leads to diseases such as anaemia (iron deficiency), rickets (vitamin D deficiency), goitre (iodine deficiency), and many others.

Child malnutrition, especially among children under 2 years old, is a prevailing issue in Kyrgyzstan. In 2021, the NIMAS (2021) survey identified that only 15 per cent of children aged 6–23 months received the minimum acceptable diet, and 26 per cent met the minimum dietary diversity. Further, NIMAS revealed that around 8 per cent of children under 5 suffer from undernutrition (of whom, 7 per cent have stunting, 0.8 per cent wasting, and 0.8 per cent underweight), over 7 per cent struggle with overnutrition (7.3 per cent overweight and obese). Moreover, the data shows that 73.8 per cent of children do not meet the minimum dietary diversity consumption (that is, they do not consume sufficient types of food), and 35.7 per cent do not meet the minimum meal frequency indicator. Additionally, 29.2 per cent of children under 5 and 49.3 per cent of pregnant women were affected by anaemia, while 47 per cent of children under 5 had iodine deficiency and 16 per cent vitamin A deficiency. This evidence pinpoints

6 Rose et al. 2017; Mahumud et al. 2018; Froome et al. 2020; Starkweather et al. 2020

7 UNICEF, a, n.d.

8 Glewwe et al. 2001; Jukes 2007; Alderman et al. 2006; Hoddinott et al. 2008

9 Glewwe et al. 2001

10 UNICEF, b, n.d.

a significant need for improving the quality and diversification of household diets in Kyrgyzstan.

The Behavioural Insights (BI) study was initiated to investigate the enablers and barriers to child nutrition, primarily focusing on children under 2 years old. The study examines the factors influencing malnutrition, encompassing beliefs, perceptions, social norms, taboos, gender dynamics, intrahousehold relationships, market accessibility, and seasonality. The BI study is part of the Nutrition and Social Behaviour Change (SBC) research and intervention test intended to understand better the dietary practices of families with children under 2 and develop, test, and evaluate two solutions to address identified barriers using an experimental research design.

Between mid-October and early November 2023, data were collected through 8 focus groups, 8 workshops, and 16 semi-structured and in-depth interviews with primary caregivers of children aged 6 – 23 months and key stakeholders in the communities with relevance to child nutrition, as well as 12 observations of cooking and eating process in the families with children between 6 – 23 months. This report presents the findings of the BI study.

3. STUDY METHODOLOGY

Objective of the study

The objective of the BI was to explore enablers and barriers, such as beliefs, perceptions, social norms, taboos, gender and intrahousehold dynamics, market access, and seasonality of food availability, that enable or hinder mothers, fathers and grandparents of children under two years old (or other caregivers in the absence of the aforementioned primary caregivers) to provide dietary diversity that includes breastfeeding, fruits, vegetables, starchy food, dairy, animal origin protein, and fat for children under 2 years old.

Research sites

The research sites included Bishkek City, Chui Province, and Jalal-Abad Province, which were selected based on the results of NIMAS, 2021. According to this survey, these regions had the highest level of child malnutrition. For the BI study, the following specific locations were selected: Belek village (Sokuluk District of Chui District), Suzak village (Suzak District of Jalal-Abad province), Jalal-Abad City, and Bishkek City. Hence, the study included two rural settings and two urban settings.

Bishkek, the capital and largest city of Kyrgyzstan is in the north of the country. Its population was estimated at 1,074,075 in 2021, with around 75 per cent being ethnic Kyrgyz.[11] Bishkek is also the administrative centre of Chuy Province, which surrounds the city (although the city itself is not part of it). The city has several large bazaars and modern shopping centres.

Belek village, in Sokuluk district in Chuy province, is a small village community of approximately 300 households with an overall population of around 1,500 people of predominantly Kyrgyz ethnicity. Belek village faces infrastructural challenges. For example, the Paramedic and Midwife Station is in suboptimal conditions, lacking water and basic sanitary facilities. The nursery shares space with the school and lacks a dedicated playground.

Suzak villageis the administrative centre of Suzak district in Jalal-Abad province, and has a population of 32,479 in 2021.[12] Suzak village is 15 km from the Kyrgyzstan-Uzbekistan border, which explains the high proportion of ethnic Uzbeks in the area. According to the most recent available census from 2009, the ethnic composition of Suzak district was 61 per cent Kyrgyz, 35 per cent Uzbek, 3 per cent Turks and Kurds. The community is predominantly engaged in agriculture (particularly cultivation of rice and pistachios) and cattle breeding. Religious practices play a central role in Suzak, with a high level of religiosity evident among the residents. Despite the village's large population, infrastructure such as schools, nurseries, and pharmacies is sufficient for only 6,000 people.

Jalal-Abad is the third-largest city in Kyrgyzstan, with a population of 123,239 (as of 2021).[13] The ethnic composition, according to the 2009 census,[14] includes 72 per cent Kyrgyz, 25 per cent Uzbek, and 3 per cent representing other ethnic groups. In some parts of Jalal-Abad, especially in new settlements, there is a great shortage of nurseries/kindergartens and schools.

11 www.stat.kg/en/statistics/

12 www.stat.kg/

13 www.stat.kg/ru/statistics/naselenie/

14 www.stat.kg/ru/statistics/naselenie/

Design of the study

The BI used human-centred design (HCD), a problem-solving qualitative technique that puts people at the centre of the process of identifying solutions for a problem. Hence, the solutions are drawn on the needs of people.[15] Generally, four stages of design thinking are distinguished, shown in Figure 1. This report focuses on the first two stages: 'Clarify' and 'Ideate'.

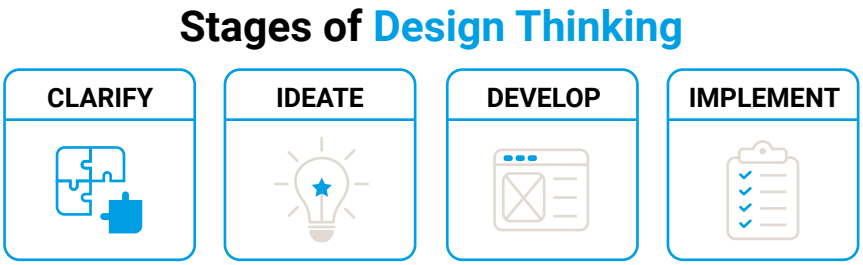
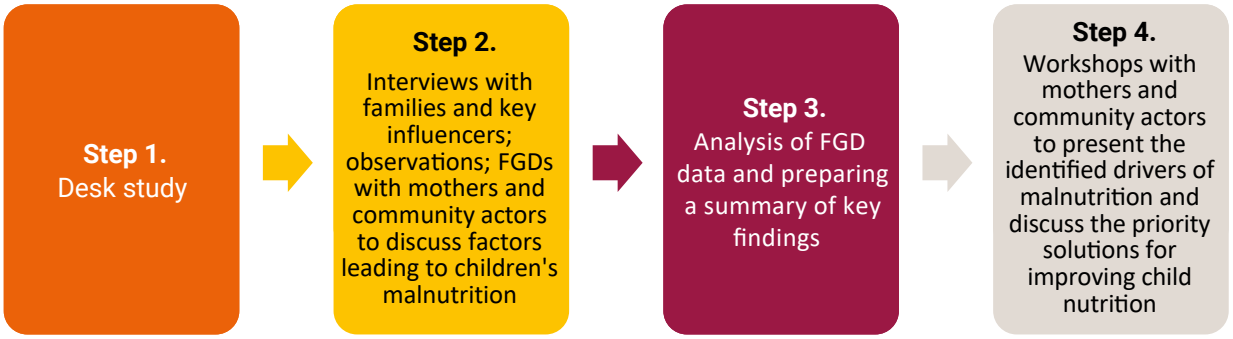


Figure 1: Stages of design thinking

Consequently, the study involved a sequential multi-step process in which each step informed the next one using a different data collection method.[16] Step 1 was desktop research.[17] For this, relevant studies on nutrition of children aged 6–23 months in Kyrgyzstan as well as in other contexts were reviewed to understand key factors behind child malnutrition. In addition, the current situation of child malnutrition in Kyrgyzstan was also reviewed. This information was used to gain more understanding on key concepts, such as social and gender norms, beliefs, perceptions, and hygiene. Then the insights were used to develop interview and focus group questions. Step 2 involved collecting data through interviews, FGDs, and observations. In Step 3, the collected data were analysed using qualitative top-down and bottom-up approaches to structure it according to key concepts but also enable new themes to be identified. Summaries of key enablers and barriers to child nutrition were prepared. In Step 4, validation workshops were conducted with relevant stakeholders (such as social and behaviour change specialists from UNICEF Kyrgyzstan) to discuss and validate the key enablers and barriers, and to identify a preliminary set of priority solutions for addressing the identified barriers (Figure 2). In this way, data collection aligned with the co-design element[18] of HCD, as the two sets of discussions were intended to explore both problems and solutions collaboratively, and to develop solutions that were embedded in community needs.

Figure 2: Steps of data collection



15 Landry 2020; UNICEF (d) n.d.

16 Methods: human-centred design tools and references. Available at www.vic.gov.au/methods-human-centred-design-tools-and-references

17 Human-centred design playbook: Desktop research. Available at www.vic.gov.au/desktop-research

18 Human-centred design playbook: Co-design. Available at www.vic.gov.au/co-design

Data collection methods

The BI study used qualitative data collection tools: focus groups, family in-depth interviews with observations, and semi-structured interviews. Data were collected in four sites with high levels of malnutrition in children under 2.[19] The sites included two urban areas, Bishkek City and Jalal-Abad City, and two rural areas, Suzak village (Suzak district in Jalal-Abad oblast) and Belek village (Sokuluk district in Chui oblast).

Focus group discussions

Focus group discussions (FGDs) were held with primary caregivers of children aged 6–23 months old and community actors and leaders in the four research sites to explore the enablers and barriers to ensuring nutritious diets for children under 2. For FGDs with primary caregivers, mothers, fathers, grandparents or any key caregiver (in the absence of the aforementioned categories) with children under 2 were invited through community actors and health workers. For FGDs with community actors and leaders, active female and male community members and leaders were invited (for example, heads of various committees, activists, health workers, village committee heads, school and nursery staff, social workers).

Table 2: Number of FGDs per site

Site	FGDs with mothers and primary caregivers	FGDs with stakeholders
Bishkek city	1	1
Belek village, Sokuluk district	1	1
Jalal-Abad city	1	1
Suzak village, Suzak district	1	1
Total	**4**	**4**

The FGDs explored various topics, including community context, social norms, and taboos surrounding nutrition, with a particular focus on children aged 6–23 months. Additionally, they delved into gender and intrahousehold dynamics and their influence on the nutrition of children in this age group, as well as beliefs, perceptions, knowledge, and attitudes regarding their nutrition. The discussions also addressed opportunities related to market access, seasonality, and access to water, sanitation, and hygiene (WASH) and health care for ensuring the nutrition of children aged 6–23 months. Participants discussed information channels for receiving nutrition-related information, strategies for improving nutrition, especially for children in this age group, and the willingness of community members to implement changes in nutrition practices, particularly for these children.

19 NIMAS 2021

Figure 3: FGD with mothers in Suzak

Interviews and observations

In-depth family interviews were conducted with primary caregivers and other family members of children aged 6–23 months to gain a better understanding of current eating habits, feeding practices of children aged 6–23 months, general attitudes toward health, perceptions of healthy eating, and trusted sources of information regarding health, hygiene, and healthy eating (including for children aged 6–23 months). The interviews also explored barriers to healthy eating and maintaining a mixed and balanced diet, along with hand hygiene practices.

Short observations of cooking and mealtimes in these families were also conducted to triangulate the data from the interviews and FGDs. Researchers followed primary caregivers and other family members when they prepared food and fed their children aged 6–23 months. The focus was on observing the process of cooking and consuming the meal by the family, including roles and responsibilities during the cooking process, as well as the process of having the meal, including the interactions between family members, with a particular focus on a child aged 6–23 months.

Additionally, semi-structured interviews were held with key influencers, such as health workers, community leaders, heads of women's committees, and village health committees, to complement FGDs with community members and actors. Key influencers were identified during the in-depth family interviews.

In total, 12 in-depth family interviews and 4 semi-structured interviews with key influencers were conducted (Table 4). All the interviews took place in locations where the participants felt comfortable, such as their homes or community venues of their choice.

Table 4: Number of in-depth family interviews and interviews with key influencers

Site	In-depth family interviews with mothers and primary caregivers, and observations	Interviews with key influencers
Bishkek city	3	1
Sokuluk village, Chui oblast	3	1
Jalal-Abad city	3	1
Suzak village, Suzak district	3	1
Total	**12**	**4**

Data analysis

The FGDs and interviews were audio recorded with the permission of the research participants. Subsequently, the recordings of each FGD were transcribed, and observations were documented in the form of notes and photographs. Once the transcripts and notes were finalized, they were coded (that is, sorted according to common themes based on the developed conceptual framework). The research team used a thematic analysis approach, which implied organizing data into common 'themes' to explore and compare experiences between and across participants' accounts. For this, the team used the deductive ('top-down') approach. The coding process was framed by the key themes identified in the conceptual framework based on the COM-B theory: Capabilities (people's skills and knowledge that influence the enactment of a behaviour); Opportunities (social influences and factors related to the physical environmental that influence the enactment of a behaviour); and Motivation (emotions, habitual processes, beliefs and identity that direct behaviour).[20] Each theme was then reviewed, summarized, and written up.

Ethical considerations

The research team observed the key ethical principles of social research: voluntary participation, informed consent, confidentiality/anonymity, and no harm (security and safety). The researchers had information sheets on the key principles of ethics, which they read out or explained to the study participants before inviting them to participate in the research. Study participants were informed thoroughly about 1) the aims of the study, 2) why they were invited to participate in the study, and 3) what the benefits of the study would be. They were also made aware that it should be their decision whether or not to participate in the study based on the information they received. During the focus groups and interviews, study participants were asked for permission to record the interviews and discussions. The researchers explained that recording would ensure the accuracy of the data. Study participants were assured of confidentiality and anonymity. They were informed that their names would be anonymized in the report. For this reason, the final report does not have any names. Only the details of the FGDs are provided for direct quotes.

Workshops

Eight workshops were conducted once the data from the FGDs, interviews, and observations were analysed. As shown in Table 3, workshops were held with mothers and other primary caregivers, as well as key stakeholders (such as community leaders, heads of various committees, activists, health workers, village committee heads, school and nursery staff, and social workers).

20 Michie et al., 2014

Table 3: Number of workshops conducted in each research site

Site	Workshops with mothers and primary caregivers	Workshops with stakeholders
Bishkek city	1	1
Belek village, Sokuluk district	1	1
Jalal-Abad city	1	1
Suzak village, Suzak district	1	1
Total	**4**	**4**

The aim of the workshops was to validate the findings from previous phases of data collection by gaining insights into participants' reflections on the identified barriers to nutrition of children aged 6–23 months. Participants were also asked to select the three barriers that they considered to be most important. Insights were also gathered about participants' thoughts on potential solutions for each of these three key barriers (see Annexes 2 and 3).

Figure 4: Validation workshop with mothers and caregivers in Bishkek city

Figure 5: Validation workshop with stakeholders in Jalal-Abad city

Figure 6: Validation workshop with stakeholders in Jalal-Abad city

4. FINDINGS

4.1 Social norms and taboos

Social norms are a type of social influences that have been defined as *"the perceived informal, mostly unwritten, rules that define acceptable and appropriate actions within a given group or community, thus guiding human behaviour. They consist of what we do, what we believe others do, and what we believe others approve of and expect us to do. Social norms are therefore situated at the interplay between behaviour, beliefs and expectations"*.[21]

Generally, caregivers prioritized breastfeeding before the child reaches 1 year. Some study participants strongly believed that children should primarily be breastfed until they are one or one and a half years old, receiving only porridge and mashed vegetables, particularly potatoes. Some caregivers said that they give yogurt or supplementary food from shops such as Agusha (a brand name).

> *"I feed my infant during the day. In the evening, my mother-in-law and I feed the child. My little one eats two or three meals a day. In other cases, I breastfeed. If the child is very active, I also give fruits such as bananas and apples" (Interview with a mother, Belek).*

At age one, caregivers actively introduce solid foods from the family's regular meals to their children. Family observations revealed that, in 9 out of 12 observed families, children above 1 year were fed the same food as the rest of the family.

> *"I love pasta dishes. For example, I like lagman [a noodle dish]. I also like plov [a rice dish]. When I cook, I cook what I want. The children eat only what I cook. For example, my children do not like plov. But when I make it, they eat it because they are hungry. I sometimes cook the children's favourite dishes; they like buckwheat dishes and types of porridge. My little daughter does not like porridges or dairy food. I mostly breastfeed her and give whatever we eat in mashed form. I do not make porridges and purees for her at all." (FGD with mothers and caregivers, Suzak)*

Additionally, the study participants in FGDs and interviews shared that some types of fruits should be avoided since they may cause diarrhoea. The prevailing comment among mothers and caregivers in all research areas was that there are generally no strict rules or principles about feeding children. Children eat whatever they want, and after turning 1 year, they are often allowed to have sweets. For instance, boorsoks (fried pastries like doughnuts) are a common snack among children, and they also enjoy different types of sausages and hotdogs. Dough-based foods like oromo and kesme are also common for children under 2. It is considered acceptable if a child does not eat a proper meal as long as they consume something they like. However, in some FGDs, mothers reported attempting to limit the intake of sweets and of heavy dishes such as horse meat.

Caregivers and mothers shared that they introduce supplementary food from the sixth month of the child's life, mostly in the form of puree. Commonly, this includes mashed potatoes from family meals like soups, or mashed fruits like apples. On the one hand, there were a few exceptions, especially in Bishkek, where women tried to provide a more diverse diet for their children, including different vegetables, fruits, and meats, including fish. On the other hand, there were cases on the unhealthy spectrum where mothers shared feeding their infants under 1 milk mixed with chocolate.

Furthermore, a nutritionist from Bishkek interviewed for the study who worked with families and infants mentioned that families feed their infants bylamyk – a traditional flour-based porridge, where flour is fried with a small amount of oil or fat and then mixed with water or milk, and sugar. The nutritionist identified bylamyk as a key issue in the diet of infants because it contains ingredients that can

21 UNICEF, 2021. www.unicef.org/media/111061/file/Social-norms-definitions-2021.pdf

cause health problems when given to the infant from an early age (such as the first month of life) and on a regular basis:

> *"Bylamyk is the biggest problem in our society. This is boiled flour, it can be made with lamb fat, and I can't even imagine how it tastes. And sugar is added there. This flour is fried and mixed with water and then given to the child on the assumption that the child is not getting enough. We all did that. These are all remnants of our past, and from this, all the problems begin because bylamyk can be given right from birth. This is the most important problem, it seems to me." (Interview with a nutritionist, Bishkek)*

Bylamyk is a favourite food among the older generation across the country, as indicated by women in all research sites. Because the older generation grew up after the war, dough and meat were the main food items for them. However, mothers from the younger generation tend to be more sceptical. Nevertheless, some of them attempted to follow the advice of their elderly family members, but their children experienced vomiting, leading to the discontinuation of bylamyk feeding. Only one mother in Bishkek persisted with feeding bylamyk because it is cheap to make. During family observations of conducted within the study, 1 out of 12 families fed bylamyk.

Figure 7: Preparation of bylamak (Suzak village)

There were other beliefs passed down by older generations that are now being questioned by the younger generation. For example, there are sayings such as "If a child eats fish, his/her mouth will look like a fish's mouth." A health worker from Suzak said that such sayings are now being ignored, but they still exist in communities. Other similar norms and beliefs persist. For instance, children are given tea with milk from the sixth month of their life. Water is considered tasteless, and some women resist giving water to children. For example, if 12 families observed during the study, only one had water at the dinner table. The other 11 families, which also included the toddlers, drank tea. A mother from Jalal-Abad succinctly summarized key misconceptions prevalent in the population by pointing out how community beliefs related to feeding children under 2, breastfeeding, and the dietary habits of lactating mothers turned out to be erroneous and absurd. She understood this when she started following a paediatrician blogger on Instagram. For instance, she discovered that the widespread belief among people that tea with milk increases the milk volume of the lactating mother is entirely incorrect. She said that she learned from the blogger that the more the mother breastfeeds the child, the more the milk increases.

> *"Baktygul Kylychbekova, a paediatrician, had special guidelines for the nutrition of pregnant and nursing mothers. In the past, the common practice in the community was that the woman who gave birth, should have kordo [boiled rice mixed with yogurt] for 40 days. But it turns out there is no such thing in medicine. We used to do this. But there is no benefit from it. I found out with my daughter [her third child]. I went on a strict diet for about 10 days. After that I got tired and wanted to eat different food. I started mixing food. Fruits and vegetables are not allowed for [lactating mothers] and it was summer. But I started having fruits and vegetables from time to time. I had lamb, horse meat, nectarines, watermelon. In short, I started mixing different food and, thank God, everything was fine. People believe that if a lactating mother mixes food, then the child will have diarrhoea. But it turns out that is not true. This is our belief from the past. Beliefs such as if a mother eats horse meat, then something will happen is absurd. It does not have any effect at all. It is also wrong to say that*

drinking tea with milk will increase the milk supply. The more you breastfeed the baby, the more milk will increase. In addition, it is necessary to breastfeed properly, the child should breastfeed in a comfortable position. All these things show that most of us breastfeed incorrectly." (Interview with a mother. Jalal-Abad)

Further, study participants across all research sites reported that it is becoming a norm for people, especially of the younger generation, to order fast food, particularly pizza, sushi, hamburgers, sausages, and fries. Other unhealthy snacks, such as crisps and fizzy drinks, were noted to be common too. Working families are opting for ready-made and frozen foods from shops. These emerging food preferences in the households also affect children aged 6–23 months. Nevertheless, mothers and caregivers said that they do not allow infants and toddlers to eat unhealthy snacks like crisps.

However, other mothers noted that it is sometimes difficult for them to resist the general trend of consuming fast food, and they let their children have them. It is perceived that most people follow what other people do and there is a prevailing trend in society to feed children fast food, although mothers acknowledge the potentially harmful nature of consuming these foods extensively. Notwithstanding this awareness, people still provide such items to their children with the intention of making them happy.

"Many people live with the flow of the society. We now have a lot of fast food. Our kids love those things. Fast foods include pizza, hamburgers, French fries, and other foods. We give our children [this food] even though we know it does more harm than good, because we want to make them happy from time to time." (FGD with mothers and caregivers in Jalal-Abad)

Further, a common behaviour among women while feeding children, as mentioned by nutritionists, includes mothers sometimes chasing after their children to feed them if they believe the child did not eat enough during a mealtime. Consequently, the child may lose a sense of boundaries between feeding times, turning the entire day into a continuous feeding process, and leading the child to resist further feeding. Some mothers resort to manipulation, deception, and bribery to encourage their children to eat, fostering incorrect associations with feeding. Children may come to view such behaviour as normal. Additionally, overly restrictive measures (such as restriction of sweets) backfired; children tended to overeat sweets once they gained access to them.

Nutritionists also highlighted a common belief among some mothers who aim for their children to gain weight, even if the child is developing fine. These mothers insist that the child needs to gain weight. This perspective from nutritionists aligns with discussions held with mothers and caregivers across all research areas. Most mothers and caregivers expressed the belief that a healthy child should be plump, and weigh slightly above average. More than half the FGD participants agreed fully or somewhat that most people in their communities thought that having a 'skinny' child was a sign of bad parenting.

Finally, toddlers are often not provided with utensils because mothers and caregivers are concerned that they will harm themselves. Consequently, toddlers may not develop the skills to feed themselves and may lose interest in food.

4.2 Gender and intrahousehold dynamics

Other types of social influences, such as gender and intrahousehold dynamics, were also found to be relevant in this context. During FGDs, especially in rural settings, participants highlighted the prevalent practice of families living in an intergenerational setup, where daughters-in-law reside with their husbands' families. Among the families observed during the study, 5 of the 12 lived in such arrangements. Consequently, grandmothers played a significant role in caring for children under 2. In urban areas, some participants noted that grandfathers also contribute to childcare. Typically, grandparents take care of children between mealtimes, taking them for walks for instance. In cases where women returned to work early, care for children under 2 was predominantly provided by grandmothers.

There appears to be power dynamic challenges between mothers-in-law and daughters-in-law, where the former can influence the feeding practices of the child based on her own perceptions and past experiences. For instance, during FGDs some women recalled their mothers-in-law suggesting giving bylamyk to children, asserting that it would keep the children full while they managed household chores. These perceptions tend to be transmitted across generations. Women residing with their in-laws sometimes struggle to provide healthy food to their children, even when equipped with information on feeding nutritious meals, due to time constraints arising from household chores and a lack of financial resources. Meanwhile, older women in FGDs consistently mentioned that younger parents nowadays prefer different foods, such as pizza and rolls, often opting to eat out in cafes, which has changed the eating dynamics.

> *"I searched the internet for information on proper nutrition for my child under 2 years. They said to give the child a variety of useful fruits. For example, adding strawberries and blueberries to food. We do not have such things. I am subscribed to many Instagram pages about healthy eating for young children. They [families on Instagram] spend all their time [on eating]. We live in a village, and when you live with your mother-in-law, you do not have much time for your children. I could not use the useful information I received about proper nutrition for the child, perhaps because of lack of time or funds." (FGD with mothers and caregivers, Belek)*

In some cases, negative relationships between mothers-in-law and daughters-in-law can also affect the feeding of infants and toddlers. As demonstrated in the statement below, mothers-in-law may act contrary to what their daughters-in-law do in order to establish their authority. The financial dependence of young couples on their parents can also diminish their voice in making and asserting decisions about feeding their children. Cultural and traditional expectations, such as the young generation obeying the older generation, may restrict young couples' ability to make independent decisions. Thus, some study participants thought that any interventions promoting healthy eating for children should consider including grandmothers.

> *"When their child is born, women already have some kind of negative relationship with their mother-in-law. This relationship is then also passed on the child. It is frequently observed that when the mother says that this [sweets] is harmful for the child, the grandmother, instead of supporting her daughter-in-law, gives sweets to maintain her authority. She does not understand that she is doing something wrong. Well, when a child screams [wanting or not wanting a certain thing] the mother-in-law says: 'He does not want it, that means he does not want it,' or on the contrary: 'he wants it, give it to him, nothing will happen.' And the daughter-in-law cannot refuse and obeys. And this discord is also harmful for the child. It often happens that daughters-in-law cannot do what they think is right. The grandmother believes that her opinion is correct, that she is the oldest, and that she knows bet. Sometimes, the financial dependence of the daughter-in-law and son is also a reason. If a person buys food for home or gives money, then he decides what the family and child will eat." (FGD with stakeholders, Bishkek)*

Furthermore, the dietary preferences of family members shape the products and foods consumed in households, influencing the feeding of infants and toddlers. For example, a mother in Bishkek mentioned that her husband and his sister do not like eating chicken or lamb. Consequently, their whole family mostly consume beef. Another mother from Bishkek stated that the changes she makes to promote healthy eating are met with misunderstanding from her husband. Her toddler gets badly constipated and is very picky about food. It is challenging for the mother to make the child eat healthier food. The situation is further exacerbated by the food preferences of the father and grandmother, who tend to favour biscuits, pastries, and dishes made of dough, such as manty, kesme and beshbarmak. This case illustrates that feeding healthy food to children is intertwined with the broader eating habits of the family members. Hence, the enabling environment for a healthy diet of children aged 6–23 months should involve all the adults living in the household.

Mothers noted a lack of awareness and acceptance of healthy eating among family members as a problem. Women complained that they do not receive support and understanding from their husbands and other family members. For instance, a mother from Bishkek mentioned that she would like to have a water filter, but her husband did not allow its installation because he did not see any point in it. He held a similar view about food. As the quote below shows, her husband believes that if one is destined to die, one will do so irrespective of food choices. Thus, he enjoys eating fast food and drinking fizzy drinks.

> *"He says: 'If a person is destined to die, he will die, it does not depend on that [food]. How long God gave one to live, that's how long one will live.' He himself loves fast food and fizzy drinks, but at the same time he is very thin, really very thin. And the children also look at him and eat. I think that I first need to switch to a healthy diet myself, and the children will see me, eat what I eat, and get used to it. That's why I'm looking for information for myself." (Interview with a mother, Bishkek).*

There also tends to be too much intervention from extended family members who give feeding advice, mostly drawn upon traditions and personal experiences. However, mothers seem to develop their own strategies to deal with these interventions from extended family members. As the quote below shows, mothers agree with everyone, but they do things their own way. However, access to credible and evidence-based information remains a problem.

> *"In our family, everyone teaches. When I gave birth to my first child, everyone taught me: my mother-in-law, my sister-in-law, my mother. Okay, I listen to my mother. But all of them talk like they are paediatricians with experience. They say: 'Give the baby milk, give tea with milk, give bread soaked in tea, give some soup, give fat of chuchuk [a sausage made of horse meat and fat], rub fat of the sheep, and put some breastmilk into the baby's nose and ears.' In short, there was nothing left that they did not say. I said 'Yes' to them and did it my way. At the beginning, we had conflicts. I opposed this advice. Then I realized that I needed to say 'yes' but do it my way. My husband taught me this. He said: 'You say Yes, but do it your way.' In the beginning, there were a lot of 'teachers.' And then they understood [that she does it her way]." (FGD with mothers and caregivers, Bishkek)*

Women shared that the decision about making food for the household was mostly made by them. Only a few women said that sometimes men express preferences for certain foods, and then those foods are prepared. During observations of families, mothers from 10 out of 12 families decided what to cook. However, during FGDs around half of the women said that shopping is done by their husbands. In Bishkek, women who lived independently (not with in-laws) mentioned that they oversee shopping for food. However, the money is provided, in most cases, by the husband. In relation to children's feeding, mothers said that they make decisions regarding what to feed children.

Women talked about the high expectations they have. As the quote below illustrates, women felt pressured to meet certain gender norms, and were often compared to either other women in the communities or the past experiences of older women. The comparisons and judgments made it difficult for them to cope with household chores and caring for children. This was particularly the case for women who lived with their in-laws.

> *"I gain weight when I'm pregnant. During my second pregnancy, I gained more than 30 kg. After giving birth, a woman's self-esteem drops. We are often compared to other women. They say, 'That one is managing well, this one is doing this'. Then I think that I am doing something wrong. In our country, demands increase as soon as you give birth. They question you "Why are you like this?". They say: 'Women in the past used to do everything'. Words like that upset me very much." (Interview with mother in Jalal-Abad)*

Because of this women, during interviews, mentioned feeling freer and more relaxed at work than at home due to the numerous responsibilities they had. Women felt overwhelmed by multi-layered expectations and responsibilities, including work and household chores, especially in the context of living with in-laws. Most women stated that their favourite part of the day is when older children are at school and the child under 2 is asleep. This is because they have time for their daily house chores and leisure.

Further, mothers and caregivers also discussed the lack of involvement of men in the care of children. Consistently, women spoke about fathers being minimally involved in the lives of their children due to work commitments or having active social lives outside their households. At times, men fail to appreciate the efforts of women and do not offer support. Women who stay at home and look after children expressed feelings of burnout. Nonetheless, some mothers at FGD said that men were becoming more involved in family matters and bringing up children. They can even feed them and take them to nursery.

4.3. Knowledge and access to information

In terms of capability, nutrition-related knowledge was found to be a recurrent theme in the discussions. Study participants in all research areas stated that mothers and other primary caregivers, such as grandmothers, lacked up-to-date knowledge about feeding children aged 6–23 months. It is important to note that, despite this perception, study participants consistently asserted that a healthy diet comprising diverse foods is paramount for the physical and mental development of children. Some caregivers, especially in Bishkek, said that some dishes, particularly those made of dough, were not necessarily good for the health of children and adults. They emphasized that a healthy diet should predominantly consist of vegetables and fruits.

While most people seem to have a general understanding that diverse food is good for health, they lack specific information relevant to their daily context. For example, some study participants, especially nutritionists, argued that it is possible to eat healthy and provide nutritious food to children using the available products in the market on an average budget. The discussions indicated that this type of context-relevant knowledge appears to be missing.

Additionally, some participants – especially community leaders and activists – argued that people also lack information about the negative implications of their current practices around child nutrition and feeding in general. They insisted that raising awareness among community members about the negative consequences of current practices may incentivize them to change child-feeding practices and dietary habits in general.

Across all research areas, paediatricians and health workers emerged as key influencers in providing crucial information on infant feeding, the introduction of solid foods, and overall nutritional guidance. Most FGD participants agreed that health workers provide sufficient information to them about the nutrition of children aged 6–23 months. The study revealed that mothers often turn to healthcare professionals during times of illness, or specific health concerns for detailed advice on feeding practices. However, this guidance tends to be more reactive, focusing on problem solving rather than offering comprehensive preventive measures. In other words, while mothers seek advice during episodes of illness, a systematic approach to educating caregivers on preventive nutrition, especially in the critical early stages of child development, is lacking. This highlights an opportunity to integrate nutritional counselling into routine health-care visits, fostering a preventive mindset among caregivers. Participants stressed the need for national-level programmes, particularly through family practitioners, to disseminate information and promote healthy eating.

Further, the study showed that mothers and caregivers draw on diverse sources, including personal experience, advice from relatives, and observations of other people's practices. In rural settings, the study participants suggested promoting healthy eating for children aged 6–23 months through face-to-face, household-based information sharing with the involvement of village heads and women's committees, considering that not all women go to health clinics (in rural areas medical-obstetric stations, hereafter referred to as FAPs, after their Russian acronym). Study participants emphasized that the delivery of information should be interesting, engaging and involve actors that community members would listen to. In rural settings, these can be village heads and women's committees. In urban settings, they can be family practitioners and specially trained specialists.

> *"Information can be spread through Family Practitioner clinics. Specially trained specialists can come and deliver information sessions. In rural areas, it is possible to include village*

leaders and women's committees in the dissemination of information. Various methods and formats should be used to deliver information." (FGD with mothers and caregivers)

"I would like information to be provided at state level, specifically for mothers. For example, information can be provided in Family Practitioner clinics to inform mothers and caregivers about the importance of nutrition for the child. Because of our mentality and a lack of financial means, we do not know. Many families cook mainly fried foods, even soups are fried at the beginning. Here, I think we need better information." (FGD with mothers and caregivers in Bishkek)

Some participants actively seek information from the internet, nutritionists, books, and private paediatricians. Others pointed out that people now prefer videos and visuals over text, as reading is not a common practice for many. Therefore, they emphasized that videos and social media can play a central role in information delivery. The influence of influencers on social media, particularly those acquiring international knowledge, indicates a growing reliance on digital platforms. Social media, especially platforms like Instagram and YouTube, emerged as influential sources of child nutrition information.

"I'm mostly on Instagram. There is probably no person who is not on Instagram just now. That's why I think it would be good to spread the information on social media. You can spread information on Facebook and YouTube. Radio and television programmes would work too." (Interview with a mother in Jalal-Abad)

"I would encourage parents to give more fruits and vegetables to their children. This information can be delivered to parents online and offline. Nowadays, most people spend a lot of time on the internet, so I believe that it should be better online. For example, make videos that will be based on facts." (Interview with a mother in Jalal-Abad)

Some participants suggested the importance of regular reminders about healthy eating through television and other mass media. Television, in particular, was highlighted due to its wide viewership, especially in rural areas. Opinions were divided regarding leaflets, with the older generation expressing a preference for this traditional means of information delivery. The credibility of the information was noted as important, and that content should be based on facts. Further, the shortage of specialists in Kyrgyz language regarding breastfeeding and introducing solid food poses a challenge. While mothers appreciate the accessibility of information, concerns about information overload and credibility were highlighted by parents.

A notable generational gap exists with younger caregivers more actively engaging with social media for information. While grandparents mostly rely on life experiences. Additionally, it was noted that in Suzak that some women in ethnic Uzbek communities lack smartphones and access to the internet, which limits their access to online information. Nevertheless, the evolving role of technology suggests a shift in information-seeking behaviour across generations. The influx of information demands digital skills and critical thinking, particularly as contradictory content proliferates.

"There is a lot of information; some is verified, and most are not. Nowadays, there are many people who make videos about things that they don't really know about. I may find the information useful if there are some facts there. If a person speaks about personal opinion without any facts, I consider that information to be unreliable and not useful. But it also depends on the person who is relaying the information; if this person is a professor or researcher, I can trust the person. But if this is a simple non-professional person saying something about what a child should or should not be eating, then I will not trust that source." (Interview with a mother, Jalal-Abad).

Key information sources noted by study respondents:

- FAP workers (rural areas)
- Paediatricians (all locations)
- Personal experiences, relatives, and family members (all locations)

- Nutritionists and books (mostly Bishkek)
- Social media platforms, such as Instagram and YouTube (all locations)
- Influencers and bloggers, including their online courses and webinars (all locations) in Russian and Kyrgyz languages
- YouTube channel of Dr Komarovskei: www.youtube.com/@eokomarovskiy
- YouTube channel of Dr Turabekov: www.youtube.com/@DoctorTurabekov
- YouTube channel of Asel Minawaga: www.youtube.com/@AselMinagawa

4.4 Market access and seasonality of food availability

Opportunities afforded by the physical environment were identified as potentially important drivers for nutrition-related behaviours in the study context. The interviews and FGDs indicated that market and food accessibility varied across households, and prominent distinctions were observed between respondents in rural and urban areas. In rural settings, mothers, caregivers, and community members highlighted that they grow most vegetables by themselves. Study participants noted that the proximity of Sokuluk (the administrative centre of Sokuluk district) facilitates market access. Community members noted reliance on the district centre for certain items like baby formula for children, which are not available in smaller rural communities.

With regard to the accessibility of vegetables and fruits in winter, many rural households reported relying on home-grown and stoked-up produce. Most FGD participants fully agreed that there are not so many fruits and vegetables in the winter, but most people in their communities preserve and store nutritious food at home. Overall, availability of different products is perceived to be consistent, although affordability remains variable.

In the semi-urban setting of Jalal-Abad city, study participants noted that access to different types of food is mostly available throughout the year. However, there is a lack of certain sea products, and affordability of certain food items is another key barrier. Most mothers and caregivers indicated the financial constraints affecting their food choices. The notion of eating more during the season of abundance (summer) was also noted.

In Bishkek (an urban setting), participants noted wider availability of different food items. Accessibility to shops 24/7 was highlighted, emphasizing continuous access to food. However, mothers and caregivers in Bishkek are more likely to opt for cheaper food options for their children, and occasionally deviate from paediatrician recommendations because of financial limitations.

Around half of FGD participants agreed that most members of their communities have regular opportuniti3w to buy fresh fruits and vegetables from the market and they can afford it. Thus, the role of finance as a barrier to healthy eating emerged as a cross-cutting theme in both rural and urban settings.

> *"The financial side is important. … For example, when I ask my husband to buy broccoli, he says: why? It is too expensive. And we end up buying either meat or something else." (Interview with a mother, Bishkek)*

4.5 Access to clean water and proper sanitation

Another environmental influence on nutrition-related behaviours was access to clean water and sanitation. Water plays a crucial role in various physiological functions, including digestion, absorption, and transportation of nutrients. Clean water ensures that children have a safe and reliable source for meeting their hydration needs, facilitating overall bodily functions. Clean water is vital for preparing nutritious and safe food. In households where water quality is compromised, there is a higher risk of contamination of food, leading to waterborne diseases. Diarrhoeal diseases, in particular, are of concern, as they can result in nutrient malabsorption and contribute to malnutrition. For infants, access

to clean water is crucial for breastfeeding and the preparation of infant formula. Availability of clean water promotes hygienic practices, such as handwashing before meals and after using the toilet.

Access to clean water was a significant issue in Belek village. Availability during the summer months can be restricted to twice a week. Even then, tap water was reported to be "poor and muddy." Use of filters is limited due to cost and maintenance challenges. Study participants indicated water scarcity, affecting irrigation for villagers who predominantly grow their vegetables. The local health facility also has the same local issue with water being inconsistent and muddy. Mothers resort to boiling water before consumption to ensure safety. Limited access to clean tap water leads to less healthy drink options, such as mixing boiled water with jam or resorting to fizzy drinks. The financial barrier to purchasing filters further hinders water quality improvement.

In Suzak and Jalal-Abad, access to clean water and sanitation varied, with most households reporting having access to clean water. The interviewed respondents reported significant improvements in water conditions in recent years, narrowing the gap between urban and rural areas. The indicator of satisfactory WASH conditions in households has surged to 80 per cent, contributing to decreased diarrhoea cases. However, some individuals still struggle with hygiene practices, partly due to ignorance of the potential consequences or laziness. Power cuts occasionally disrupt the water supply, posing challenges for community members.

The capital, Bishkek, stands out with reliable access to water, including hot water. Hygiene practices are relatively advanced, with mothers emphasizing frequent clothing changes and bathing for child hygiene. The city's robust infrastructure ensures consistent water access, minimizing sanitation concerns. However, FGD participants in Bishkek noted that the situation in the new settlements around Bishkek is different, as the residents of these settlements have limited access to water.

In relation to WASH practices, mothers and caregivers during FGDs said that they ensure that their family members follow good practices, such as washing hands before consuming food and after using the toilet. They also indicated that they have several places in their flats and houses designated for washing hands. During the observations of families, 10 of 12 families washed their hands before eating. A similar number of mothers also washed their hands before cooking. However, in not all these 10 cases did family members use soap. They rinsed their hands with water because of their perception that soap should be used if they were doing an activity such as working or playing outside.

5. CONCLUSION

In conclusion, the evidence presented in this report shows that the nutrition of children aged 6–23 months is embedded in the nutrition practices of their families. These practices, in turn, are shaped by traditional, cultural, and historical factors. With roots in the nomadic past, the common diet in the research areas predominantly comprises meat and dough-based dishes. In times of economic shortage, these food preferences are prioritized over other choices, such as fruits, vegetables, and legumes. Since the common practice is for children aged 6–23 months to eat the same food as the whole family, the long-established tradition of consuming meat (beef and lamb) and pastry dishes is then passed down to the children.

The importance of diverse food, including various fruit and vegetables, for children was recognized by all study participants. However, ensuring diverse food entails that families introduce changes not only for children aged 6–23 months but also in the knowledge, beliefs, and practices of primary caregivers and other family members. This is because the evidence shows that even if mothers are given a budget to buy ingredients and are allowed to make decisions about meal choices, they still need to ensure that the prepared meals meet the preferences of other key family members, such as husbands and parents-in-law. This indicates that interventions related to child nutrition should focus not only on mothers or other female primary caregivers but also on fathers and parents-in-law. In addition, the latter actors also need be involved in order to transform intra-household relations and gender norms, so that women receive more support from men and their in-laws in relation to childcare and household chores.

Introducing changes may face resistance because people believe that diverse food – including different food groups, particularly various fruit and vegetables – is expensive. This indicates that interventions should focus on informing and offering the population healthy meal options within their available budgets. Another concern is access to water, leading people to opt for unhealthy options for children, such as fizzy drinks. Where these drinks cannot be afforded, people resort to drinking dirty water after it settles for a few hours, allowing all the sediment to sink. Hence, interventions could focus on ensuring access to clean water, providing various alternatives to ensure that children receive clean water.

The role of health workers and paediatricians was noted to be very important, as mothers and caregivers rely on their advice. However, caregivers shared that they receive information about food and nutrition from health workers only when they specifically request it, especially when their child is unwell. Overall, mothers, especially in Bishkek city, expressed concerns that health workers do not provide all mothers with comprehensive nutrition information. Additionally, there is a shortage of experienced nutritionists and nutrition programmes in Kyrgyzstan that could raise awareness about nutrition among the population, particularly mothers and caregivers. Consequently, a common recommendation among study participants was to improve information provision to caregivers. For instance, study participants suggested state programmes focused on nutrition or an information campaign.

It has become evident that social media is influencing beliefs, knowledge, and practices related to food and nutrition, with bloggers playing a prominent role in shaping these changes. However, mothers encounter challenges in assessing the credibility of information, highlighting the need for skills to discern trustworthy and evidence-based sources. Additionally, the internet is affecting the feeding practices of children, as many children now watch cartoons on devices while eating. Nutritionists express concerns about this practice, suggesting that it disrupts the feeding process and may affect accurate assessment of food volume, potentially leading to overeating or undereating. These findings underscore the importance of incorporating social media into communication interventions, emphasizing the significance of understanding information credibility and promoting proper use of the internet.

PART II. SOLUTION EVALUATION REPORT

This part presents the outcomes of the testing and evaluation of two solutions to promote diverse nutrition among children aged 6–23 months. The solutions were developed to address the barriers revealed by the Behavioural Insights Study to achieving diverse child nutrition. They include widespread family diets that emphasize fatty, dough-based meals and limited knowledge about dietary diversity among mothers, fathers, and grandparents. Challenges such as adherence to family expectations, lack of access to reliable information, and the perception that diverse diets are financially unattainable, further hinder families' ability to provide varied and nutritious meals for their children aged 6–23 months.

Thus, a priority focus for the solutions was cooking and eating (as a family) a nutritionally diverse set of snacks and main dishes each day. Two solutions were developed. The first solution, Grandparents' Healthy Eating Meetings, aimed to educate grandparents on the importance of dietary diversity, encouraging them to support their families in introducing a variety of foods, especially Vitamin A-rich vegetables, into children's diets. The second solution, Provision of Information for Mothers on Nutritious Feeding of Children Aged 6–23 Months, focused on equipping mothers with practical knowledge through the provision of brochures and WhatsApp posts, helping them prepare more diverse and nutritious meals for their children.

The two solutions were implemented over a four-week period, from 25 July to 16 August 2024. The "Grandparents' Healthy Eating Meetings" involved four weekly sessions in which participants learned about the importance of dietary diversity and received practical guidance on how to introduce a wider variety of foods into children's diets. "Provision of Information for Mothers on Nutritious Feeding of Children Aged 6–23 Months" was conducted through health check-ups and WhatsApp messaging, where mothers received information on nutritious meal preparation for their children. Both solutions were evaluated using surveys and FGDs with participants, as well as interviews with health workers.

EXECUTIVE SUMMARY

Outcomes of testing and evaluation

Solution 1 – Healthy eating sessions for grandparents

The healthy eating sessions were successfully implemented over four weeks. While there was a mix of consistent and occasional attendees, 28 grandparents attended at least two sessions each, with most of the regular participants being women; men generally only attended once due to work commitments and discomfort in predominantly female groups, due to gender roles where feeding children is seen as women's responsibility.

The sessions were well-received, particularly the hands-on cooking demonstrations, which helped grandparents learn practical ways to prepare nutritious meals for children. The WhatsApp groups played a crucial role in keeping participants informed and engaged, especially for those who missed sessions. Printed recipes were distributed based on participant requests, further enhancing the usefulness of the materials. Many grandparents reported introducing a wider variety of fruits, vegetables and protein sources into their grandchildren's diets. A significant shift was observed in reducing sugary snacks and an increased focus on balanced meals. Most of the grandparents (96 per cent) reported improved understanding of the importance of dietary diversity after attending the sessions. They felt more motivated to implement the tips and advice learned during the sessions in their everyday lives. However, the perception that maintaining a diverse diet is expensive remained a barrier, though this perception decreased by the endline.

Solutions 2 - Provision of information for mothers on nutritious feeding of children aged 6–23 months

Women received child nutrition information primarily through a combination of health worker explanations, brochures and WhatsApp posts. The women appreciated the convenience of WhatsApp, especially due to their busy schedules. However, many preferred video content over pictures, suggesting that videos with concise information would be more engaging and easier to follow. Health workers also valued WhatsApp for its ability to maintain contact with mothers, but noted the need for more discussion within the groups. Nonetheless, face-to-face interactions with health workers were the most effective and preferred method of information delivery. This was attributed to the interactive element, allowing mothers to ask questions and clarify doubts. Mothers also highly valued the detailed explanations from health workers.

Most surveyed women (86 per cent) expressed satisfaction with the nutritional information, and the majority reported improvements in their understanding of child nutrition. A significant proportion of mothers made changes to their children's diets based on the information provided. Common changes included monitoring eating schedules, encouraging self-feeding, and preparing healthier meals with less salt and sugar.

Eighty-seven per cent of surveyed women believed that following a diverse diet was important for their children's health. However, opinions varied regarding the cost and feasibility of maintaining such a diet, with many mothers undecided or finding it challenging to balance financial constraints with dietary diversity. Further, some mothers found it difficult to follow a diverse diet or serve new foods to their children. This was partly due to financial constraints, limited knowledge, or the belief that their children would not accept certain foods. Additionally, mothers reported challenges in preparing separate meals for their children, citing time constraints and difficulty incorporating healthy options consistently.

Recommendations

1. Using videos

   Videos should be over static images to improve engagement and understanding. Other interactive elements, like quizzes, could also be beneficial.

2. Involving all family members

   Fathers and other family members should be included in the sessions to improve the solutions' effectiveness by addressing the whole family's role in nutrition.

3. Expanding the intervention

   The interventions should be expanded to kindergartens and schools, and integrated into daily life and antenatal care for sustained impact.

4. Addressing cost perceptions

   Guidance should be provided on using affordable, local ingredients and meal planning to counter the perception that diverse diets are expensive.

5. Integrating nutrition into health programmes

   Nutrition education should be integratrf into routine health programmes to ensure ongoing support and information for families.

6. Engaging men

   Sessions should focus on family nutrition, rather than just child feeding, to encourage more consistent male participation.

7. Adjusting session frequency

   Biweekly or monthly sessions should be considered to accommodate participants' schedules and maintain engagement over a longer period.

1. BACKGROUND

A Behavioural Insights study conducted in October and November 2023 in Chui and Jalal-Abad oblasts identified several key barriers to diverse child nutrition. The study revealed significant challenges related to diverse child nutrition. Children aged 6–23 months typically consumed what the rest of the family ate, which often included dough-based dishes, with limited intake of diverse vegetables, fruits, legumes, various meats, including fish, and dairy products. Mothers believed that their husbands, in particular, expected them to prepare meals centred around fatty meat and dough. Fathers, in turn, believed that consuming fatty and dough-based dishes (considered to be traditional cuisine) was necessary because these foods were associated with strength.

The study also highlighted that mothers, fathers and grandparents lacked practical knowledge about diversifying their family's diet with locally available products, and the long-term benefits of such a diet for children under two. Grandmothers and fathers were particularly unaware of the health risks associated with lack of dietary diversity, preferring instead to feed children fatty and filling foods. There was also a general lack of knowledge among family members about alternatives to sugary products for motivating children to eat. They were unaware of the harm caused by excessive sugar consumption in children. Cultural norms dictated that mothers follow the guidance of key family members, especially husbands and parents-in-law, in matters related to child feeding. This expectation, combined with the demands of work and household chores, particularly in intergenerational households, left mothers with little time to prepare diverse meals for their children. Mothers also had limited access to reliable information on nutrition, often relying on social media or, occasionally, consulting health workers, but they were expected to adhere to the advice of older generations. Additionally, many caregivers believed that maintaining a diverse diet was expensive and beyond their financial means.

To address these barriers, various solutions were discussed with stakeholders, including representatives of the Ministry of Health and international organizations. Through discussion and consideration of solutions based on a set of criteria, the following two solutions targeting mothers and grandparents were selected as the most promising for implementation and testing:

(1)Grandmothers' and grandfathers' healthy eating meeting – The first solution targeted grandmothers and grandfathers. The key aim was to educate and encourage them to become advocates for dietary diversity at home and to support their daughters-in-law and daughters in cooking dishes with a wide variety of ingredients, especially Vitamin A-rich vegetables (such as carrots, dark green leafy vegetables, and pumpkin) and other vegetables and fruits. Recipes for healthy food, particularly those involving vegetables and fruits, were demonstrated. Grandmothers and grandfathers were also provided with easy-to-understand, visually appealing information leaflets that highlighted simple ways to introduce a variety of foods into children's diets. The solution envisaged that, after the sessions, grandmothers and grandfathers would actively engage in ensuring diverse diets at home, especially for children aged 6–23 months. They would also influence and support their daughters-in-law to cook healthier and more diverse dishes.

(2)Provision of information for mothers on nutritious feeding of children aged 6–23 months during health check-ups and over WhatsApp – The second solution targeted mothers. This solution involved health workers (for example, those at village health points) providing easy-to-understand, visually appealing information that highlighted simple ways to introduce a variety of foods into children's diets. This was done by distributing leaflets and sharing posts in WhatsApp groups. The main goal of this solution was to equip mothers with the knowledge needed to prepare diverse meals for children aged 6–23 months. The expected behaviour change was that mothers would begin preparing more diverse, nutritious meals for their children in this age group.

2. SOLUTION IMPLEMENTATION PROCESS

2.1. Preparatory activities prior to solution implementation

Prior to the solutions' implementation, several preparatory activities were conducted:

- The Empirica team developed a methodology for implementing and evaluating solutions in English, with all the tools translated into Russian and Kyrgyz.
- Based on the methodology, the Empirica team also developed a guide for solution implementation in Russian and translated it into Kyrgyz.
- A leaflet on the nutrition of children aged 6–23 months, 12 key messages for WhatsApp groups and content for four healthy eating sessions with grandparents were developed by the nutrition specialist from the Republican Centre for Health Promotion (RCHP) under the Ministry of Health.
- Once the leaflet, key messages, content and evaluation methodology were ready, an in-person workshop was conducted in Bishkek on 19 July 2024. The workshop included four health workers from Suzak and Sokuluk districts in Jalal-Abad and Chui provinces respectively (the workshop programme is in Annex 4). Five Empirica team members and three representatives of the RCHP and UNICEF also attended.
- The Empirica team provided step-by-step instructions for health workers on implementing the solutions.
- The RCHP representative explained the materials developed for the four healthy eating sessions and demonstrated a master class on cooking salads and meals for children aged 6– 23 months. She also presented and explained the 12 key messages to be sent by WhatsApp to mothers and grandparents. Health workers – who already communicated with mothers via WhatsApp in their villages – proposed creating a WhatsApp group with these women to circulate the 12 messages three times a week.
- An additional online meeting was held on 22 July with other health workers from the same locations to ensure that they also received the necessary information and could replace their colleagues if needed (for example, during holiday breaks).

2.2. Implementation of solution 1

Implementation of the solution lasted for 4 weeks, from 25 July to 16 August 2024. The following criteria were used to recruit grandparents:

- Grandmothers and grandfathers who reside in the designated research sites.
- Grandmothers and grandfathers with grandchildren aged 6–23 months. Grandparents from the same families were allowed to attend the sessions; however, the final number of participants needed to come from a minimum of 15 distinct families.
- Grandmothers and grandfathers who were willing and able to participate in discussion sessions.

Individuals with severe cognitive or physical illnesses that would have made it impossible to attend meeting sessions were excluded.

In both districts, , health workers played a key role in recruiting grandparents for the healthy eating meetings by inviting eligible participants, and encouraging them to invite their neighbours. They kept the village head informed. In Sokuluk district, the head of the village also helped by providing transportation for those grandparents who found it difficult to walk to the health centre due to the hot weather. In Suzak district, health workers also requested community leaders, particularly the village head, to assist in informing eligible grandparents about the healthy eating meetings and encouraging them to attend the sessions. Table 5 shows number of participants at each healthy eating meeting in both locations. The number of participants at the session ranged from 13 to 20. In both locations, women attended sessions consistently. Men's attendance varied across the sessions, with the highest participation being 23 per cent in Sokuluk district and 21 per cent in Suzak district.

Table 5: Participants of sessions in two locations

Session No	Sokuluk District, Chui Province			Suzak district, Jalal-Abad province		
	Men	Women	Total	Men	Women	Total
Session 1	3 (20%)	12 (80%)	15	4 (21%)	15 (79%)	19
Session 2	2 (17%)	12 (83%)	14	3 (20%)	12 (80%)	15
Session 3	3 (23%)	13 (77%)	16	0	13 (100%)	13
Session 4	0	13 (100%)	13	2 (10%)	18 (90%)	20

According to the methodology of the Healthy Eating Sessions, at least 15 grandparents (70 per cent women and 30 per cent men) from distinct households were expected to attend the sessions over the course of four weeks. However, in practice, there was a mix of participants, with some attending regularly and others joining as new participants. The attendance list indicates that a total of 73 grandparents participated across the two locations. Of this number, 45 grandparents (primarily men) attended only once, while the other 28 grandparents attended at least two sessions. At the endline survey, 24 of the 28 regular attendees were surveyed. Of them, 4 grandparents (17 per cent) attended two sessions, 11 grandparents (46 per cent) attended three sessions, and 9 grandparents (38 per cent) attended all four sessions. As outlined in the methodology, the analysis in this report focuses only on those who attended at least two sessions, as the design of the solution allowed participants to catch up through WhatsApp messages if they missed one session.

Notably, consistent attendance was predominantly by women, with only one man attending two sessions consecutively, while the others attended just once. When asked about their drop-off, men cited work commitments (including agricultural work on the fields) and discomfort discussing feeding issues in a group primarily comprising women. Many expressed the belief that child feeding is traditionally a woman's responsibility, highlighting how gender roles influenced their participation. This suggests that future nutrition programmes should consider framing the issue as a family responsibility, integrating child feeding into broader family-centred initiatives.

WhatsApp groups

Health workers created a WhatsApp group with the grandparents to discuss meeting dates and times and to provide information on health and nutrition. The WhatsApp group also enabled the health workers to send reminders a day before each session to ensure participants remembered the meeting details. Additionally, during the four weeks, informational messages were sent via WhatsApp, to help those who missed the sessions to still receive the information. These messages were sent three times a week, on Mondays, Wednesdays, and Fridays. The regularity of these communications was designed to keep participants consistently informed and engaged with the project, especially those who missed the sessions.

Content of the sessions

Session 1 (Week 1): The importance of early childhood nutrition – This session focused on highlighting the significance of nutrition during early childhood. It covered the long-term consequences of poor nutrition, such as stunted growth, weakened immunity, and increased risk of chronic disease. Participants were introduced to essential nutrients, including proteins, fats, carbohydrates, and key vitamins and minerals like vitamins A and D, iron, calcium, and zinc. The session also discussed the benefits of breastfeeding and provided guidance on introducing complementary foods.

Session 2 (Week 2): Introduction to complementary foods and meal preparation (masterclass) – This session was dedicated to introducing complementary feeding for children aged 6–23 months. Participants were informed about the optimal time to start complementary foods, and the importance of recognizing signs of readiness in children. Health workers demonstrated the preparation of simple meals for children, including an example of recipes with vegetables such as carrots and courgette, and a fruit salad with apples and bananas.

Session 3 (Week 3): Menu for children aged 6–23 months and their benefits – The third session focused on creating balanced menus for children aged 6–23 months. Sample menus for breakfast, lunch, and dinner were presented for both age groups, 6-8 months and 9-23 months. It also included portion recommendations and the importance of a varied diet. The session discussed the role of family support in encouraging healthy eating habits and addressed potential challenges, such as food allergies and digestive issues.

Session 4 (Week 4): Introduction of new foods and meal preparation (masterclass): The final session covered the gradual introduction of new foods into a child's diet, along with tips on how to manage this process using a food diary. A masterclass was conducted on preparing meals for children aged 9–23 months, including recipes with chicken and vegetables, and a fruit salad with yoghurt. The session also addressed common challenges with complementary feeding, and offered strategies for resolving these issues.

Check-ins with health workers

A Zoom check-in was conducted by the Empirica team in partnership with RCHP with health workers after the second healthy eating session, to discuss progress and address any challenges. During the check-in, health workers reported that the first master class, which demonstrated how to prepare healthy meals for children, was particularly well-received by the grandparents. Many grandmothers expressed a strong interest in the recipes shared during the session, and requested printed copies to take home.

In response to this feedback, the Empirica team swiftly addressed the request by printing the recipes provided by the RCHP representative. These materials were distributed to the grandparents immediately after the second session, ensuring that they had the information to put the healthy meal ideas into practice at home. This timely response helped maintain engagement and ensured that the grandmothers could continue benefiting from the sessions by incorporating the new recipes into their family meals.

Challenges and mitigation measures

Recruiting and ensuring the participation of grandparents, especially men, was a significant challenge. Men had work commitments and seasonal agricultural tasks, which left them with little time for the sessions. This was further compounded by a general disinterest in nutritional matters in the household, seeing it as a female task. In addition, the timing of the sessions in the second half of summer also coincided with holidays during which many participants were away, further limiting their availability. Health workers also faced challenges due to their own annual leave in August, which disrupted the mobilization and engagement of participants.

To mitigate these challenges, healthy eating sessions were scheduled at times convenient for grandparents. To increase attendance of men, the village head and representatives of the local authority (ayil okmotu) personally spoke with the eligible men about the importance of the sessions, particularly for children aged 6–23 months. Health workers maintained ongoing communication with the grandparents through a dedicated WhatsApp group to promptly address concerns, provide updates, and ensure that information and support offered were tailored to the needs and schedules of grandparents.

The Empirica team, together with an RCHP representative, organized an online meeting with health workers who were going on annual leave and their replacements to facilitate the handover process and provide any necessary clarifications. After the second healthy eating session, the Empirica team, along with the RCHP representatives, held a meeting to discuss the progress of solution implementation. During the meeting, local health workers shared the progress and challenges conducting the sessions, with the main issue being the challenges mobilizing grandparents. The meeting resulted follow-up actions being determined to improve attendance, including discussing the issue with village heads and the ayil okmotu to gain their support in ensuring consistent attendance by the grandparents at the sessions.

2.2 Implementation of Solution 2

The implementation period for Solution 2 lasted from 23 July 23 to 21 August 2024. In accordance with the methodology, health workers provided a brochure, developed specifically for this solution by an RCHP representative based on the UNICEF guidelines on infant and young child feeding, containing information on feeding children aged 6–23 months, to mothers who visited health points for child check-ups. In other words, mothers with children aged 6–23 months who visited the health clinic for reasons related to child health were given a booklet on child nutrition. Health workers were provided with a script to use when handing the booklet to the mother, which was included in the implementation guide (see Annex 6).

If the mother agreed to receive messages via WhatsApp, she was also added to a WhatsApp group to receive 12 messages on the nutrition of children aged 6–23 months, developed by the RCHP representative for this solution, over the course of four weeks. Health workers maintained a list, recording the mother's details when she received the booklet and noting whether she was willing to receive nutrition messages via WhatsApp.

The attendance lists for Sokuluk district showed that 22 women received a booklet over the course of four weeks, and most of them also expressed interest in receiving messages via WhatsApp. Only one woman refused either the booklet or the WhatsApp messages due to lack of interest. In Suzak district, the attendance list showed that 39 women received booklets during their health check-ups, and all of them were willing to receive WhatsApp messages.

For the WhatsApp messages, health workers created a WhatsApp group. Mothers who visited the clinic for consultations regarding their children aged 6–23 months and provided their WhatsApp numbers were added to this group by the health workers. Additionally, health workers added other eligible women in the village for whom they had contact details to the WhatsApp group, even if they had not visited the health clinic for a check-up. Thus, these women only received the WhatsApp messages. It should be noted that women were free to leave the group if they did not wish to receive the WhatsApp messages.

Over the course of four weeks, a total of 12 informational messages were circulated to the mothers by WhatsApp. The messages were sent three times a week on specified dates. To introduce the messages, health workers were provided with an introductory script by the Empirica team for consistency (see Annex 5). Below are the topics of the 12 messages:

1. Make sure your child has a quiet environment during mealtimes so that they can concentrate on eating
2. Let your child handle the spoon and fork independently

3. Encourage your child to try new foods
4. Consider your child's personal preferences and tastes when planning their diet
5. To avoid skipping meals and prevent lack of appetite, offer regular meals
6. Add nutritious foods to your child's diet to ensure nutrition and prevent micronutrient deficiencies
7. Avoid forcing food and create a positive atmosphere during meals
8. Maintain good hygiene
9. Continue breastfeeding until age 2 or beyond to provide your baby with nutrients and antibodies
10. Do not add salt, sugar and trans fats to your child's food, maintain a healthy diet.
11. Prepare sugar-free foods to prevent addiction to sweet taste from a young age
12. To maintain your child's health, ensure adequate water supply and proper drinking habits

Challenges and mitigation

Health workers noted that during the summer, the number of mothers visiting for check-ups is lower than usual due to the hot weather (with temperatures ranging from 38°C to 40°C) and the demands of raspberry picking and cattle raising, which keep mothers busy during the summer months. As a mitigation measure, as noted above, health workers added women to the WhatsApp group so that those who did not come for health check-ups would also receive information about feeding children aged 6–23 months.

3. METHODOLOGY OF SOLUTION EVALUATION

3.1. Evaluation of the Implementation and process of Solution 1

The evaluation focused on the implementation and process of the solution and had the following research questions to study:

1. Was the solution delivered as intended? How, if at all, did the actual delivery of the solution differ from what was initially expected?
2. What were the key challenges encountered when implementing the solution?
3. What are health workers' experiences with implementing the solution?
4. What were the perceived supporting factors or barriers to effective implementation of the solution?
5. To what extent did the solution reach and engage with its intended audience (grandmothers and grandfathers)?
6. Which recruitment strategies were the most successful in reaching intended participants for the solution?
7. How successful was the solution at retaining participants over the course of 4 weeks, and why?
8. What did the participants think about the solution content and mode of delivery of the intervention, in terms of being engaging, useful, acceptable and appropriate for this target audience? What are their recommendations for potential changes in content and mode of delivery of the intervention?
9. How well do grandmothers and grandfathers understand the importance of dietary diversity after attending the sessions? How motivated do they feel about implementing the tips and advice learned in their everyday lives? How feasible do they think it would be to implement what they have learned in their everyday lives, and why?
10. How, if at all, has the behaviour of grandmothers and grandfathers regarding the feeding of their grandchildren changed after participating in the intervention based on their self-report? To what extent have grandmothers and grandfathers engaged in ensuring diverse diets at home after participating in the sessions?

Data collection points and methods

Data were collected before (baseline), during, and after (endline) the implementation of the solution. As shown in Table 2, at baseline, two FGDs were conducted with grandparents (one per location), with a total of 31 grandparents (22 women and 8 men) participants across both research sites. In addition, a survey was conducted with 37 grandparents (11 men and 26 women). The sample characteristics are provided in Section 4.1.

During the solution implementation, the Empirica team observed each healthy eating meeting. As per the methodology, the meetings took place once a week, with the date and time determined by the participants to accommodate their schedules. Additionally, health workers maintained an attendance list, noting who was present at each session.

At the endline, two FGDs (one per location) were conducted with the grandparents who attended the healthy eating sessions and were available for discussion. A total of 27 grandparents (all women) across both research sites participated in the FGDs. The analysis also included survey responses from 24 grandparents (23 women and 1 man). The sample characteristics are provided in Section 4.1.

Furthermore, four semi-structured interviews (two per location) were conducted with health workers.

3.2. Evaluation of the implementation and process of Solution 2

The evaluation of Solution 2 also focused on its implementation and process and had the following research questions to study:

1. Was the solution delivered as intended? How, if at all, did the actual delivery of the solution differ from what was initially expected?
2. What were the key challenges encountered when implementing the solution?
3. What are health workers' experiences with implementing the solution?
4. What were the perceived supporting factors or barriers to effective implementation of the solution?
5. To what extent did the solution reach and engage its intended audience (mothers of children aged 6–23 months)?
6. What did the participants think about the solution content and mode of delivery of the intervention, in terms of being engaging, useful, acceptable and appropriate for this target audience? What are their recommendations for potential changes in content and mode of delivery of the intervention?
7. To what extent did the mothers understand the information provided during health check-ups and/or by WhatsApp?
8. How well do mothers understand the importance of dietary diversity after receiving the intervention? How motivated do they feel about implementing the learnt tips and advice in their everyday life? How feasible do they think it would be to implement the learnt tips and advice in their everyday life, and why?
9. How, if at all, has the behaviour of mothers regarding their children's nutrition changed after receiving the intervention based-on their self-report? To what extent have mothers changed their meal preparation practices for their children aged 6–23 months since receiving the information?

Data collection points and methods

Data was collected after the four-week implementation period of the solution and during its implementation. During solution implementation, the Empirica team observed how health workers handed brochures to mothers once a week. Health workers maintained a list where they recorded information about mothers who received the brochures. After the solution was implemented, two FGDs (one per location) were conducted with 12 mothers across two locations. A survey was conducted with 69 women, and two interviews with health workers (one per location) were also carried out. The sample characteristics are provided in Section 4.2.

3.3 Data analysis

To analyse the survey data from both grandparents and mothers, percentages were calculated for each question. For the survey with grandparents, a comparison was made between the baseline and endline. However, due to participants dropping out after the first session, and time constraints in tracking the participants who attended the sessions, a cohort-based comparison of the baseline and endline data was not feasible. Therefore, a cross-sectional approach was adopted, treating the baseline and endline samples as independent. The endline sample comprised only grandparents who attended two or more sessions.

For analysis of the qualitative data, a thematic approach was employed, with data categorized under recurring themes. The quantitative and qualitative findings were integrated to provide comprehensive understanding of the situation.

4. SOLUTION EVALUATION RESULTS

4.1. Solution 1

Sample characteristics

In the baseline survey, 37 participants were included, of whom 11 (30 per cent) were men and 26 (70 per cent) women. In the endline survey, the sample size comprised those who attended the sessions at least twice – 24 grandparents, with 23 women (96 per cent) and one man (4 per cent). At the endline, there were more participants from Sokuluk district (63 per cent) than from Suzak district (38 per cent). This was due to the higher number of grandparents from Sokuluk participating in two or more sessions compared to those from Suzak district (Table 2).

The average household size was six people at both time points. The average number of grandchildren living in the same household with grandparents was two, and the average age of the children was 12 months at baseline and 14 months at endline. At both time points, there were more boys than girls among the grandchildren (Table 2).

Across both time points (baseline and endline), the average age of men was 57 years, and the average age of women was 55 years. Regarding marital status, most of the surveyed grandparents were married, with 81 per cent at baseline and 73 per cent at endline. In terms of employment status, at baseline, 44 per cent were employed in some form (full-time, part-time or self-employed), while the remaining 57 per cent were not engaged in employment due to being retired, homemakers, or unemployed. By the endline, these percentages shifted, with 33 per cent employed and 67 per cent not employed. This suggests that those not engaged in employment tended to attend the sessions more consistently than those who were employed (Table 6).

Most grandparents (54 per cent) at both time points had secondary or high school education. The proportion of those with college or university education also increased, from 19 per cent at baseline to 29 per cent at endline. Additionally, the proportion of respondents with vocational or technical training rose from 11 per cent to 17 per cent between baseline and endline. There was a decline in the number of respondents with no formal education, dropping from 3 per cent to 0 per cent, and a decrease in those with only primary or elementary education, which fell from 11 per cent at baseline to 0 per cent at endline. These statistics around education suggest that those with some form of education tended to persist in attending the sessions (Table 6).

Table 6: Sample characteristics of surveyed grandparents

Variable	Baseline (n=37)	Endline (n=24)
Gender		
Men	11 (30%)	1 (4%)
Women	26 (70%)	23 (96%)
Location		
Sokuluk district	16 (43%)	15 (63%)
Suzak district	21 (57%)	9 (38%)
Number of grandchildren living in the same household with grandparents		
Whole sample	2 grandchildren	2 grandchildren
Average age of the child (6–23 months)		
Whole sample	12 months old	14 months old

Number of people in the household		
Whole sample	6 people	6 people
Number of children in the household		
Whole sample	4	2
Gender of grandchild		
Boy	54%	58%
Girl	46%	42%
Marital status		
Married	81%	73%
Single	5%	5%
Widowed	11%	18%
Divorced	3%	0%
Employment status		
Engaged in employment		
Employed full-time	27%	25%
Employed part-time	3%	8%
Self-employed	14%	0%
Not engaged in employment		
Retired	41%	50%
Homemaker	11%	17%
Unemployed	5%	0%
Education		
Secondary/high school	54%	54%
College or university	19%	29%
Vocational/technical training	11%	17%

Feedback on healthy eating sessions

The health workers found the materials provided by the RCHP, developed specifically for this solution, to be very well-thought-out and detailed. The materials included information on various vegetables and the vitamins they contain. Additionally, they appreciated the guidance on identifying and managing food allergies in children, including how to recognize an allergy and how to feed a child with allergies. Health workers observed that grandparents attended the sessions with great attention and interest, and were fully engaged, showing a strong desire to learn the information presented. Based on the health workers' observations, grandparents were particularly interested in the master classes, where they were eager to learn new recipes that they had not known before. As noted earlier, when grandparents expressed interest in the recipes, this was communicated to the Empirica team during a check-in Zoom call with the health workers. The Empirica team then provided additional recipe materials from the RCHP to disseminate to the grandparents. Health workers noted that the dissemination of these additional materials, including menus and healthy nutrition recipes for children, was very helpful.

The positive feedback from the health workers was also reflected in the survey results from the grandparents. A total of 96 per cent of surveyed grandparents rated their overall experience with the sessions as either positive or very positive. At the FGDs, grandparents expressed positive feedback, highlighting the value of the information provided and the sessions themselves. Many participants emphasized that the sessions were well-organized and beneficial, with some suggesting that similar sessions should be held more frequently. The overall sentiment was one of gratitude, with many grandparents expressing their satisfaction with the project and hoping for its continuation.

All the surveyed grandparents were satisfied or very satisfied with the timing of the sessions. It is important to note that the grandparents themselves decided when to meet. For example, some sessions were held on Saturdays, as this was the day that best suited their schedules. Additionally, 88 per cent of surveyed grandparents were either satisfied or very satisfied with the location of the sessions, and 83 per cent said the sessions were accessible and convenient to attend. In Suzak district, the sessions were held at the village health point, while in Sokuluk district, they were conducted in the village health committee room within the community centre.

All the grandparents surveyed at the endline were satisfied or very satisfied with the delivery of the sessions. Moreover, 88 per cent of surveyed grandparents at endline found the sessions easy to engage with, and the same proportion said they found the content of the sessions either very useful or extremely useful. Regarding their understanding of dietary diversity, 96 per cent of the sample felt their understanding had improved either significantly (54 per cent) or moderately (42 per cent) after attending the sessions. Similarly, 88 per cent of the surveyed grandparents said their motivation to use the tips and advice learned during the sessions in their everyday lives had increased either significantly (58 per cent) or moderately (30 per cent). Lastly, 88 per cent of respondents felt that their motivation to encourage and support others (such as the mother or father of their grandchild) to use the learned tips and advice in daily life had increased after attending the sessions.

These statistics were reflected in the discussions with grandparents. During the FGDs, grandparents expressed their satisfaction with the content, finding the healthy eating sessions both informative and useful. They noted that they had learned new information about feeding children, which is important to them as many grandmothers now have to care for their grandchildren when parents go abroad for work or find employment. Grandparents valued learning new recipes for healthy meals for children aged 6–23 months and other family members. In particular, they appreciated receiving information about allergies, the harm from excessive use of salt and sugar, and the dangers of trans fats. Grandparents also noted that they came to understand that complementary feeding should be introduced at 6 months, and that breastfeeding should continue alongside it.

> *"The master class was very impressive. We learned many new things that we did not know before. For example, we made a salad and discovered that adding no salt makes it very healthy. This idea was practical and useful. We were very impressed and have taken this new information to heart. I enjoyed it a lot and found it very helpful." (FGD with grandparents)*

Similarly, health workers shared that grandparents learned in the healthy eating sessions that children under 6 months should not be given water, which is crucial in preventing health issues in young children: "They used to give water to newborns at home, which led to vomiting. After attending our classes, they learned that additional water should only be given after 6 months, as mothers' milk provides enough hydration for newborns. Grandmothers appreciated learning this new information."

WhatsApp use

WhatsApp groups were created in each location to disseminate 12 posts about child nutrition. Health workers noted that creating a WhatsApp group and using it for information dissemination was considered good practice. Ninety-six per cent of the surveyed grandparents at endline reported receiving the WhatsApp messages related to child nutrition. Of these, 74 per cent read either all the messages (39 per cent) or most of the messages (35 per cent). The remaining 26 per cent read some or only a few of the messages. Additionally, 87 per cent of surveyed grandparents who received the messages found the content useful (57 per cent) or very useful (30 per cent).

In FGDs, grandparents said that sending messages via WhatsApp complemented the sessions well. They appreciated that the short messages provided a lot of useful information and advice, which had a positive impact on participants. One participant noted: "For example, people learned that forcing a child to eat is not the right approach. If a child doesn't want to eat, they shouldn't be forced. It's important to assess the child's appetite and understand their taste preferences. This information made a strong impression." Grandparents also realized the importance of maintaining hygiene, such

as washing hands before preparing food for children. They became aware that their habits influence their children, and received advice on how to encourage children to eat without threats or the use of gadgets during meals.

Attitude to dietary diversity

The endline showed that the attitudes of the surveyed grandparents changed towards dietary diversity. As can be seen from Figure 8, a much higher percentage of survey grandparents (79 per cent) at endline than at baseline (54 per cent) thought that following a diverse diet including different fruit and vegetable and other types of food ingredients was very/extremely important.

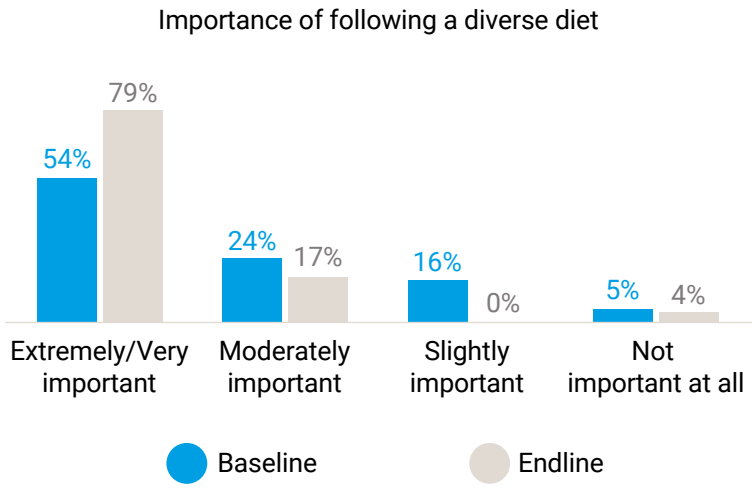


Figure 8: Responses of surveyed grandparents to the question: "How important is it for you to follow a diverse diet that includes different fruits and vegetables and other types of food ingredients (such as dairy products, meat, eggs, legumes, nuts, seeds, cereals, root crops, and tubers)?"

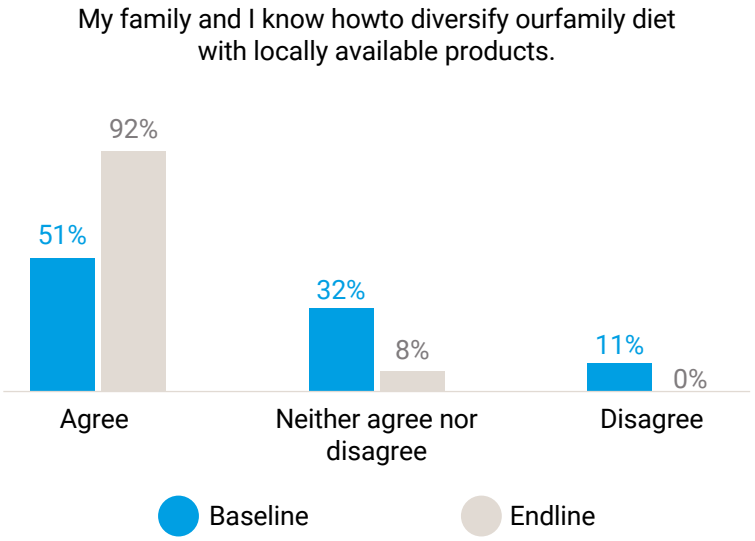


Figure 9: Levels of agreement and disagreement among surveyed grandparents with the statement: "My family and I know how to diversify our family diet with locally available products."

Regarding surveyed grandparents' perceptions of their ability to diversify their family diet with locally available products, at baseline, 51 per cent of respondents agreed with the statement, 32 per cent were neutral (neither agreed nor disagreed), and 11 per cent disagreed. By the endline, there was a significant increase in confidence, with 92 per cent of respondents agreeing that they knew how to diversify their family diet. The proportion of neutral responses dropped to 8 per cent, and none of the respondents disagreed by the endline (Figure 9). This shift indicates that, over time, the surveyed grandparents gained stronger understanding of how to diversify their family diet with locally available products.

The fact that grandparents learned about diversifying their family diet with locally available products was also evident during the FGDs. Grandparents highly valued the hands-on cooking sessions, which demonstrated how to prepare nutritious meals for children and other family members using widely available ingredients. They observed that modern nutritional approaches differ significantly from those of the past. Historically, diets were less varied, but they noted that new products and cooking methods are now being introduced. Grandparents highlighted that the most important insight they gained was the realization that various meal options can be prepared from organic ingredients for children aged 6–23 months, beyond just traditional porridge.

> *"The most important thing was that we learned that we were feeding children aged 6–23 months incorrectly, giving them only traditional porridge, and did not know about healthy purees for children" (FGD with grandparents).*

> *"I liked the dish made with carrots and courgettes. We boiled them in water and served them without salt, and the children enjoyed it and ate it" (FGD with grandparents).*

In relation to surveyed grandparents' agreement with the statement that a diversified diet, including different fruits, vegetables, and other food ingredients, can positively affect the health of children under 2 years, at baseline, 89 per cent of respondents agreed with this statement, while 11 per cent disagreed, and none were neutral. By the endline, agreement remained high at 83 per cent, though it decreased slightly. Meanwhile, 13 per cent of respondents indicated a neutral stance (neither agree nor disagree), and the proportion of those who disagreed dropped to 4 per cent. These results suggest that, while overall agreement with the positive impact of a diversified diet on children's health remained strong, disagreement on this matter significantly decreased with a small proportion of respondents moved towards a neutral position, indicating the need for further reinforcement of the importance of dietary diversity.

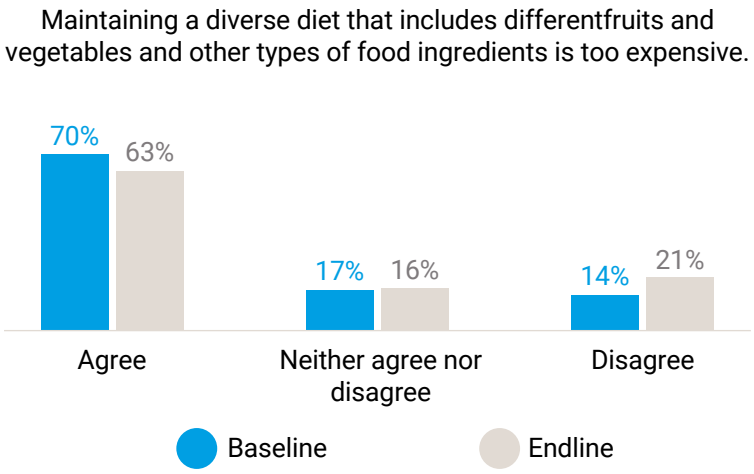


Figure 10: Levels of agreement and disagreement among surveyed grandparents with the statement: "maintaining a diverse diet that includes different fruits, vegetables and other types of food ingredients is too expensive

Regarding the cost of a diverse diet, at the baseline, 70 per cent of surveyed grandparents agreed that maintaining a diverse diet, including different fruits, vegetables, and other food ingredients (such as dairy products, meat, eggs, legumes, nuts, seeds, cereals, root crops, and tubers) was too expensive, 16 per cent neither agreed nor disagreed, and 14 per cent disagreed. By the endline, there was a decline in agreement with the statement, with 63 per cent of respondents still considering a diverse diet too expensive. Neutral responses remained nearly unchanged, with 17 per cent neither agreeing nor disagreeing. However, the proportion of surveyed grandparents who disagreed that a diverse diet is too expensive increased to 21 per cent (Figure 10). In other words, a growing portion of surveyed grandparents may have gained more confidence in the affordability of diverse diets, though the perception of high cost remains prevalent among most participants. This point was particularly visible when looking at the responses of surveyed grandparents to the statement that maintaining a diverse diet, including fruits, vegetables, and other food ingredients (such as dairy products, meat, eggs, legumes, nuts, seeds, cereals, root crops, and tubers) is beyond their financial means.

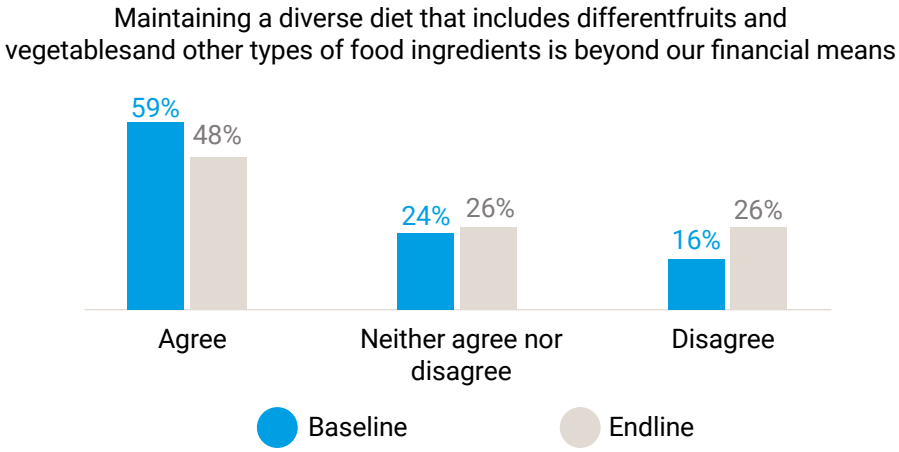


Figure 11: Levels of agreement and disagreement among surveyed grandparents with the statement: "Maintaining a diverse diet that includes different fruits and vegetables and other types of food ingredients is beyond our financial means.

At the baseline, 59 per cent of respondents agreed with this statement, indicating that most found maintaining a diverse diet financially challenging. This proportion decreased to 48 per cent at the endline, suggesting a shift in perception, with fewer respondents seeing it as unaffordable. The proportion who neither agreed nor disagreed with the statement remained relatively stable. Notably, the proportion of respondents who disagreed with the statement rose from 16 per cent at the baseline to 26 per cent at the endline, indicating that more participants felt a diverse diet was within their financial means by the end of the study (Figure 11). In summary, while a significant proportion of respondents still felt that maintaining a diverse diet was financially difficult, there was a noticeable shift towards disagreement, indicating a growing perception that a diverse diet may be more affordable than initially thought. In the open comments of the survey, grandparents noted that preparing the healthy dishes was cost-effective and that simple recipes make them accessible. Using a few basic ingredients, such as carrots, courgettes, and chicken breast, can create meals that are both nutritious and appealing to the entire family.

Behaviour

Ninety-six per cent of the surveyed grandparents said it was either easy (54 per cent) or somewhat easy (42 per cent) to use the tips and advice learned at the sessions in their everyday life. One of the visible changes is that there was a significant shift in food preparation practices for children at the endline, with 79 per cent of respondents stating that they now cooked separate food for their child (compared to 43 per cent at the baseline), and 21 per cent reporting that the child ate the same food

as the rest of the family (see Figure 12). This suggests growing awareness and practice of preparing age-appropriate or nutritionally tailored meals for children, as more families began preparing separate food for their young ones by the end of the study.

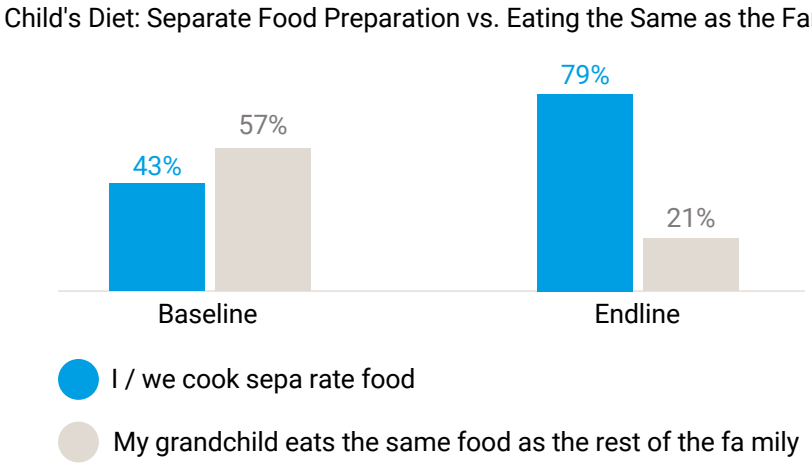


Figure 12: Responses of surveyed grandparents to the question: "Do you cook separate food for your grandchild aged 6–23 months or does your grandchild eat the same food as the rest of the family?"

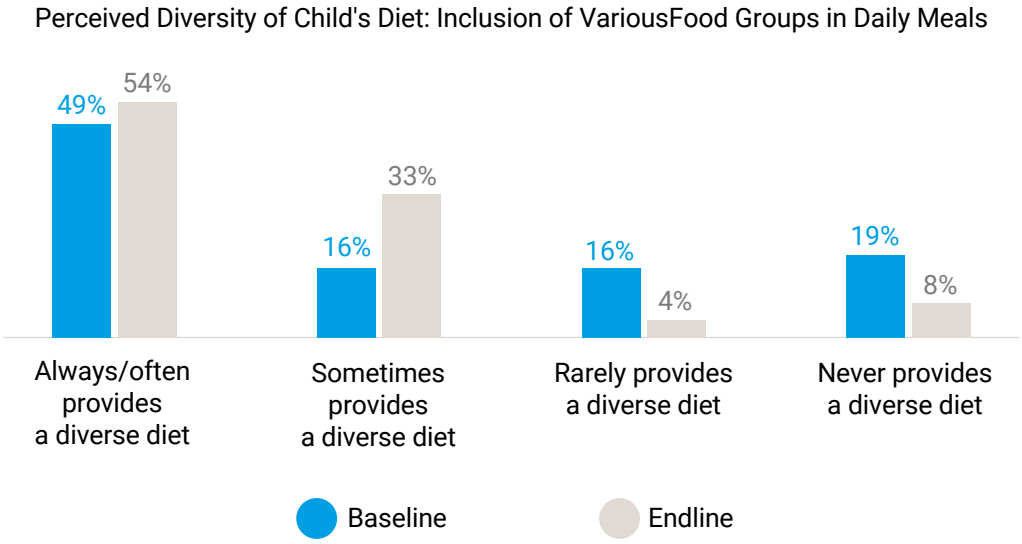


Figure 13: Responses of surveyed grandparents to the question: "To what extent do you think your family provides a diverse diet that includes different fruits and vegetables and other types of food ingredients (such as dairy products, meat , eggs, legumes, nuts, seeds, cereals, root crops, and tubers) for your child.

Changes were also observed in the responses of the surveyed grandparents regarding provision of a diverse diet. At the baseline, 49 per cent of respondents reported always or often providing a diverse diet, which includes various food groups such as fruits, vegetables, dairy products, meat, eggs, legumes, nuts, seeds, cereals, root crops, and tubers. By the endline, this figure had increased slightly to 54 per cent, suggesting a small but positive improvement in the consistent provision of diverse diets. Importantly, there was a significant reduction in the proportion of families who reported never providing a diverse diet, dropping from 19 per cent at the baseline to just 8 per cent at the endline (see Figure 13). This suggests a marked improvement in awareness and possibly access to diverse food options.

Additionally, the proportion of families who sometimes provide a diverse diet increased significantly, from 16 per cent at the baseline to 33 per cent at the endline. This increase indicates that while some families have not yet reached the level of consistently providing diverse diets, there has been considerable progress in their dietary practices. Lastly, the percentage of families who rarely provide a diverse diet fell from 16 per cent at the baseline to 4 per cent at the endline (Figure 13). This reduction, combined with the decrease in those who never provide a diverse diet, points to an overall improvement in the frequency with which diverse diets are being incorporated into family meals. Overall, the data reflect a positive trend toward more frequent and consistent provision of diverse diets among families over the period of solution implementation. For example, health workers noted during an interview that grandparents regularly asked for recipes for healthy meals for their grandchildren. One grandmother, for instance, asked if she could prepare beetroot puree. Health workers observed that, during the healthy eating sessions, grandparents reported that they had begun preparing purees not only from potatoes (the typical ingredient) but also from apples, bananas, and other vegetables and fruits.

In line with this, changes were observed in surveyed grandparents' perceived difficulty in following a diverse diet. As shown in Figure 14, over time, surveyed grandparents became more comfortable with following a diverse diet, as evidenced by the sharp decline in those finding it difficult and the substantial increase in neutral responses. In addition, the proportion who found it easy substantially decreased, indicating that following a diverse diet had become more manageable overall.

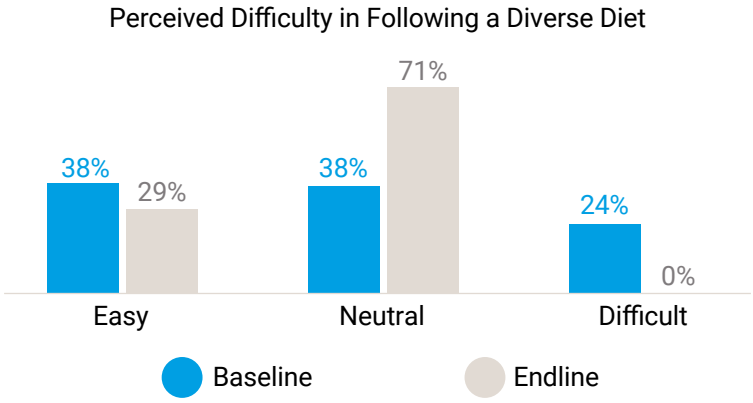


Figure 14: Responses of surveyed grandparents to the question: "How easy or difficult would it be to follow a diverse diet?"

When asked about the changes they made to their grandchildren's diet based on what they learned from the healthy eating sessions, the most significant change was the introduction of a wider variety of fruits and vegetables, with 63 per cent of participants reporting this change (Figure 15). Another 33 per cent of grandparents focused on preparing more balanced meals that incorporate all food groups, reflecting their understanding of the importance of dietary diversity. In the same vein, 29 per cent added more diverse protein sources, such as beans or nuts, into their grandchildren's meals.

These statistics was echoed in the qualitative data. In the open comments in the survey, many mentioned incorporating more vegetables and fruits into their meals, with several specifically highlighting increased preparation and consumption of salads. Some grandparents also began baking apples and found that both children and adults enjoyed this healthy treat. During FGDs, grandparents, especially in Sokuluk district, said they began actively applying the knowledge about children's diets and nutrition by incorporating various ingredients into their diet such as courgettes, carrots, rice, buckwheat, lentils, lentil-based bread, apples, and walnuts into their meals: "Yes, we are using the suggested ingredients. I especially enjoyed the salad with apples and walnuts. After we had it, we served it to the children, and they liked it." (FGD with grandparents).

Further, as shown in Figure 15, 38 per cent of surveyed grandparents reported cutting down on sugary foods and drinks, suggesting increased awareness of the negative effects of excessive sugar consumption on children's health. Similarly, 33 per cent replaced unhealthy snacks with healthier options, further demonstrating their commitment to promoting better eating habits for their grandchildren (Figure 15). In the open comments in the survey, grandparents also stated that they had started using less sugar and salt and begun avoiding fried foods, opting instead for boiled vegetables and lighter meals. Similarly, health workers shared during interviews that, typically when families cook, they often add a lot of salt or sugar, especially in porridge. Now, according to the grandparents' feedback, they have begun using less salt and started asking health workers about healthy methods of food preparation. Health workers noted that they encourage grandparents to use ingredients they normally do not use, such as cabbage, carrots, lentils and peas. They also advise always on having salad on the table and preparing dishes made from dough less frequently.

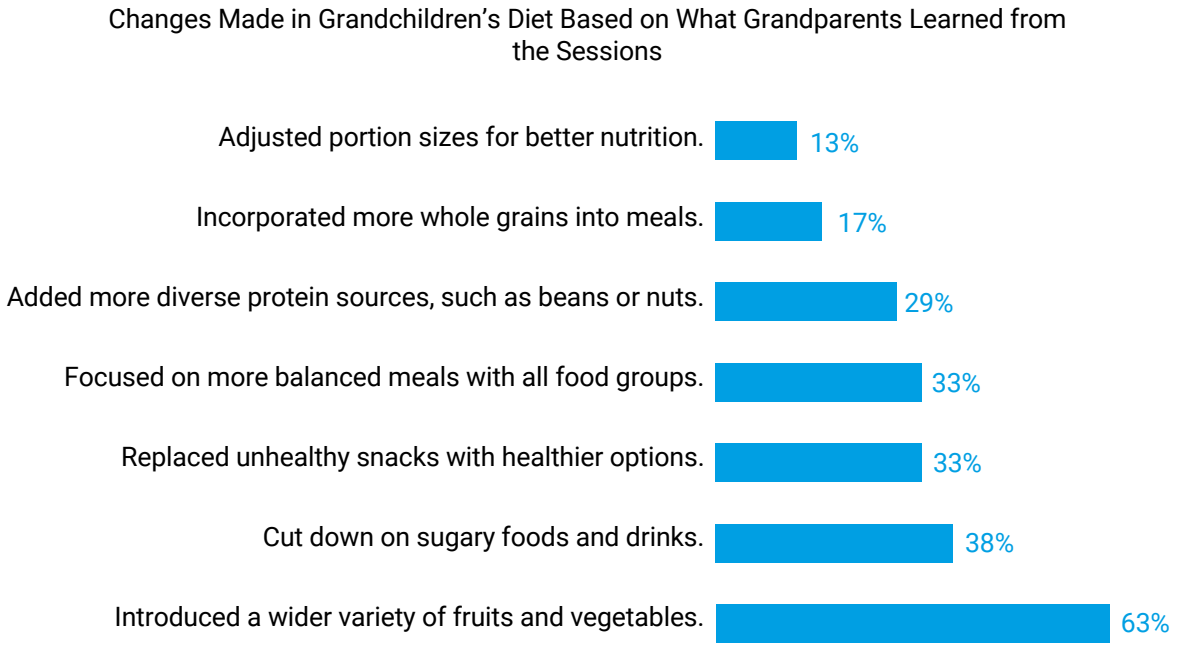


Figure 15: Responses of surveyed grandparents to the question: "Have you made any of the following changes to your grandchildren's diet based on what you learned from the sessions?"

These changes reported by grandparents after attending the healthy eating sessions were further supported by significant shifts in the dietary patterns of their grandchildren over time. Analysis of the responses of grandparents about the diet of their grandchild aged 6–23 months in the past 24 hours revealed notable increases in the consumption of several food categories at the endline. The intake of vegetables (for example, cabbages, cauliflowers and tomatoes) grew by 23 percentage points, from 60 per cent to 83 per cent. The consumption of grains, roots, and tubers (such as bread, rice, noodle and porridge) also increased by 32 percentage points, from 68 per cent at baseline to 100 per cent at endline. There were also moderate increases in consumption of vitamin A-rich vegetables (+15 percentage points), nuts and seeds (+14 percentage points), medium-to-dark green leafy vegetables (+14 percentage points), eggs from poultry or any other bird (+13 percentage points), and organ meat (+12 percentage points). These trends suggest that families increasingly prioritized including a more diverse range of nutrient-rich foods in their children's diets over time. Continued breastfeeding (+10 percentage points) and intake of other fruits like apples and grapes (+7 percentage points) also increased at the endline, indicating a positive shift towards combining complementary feeding and breastfeeding and incorporating more protein-rich and vitamin-rich foods (Figure 16).

There was a decline in the consumption of unhealthy food at the endline. The largest decrease was in the consumption of crisps, fries, fried dough, or instant noodles, which dropped by 24 percentage points, from 49 per cent at baseline to 25 per cent at endline, indicating a positive reduction in the intake of unhealthy, processed snacks. Similarly, there was a significant reduction in the consumption of sweets (such as chocolates, candies, and biscuits), which dropped by 23 percentage points, from 73 per cent to 50 per cent. This suggests an increased awareness of reducing sugary food intake for children (Figure 16).

Some food categories saw either minimal or no changes. For instance, pulses (beans, peas) consumption increased slightly by 3 percentage points, while roots and tubers (for example, potatoes) and milk and milk products showed a marginal increase of just 2 percentage points and 1 percentage points respectively. Additionally, there were moderate declines in the consumption of fish (-8 percentage points) and vitamin A-rich fruits (-4 percentage points), indicating that these categories were consumed less frequently at the endline compared to baseline. The consumption of meat and poultry remained almost the same (-1 percentage point) (Figure 16).

Food category	Baseline	Endline	Change
Grains, roots, and tubers: Bread, rice, noodles, porridge, or other foods made from grains	68%	100%	32%
Other vegetables: Cabbage, cauliflower, eggplant, cucumber, tomatoes, onions, beetroot	60%	83%	23%
Vitamin A-rich vegetables: Pumpkin, squash, carrot, or other yellow/orange vegetables	73%	88%	15%
Nuts and seeds: Any tree nut, groundnut/peanut, or nut/seed butters	57%	71%	14%
Medium-to-dark green leafy vegetables: Spinach, dark green lettuce, or sorrel	32%	46%	14%
Eggs from poultry or any other bird	78%	91%	13%
Organ meat: Liver, kidney, heart, brain, or other organ meats	30%	42%	12%
Breast milk	73%	83%	10%
Other fruits: Apples, grapes	89%	96%	7%
Pulses (beans, peas, lentils): Mature beans or peas including chickpeas, lentils, or bean/pea products	80%	83%	3%
Roots and tubers: Potatoes, radish, or other commonly consumed roots and tubers	73%	75%	2%
Milk and milk products (not including butter, ice cream, cream, or sour cream)	70%	71%	1%
Meat and poultry: Beef, lamb, chicken, turkey, or other birds	89%	88%	-1%
Vitamin A-rich fruits: Apricot, peach, oranges, plums, melon, and other vitamin A-rich fruits	92%	88%	-4%
Fish: Fresh, salted, frozen, or canned fish, shellfish	43%	35%	-8%
Sweets: Sugary foods such as chocolates, candies, cookies/sweet biscuits, cakes, sweet pastries, etc.	73%	50%	-23%
Crisps, chips, fried dough, or instant noodles	49%	25%	-24%

Figure 16: Responses of surveyed grandparents to the question: "think about your grandchild aged 6–23 months. Did the child eat any of the following yesterday (in the past 24 hours)?"

Regarding the types of drinks consumed by children in the past 24 hours at both the baseline and endline stages, the results also indicated shifts in the types of drinks being offered to children, with some categories showing increased consumption and others a decline. The consumption of yogurt-like drinks such as ayran and kefir, increased by 13 percentage points, from 70 per cent to 83 per cent, indicating that these nutritious drinks became slightly more prevalent in children's diets. There was a notable increase in the consumption of ordinary water, which rose from 84 per cent at baseline to 92 per cent at endline, an 8-percentage-point increase (Figure 17).

Tea or coffee consumption remained relatively stable, with only a 3-percentage-point increase, from 43 per cent to 46 per cent. This minimal change suggests that the consumption of these drinks remained consistent over time. Several drink categories saw a decline in consumption by the endline. The most significant decrease was observed in consumption of baby formula, which dropped by 10 percentage points, from 73 per cent at baseline to 63 per cent at endline. This reduction may indicate a shift away from formula feeding as children grow older or as families transition to other types of milk or drinks. The consumption of sweetened beverages also decreased, with a 5-percentage-point drop from 43 per cent to 38 per cent. Animal milk (including fresh, canned, or powdered milk) also saw a

decrease, dropping by 7 percentage points, from 41 per cent to 33 per cent, reflecting a shift towards other types of milk or dairy products or a general reduction in milk consumption (Figure 17).

Drink Category	Baseline	Endline	Change
Yogurt-like drinks: ayran, kefir	70%	83%	13%
Ordinary water	84%	92%	8%
Other drinks and products: tea or coffee	43%	46%	3%
Sweetened beverages: soft drinks, carbonated drinks, chocolate drinks, malt drinks, fruit juices	43%	38%	-5%
Animal milk: fresh, canned, or powdered milk	41%	33%	-7%
Baby formula	73%	63%	-10%

Figure 17: Responses of surveyed grandparents to the question: "Did the grandchild drink any of the following yesterday or last night?"

Sharing information with others

Almost half the surveyed grandparents (43 per cent) said that they shared the information from the sessions with their children. Another 26 per cent reported sharing with neighbours (Figure 18). At the FGDs, grandparents noted that they had come to realize the importance of sharing knowledge with others. They mentioned that it is important for people to have this information, as it can be applied in everyday life. Grandparents believed that even if a small number of people share what they have learned with others, it significantly extends the reach of that knowledge. Grandparents also highlighted that using videos could make information more accessible and understandable. The grandparents stressed that in the future workshops and master classes should include not only grandparents but also the parents of young children.

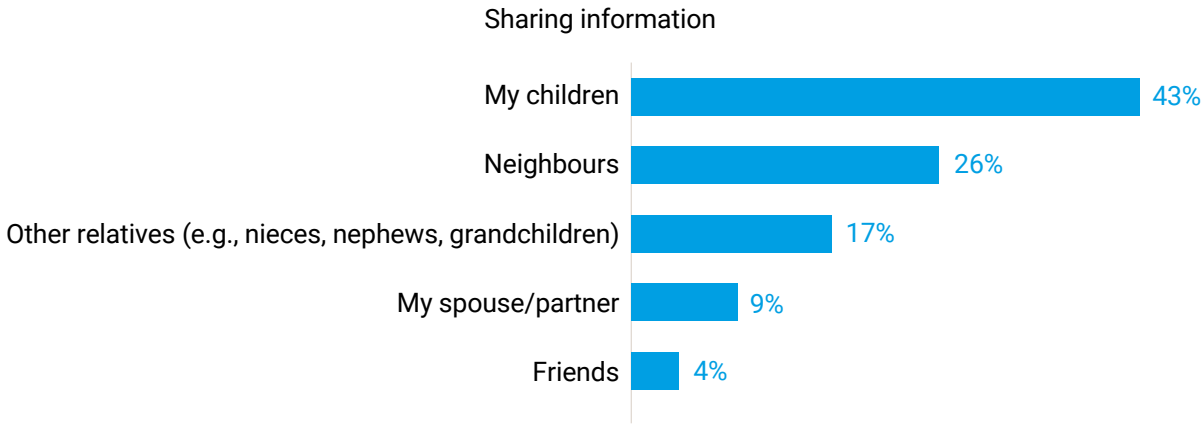


Figure 18: Responses of surveyed grandparents to the question: "With whom have you discussed the information from the sessions?"

Suggestions for improving the solution and recommendations for future initiatives

Grandparents at the FGDs and health workers in interviews provided a several suggestions to improve the solution, and other recommendations for the future.

Enhancing practical learning and engagement

- There was a strong desire for more practical activities alongside the theoretical aspects, as participants felt hands-on experience would enhance their learning.

- Information about the master classes should be provided in advance, so that participants can prepare for and look forward to the next session. Expectations should align with the content, which should include both demonstrations and discussions. Participants should have the opportunity to ask questions and receive additional explanations.
- It is essential to include videos in the master class materials for better clarity and engagement. Videos will help participants understand the cooking process and increase their interest.
- Organizing local competitions can foster greater community involvement. Hosting events in villages, such as contests among young parents or grandparents, can create excitement and engagement. Competitions could feature practical workshops, raising awareness and making learning about nutrition more interactive.

Expanding the audience

- Some participants suggested expanding the audience for these sessions to include other family members, notably their children (the parents of children aged 6–23 months) as well as staff in schools and kindergartens, such as cooks, teachers and caregivers. This would further spread knowledge on proper nutrition.
- Involving cooks from preschools and schools in these sessions would help improve the quality of food in educational institutions and make meals more appealing to children.
- Broadening the scope of the programme to include children from aged 6 months Garde 4 is crucial. Schools provide meals up to Grade 4, so integrating nutrition education into this age group ensures consistent guidance on healthy eating throughout their early years.

Use of media and technology

- Participants recommended sharing the WhatsApp messages used in the solution with schools and kindergartens.
- Mothers can be asked share videos and pictures of feeding their children healthily in WhatsApp groups to positively influence others.
- Creating a dedicated app for proper nutrition would provide easy access to information and recipes for both children and adults. An app would be more convenient than pages or PDFs, which can be forgotten or difficult to open.
- Health workers also suggested sharing videos on healthy nutrition through the internet, social media, and television to reach a wider audience.

Engaging community leaders and influencers

- To enhance community engagement and spread information effectively, invite influential local leaders to participate in healthy eating sessions. These leaders can advocate affordable, nutritious food options in their communities.
- Empowering youth leaders from the community can greatly benefit the initiative. Training young people, especially those with medical backgrounds, will help spread knowledge more effectively.

Addressing specific nutritional concerns

- It is important to address the issue of sugary treats by educating people about the health risks associated with high sugar consumption and promoting healthier alternatives.

4.2 Solution 2

The socio-demographic characteristics of the surveyed mothers

The survey included 34 women from Sokuluk district and 35 women from Suzak district after the implementation of the solution. The average age of the mothers was 28, with ages ranging from 20 to 40 years. On average, the women had two children, and the average age of the children was 13 months. There were more boys (58 per cent in Sokuluk and 60 per cent in Suzak) than girls.

In both locations, women reported an average household size of six people. In Sokuluk district, women reported having an average of two children, while in Suzak district, the average was three children. Most of the women (93 per cent) were married, particularly in Suzak district. A significant number (80 per cent), especially in Suzak district, were homemakers. More women in Sokuluk district (21 per cent) than in Suzak district (12 per cent) were employed either full-time or part-time. In Suzak district, 77 per cent of respondents had a secondary school education, with the other 23 per cent having completed college or university. In Sokuluk district, the educational background was more diverse, with 47 per cent of respondents having a secondary school education, 29 per cent with a college or university education, and some with vocational/technical training or primary school education (see Table 7).

Table 7: The socio-demographic characteristics of the surveyed mothers

	Sokuluk district (n=34)	Suzak district (n = 35)	Total (n = 69)
Marital status			
Married	85%	100%	93%
Living with a partner	3%	0	1%
Single	6%	0	3%
Widowed	0	0	0
Other	6%	0	3%
Employment status			
Employed full-time	9%	3%	6%
Employed part-time	12%	9%	10%
Homemaker	71%	89%	80%
Student	6%	0	3%
Other	3%	0	1%
Education			
Secondary/high school	47%	77%	62%
Primary/elementary school	9%	0	5%
College or university	29%	23%	26%
Vocational/technical training	6%	0	3%
No formal education	0	0	0
Prefer not to say	9%	0	5%

Provision of information

The women surveyed received information about child nutrition through a combination of different media. The most common medium, as reported by 26 per cent of women, was a combination of health worker explanations and WhatsApp posts. WhatsApp posts alone were also a significant source of information for 24 per cent of the respondents, highlighting the importance of digital communication

in reaching the target audience. A smaller group (18 per cent) indicated that they received information from a combination of health worker explanations, brochures, and WhatsApp posts. Brochures alone accounted for 15 per cent of responses. Some of the respondents (11 per cent) reported receiving information through health worker explanations and brochures, while 6 per cent mentioned a combination of brochures and WhatsApp posts (Table 8).

Table 8: Responses to the question: "How did you receive information?"

Information delivery format	%
Health worker explanation, WhatsApp posts	26%
WhatsApp posts	24%
Health worker explanation, brochures, WhatsApp posts	18%
Brochures	15%
Health worker explanation, brochures	11%
Brochures, WhatsApp posts	6%

When asked about their preferred method of information delivery, women indicated multiple formats. When disaggregating their responses, it emerged that 48 per cent of women preferred receiving information from health workers, 45 per cent from WhatsApp groups and 32 per cent from brochures. However, it is worth noting that many women expressed a preference for receiving information from multiple sources.

These quantitative insights were also reflected in the qualitative data. During the interviews, women expressed satisfaction with the child nutrition information they received by WhatsApp. As many mothers are occupied with household duties and care for young children, receiving information through WhatsApp groups was convenient. It allowed them to access valuable content and updates without leaving their homes. However, the women felt that messages in the form of pictures were not enough. They suggested that it would be beneficial to send information in video format and then discuss it in the group. This approach would enable mothers to share their practices and insights, making the interaction more productive and informative.

Despite the conveniences that WhatsApp offers, some mothers expressed a preference for receiving information through face-to-face interactions. This method would allow them to listen attentively, ask questions, and seek clarification on any unclear points. They thought this approach would be more effective as it facilitates direct communication and immediate feedback. When information is provided in written form, such as brochures or online materials, there is a risk that it may not be thoroughly read or fully understood in a home setting.

Further, 92 per cent of the surveyed women stated that the information provided by the health worker was either very, mostly, or somewhat clear and understandable. Additionally, 78 per cent of the surveyed mothers found the information in the brochure to be very, mostly, or somewhat clear and understandable. Regarding WhatsApp messages, 71 per cent of surveyed mothers indicated that the information provided in the WhatsApp messages was either very, mostly or somewhat clear and understandable.

It is evident that the interaction with the health worker appears to be the most effective source of information, as it is conveyed more clearly and understandably than the other two channels. This may be attributed to the interactive element, where women can ask questions or provide feedback. During the interviews, health workers mentioned that they consulted with mothers and provided brochures. If mothers had any questions, they raised them either during the consultation or personally through WhatsApp. However, as indicated in the quote below, WhatsApp also facilitates interaction between health workers and mothers.

> *"I stayed in close contact with the mothers. Some video-called me while their child was eating, laughing as the child held the spoon upside down. They said they were following my advice and were happy. They also sent pictures of their child holding the fork incorrectly, asking how to feed without a television or phone. I encouraged them to be patient, as the child would learn with practice." (Interview with health workers)*

Additionally, health workers reported receiving many questions from mothers about the healthy eating sessions provided to grandparents. Mothers expressed a strong desire to attend similar types of healthy eating sessions. On a positive note, they confirmed that their mothers-in-law or mothers had relayed the information from the sessions to them. Given the interest among mothers, especially in the hands-on elements of the healthy eating sessions, health workers recommended organizing these sessions for mothers as well.

However, several women from the focus groups expressed a preference for video-based content over reading WhatsApp messages. They explained that watching videos is more convenient, as they often don't have the time to read through messages. Many agreed that videos with concise and precise information would be easier to follow and more engaging, given their busy schedules. This feedback highlights the importance of using more accessible formats like videos to effectively communicate essential messages about child nutrition to mothers: "Watching videos is more convenient than reading messages on WhatsApp. It's better if the videos contain concise and precise information" (Interview with the mother)

Health workers appreciated the use of WhatsApp groups for sending messages to mothers. They found the messages both useful and visually appealing. They plan to continue using the group, regularly sharing the materials with new participants as they join. However, health workers noted some lessons learned that they plan to address once the season of annual leave is over. One key observation was the lack of discussion among mothers in the WhatsApp group, which could have been because some of them may not have known each other. Another lesson shared by the health workers was that distributing brochures and WhatsApp messages should be accompanied by more in-depth, face-to-face explanations. Without proper context, some mothers may not fully appreciate or understand the information. Probably for this reason, mothers identified explanations from the health workers as the preferred channel of information that is clear and understandable.

Perceived benefits

Eighty-six per cent of the surveyed women said that they were satisfied with the nutritional information provided. In addition, 40 per cent of surveyed mothers reported a significant improvement, 37 per cent a slight improvement, and 12 per cent a moderate improvement in their understanding of child nutrition. However, 10 per cent of the overall sample indicated no improvement in their understanding, suggesting that while the information provided had a positive impact on most participants, some women still did not experience any improvement. In the open comments in the survey, mothers expressed a desire to gain additional knowledge on various topics related to child nutrition. Women wanted to receive more detailed information on what foods and in what quantities should be given to a child throughout the day, as well as which foods can be combined. Some participants expressed a desire to learn more about vitamins, their importance, and their role in children's nutrition. They are also interested in how to communicate effectively with a child during meals, particularly how to feed a child without distractions such as a phone. Questions regarding porridge and infant formula also garnered interest. There was particular interest in the topic of replacing infant formula with milk. Some participants wanted to know more about the differences between modern and traditional nutrition, as well as which approaches are more effective.

During the FGDs, mothers shared that the information in brochures and WhatsApp messages was extremely useful to them. The explanations provided helped them to clarify how to properly introduce new foods into their children's diets. They learned how to store foods correctly in the refrigerator and freezer, which is important for maintaining freshness and nutritional value. Mothers noted that the

guidance on gradually introducing new foods to avoid allergies and other adverse reactions was particularly valuable. They expressed confidence that this knowledge will help them take better care of their children's nutrition in a safer and more effective way. Mothers found the most interesting and useful information to be not using phones, television, or other distractions while eating.

"I can say that the support has been helpful because my daughter was not eating well. I started offering additional foods, like boiled eggs, and learned how to make purees. Initially, as this is my first child, I didn't know which foods to give. However, I received information about infant nutrition through brochures and consultations via WhatsApp. This has helped me improve my daughter's diet, and I've effectively implemented the advice in our daily routine".

Attitudes to dietary diversity

Like 82 per cent of grandparents at the endline, 87 per cent of surveyed women said that following a diverse diet was either extremely or very important for them. Eighty-seven per cent of the surveyed women also thought that a diversified diet can positively affect the health of children under 2 years old; similar to the 85 per cent for grandparents at endline.

Fifty per cent of surveyed women said that their family provided a diverse diet either always or often; though it should be mentioned that another 42 per cent said that their families provide a diverse diet sometimes. Mothers were split in their views about the cost of maintaining a diverse diet, with 31 per cent of surveyed women thinking that maintaining a diverse diet is expensive, 36 per cent believing it was not expensive, and 34 per cent being unsure. The same dynamic was observed regarding mothers' beliefs about whether maintaining a diverse diet is beyond their financial means, with 35 per cent saying that it was beyond their financial means, 30 per cent saying that it was not beyond their financial means, and 35 per cent being indecisive. At the same time, 79 per cent of surveyed women said that their family knows how to diversity their family diet with locally available products.

During the interviews, a health worker shed light on common misconceptions mothers had about their children's food preferences. Initially, many mothers avoided giving their child certain foods, like egg yolk, assuming the child would not eat it, only to be surprised when the child did. Similarly, mothers would often add salt to potatoes and sugar to porridge or compote, believing their child would not enjoy these foods otherwise. This demonstrates a pattern of inaccurate assumptions about children's eating habits, which could be corrected with better-informed guidance. The health worker's observations suggest that by introducing these healthier options without unnecessary additives, mothers can provide more nutritious meals and feel more confident in their child's acceptance of such foods.

> *"Mothers did not give their child the egg yolk, thinking that the child wouldn't eat it. However, they were surprised when the child ate it. They also mentioned that they added salt when preparing potatoes and sugar when making porridge or compote, believing that the child wouldn't like it and wouldn't drink it." (Interviews with health workers)*

Behaviour

When asked how easy or difficult it was for mothers to follow a diverse diet, there was a significant difference between the responses from the two locations. Only 12 per cent of the surveyed mothers from Sokuluk district, compared to 43 per cent of the surveyed mothers from Suzak district, said it was easy. It is worth noting that most women were undecided in their answers. Additionally, 18 per cent of surveyed mothers in Sokuluk district and 12 per cent in Suzak district stated that it was difficult to follow a diverse diet (Figure 19). At the FGDs, mothers were divided into two groups. Some found it easy to introduce new foods into their children's diets, believing it could be done smoothly. These mothers included those who already had this knowledge and made an effort to incorporate it into their daily diet, including their young child's meals. Others, however, said that introducing changes was challenging, as their children might not like all the new recipes and could resist trying different foods. Those

who found it difficult cited reasons such as not knowing how to decide what to eat, lacking the money to buy diverse foods, and not considering it important to follow a diverse diet.

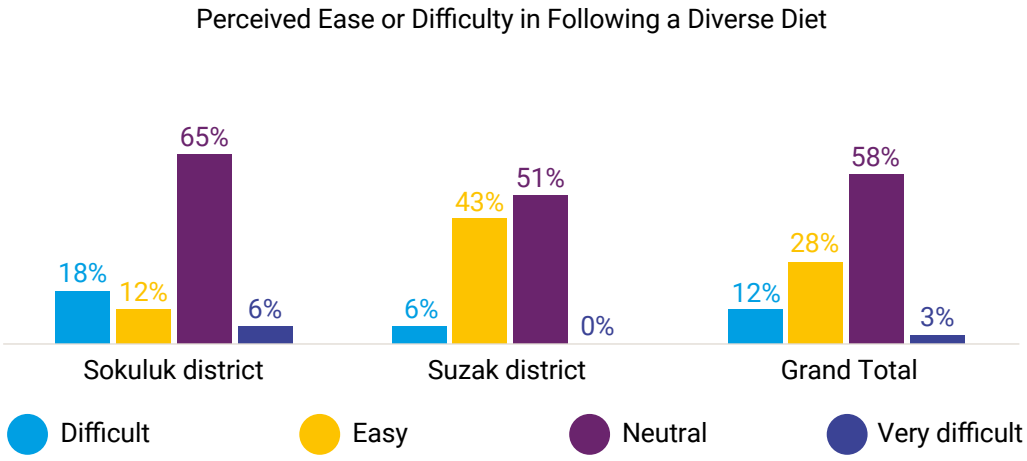


Figure 19: Responses to the question: "How easy or difficult would it be to follow a diverse diet?"

Regarding cooking separately for children, 71 per cent of women from Suzak district reported that they prepared separate meals for their children, whereas in Sokuluk district, this figure was 34 per cent. The other respondents in each location stated that their child ate the same food as the rest of the family. When it came to dietary changes based on the information provided, the survey results differed between the two locations. In Sokuluk district, 61 per cent of women reported making either significant (19 per cent) or some (42 per cent) changes to their children's diets. In contrast, in Suzak district, only 23 per cent reported making changes, with 51 per cent admitting they had not made any changes yet but planned to, and 26 per cent saying they were making no changes at all. Of those who made changes, 69 per cent found it easy to implement the changes, 23 per cent were undecided, and just 8 per cent said it was difficult (Figure 20).

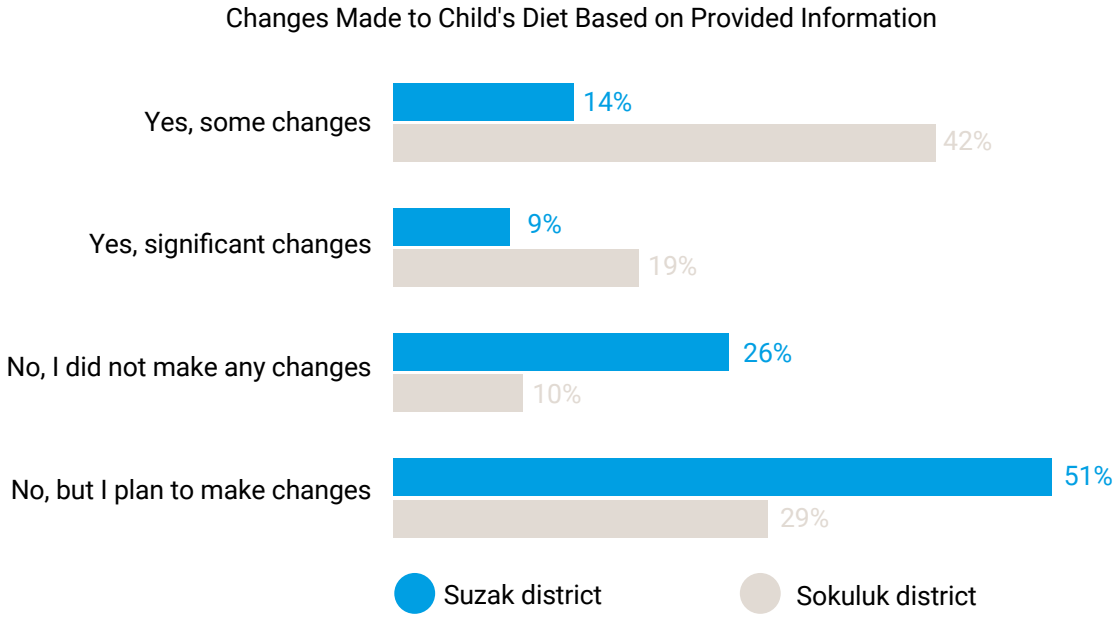


Figure 20: Responses of surveyed grandmothers to the question "have you made any changes to your child's diet based on the information provided?"

The women who made changes provided the following clarifications about the type of changes they made. Some mentioned that they began to closely monitor their child's eating schedules and made efforts to ensure proper nutrition. Other changes included encouraging children to feed themselves with a spoon and fork and refraining from distracting them with a phone during meals. They learned that it is important to provide a calm environment during meals, allowing the child to focus on eating without distractions. Others emphasized the importance of respecting their child's appetite and not forcing them to eat. Some women started preparing separate meals for their children, focusing on healthier options such as vegetables, fruits and porridge. Several women made specific dietary changes, such as reducing the amount of flour-based foods, steaming vegetables, and gradually cutting down on sugar and tea. Lastly, some women emphasized the importance of feeding their children at regular intervals, adhering to a consistent schedule.

However, some mothers shared challenges they faced. For instance, some encountered difficulties serving mashed vegetables to their children, as the children did not enjoy boiled and mashed vegetables, often leaving these dishes uneaten. In contrast, smoothies made from fruits were more readily accepted and enjoyed by the children. Additionally, several mothers found the process of preparing separate food for their children quite challenging. The task of cooking and presenting healthy meals proved a significant hurdle, affecting their ability to consistently incorporate these foods into their children's diets.

To cross-verify these changes reported by mothers, the analysis looked at the dietary intake of children as reported by mothers in the past 24 hours across various food categories. The highest reported food group consumed by children was other fruits, such as apples and grapes, with 91 per cent of mothers indicating that their children ate these fruits. Vitamin A-rich fruits, like apricots, peaches, and oranges, were also highly consumed, with 88 per cent of mothers reporting their inclusion in their children's diets (see Figure 21).

In terms of vegetables, 82 per cent of mothers noted that their children consumed Vitamin A-rich vegetables, such as pumpkin and carrots. Breastfeeding was also prevalent, with 80 per cent of mothers stating that their children were breastfed during this period. Eggs were another common part of the diet, with 78 per cent of mothers indicating that their children ate eggs. Milk and milk products, excluding butter and cream, were consumed by 76 per cent of children, while 74 per cent of mothers reported that meat and poultry were included in their children's meals. Grains, roots, and tubers, such as bread, rice, and noodles, were consumed by 64 per cent of children, while 56 per cent of mothers reported feeding their children other vegetables, including cabbage and tomatoes. Sweets, such as chocolates and cookies, were given to children by 56 per cent of mothers (see Figure 21).

Food category	Mothers
Other fruits: Apples, grapes	91%
Vitamin A-rich fruits: Apricot, peach, oranges, plums, melon, and other vitamin A-rich fruits	88%
Vitamin A-rich vegetables: Pumpkin, squash, carrot, or other yellow/orange vegetables	82%
Breast milk	80%
Eggs from poultry or any other bird	78%
Milk and milk products (not including butter, ice cream, cream, or sour cream)	76%
Meat and poultry: Beef, lamb, chicken, turkey, or other birds	74%
Grains, roots, and tubers: Bread, rice, noodles, porridge, or other foods made from grains	64%
Roots and tubers: Potatoes, radish, or other commonly consumed roots and tubers	56%
Sweets: Sugary foods such as chocolates, candies, cookies/sweet biscuits, cakes, sweet pastries	56%
Other vegetables: Cabbage, cauliflower, eggplant, cucumber, tomatoes, onions, beetroot	54%
Pulses (beans, peas, lentils): Mature beans or peas including chickpeas, lentils, or bean/pea proc	24%
Nuts and seeds: Any tree nut, groundnut/peanut, or nut/seed butters	21%
Medium-to-dark green leafy vegetables: Spinach, dark green lettuce, or sorrel	16%
Organ meat: Liver, kidney, heart, brain, or other organ meats	15%
Fish: Fresh, salted, frozen, or canned fish, shellfish	15%
Crisps, chips, fried dough, or instant noodles	12%

Figure 21: Responses of surveyed mothers to the question: "Think about your child aged 6–23 months. Did the child eat any of the following yesterday (in the past 24 hours)?"

However, consumption of other key food categories was notably lower. Only 24 per cent of mothers reported that their children ate pulses, such as beans and lentils, and just 21 per cent reported feeding their children nuts and seeds. The intake of medium-to-dark green leafy vegetables was also low, with only 16 per cent of mothers reporting that their children consumed these types of vegetables. Additionally, 15 per cent of mothers indicated that organ meats, such as liver or kidney, were part of their child's diet, and fish consumption was reported by 15 per cent of mothers as well. Finally, crisps, fries, and other fried snacks were reported as consumed by 12 per cent of children according to their mothers (see Figure 21).

These statistics show that many mothers are including fruits, vegetables, and dairy products in their children's diets. There is room for improvement in incorporating more diverse sources of proteins, pulses, and nutrient-rich vegetables.

Women were also asked to indicate what drink their child drank yesterday or last night. The analysis showed that 92 per cent of surveyed mothers said that their child drank ordinary water, making it the most consumed drink. Baby formula was consumed by 46 per cent of children, but there was notable variation in the number of times it was given; in Sokuluk district, 31 per cent of mothers said their children drank formula more than seven times in the past 24 hours, while 69 per cent of mothers did not know. In Suzak district, 53 per cent of mothers said their children drank formula more than seven times, with the rest unsure. Yogurt-like drinks such as ayran or kefir were consumed by 40 per cent of children, with a higher percentage in Sokuluk district (53 per cent) than in Suzak (26 per cent) (see Figure 22).

Among less consumed drinks, tea or coffee was consumed by 38 per cent of children, with most mothers in Sokuluk district (90 per cent) reporting that the tea or coffee was sweetened, while none of the mothers in Suzak indicated that these drinks were sweetened. Further, 38 per cent of children consumed sweetened beverages like soft drinks, carbonated drinks, chocolate drinks, malt drinks, or fruit juices. Animal milk, including fresh, canned, or powdered, was consumed by 35 per cent of the children (see Figure 22).

The data suggest that while water is the most common drink for children, other drinks, particularly those with added sugar, are still prevalent. There may be room to reduce intake of sweetened beverages and promote healthier alternatives like water.

Type of Drink	(%)
Ordinary water	92%
Baby formula	46%
Yogurt-like drinks: ayran, kefir	40%
Other drinks and products: tea or coffee	38%
Sweetened beverages: soft drinks, fruit juices	38%
Animal milk: fresh, canned, or powdered milk	35%

Figure 22: Responses of surveyed grandparents to the question: "Did the child drink any of the following yesterday or last night?"

These statistics were supported by the qualitative data. Mothers mentioned that they now prepare healthier foods, such as baking squash and apples for purees and cooking porridge with minimal salt. They have switched from serving tea to offering water and sugar-free compote, and they have stopped giving cookies to their children. The emphasis has shifted to providing vitamin-rich fruits and vegetables instead of relying on dietary supplements, with fruits like apples and strawberries being encouraged.

Sharing information

The data show that most mothers did share the information they received about child nutrition with others, though the frequency of sharing varied. In total, 59 per cent of mothers reported sharing the information: 24 per cent did so frequently, 21 per cent occasionally, and 14 per cent rarely. On the other hand, 36 per cent of the mothers said they had not shared the information at all, while 8 per cent could not remember if they had shared it (see Figure 23). These statistics suggest that although most mothers made efforts to spread the knowledge they gained, a significant proportion did not engage in information-sharing, which may present an opportunity for further support or encouragement. During the interviews, mothers shared that they had begun passing on the information they received about proper child nutrition to other mothers. However, they noted that they were unable to share the information widely due to their busy schedules, home responsibilities, and lack of time to engage with their phones regularly. These insights from the qualitative data align with the statistics, which show that around a third of mothers did not share the information, and even among those who did the frequency varied.

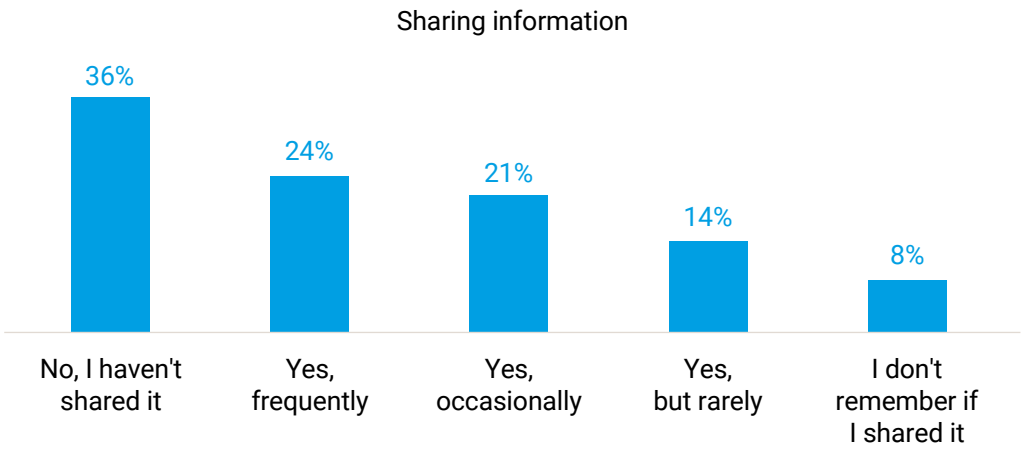


Figure 23: Responses to the survey question: "Have you shared this information with other family members or friends?"

Suggestions for improving the solution and recommendations for future initiatives

Mothers and health workers provided a range of suggestions and feedback on how to improve these solutions, which can be grouped into the following thematic areas:

Continuation and expansion of the solution

Many mothers expressed gratitude for the project, stating that the information provided was beneficial and well-received. Several recommended that the project continue, with suggestions for more frequent meetings and information sessions, particularly targeting mothers in their communities. They emphasized that the project should extend beyond a single month to ensure long-term engagement, with some suggesting it continue for at least one year or even five years to benefit younger children.

Enhanced information delivery

A common suggestion was to improve the format of information dissemination. Participants proposed replacing static images with videos, believing that videos, particularly with animation, would be more understandable, engaging, and effective in conveying the information. Specifically, mothers suggested including short instructional videos and detailed recipes for foodstuffs like spinach and celery, which they found challenging to use.

Interactive learning

Some mothers suggested incorporating more interactive elements, such as tests or quizzes, to help mothers assess their knowledge and understanding of child nutrition. Others expressed a desire for more live, in-person meetings to enhance the learning experience and enable more direct interaction.

Practical tools and guidance

Mothers also requested a sample daily menu for young children, including portion sizes for breakfast, lunch and dinner. This would help parents plan meals and ensure balanced nutrition. Additionally, they emphasized the need for discussions within WhatsApp groups about how others are implementing the practices, to create a more supportive and practical learning environment.

Recommendations from health workers for improving nutrition education

Health workers recommended conducting master classes for mothers, as brochures alone did not include recipes or cooking methods. They also advised that WhatsApp groups remain active to ensure continuity and effectiveness. Health workers further suggested integrating this solution with existing health directives, such as that on visiting newborns within three days of birth, to provide information on proper nutrition for infants aged 6–23 months on a mandatory basis. Health workers believed that the Ministry of Health needs to ensure that mothers receive the necessary information on child nutrition at key developmental stages.

5.CONCLUSION AND RECOMMENDATIONS

Overarchingly, the pilot of the two solutions suggests that it is possible to conduct community level work to improve child nutrition in the country.

Solution 1 (grandparents' healthy eating meetings) showed particular promise in strengthening the enabling external environment – that is, directly targeting the behaviours of grandparents and their ways of thinking about infant nutrition – in order to enable further changes in nutrition among grandchildren in their households. Grandparents evidenced high levels of satisfaction after attending the meetings, and they were convinced of the benefits of the initiative; however, the fact that those with higher levels of education and more time on their hands were attending repeated sessions suggests that the initiative must carefully consider the time commitments of participants.

Attitudes among participants have also improved over time, with messages over digital platforms such as WhatsApp proving a useful but not essential reminder. Among grandparents, engagement with the messages seems sporadic, indicative potentially of more general engagement on such platforms among the age group. However, despite promising shifts in attitude, and some promising behavioural changes, challenges persist. For example, perceptions regarding the high price of a healthy and diverse diet and the ability to afford this are still largely negative.

Particularly promising are the spill-over effects of solution 1 – reduction in salt and sugar intake among the grandparents is of value not just for the grandchildren and household but also to enable prevent and control chronic disease at public health level. There are gender-related differences in the behaviours of grandparents, with grandmothers more consistently benefiting and engaging with solution 1 compared to male counterparts. Health care workers which supported this solution expressed support for it, but also noted difficulties in recruiting participants. The latter also emphasized the importance of embedding similar initiatives in other places – such as schools – suggesting that awareness of family is one of many influences on child nutrition.

Solution 2 (provision of information for mothers on nutritious feeding of children aged 6–23 months) has similarly shown promise, and has largely yielded positive benefits in relation to attitudinal and behavioural change among mothers. The level of understanding among mothers of the importance of a diverse and healthy diet increased generally and behaviour change also followed, but here location-based differences are important. These regional differences highlight the need for tailored approaches to information dissemination and support.

Like grandparents, mothers reported preferring direct face-to-face contact for engaging with health care professionals and the information provided; however, this group is more digitally literate and better appreciated the digital follow-up that took place over WhatsApp. Like for grandparents, recommendations were made to create videos that directly demonstrated some of the concepts taught. One of the intended mechanisms to address this – enabling group discussion among mothers and/or further sharing of information – was not successful – potentially because explicit prompts or activities to prompt group engagement were missing.

The evaluation data suggest that both solutions could be strengthened by employed similar strategies.

1. Use videos and other means for better engagement

Both solutions emphasize the importance of using videos over static images provided in leaflets or information sheets for better clarity, engagement, and understanding. Participants of solution 1 talked about embedding videos in the meetings, while mothers taking part in solution 2 discussed videos as demonstrating desired behaviours and further development of broader master classes. Other engagement modalities – such as quizzes or group competitions – could also be incorporated into the latter

2. Involve all family members

Data across participants for both solutions support the findings of the initial background study – which clearly highlighted interlinkages between grandparents' attitudes and behaviours and the behaviours of mothers, but also fathers and children themselves. It is important to recognize that here the solutions were incredibly targeted at specific people – mothers and grandparents. This also meant that fathers, for example, may have then felt no need to follow any of the advice given and/or that consideration to troubleshooting – what to do if a child does not find something tasty/refuses to eat – were minimal.

3. Expand the scope of the intervention

Recommendations across both participant groups also emphasized that the interventions were too restricted in various ways. For example, an expansion of the solutions to others in the community was recommended – for example, making sure messages are incorporating more broadly in kindergarten or school and otherwise. Further, participants discussed the need to have a longer timeframe for the solution and, where possible, to embed it more clearly into the lives of mothers and families. For example, it could be possible to integrate solution 2 information sharing into antenatal care classes among others, and then use videos and WhatsApp during follow up.

4. Address financial perceptions of dietary diversity

Data showed that many mothers and grandparents still perceived maintaining a diverse diet as financially burdensome, despite some later realizing it was more affordable than initially thought. Hence, there is need to expand the intervention to provide targeted guidance on how to incorporate locally available, affordable ingredients into meals. This could involve practical tips for meal planning on a budget and demonstrating how to prepare nutritious, cost-effective dishes during master classes. Additionally, ensuring that these messages are shared widely through WhatsApp and during health check-ups would help reinforce the affordability and accessibility of a diverse diet.

5. Integrate nutrition education into existing health programmes

Participants highlighted a need for sustained promotion of information on child nutrition. To address this, integrating nutrition education into existing maternal and child health programmes was recommended. This would ensure continuous support and education for families beyond the duration of the intervention. Health workers can provide regular updates, check-ins, and information sharing during routine health visits, ensuring that key nutrition messages are reinforced and sustained over time.

6. Engage men in nutrition discussions

The challenge of men's inconsistent attendance at sessions focused on child feeding was evident, as they tend to see this as the responsibility of mothers. To address this, it is recommended to frame future sessions around family nutrition in general, where child feeding is included as part of a broader family discussion. This approach is likely to encourage greater male participation, as it aligns more with their perception of their role within the family.

7. Adjust session frequency for improved attendance

Participants expressed mixed feedback regarding the weekly sessions, with those with more time attending more regularly, while others preferred a longer timeframe for the intervention. To accommodate these varying preferences and reduce pressure on both health workers and community members, it is recommended to consider holding sessions on a biweekly or monthly basis. Extending the intervention over a longer period would ensure greater engagement without overwhelming participants and facilitators with frequent meetings.

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ANNEX 1: THREE KEY ISSUES AROUND CHILD NUTRITION IDENTIFIED AT THE FGDS WITH MOTHERS AND CAREGIVERS, AS WELL AS FROM COMMUNITY LEADERS AND ACTIVISTS

№	Location	Respondent category	Top three issues around child nutrition identified
1	Jalal-Abad town	Mothers and caregivers	1. Psychological state of mothers/depression in mothers. 2. Migration/forced abandonment of children in the care of other family members. 3. Lack of information about proper nutrition.
2	Jalal-Abad town	Community leaders and activists	1. Lack of awareness among mothers about healthy eating. 2. Mentality, family responsibilities, and household chores. 3. Migration and early entry of mothers to work.
3	Suzak village	Mothers and caregivers	1. Poor provision of information about proper nutrition in rural health clinics (FAPs) and clinics. 2. Young mothers lack time to prepare nutritious food at home due to household chores. 3. Children of migrants are left without adequate supervision, especially those aged 6–23 months.
4	Suzak village	Community leaders and activists	1. Financial difficulties prevent mothers from buying various food products for their children. 2. The use of traditional food, which is not considered proper nutrition. 3. Absence of motivation due to health conditions.
5	Bishkek city	Mothers and caregivers	1. Poor awareness among mothers of healthy eating 2. Financial restrictions. 3. Influence of the older generation and husbands.

6	Bishkek city	Community leaders and activists	1. Poor healthy eating awareness 2. Influence of the older generation 3. Mental health
7	Belek village, Sokuluk district	Mothers and caregivers	1. Lack of training and guidance for new mothers on transitioning from breastfeeding to regular feeding and combining different foods. 2. Due to household responsibilities and the demands of daily life, there is limited time or difficulty changing healthy eating habits. 3. Financial constraints make it challenging for mothers to afford nutritious food.
8	Belek village, Sokuluk district	Community leaders and activists	1. Mothers lack sufficient time to prepare special baby food and acquire knowledge of proper nutrition due to household chores and concerns. 2. Financial difficulties create challenges in providing variety of food for children aged 6 to 23 months. 3. Financial constraints make it challenging for mothers to afford nutritious food.

ANNEX 2: TOP THREE BARRIERS TO CHILD NUTRITION FOR CHILDREN AGED 6–23 MONTHS AND THE SOLUTIONS, AS IDENTIFIED BY FGD PARTICIPANTS

№	Location	Respondents	Top three issues indicated	Solutions proposed by study participants for Problem 1	Solutions proposed by study participants for Problem 2	Solutions proposed by study participants for Problem 3
1	Jalal-Abad	Mothers	1. Psychological state of mothers/ depression in mothers. 2. Migration/ forced abandonment of children in the care of other family members. 3. Lack of information about proper nutrition.	**Conducting psychological training sessions** for both mothers and fathers to enhance their understanding of the psychological well-being of wives after childbirth and the birth of children. These training sessions will help them recognize that the family atmosphere and relationships significantly influence mothers' care for their children. Additionally, distributing brochures to families with information on this topic would serve as an additional source of useful information. **Engaging in conversations and spiritual meetings with religious leaders** in mosques during Friday prayers can provide a platform for	**Working together with the migration service and guardianship authorities,** to register children whose parents go to work abroad and organize regular consultations on the proper nutrition of these children. Where possible, essential foods should be provided to children aged 6 to 23 months. One of the desirable measures may be a ban on long trips without their children for young mothers. **Distributing brochures to parents about proper nutrition and the risks** associated with leaving children in the early stages of development without proper care and nutrition. These brochures should contain information	**Training local health workers to provide quality counselling on nutrition** and the transition from breastfeeding to general nutrition. This includes education about a variety of foods suitable for children at different stages of growth and development, as well as methods for gradually introducing new foods into the diet. **Sharing nutrition information through social media videos and bloggers** to help promote healthy eating and provide practical advice on how to implement it using commonly available foods. These videos may include examples of healthy cooking, demonstrating how to use common ingredients to

				offering support and psychological counselling. Focusing these conversations on family relationships can assist in understanding the basic principles of parenting and promoting mutual support within the family. **Creating social videos that emphasize the distribution of responsibilities among family members** and underscore the importance of caring for each other can help foster a better relationship between mothers-in-law and daughters-in-law. These videos can aim to encourage care for each family member and enhance overall understanding of the importance of mutual assistance. **Training medical personnel to provide basic psychological services** and exploring the possibility of appointing psychological consultants in clinics will enable families to receive not only medical care but also psychological support in health-care facilities. This can offer families additional assistance in addressing their psychological problems and concerns.	about the diet, vitamins, necessary products for children aged 6 to 23 months, as well as the rights and responsibilities of parents to the child. **Conducting parenting training for young mothers** to teach the basics of proper childcare and nutrition. **Disseminating information about childcare,** especially among young mothers, through social networks (Instagram, Facebook) to help raise awareness of the importance of proper care and nutrition for children, and provide access to useful information and advice regarding child nutrition and care.	create nutritious and tasty meals for children. **Through doctors in FAPs (Medical and Obstetric Stations) and FGPs (Urban Medical Care Hospitals), along with physician bloggers, conducting information campaigns about vitamins,** optimal combinations of vitamins, and provide checklists and other useful materials. This will allow parents to better understand which vitamins are important for development and health and what foods to eat to get them.

2	Jalal-Abad	Activists	1. Lack of awareness among mothers about healthy eating. 2. Mentality, family responsibilities and household chores. 3. Migration and early entry of mothers to work.	**Disseminating information through television and social media:** This includes the use of television and popular social platforms to widely disseminate information about healthy eating, providing tips, recipes and practical advice on developing healthy eating habits. **Conducting training and seminars on healthy eating:** Organizing specialized events to teach people the basics of proper nutrition, healthy habits, and explaining the role of various foods in maintaining health. **Educating schoolchildren and students at schools on the basics of healthy eating:** This includes the integration of educational programmes on healthy nutrition into the curricula of schools and universities to develop students' skills and knowledge about healthy lifestyles. **Showing short and interesting videos in public places:** Using public places such as public transport stops, banks and squares to show short videos about healthy eating to attract public attention to this issue.	**Creating a family-friendly nutrition video** that covers important aspects of nutrition for each family member. The video may include tips on nutritious food choices, healthy recipes, and healthy eating approaches based on the age and needs of each family member. **Sharing videos on the harmful effects of poor diets in WhatsApp groups:** This involves creating short videos highlighting the harmful effects of poor diets and sharing them through WhatsApp groups. The videos can demonstrate the negative health effects of unhealthy eating, and highlight the importance of healthy eating for the entire family. **Creating videos on how to properly share responsibilities within a family:** These videos should provide tips and tricks on how to properly share responsibilities within a family, including tasks like cooking, grocery shopping, caring for children, and maintaining a healthy lifestyle. They can help families develop healthy habits and help them manage household chores more effectively.	**Providing information and organizing training programmes for caregivers** about health, nutrition, and childcare. The raining may include classes on childcare, health, nutrition, and skills needed to care for children of all ages. **Establishing a ban on traveling or going to work for women with children under 3 years of age**, including establishing restrictions on traveling to work or performing work duties for women who have children under the age of three. The goal is to provide guardianship and care for children at an early age. **Educating on proper family planning and healthy nutrition for children under 2 years of age**, including educational programmes on healthy family planning and nutrition for children under two years of age. The training is focused on providing information on the proper diet and care of young children to ensure their health and full development.

				Creating information channels on WhatsApp and Telegram: Using instant messengers to create channels where you can receive up-to-date information, advice and exchange of experiences on healthy nutrition. **Holding Healthy Nutrition Day:** Organizing an event dedicated to informing and educating the public about healthy eating, which includes lectures, master classes, culinary demonstrations, and so on. **Distributing brochures and information leaflets about healthy eating among mothers** with useful tips and recommendations on nutrition and healthy lifestyles. **Developing notes for mothers with menus, proper diet and optimal combinations of vitamins:** Preparation of practical materials for mothers with examples of healthy menus, balanced diets and optimal combinations of products to maintain healthy lifestyles in children.	**Disseminating information about prohibiting mothers from going to work and transferring childcare to other family members** to ensure early parental care. **Informing fathers about their responsibilities in caring for children under two years of age:** This solution includes information activities aimed at making fathers aware of their responsibilities and roles in caring for children under two years of age. The goal is to support equal sharing of responsibilities between parents in caring for children.	

3	Suzak	Mothers	1. Poor provision of information about proper nutrition in rural health clinics (FAPs) and clinics. 2. Young mothers lack time to prepare nutritious food at home due to household chores. 3. Children of migrants are left without adequate supervision, especially those aged 6–23 months.	**Imparting knowledge to mothers immediately after giving birth about proper nutrition for children**. This can be achieved through various channels such as brochures, educational videos, or lectures provided by health professionals directly in maternity hospitals. These materials should contain information about children's diets, general principles of nutrition, essential nutrients for child development, etc. The dissemination of this information must be accessible and understandable to new mothers, enabling them to easily acquire the necessary nutritional knowledge for their children. **Training medical personnel in FAPs and clinics about proper nutrition:** Health workers in FAPs and clinics should be aware of the principles of healthy nutrition for all age groups, especially for infants and preschool children. This education should cover basic aspects of nutrition, such as the amount of nutrients needed, the importance of food variety, proper portions, and	**Sharing videos about the correct distribution of responsibilities among family members:** These videos demonstrate the effective distribution of responsibilities within the family regarding childcare and household chores. They offer tips and strategies for balancing responsibilities among family members, emphasizing the importance of cooperation and mutual support in creating a healthy and harmonious family environment. **Sharing videos about the importance of fathers in proper nutrition and raising children:** These videos will highlight the crucial role of fathers in raising and nourishing children. This may include information about the impact of paternal presence on children's development, emotional well-being, learning, and parenting, with a focus on questions about healthy eating. The purpose of the video is to motivate and inspire fathers to actively participate in creating a healthy lifestyle and ensuring proper nutrition for their children.	**Enabling close collaboration between FAP representatives, social service workers and migrant families,** particularly those with small children aged 6 to 23 months. There is a need to provide more attention, additional nutritional advice to caregivers and parents, and to promote good childcare practices. **Providing migrants with books on proper nutrition for children aged 6 months and older,** as well as emphasizing the importance of caring for children: Supplying special books or brochures to migrants will help educate and inform parents about proper nutrition for children aged 6 months and older. These books will contain information about the nutritional needs of children, proper diets, as well as the basics of childcare. **Disseminating information about proper nutrition and care for children under three years of age among parents and guardians:** It is essential to actively disseminate information among parents and

				eating patterns. This will enable health staff to provide more effective support and advice to parents on nutrition and the healthy growth and development of children. **Disseminating information and videos about healthy nutrition through social networks, television, and radio:** Videos, informational articles, audio recordings, and podcasts can be created to reach a wide audience. They should contain practical advice, interesting facts about nutrition for children of different ages, examples of healthy recipes, and information about the importance of proper nutrition for the health and development of children. Dissemination through various media platforms will help reach more parents and create awareness about the importance of proper nutrition in children.		guardians about the importance of proper nutrition and care for children under three years of age. This can be achieved through consultations, conversations, informational booklets, and other educational materials that encourage parents to make informed decisions regarding the health and nutrition of their children.
4	Suzak	Activists	1. Financial difficulties prevent mothers from buying various food products for their children.	**Sharing videos about proper nutrition through social networks** - educational content for young mothers and their families, including expert advice on healthy recipes, food pyramids, and recommendations for balanced nutri	**Disseminating and clarifying information about the fact that upbringing, traditions, and parental views are directly related to proper nutrition:** Conducting information campaigns aimed at parents to help them understand	**Educating men about proper nutrition and the importance of mothers in the proper nutrition of the family:** This involves providing education to men so that they understand the importance of their role in promoting healthy

			2. The use of traditional food, which is not considered proper nutrition. 3. Absence of motivation due to health conditions.	tion for children and adults. These videos should be available on YouTube, Instagram, Facebook, and TikTok to help young parents make more informed decisions about their children's nutrition. **Constructing greenhouses for young mothers in the village** - providing access to fresh vegetables and fruits. The greenhouse will offer a variety of products, helping young mothers obtain quality produce without additional costs. It also creates opportunities for self-education, allowing young mothers to care for plants and participate in growing their own food. This process promotes better understanding of the importance of healthy nutrition for the whole family. Additionally, the greenhouse can become a place for exchange of knowledge and recipes among young mothers, fostering a community that understands the significance of healthy nutrition and childcare.	how their approach to nutrition affects the formation of children's eating habits. This can be achieved through educational seminars, master classes with nutritionists and psychologists, as well as the development of information brochures and videos explaining the influence of family culture on food choices and children's health. The main goal here is to assist parents in understanding and changing their approach to healthy food for the whole family. **Providing basic training on proper nutrition for representatives** and conducting seminars, lectures, and round tables to discuss transfer of knowledge to younger families. They should also organize events devoted to explaining the importance of forming proper eating habits. **Placing videos about proper nutrition in schools and kindergartens:** The videos can contain information about healthy eating, the nutritional value of various products, the principles of a balanced diet, and the benefits of proper eating habits. The	eating habits in the family. Men can participate in seminars, lectures, and master classes where the basics of healthy eating and its impact on the health of family members will be explained. The goal is to create an understanding that creating healthy habits in the family is a shared endeavour that requires the efforts of all family members. **Ensuring psychologists are available among women with small children in FAPs and clinics:** This proposal involves creating conditions for providing psychological support to young mothers visiting FAPs and clinics. A psychologist will be able to provide consultations on issues of motherhood and child upbringing, and help cope with stress and problems associated with motherhood. This will support the psychological health of young mothers, improve their relationships with their children, and increase their self-confidence as parents. **Opening centres for young mothers to exchange information and socialize:**

					goal is to make educational institutions a place where children receive information about healthy nutrition and can integrate new habits into everyday life.	These centres will provide a platform for young mothers where they can meet, exchange experiences, communicate, and spend time in a friendly atmosphere. Such centres will organize events aimed not only at discussing issues of nutrition and children but also at discussing issues of self-development for women as mothers and individuals. This may include seminars, master classes, and lectures on personal growth, self-improvement, and development. This will help young mothers not only expand their circle of acquaintances and gain information but also create a strong community for mutual support and development.
5	Bishkek	Mothers	1. Poor awareness among mothers of healthy eating 2. Financial restrictions. 3. Influence of the older generation and husbands.	**Raising awareness of healthy eating among mothers through medical personnel at health facilities:** Special training and seminars should be conducted for paediatricians and general practitioners on the importance of proper nutrition for children. Education should include information about recommended nutritional standards for different age	**Providing information on how to keep to the same budget while buying nutritious foods:** A series of videos or promotional materials should be created demonstrating ways to purchase nutritious and healthy foods while keeping to the same budget. Tips should be provided on choosing affordable yet nutritious foods and taking advantage of	**Inviting husband and in-laws to paediatricians' baby check-ups** to create a more inclusive atmosphere/ This will increase understanding and involvement in the child's care, strengthen understanding of medical advice, and support wider responsibility for the child's health. **Encouraging newlyweds to live separately,** to help them take better care of their

				groups of children, as well as the basics of healthy eating. Specialized guidelines and information materials should be created for doctors, which they can use when consulting parents during appointments. These materials may include reminders, advice, and recommendations on creating a healthy diet for children of different ages. **Establishing a feedback mechanism from parents about the nutrition information provided by doctors during examinations and its usefulness.** This will enable evaluation of the effectiveness of doctors' information work and adjustments if necessary. **Appointing a child nutrition specialist in clinics,** to advise parents and monitor the nutrition of children from 6 months to 3 years. **Distribute brochures in FGPs, in maternity hospitals about healthy eating:** Information brochures and leaflets should be distributed about proper nutrition for parents and newborns in gynaecological hospitals and	seasonal discounts and in-store promotions. Mothers should receive financial training on how to calculate their family budget to ensure funds are sufficient for this purpose. **Discussing among bloggers how to eat healthy on a budget:** Collaborate with bloggers who can share their experiences and tips on eating healthy on a budget. They will cover topics such as meal planning, choosing affordable and nutritious foods, and saving money when buying groceries. **Organizing fairs with the participation of domestic producers with government support:** regular fairs should be held where domestic producers provide their products directly to consumers. Government support will help create affordable and diverse products at lower prices. **Informing mothers about using starters from the state dairy kitchen to prepare their own dairy products at home (such as yogurt and cottage cheese):** Mothers should be informed that they can use	health and the health of their future children. This can lead to a better lifestyle, including improved nutrition, living conditions, and a better understanding of the importance of family health. **Organizing state programmes for the whole family, such as a monthly "Healthy Family Club"** to train the older generation in healthy eating at clinics. The idea is to teach the older generation the basics of healthy eating. Free meetings, held once a month at clinics, would provide the older generation with the knowledge and skills in healthy eating they need to maintain their health and the health of their loved ones. **Creating a WhatsApp newsletter from doctors** with useful tips on a healthy lifestyle and proper nutrition. This will help regularly educate people about the importance of good nutrition and lifestyle, ensuring they have access to up-to-date information from qualified professionals. **Broadcasting television programmes and videos**

				maternity hospitals. These materials will contain practical advice on the first steps in feeding, healthy diets for babies, and advice about breastfeeding. **Introducing a bonus for doctors for timely monitoring of proper nutrition, similar to monitoring of vaccinations:** Medical personnel should be rewarded for timely and effective consultation of parents on healthy nutrition for children. A bonus system should be implemented for doctors, similar to the vaccination control system, where they receive bonuses for monitoring and regularly informing about proper nutrition. **Creating and supporting more cafes specializing in healthy children's nutrition.** A support programme should be developed for restaurants to offer healthy children's menus at affordable prices. **Promoting Healthy Eating Information through Quality Mum Bloggers:** Collaborate with mum bloggers who have large social media followings to promote healthy eating for	starters from the state dairy kitchen to make their own dairy products at home. This will save money, and these products are tasty and high quality. The kitchen should be accessible to all mothers, allowing them to buy products at the clinic at a low price. Working hours should be extended so that mothers can purchase products at a convenient time.	**with doctors** on well-known channels (KTRK, ElTR, NTS), especially during the news. This will provide a wide audience with reliable information about a healthy lifestyle and proper nutrition.

				children. The bloggers will create informative content promoting healthy baby foods and pages dedicated to healthy eating for children. **Creating an official State Instagram page on healthy nutrition for children** that provides accessible and interesting information about healthy nutrition for children. It should include short videos from doctors, helpful tips on healthy eating, and prepared meal options for children. **Using social videos about the importance of healthy eating:** Create social videos about the importance of healthy nutrition for children and distribute these videos on social networks, in television programmes, and show them in kindergartens, schools, and clinics. The videos will inform about the benefits of proper nutrition and its importance for children's health.		
6	Bishkek	Activists	1. Poor healthy eating awareness 2. Influence of the older generation	**Providing information through the media – advertising and informational videos.** Advertising campaigns and informational videos on television, radio, newspapers,	**Creating television and online commercials** aimed at grandparents, emphasizing the importance of healthy eating for their grandchildren. Videos can contain	**Creating social videos about healthy eating from a psychological point of view**, discussing the psychological importance of nutrition, explaining how proper nutrition

			3. Mental health	and magazines addressed to parents about the importance of healthy eating for children will reach a wide audience and raise awareness about healthy nutrition. **Disseminating social videos on social networks and billboards about the impact of nutrition with the participation of specialists:** Promote knowledge about the impact of nutrition on children's health through popular social platforms (Instagram, TikTok) and outdoor advertising (billboards). Participation of specialists and medical experts can increase the credibility of the information. **Disseminating information through UNICEF's Bebbo app:** Use the popular parenting app Bebbo to disseminate information and tips on healthy eating for children, thereby reaching a more targeted audience. **Involving bloggers in disseminating Information:** Conduct awareness campaigns through bloggers to share tips and knowledge about healthy nutrition for children with their audience.	interesting facts and tips to attract the attention of the older generation. **Conducting discussions on television talk shows** about proper nutrition for children, featuring doctors, nutrition experts, and representatives of the older generation. **Distributing WhatsApp newsletters** with practical tips on healthy eating for grandchildren, easily accessible to grandparents. **Creating short and educational videos on the TikTok platform** that provide information about the impact of proper nutrition on children's health. **Inviting the older generation to be examined by doctors:** Paediatricians and family doctors can invite mothers to bring their parents or older relatives for a medical examination to discuss the impact of a healthy diet on the health and development of their grandchildren. **Distributing brochures to the older generation:** Physicians of all specialties can provide brochures to older adults	affects a person's psychological state and emotional well-being. **Creating videos aimed at educating about postpartum depression,** its symptoms, consequences, as well as providing information about available methods of help and support for mothers. **Creating social videos about allowing emotions and emotional intelligence,** discussing the importance of expressing and managing emotions, encouraging openness and the resolution of emotions, including through healthy eating and good eating habits. **Creating social videos about timely psychological and physical support for mothers,** emphasizing the importance of healthy lifestyles and nutrition in the process of recovery after childbirth and in caring for the child. **Introducing Psychology into the school curriculum,** with the aim of teaching children the basics of psychology, developing skills for self-regulation of emotions, and

				Providing training lectures for doctors from experts on WHO standards: Provide regular training lectures for paediatricians and family doctors to update their knowledge of the WHO standards for healthy nutrition for children. **Providing information in clinics through stands with information and QR codes:** Place information stands with QR codes in clinics for access to online resources about healthy eating for parents. **Opening a staff for a breastfeeding and complementary feeding specialist in the clinic:** Provide additional medical support and consultations on breastfeeding and complementary feeding in the clinic. **Disseminating information about complementary feeding from a paediatrician at 3.5 months:** Distribute brochures and information materials about complementary feeding from a paediatrician at a special consultation. **Creating mother and child rooms with information**	with information about the Harvard Plate diet and food guidelines. These materials may include practical tips and advice on healthy eating for children.	fostering understanding of the importance of mental health.

				materials in clinics: Create special rooms with brochures and books about breastfeeding and complementary feeding for parents in clinics. **Distributing books on healthy eating upon discharge:** Distribute bright and informative books with recommendations on healthy eating for parents on discharge from the maternity hospital or clinic. **Exerting state control on baby food packages:** Introduce labelling on baby food packages according to WHO standards, for example, on the start of complementary feeding from 6 months. **Providing QR codes on doctors' Instagram** profiles for more detailed information about healthy eating. **Organizing special lectures and seminars for mothers** with practical knowledge about proper nutrition and child care.		
7	Sokuluk	Mothers	1. Lack of training and guidance for new mothers on transi	**Conducting awareness-raising activities for young mothers on supplementary feeding and the transition from breastfeeding to**	**Providing recipes for young mothers on proper nutrition and healthy earing by clinical medical staff:** Clinical staff can create brochures	**Providing baby food, such as yoghurt (biolact) and others**, to children aged 6–23 months, as was done in the Soviet Union.

			tioning from breastfeeding to regular feeding and combining different foods. 2. Due to household responsibilities and the demands of daily life, there is limited time or difficulty in changing healthy eating habits. 3. Financial constraints make it challenging for mothers to afford nutritious food.	**primary nutrition:** Host special seminars or lectures for young mothers, featuring experts in nutrition and child health who can discuss the importance and nuances of transitioning from breastfeeding to regular nutrition. Workshops should provide information on properly introducing a variety of foods into a child's diet, taking into account age appropriateness and nutritional needs. New mothers should also receive practical advice and guidance on planning their infant's diet. **Providing information brochures immediately in the maternity hospital on proper nutrition, the content of necessary products, vitamins, and more:** These materials will contain information on proper nutrition during the postpartum recovery phase, essential nutritional components for women after childbirth, and details about the newborn's diet. Practical advice on preparing food for newborns, a list of necessary products, and recommendations for choosing vitamins and minerals for both mother and baby may also be included.	or informational materials containing recipes for meals that ensure a healthy and balanced diet for both mother and baby. These recipes should provide information about essential nutrients, healthy ingredients, and cooking methods that are easy, nutritious, and safe to consume. The materials will assist young mothers in enhancing the quality of their nutrition and food preparation for their children, fostering healthy growth and development in babies.	

8	Sokuluk	Activists	1. Mothers lack sufficient time to prepare special baby food and acquire knowledge of proper nutrition due to household chores and concerns. 2. Financial difficulties create challenges in providing a variety of foods for children aged 6 to 23 months. 3. Financial constraints make it challenging for mothers to afford nutritious food.	**Providing information brochures and videos on preparing quick and healthy meals for children aged 6–23 months.** These materials should offer practical advice on food selection, preparation, and creating varied and nutritious meals. They should also emphasize the importance of dietary diversity, including different food groups, and provide guidance on preparing nutritious breakfasts, lunches, and dinners for children of different ages. **Offering books containing recipes for various dishes and purees for babies, along with information on proper storage methods.** Include detailed cooking instructions, especially recipes adapted for children of specific ages.	**Expanding provision by the state of child benefits for children aged 6–23 months,** enabling young mothers to purchase the necessary products for proper nutrition.	**Providing jobs from the State for parents, especially for fathers,** so that they have enough money to buy food for proper nutrition.

ANNEX 3: INTRODUCTORY TEXT FOR SENDING TO THE WHATSAPP GROUPS

Introductory message:

Dear mothers and caregivers,

Thank you for joining our WhatsApp group dedicated to diverse nutrition for children aged 6–23 months. Over the next 4 weeks, we will share valuable information about this important topic. You will receive 3 messages every week.

We hope the information will help you to provide the best nutrition for your children. If you have any questions, please don't hesitate to ask. We are here to support you.

Weekly messages:

Friday – Week 1 message:

Good day, dear mothers and caregivers. We are pleased to share our first message about feeding diverse foods to children aged 6–23 months. If you have any questions, please feel free to ask.

Final message:

Good day, dear mothers and caregivers,

Today, we are sharing our final message, completing our four-week series on diverse nutrition for children aged 6–23 months. We hope you found the information useful for feeding your children. If you have any questions, please let us know. You are also welcome to visit our office to receive a brochure with more detailed information.

We would also like to inform you that we are conducting a survey to understand how useful these messages have been for you. You may receive a phone call asking for your feedback. Your participation is greatly appreciated and will help us improve our services. The discussion will only take a short time.

Thank you for your participation and dedication to your child's health.

ANNEX 4: INTRODUCTORY TEXT FOR GIVING OUT BROCHURES

Dear [mother's name],

During your child's health check-up today, I wanted to provide you with some valuable information to help ensure that your little one grows up healthy and strong. We have created an easy-to-understand, visually appealing brochure that highlights simple ways to introduce a variety of foods into your child's diet, especially for children aged 6–23 months.

This brochure includes:

- Essential nutrients that young children need for healthy growth and development.
- Practical tips for nutritious feeding and healthy cooking.
- Delicious and healthy recipes featuring a variety of vegetables and fruits.

We understand that keeping up with your child's nutritional needs can be challenging, so we hope this brochure serves as a helpful guide.

In addition to this brochure, we will be sending key messages through WhatsApp. This way, you can receive ongoing support and reminders about nutritious feeding directly on your phone. Please make sure we have your correct phone number so you can benefit from these updates.

We keep a record of the mothers we provide this information to, ensuring you receive all the necessary support. If you have any questions or need further advice, please feel free to reach out to us anytime.

Thank you for your dedication to your child's health. Together, we can make a positive impact on their growth and development.

For every child
Whoever she is.
Wherever he lives.
Every child deserves a childhood.
A future.
A fair chance.
That's why UNICEF is there.
For each and every child.
Working day in and day out.
In more than 190 countries and territories.
Reaching the hardest to reach.
The furthest from help.
The most excluded.
It's why we stay to the end.
And never give up.

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for every child

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