

# FEEDING MY CHILD

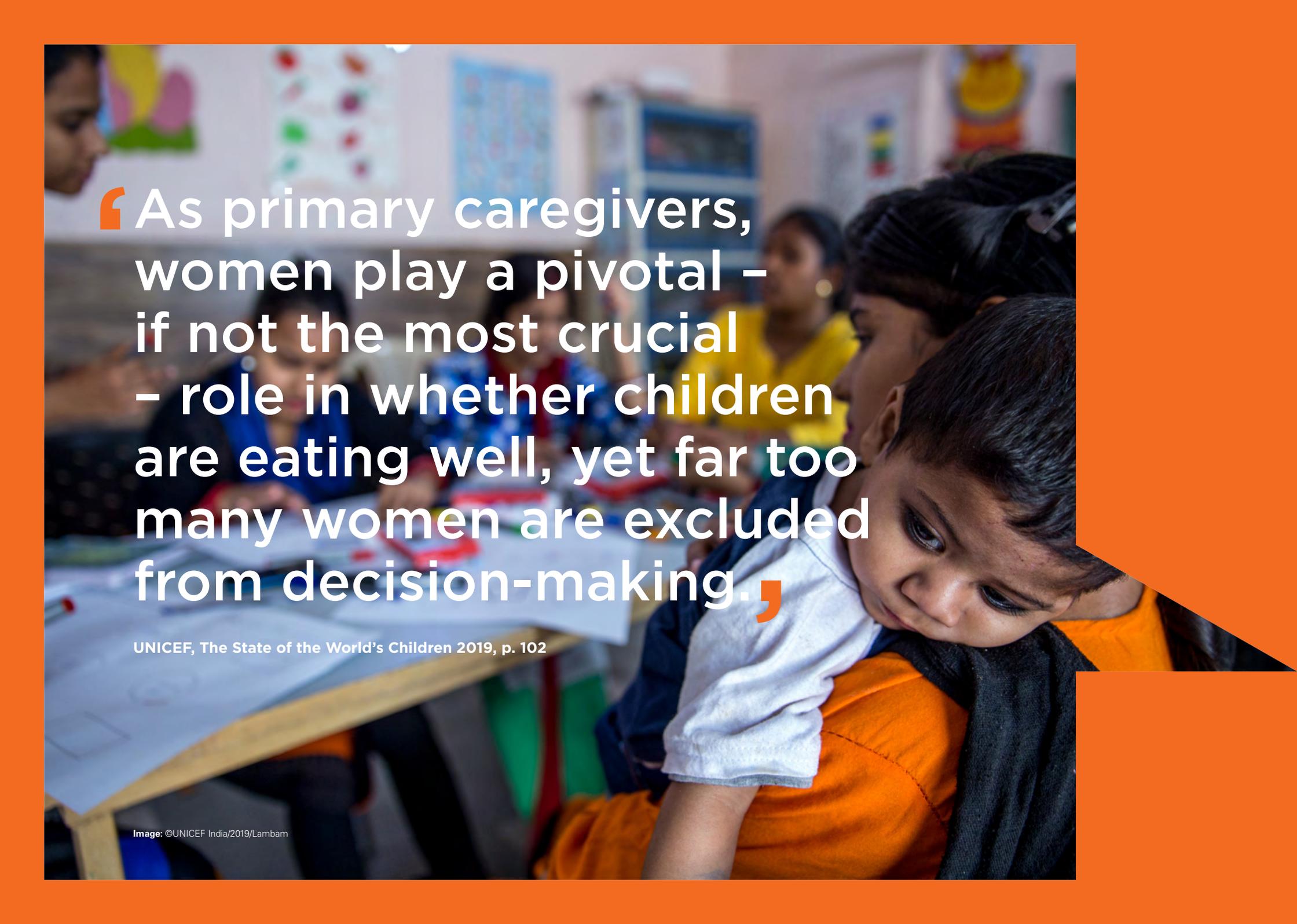
How mothers experience nutrition across the world.



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A photograph of a woman in an orange shirt holding a young child in a classroom. The child is looking down. In the background, other children and a teacher are visible at a table. The image is overlaid with a large orange shape on the right side.

As primary caregivers, women play a pivotal – if not the most crucial – role in whether children are eating well, yet far too many women are excluded from decision-making.

UNICEF, The State of the World's Children 2019, p. 102

Image: ©UNICEF India/2019/Lambam

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Image: ©UNICEF Bangladesh/2019/Khalid

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# FOREWORD

**Ask parents about the biggest challenges of raising children, and most will certainly mention feeding.**

**The questions they face about their young children can feel endless: Is she hungry? Is he eating too much? Is she eating too little? Why does she only eat this and not that?**

**For parents in poorer households and communities, the list is even longer: Can we afford to buy healthy food? And can we even find it?**

But while parents and caregivers everywhere face these questions, there are great differences in their ability to answer them. These differences reflect their household income, and their access to the information and counselling they need — and whether or not they can implement that guidance effectively.

Do parents and caregivers receive support from their families or governments? Do they have the tools and the opportunity to learn about nutritious and safe diets? Are they being targeted by advertising and marketing, and how does this influence what they purchase for their families? Is healthy food affordable or even readily available in their neighbourhoods?

Combine all these factors, and the result for children — in far too many communities — is all too often poor diets.

As UNICEF's *State of the World's Children 2019* demonstrated, at least one in three children under five is undernourished or overweight. These numbers reflect the reality that in far too many communities, too many children are eating too little healthy food and too much unhealthy food.

There can be no doubt that the COVID-19 pandemic has only worsened this situation, particularly for families living in poverty. Children who eat poorly live poorly. Malnutrition undermines children's mental and physical development and robs them of the chance to meet their lifetime potential.

For our societies — and for the attainment of the Sustainable Development Goals — the loss of human capital is incalculable.

As a global community, we face an urgent need to better support families to improve children's diets. Doing that requires better understanding of how mothers — who continue to shoulder the greatest burden of childcare in most societies — confront the very real challenges of feeding their children.

To build this understanding, teams from UNICEF and Western Sydney University's Young and Resilient Research Centre partnered to design a unique set of dialogues in 18 countries around the world to listen to mothers about their experiences of food and feeding, and the challenges they face in providing their young children with healthy diets.

Implemented by UNICEF Country Teams and National Committees, these events provided a voice to mothers from Australia to Zimbabwe.

In their own words they told us about their experiences. From the bond developed with a baby during breastfeeding to the anxiety of "fussy" eaters. From worrying about the cost of food to struggling to feed a child after a long day at work. They also told us about their everyday workarounds, suggestions for positive change, and how communities can work together to overcome barriers to a healthy diet.

We believe the *Feeding My Child* project, along with our parallel *Food and Me* young people project, provides unique insights into the challenges families are facing to eat healthily. We trust they will inspire action that makes a real difference in the lives of children and young people, providing even more of them with diets that are nutritious, safe, affordable and sustainable.



**Henrietta H. Fore**  
UNICEF Executive Director



**Professor Barney Glover AO FRSN**  
Vice-Chancellor and President,  
Western Sydney University

# MAIN MESSAGES

**In 2019, more than 500 mothers of young children took part in workshops in 18 countries to talk about how they feed their children and the challenges they face in providing high-quality nutrition.**

## Main messages from mothers in this study:

### Mothers believe breast is best

Almost all mothers viewed breastfeeding as the best way to feed their baby to at least six months of age, and 90% of them commenced breastfeeding at birth. However, almost half of babies were fed breastmilk substitutes before they were six months old. This was due to mothers' perceptions that they had low milk supply or experienced difficulties with attachment, as well as the return to work combined with household pressures. Only 20% said a health worker or nurse influenced their decision whether and how long to breastfeed. Health professionals were, however, the 'go-to' people for information on breastfeeding.

### Most infants were introduced to complementary foods at around age six months

The majority of infants received their first foods at around age six months, with a quarter receiving their first foods prior to four months. Five per cent received foods by age two months, most commonly, refined sugars added to tea or water. At four months one in five babies had been introduced to one or more food groups, most commonly grains, followed by fruit, vegetables, dairy and animal source foods. Mothers in Afghanistan reported late introduction of first foods, with some reporting they introduced first foods at twelve months because that is when babies are ready to eat.



### Young children's dietary intake is poor

Most children between six and 23 months consumed a poor quality diet. On an average day the majority did not consume a serving of fruit, vegetables, starchy vegetables or animal or plant proteins. Grains were the most commonly consumed foods, with at least two thirds of children having a daily serving or more. Most children in Serbia, Australia and China consumed animal protein daily, but in Sudan, Ethiopia and the Philippines the proportion ranged from only one in four to as low as one in ten. In this study, about one in six children (16%) aged six to 23 months consumed five or more food groups daily. Serbia was the only country where almost all children consumed foods from at least five food groups daily.

In this study, sweetened beverages and fruit juice were consumed daily by more than one in three children in Mexico, Sudan and Serbia. Very few mothers reported regular consumption of carbonated soft drinks, although in Zimbabwe and Nigeria around one in three children had soft drink daily.

### Mothers' diets improve in pregnancy but are still not optimal

Overall, while mothers' daily diets in pregnancy were not optimal, they were better than their pre or post pregnancy diets, which did not meet recommended guidelines. In pregnancy, almost 70% consumed at least one serving of vegetables daily, almost two thirds consumed a serving of fruit and around two thirds consumed animal source foods. Mothers avoided various foods and drinks in pregnancy, often for cultural reasons or because of traditional beliefs.

### Mothers' diets lack variety

On an average day, three in five mothers consumed a serving of grains and vegetables, just over half consumed a serving of animal source foods and less than half consumed a serving of fruit or plant proteins. Less than 20% of mothers had a daily serving of dairy. Participating mothers in Mexico reported consuming the highest amount of ultra-processed food and drink.

### Mothers limit children's access to unhealthy foods outside the home

Mothers tried to limit children's access to unhealthy foods outside of the home. To do this many mothers took food and drink with them when outside. However, they also admitted that as a treat for their child they purchase a range of foods, and often these are unhealthy foods or drinks.

### Mothers can distinguish healthy from unhealthy foods

Most mothers correctly identified the foods and drinks that their child consumes on an average day as healthy or unhealthy. However, one in five said they lack knowledge about healthy and unhealthy foods and drinks for their children and themselves. Meals prepared at home were considered healthier than meals bought outside the home, and mothers were particularly wary of food purchased at outside street stalls. Fruit and vegetables were considered healthy, and almost one in four mothers rated animal source foods as unhealthy. Mothers rated fried foods, sweetened beverages and snacks as unhealthy for their children and themselves, but many still gave these foods to children or wished they could offer them. Some mothers stated that they or their family members do not like the taste of healthy food so they opt for less healthy food, and that sometimes it is just more convenient to buy unhealthy food.

## Grandmothers' influence on feeding is less than expected

Family members, particularly the mothers' own mother, influenced infant and young child feeding decisions, but not as much as might be expected. In many instances mothers said that they make their own decisions about how to feed their child. Mothers also offered some suggestions for working around negative family influences, including slowly educating or informing their family.

## Children's 'fussiness' is one of many worries for mothers

Mothers in some countries worried that their young children do not eat enough or do not eat the healthy foods they want them to have – this was particularly so for participants in Indonesia, Bangladesh, India and China, and primarily in urban but sometimes in rural settings. Forty per cent of mothers described their child as 'fussy' or 'uncooperative' at mealtimes. Mothers tried different ways to encourage their child to eat, with some mothers demonstrating knowledge of responsive feeding practices.

## Health workers are the 'go-to' source of information

Health workers, including nurses, midwives and doctors, were the 'go-to' people for information when mothers wanted guidance on feeding their infant or young child. Just over half of mothers indicated that they would go to a health worker, nurse, midwife or doctor for information on the introduction of first foods and information on healthy food and drink for their child. Only around 20% would seek this information on the internet, and less than 10% would seek it from government sources.

On average, mothers were more likely to seek help from a doctor in urban areas and from a nurse in rural areas. Mothers in urban areas also stated they would seek information from the internet more often than did rural mothers.

## Financial constraints are an obstacle to healthy feeding, especially in rural areas

Unsurprisingly, mothers in lower income countries highlighted poverty's impact on their capacity to feed their children. Financial constraints were of greater concern to mothers living in rural communities than those from urban centres. Few mothers offered solutions to the lack of financial resources, although some noted that bartering or selling farm products or other commercial goods could help to supplement family income, making it possible to purchase basic foods.

## Availability of nutritious and healthy foods is a key obstacle to healthy feeding in lower income settings

One in three mothers reported that food availability is a major obstacle to healthy eating. Generalised food shortages as well as limited availability of quality or healthy foods were most frequently reported in lower income countries. Both urban and rural mothers described difficulty accessing food markets. Lack of transport and difficult road access were reported in all African countries except Egypt. Some mothers also worried about the unhygienic conditions of food stalls and the health consequences for their families.

Mothers in middle and high income countries generally had few concerns about accessing healthy foods.



Image: Ghana ©UNICEF/UNI191997/Asselin

## Mothers continue to bear the burden of ensuring healthy diets

One in four mothers reported they lacked the time to access foods and prepare healthy meals for themselves and their children because of the pressures of work both outside and within the home. Mothers said they lack support from other household members and are therefore often too tired from work to access healthy ingredients or prepare nutritious meals. Most mothers devoted the time they did have to preparing food for their child rather than themselves.

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“Mothers bear the burden of all efforts towards making their children's diet more nutritious [and] perceived it was their job to ensure that their child ate healthy food.”

(Nutritionist, urban India)



**“ I have to work so [I do not] have enough time. I prefer to feed baby healthy food and I will eat just quick grab and go foods because eating healthy and preparing meals is costly and time consuming.”**

(Mother, urban USA)

Image: ©UNICEF China/2019/Li Manwei, Ma Yuyuan

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# INTRODUCTION



**The first 1,000 days, from conception to age two, is a critical period for growth and development, and a period when diet quality is more important than at other times of life.<sup>(1)</sup> Children's nutritional needs are unique, and uniquely important in laying down the foundations of healthy growth and development.**

However, as *The State of the World's Children 2019: Children, food and nutrition* reported, malnutrition – in the forms of stunting, wasting and overweight – means that globally one in three children are not growing well.<sup>(2)</sup> Less visible, but just as worrying, is the extent of the 'hidden hunger' due to deficiencies in vitamins and other essential nutrients, which affects at least one in two children. In combination, all these forms of malnutrition gravely limit children's physical and intellectual potential, rob them of their vitality, perpetuate inequality across the generations and add to the global burdens of communicable and non-communicable diseases.<sup>(3)</sup>

Sadly, while there has been some progress in addressing malnutrition in recent years, the world is still far off meeting globally agreed targets. Progress has been further undermined by the COVID-19 crisis, which has increased rates of household poverty and food insecurity, disrupted essential nutrition services and supply chains, and led to sharp increases in food prices.<sup>(4)</sup>

How can the world meet this malnutrition challenge? There has been a growing consensus in the nutrition community in recent years around the need to focus on food systems – or the sum of activities and factors involved in producing, processing, distributing, preparing and consuming foods. When it comes to the nutrition of children in their first 1,000 days, the ways in which mothers interact with these complex food systems is vital. This reflects the reality that, globally, mothers continue to carry the primary responsibility for child care and feeding. Understanding mothers' experiences in providing food for their children, as well as ensuring a nutritious diet for themselves, is therefore critical to addressing all forms of malnutrition.

It was this thinking that lay behind the planning and implementation of an unprecedented series of workshops around the world in 2019 as part of the research for UNICEF's flagship report, *The State of the World's Children 2019: Children, food and nutrition*. With the generous support of UNICEF Country Offices and National Committees, over 500 mothers from 18 countries participated in workshops designed to gather information about their food and nutrition practices in diverse and engaging ways. This companion report presents findings from the workshops (a separate report, "Food and Me", presents findings from a parallel set of workshops carried out with adolescents).

The quality of a young child's diet is critical for growth and development.



Image: ©UNICEF Ethiopia/2019/Mulgeta Ayene

**This study aimed to:**

- canvass and represent the views of a range of mothers on their access to and knowledge of food and nutrition
- investigate mothers' experiences and aspirations for their child's, their own and their family's consumption practices
- identify commonalities and divergences between mothers' knowledge and experiences in different settings.

The mothers' mean age was 25 (range 17 to 42 years), and their children were on average 15 months old (range two to 48 months). Mothers worked individually and in facilitated groups to describe what they and their child ate and drank on an average day. They talked about breastfeeding and why they used breastmilk substitutes and explained what first foods they introduced and who influenced these decisions. Mothers identified what they thought were healthy and unhealthy food and drink for their children and themselves and explained the influences on what their child consumed each day.

This report firstly explains the data gathering and analysis methods used to document and interpret mothers' insights and perspectives on their nutrition and that of their children. It then outlines key findings, noting commonalities and key differences between mothers' experiences in different countries, and makes recommendations to guide future policy and programming. We hope that policymakers, NGOs and professionals working with mothers and their children will draw on these rich understandings of children's and mothers' diet and nutrition practices to support the development of new knowledge and interventions around the world.



Image: ©UNICEF Egypt/2019/Rehab Khaled Eldail

# BACKGROUND



Image: Niger © UNICEF/UNI116106/Pirozzi

## A child's nutritional trajectory commences during fetal life.



Image: Ghana © UNICEF/UNI190092/Quarmyne

Poor maternal nutrition in pregnancy, especially a lack of critical micronutrients, has multiple, long-term adverse effects on mother and infant health. Babies born to malnourished mothers experience higher rates of prematurity, low birth weight resulting in neonatal morbidity, and mortality and chronic diseases in later life.<sup>(5)</sup>

The wide-ranging benefits of breastfeeding for a child's healthy immune system, brain development and microbiome are well documented.<sup>(6)</sup> Breastfeeding is also important for protecting and improving women's health. Indeed, breastfeeding is considered to be a triple duty action in the context of the nutrition transition.<sup>(7)</sup>

The World Health Organization and UNICEF<sup>(8)</sup> recommend all mothers exclusively breastfeed their infant for the child's first six months to achieve optimal growth, development and health. Thereafter, they should be given nutritious complementary foods and continue breastfeeding up to the age of two years or beyond.

Yet, two out of five children receive breastmilk substitutes in the first six months, either instead of breastmilk or in addition to breastmilk.<sup>(2)</sup> Further, 21% of babies in high income countries (HICs) are never breastfed, compared with 4% in low income countries (LICs) and middle income countries (MICs).<sup>(9)</sup> It is clear that effective systems are not in place to support new mothers to breastfeed.<sup>(10, 11)</sup>

Between the ages of six and 23 months – the complementary feeding period – breastfeeding and access to a diverse range of nutritious foods provide children with the essential nutrients, vitamins and minerals they need to develop to their full physical and cognitive potential.<sup>(1)</sup> Nutritional guidelines recommend the consumption of at least five of the eight food groups, but across the globe many children do not achieve this intake.<sup>(2)</sup>

### What gets in the way of good nutrition for infants, young children and their mothers?

In all parts of the world, families face economic, political, market, social or cultural barriers to providing nutritious diets to infants and young children.<sup>(12)</sup> These challenges are exacerbated in humanitarian situations, where access to nutritious food, clean drinking water and health services is inadequate and caregiver resources are limited. Mothers report many barriers to breastfeeding and providing an age-appropriate diet for their children, including the influence of families and food industry marketing.

Improving children's diets is critical, as children's health is at the foundation of sustainable and prosperous societies. It is paramount to achieving the Global Nutrition Targets 2025, and the 2030 Sustainable Development Goals,<sup>(13)</sup> including Goal 2: to improve nutrition and end all forms of malnutrition.<sup>(1)</sup>

Mothers are critical agents in achieving these goals. This study aims to document their experiences of feeding their children during the first 1,000 days so that their insights can guide the necessary actions to enhance the nutrition of every child, everywhere.

# METHODS



## Mothers' experiences of food and nutrition were collected in workshops facilitated by UNICEF-affiliated partners, following guidelines developed by the Western Sydney University (WSU) research team.

Workshops were based on a 'distributed data gathering' methodology, developed over time by the Young and Resilient Research Centre at WSU and adapted for purpose in collaboration with UNICEF. Distributed data gathering generally involves participants completing workshop-based qualitative activities that explore participants' actual lived experiences. The process is also flexible enough to accommodate individual and/or quantitative activities.

Key to the methodology is a comprehensive implementation framework supporting adaptation and administration of research across countries, communities and cultural contexts. Using distributed data gathering, research that effectively engages participants about their everyday lives in safe and enjoyable environments can be undertaken across broad geographical spreads by the core researchers themselves, in collaboration with local facilitators, by local facilitators acting independently, or even by participants completing self-directed activities.

Local facilitators are given detailed manuals describing the workshop content and process and then take part in online training with the WSU research team. After completion, all workshop data are digitised and uploaded to a secure online repository for analysis by the WSU and UNICEF researchers. The methodology has previously been used in a range of global child and youth-centred and intergenerational projects including *The State of the World's Children 2017: Children in a Digital World*.

### Qualitative workshops

For this research, workshops were completed within a six-week period in May and June 2019, with countries determining their own implementation schedule. The workshops typically lasted four to five hours and included participants who shared a relevant demographic characteristic, such as living in the same community.

Participants completed activities designed to uncover their views and experiences of food and nutrition along with aspirations for their own and their communities' consumption practices. They worked individually and collaboratively in small groups to complete surveys, short-answer questions, creative tasks like drawing or mapping, scenario-based exercises and group discussions. Where possible workshop activities were developed using validated and standardised data collection tools. To measure dietary intake in the previous 24 hours, workshop activity 'everyday food' adapted the 24-hour dietary recall methodology to determine participants' dietary intake. Details of workshops and activities can be found in the SOWC2019 Mothers' Workshop Manual, available online at: [www.westernsydney.edu.au/young-and-resilient/documents/SOWC2019\\_Workshop\\_Manual\\_Mothers.pdf](http://www.westernsydney.edu.au/young-and-resilient/documents/SOWC2019_Workshop_Manual_Mothers.pdf)

### As is common with qualitative methodologies, data and analyses are not generalisable across broad populations.

This report presents data from a descriptive study involving small sample sizes and so the findings do not necessarily reflect broad patterns of behaviour in each participating country. The report is intended to be read as a companion to *The State of the World's Children 2019, Children, food, and nutrition*, and provides rich snapshots and illustrations

UNICEF has an extensive international network of country and regional offices and direct pathways.

of the perceptions and experiences of selective participants. The strength of the workshop methodology is its capacity to focus on and uncover in-depth information about specific themes or issues, utilise data collection mechanisms that interest and actively engage participants, and provide agency to those taking part. The research uncovers interesting and important insights into participants' actual thoughts and behaviours, surfaces the complexities of how and why they make decisions about food and nutrition and showcases some commonalities and points of divergence between participants' knowledge and experiences across the different settings the research was conducted in. Local nutritionists who participated in each workshop were invited to make reflective notes, providing comments about the relevance and effectiveness of activities as well as their impressions of the food and nutrition practices discussed by participants. Nutritionist notes were also considered in the analysis.

### Outreach and partner engagement

UNICEF has an extensive international network of country and regional offices and direct pathways to within-country governmental agencies, communities, organisations and educational centres. These networks are a robust mechanism to connect with local populations about relevant issues and a practical mechanism for engagement and distribution of research materials. Detailed information about the project was shared with UNICEF country and regional offices, and if they expressed an interest in taking part, training about publicising, recruiting for and facilitating local face-to-face workshops was provided.



All facilitators received the detailed workshop guide and participated in a 90-minute training webinar about ethics, recruitment, workshop content and data administration. Facilitators were given opportunities to discuss and ask questions and to make recommendations about tailoring activities for local contexts. Training and materials were provided in English and local facilitators arranged for translation into local languages if required.

## Recruitment and sample

Forty-one workshops, involving a total of 573 mothers, took place in 18 countries: Afghanistan, Australia, Bangladesh, China, Egypt, Ethiopia, Ghana, Guatemala, India, Indonesia, Kyrgyzstan, Mexico, Nigeria, the Philippines, Serbia, Sudan, the USA and Zimbabwe. UNICEF offices recruited a diverse sample of mothers, including those within specific and sometimes highly vulnerable, groups; for example, internally displaced refugees in Sudan. On average, workshops involved 15 participants; however, there was considerable variation in size across countries (attendance ranged from four to 29 participants; see Table 1 below and Appendix 1 for details).

Seventeen countries followed the standard workshop methodology, with participants completing a series of consecutively delivered activities. In Afghanistan workshops took the form of facilitated focus groups in which facilitators discussed questions with participant groups and recorded written answers and observations in a logbook. Workshops were modified in Afghanistan to suit participants' cultural and accessibility requirements. Sites in Afghanistan were within conflict zones, restricting attendance, and participants generally had little formal education or experience in this type of research, so a more 'intimate' focus-group-style process better facilitated their active participation.

**Table 1. Summary of mother/baby participant ages by country**

UN Code	Country	Number of workshops	Number of participants	Mean age of mothers (years)	Mean age of baby (months)
AFG	Afghanistan	2	20	N/R*	12
AUS	Australia	3	46	33.4	27
BGD	Bangladesh	2	30	21.9	12
CHN	China	2	26	32.8	12
EGY	Egypt	2	38	23.8	16
ETH	Ethiopia	2	39	20.9	14
GHA	Ghana	2	40	22.3	14
GTM	Guatemala	2	33	24.0	10
IND	India	2	20	24.0	13
IDN	Indonesia	2	39	25.7	12
KGZ	Kyrgyzstan	2	18	23.1	13
MEX	Mexico	2	27	27.6	21
NGA	Nigeria	2	36	23.4	13
PHL	Philippines	1	19	19.4	10
SDN	Sudan	4	68	25.2	14
SRB	Serbia	3	30	32.1	18
USA	United States of America	2	10	34.0	11
ZWE	Zimbabwe	2	34	23.3	13
<b>TOTALS</b>		<b>39</b>	<b>573</b>	<b>25.2</b>	<b>15</b>

\*N/R = not reported

## Data collection and analysis

### Diet coding using the NOVA food classification system

For activities where participants provided information about their actual, projected or speculative consumption of foods or drinks, food and drink items were coded based on the NOVA food classification system<sup>(14)</sup>. The NOVA system categorises foods according to the extent of food processing (rather than nutrients), to account for the increased intake of industrialised food into daily diets and global food supplies, and distinguishes homemade or freshly prepared dishes from manufactured products.

Foods and drinks were grouped as Unprocessed/ minimally processed, Processed culinary ingredients, Processed foods or Ultra-processed foods and then further classified as:

- foods consumed by themselves (e.g., fruit, nuts, milk)
- main items in a culinary preparation (e.g., vegetables, grains, flours, meat, eggs)
- accompanying items (e.g., oil, salt, sugar, herbs, spices)
- processed and ultra-processed foods ready to consume (e.g., bread, cheese, ham, packaged snacks, soft drinks, pre-prepared frozen dishes, pre-prepared frozen dishes, infant formulas, follow-on milks, other baby products).

NOVA is a validated tool for nutrition and public health research endorsed widely in scientific work by the Food and Agriculture Organization of the United Nations, the Pan American Health Organization and others.<sup>(15, 16)</sup> However, due to the limitations of a large and regionally varied data set, measurement of individual ingredient weighting to determine processing levels was not

possible for this study. Instead, coding to determine the level of processing was based on the NOVA groupings.<sup>(17)</sup> For a detailed list of coding groups, see Appendix 2.

### Infant and Young Child Feeding Practices Diet Diversity Indicator

The following food group classifications were used to assess diet diversity in young children (Figures 10, 11, 12):

- Grains, roots and tubers, starchy vegetables
- Legumes and nuts
- Dairy products (milk, yogurt, cheese)
- Animal proteins (meat, fish, poultry and liver/organ meats)
- Eggs
- Vitamin-A rich fruits and vegetables
- Other fruits and vegetables.

### Analysis

Researchers categorised data blocks (e.g., sentences, words) according to predefined themes – see Table 2. Categorisations and interpretations were then reviewed, discussed and refined. The resulting analyses were summarised and are presented using quotes and other content created by participants, synopses (i.e., core insights and ideas from the data) and charts, graphics and tables depicting key concepts and patterns. In some instances, excerpts from the data have been lightly edited for clarity; for example, minor corrections to spelling or grammar have been made to aid readability and/or to correct transcription errors. However, content has not otherwise been altered. Direct excerpts and quotes include information about their creator where available (e.g., individual/group, age, urban/rural location, country). In some instances, nutritionist workshop notes have been quoted.

“If I had money, I would purchase and prepare food as a mother [should].”

(Mother, rural Guatemala)



Image: ©UNICEF Guatemala/2019/Escobar

**Table 2. Themes used in mothers' data analysis**

Topic	Activities	Themes
My child's feeding journey	My baby's first foods and drinks	Breastfeeding, breastmilk substitutes and prelacteal feeds First foods Mothers' diet in pregnancy
What my child and I eat on an average day	An average day's food/drink Wish list foods	Children and mothers' dietary intake Perceptions of nutrition and healthy food Preferred food Discretionary foods
Family influences	Who's in your household?	Influences on feeding baby Influences on healthy eating
Food outside the home	Getting food/drink outside my home	Access/availability of food and drink for mother and baby outside the home Food in the community
Information about feeding baby	Where do I get information?	Sources for information about breastfeeding and complementary feeding Sources for information about healthy food for children
Obstacles to feeding my baby	Obstacles and workarounds	Barriers and workarounds to healthy eating for mothers and babies
A typical meal for two-to-five-years olds	Feeding my two-to-five-year old child	Common feeding practices for toddlers
The family meal	The family meal	Influences on healthy eating and lifestyle Food culture/habits Food rules Food preparation (safety, hygiene)

The NOVA system coding generated numerical data about the nature of the foods and drinks participants described in workshop activities. Participants also completed a short survey about food and drink consumption. Along with the collection of basic demographic information, the NOVA coding and survey provided data for simple statistical analyses and comparisons between relevant groups (e.g., food groups, country).

## Ethics

The research received ethics approval from WSU's Human Research Ethics Committee (Approval no. H11101).

As research activities were conducted internationally and involved mothers from a wide range of age groups and socio-cultural contexts, the research team was particularly mindful of safeguarding participants' wellbeing, especially for members of vulnerable groups. Key strategies included appraising the potential risk that particular groups could be excluded and developing research activities that were easily accessible, appropriate and safe for participants across diverse countries and cultures. A key tactic for ensuring safe and enjoyable participation was to liaise closely with UNICEF offices and local facilitators about the project. Facilitators were selected based on their experience working with participants in group settings. The detailed workshop guide included recommendations about ethics and recruitment, scripts to guide facilitation, feedback templates and activity materials. Before they were finalised, activities and processes were refined based on feedback from UNICEF offices. Local facilitators had some discretion over activity implementation, and key activities could be customised for specific cultural contexts.

**“The mothers were very engaged and actively shared with each other and with us their thoughts and practices on how to feed their babies. The level of participation was indeed out of our expectation.”**

(Nutritionist, rural China)

# KEY FINDINGS

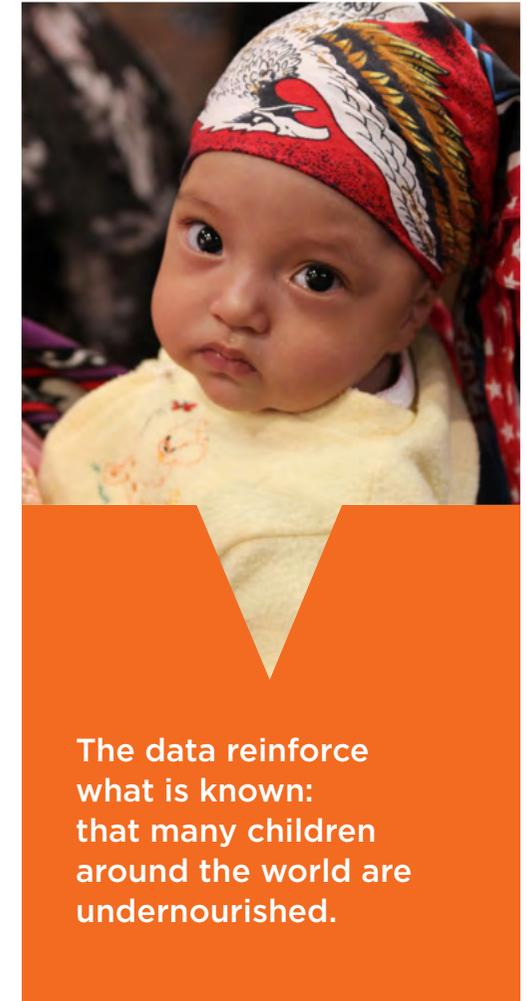


**This report describes children's and mothers' diets in the 18 participating countries, mothers' access to and knowledge of food and nutrition, and mothers' experiences and aspirations for their own, their child's and their family's consumption practices.**

The findings are presented in two sections. Section 1 reports on the quality of young children's and mothers' diets, including breastfeeding patterns and first foods. The findings highlight commonalities and differences across participating countries, but overall the data highlight that the quality of diets for young children and mothers are sub-optimal.

**The questions is: why, albeit with some improvements, are we continuing to see poor nutrition in children and mothers?**

In Section 2 of the report, participating mothers offer their perspectives on the key drivers of poor feeding practices in infants and young children. These drivers relate to their and their families' individual knowledge and perceptions about healthy and unhealthy food and nutrition and how they managed the food preferences of their child. Mothers' decisions were impacted by limited financial resources as well as the prohibitive costs of fresh or healthy foods. In addition, factors such as negative family influences and time pressures impacted on food choices mothers made for their children and themselves.



**The data reinforce what is known: that many children around the world are undernourished.**

Image: ©UNICEF Guatemala/2019/Escobar

## Section 1. Food and nutrition: the quality of young children's and mothers' diets around the world

This section focuses on what infants, young children and their mothers consume, including breastfeeding patterns, the use of breastmilk substitutes and prelacteal feeds, the introduction of first foods and the quality of diet of children aged six to 23 months. The final part describes the quality of the mothers' diets during and following pregnancy.

### Feeding babies: breastfeeding, breastmilk substitutes and prelacteal feeds

#### Breastfeeding around the globe

Optimal breastfeeding practices, including initiation within an hour of birth, exclusive breastfeeding to six months, and continued breastfeeding until at least two years of age,<sup>(18)</sup> confer many benefits to children and their mothers.<sup>(7)</sup>

In this study, the vast majority (90.5%) of mothers commenced breastfeeding at birth or soon after,<sup>1</sup> with little variation across countries. A small number (8.3%) indicated they started breastfeeding within a week of birth, and of those the majority were from Ghana and Australia. Only eight mothers (2%) reported that their child never had breastmilk.

<sup>1</sup> Mothers only reported whether they commenced breastfeeding at birth, and not whether that was within the first hour of birth.

#### Breastmilk substitutes

Almost half of mothers reported introducing breastmilk substitutes, either in addition to or as a substitute for breastfeeding, by the time their baby was six months old. Of those who had introduced breastmilk substitutes, one in five did so at birth, which is a major risk factor for failure to establish lactation.<sup>(19)</sup> The largest increase in the number of babies receiving breastmilk substitutes occurred between four and six months (see Figure 1).



Image: Ethiopia © UNICEF/UNI183051/Nesbitt

**Figure 1. Proportion of babies receiving breastmilk substitutes**



\* Note: no mothers in the study reported introducing breastmilk substitutes after 10 months of age

The practice of introducing breastmilk substitutes from birth was reported by some mothers from Egypt and Indonesia. Between birth and two months, a few mothers in each of India, Bangladesh, Serbia and Mexico and among immigrant women in Australia had also introduced breastmilk substitutes. At age four months this practice increased, particularly in Bangladesh, where almost three in five mothers introduced breastmilk substitutes; Nigeria (two out of five); and Ghana (one third). By age six months, breastmilk substitutes had been introduced by three quarters of mothers from Nigeria and Bangladesh and half of mothers in most other countries.

### Duration of breastfeeding

One in three mothers were still breastfeeding their babies (average age 13 months), either exclusively or partially, when the workshops were held. Notably, in India and Ghana, approximately 85% and 70% of mothers, respectively, were still breastfeeding their babies at this time.

Of those who had ceased breastfeeding, 23% had done so by the time their child was age six months and 72% by age eight months (see Figure 2). No country showed higher or lower rates of breastfeeding cessation prior to six months.

All the participating mothers in Bangladesh and Indonesia had ceased breastfeeding by the time their baby was eight months old, as had two thirds of mothers in Egypt.

**Figure 2. Timing of breastfeeding cessation**



Mothers' perceptions of the recommended duration of breastfeeding varied. For example, mothers in Afghanistan and Zimbabwe emphasised they would continue to breastfeed for two years, while in Mexico, mothers reported that breastfeeding (either exclusive or any breastfeeding) should continue until age six months, after which it was less important.

**Breastfeeding should last for six months; after which time it does not provide enough for the growing child.**

(Mother, urban Mexico)

**A mother should breastfeed for two years. That is what I will do.**

(Mother, rural Zimbabwe)

Nutritionists' perceptions were similar regarding how mothers understood and practised breastfeeding.

**Mothers generally seemed to have very good awareness of the benefits of breastfeeding and knew that children should be exclusively breastfed for the first six months after birth.**

(Nutritionist, urban China)

However, whilst advice to breastfeed exclusively until six months was heeded by some, it was not accepted wisdom for others. For example, only two in eleven mothers in the rural workshop in China exclusively breastfed until age six months. In Mexico the nutritionist observed that while breastfeeding until six months was widespread, exclusive breastfeeding was not.

**The mothers start feeding their babies with solids foods or formula around three months.**

(Nutritionist, rural Mexico)

These breastfeeding patterns and beliefs align with research in China<sup>(20)</sup> and Mexico,<sup>(21)</sup> where community beliefs reinforce the view that breastmilk is insufficient for the baby in the first six months.

Mothers in HICs such as Australia and the USA typically report shorter breastfeeding duration than mothers in LICs and MICs.<sup>(9)</sup> In this study however, all mothers in the USA were still breastfeeding their babies, which were ten months old on average. In Australia, many mothers were immigrants from cultures with strong support for breastfeeding.

## Prelacteal feeding

Prelacteal feeding – that is, giving newborns liquids or foods other than breastmilk before breastfeeding is established – is common in many countries,<sup>(22–25)</sup> putting at risk the proper establishment of lactation.<sup>(19)</sup>

In this study, 25% of mothers reported they introduced liquids other than breastmilk or breastmilk substitutes to their baby at birth or within the first week after birth. Water was the most common liquid, reported in Zimbabwe, Bangladesh, Egypt, Nigeria, Mexico, Sudan and Serbia. Mothers in Serbia, Mexico and Guatemala gave tea; and mothers in Bangladesh, Sudan and immigrant mothers in Australia gave their baby milk.<sup>2</sup>



**The high proportion of infants receiving prelacteal feeds and breastmilk substitutes from birth and within the first weeks is worrying, particularly because these infants come from countries that carry the burden of stunting and wasting.<sup>(2)</sup>**

<sup>2</sup> In this activity, most mothers wrote 'milk', with some indicating this was powdered or animal milk.

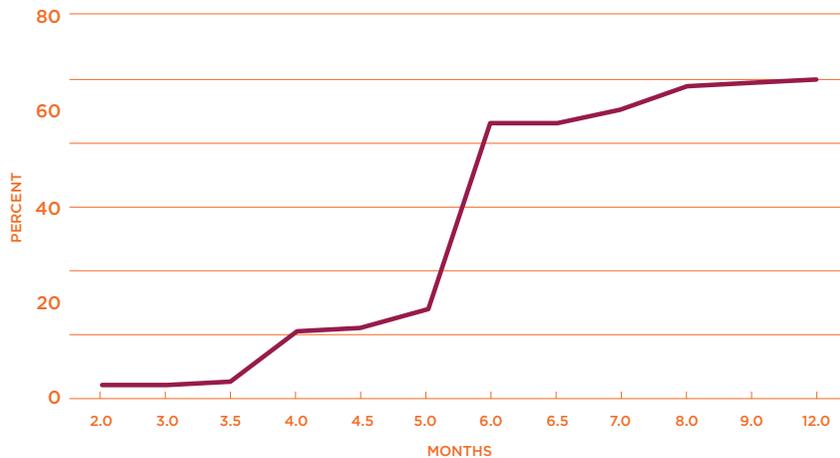
## Introduction of complementary foods

Globally, many children receive their first foods too early or too late, are not fed frequently enough or receive food of inadequate quality.<sup>(26-28)</sup> This study explored the timing and type of food and drink that infants were introduced to in their first eight months.

### When first foods and liquids were introduced

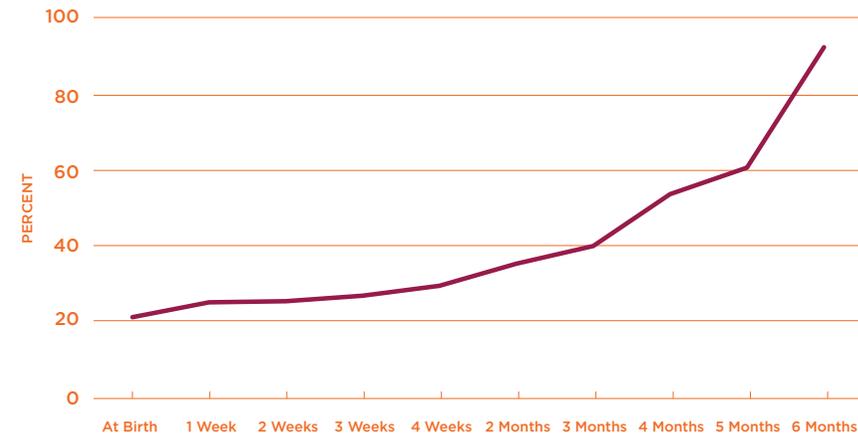
The study found that the majority of infants were introduced to first foods at around age six months (see Figure 3). A small number were offered first foods prior to four months, and at four months one in five were receiving first foods. Variation was reported by mothers participating in the workshops. For example, participating mothers from Egypt introduced infants to foods in the first two months and mothers from Afghanistan offered first foods as late as age 15 months.

**Figure 3. Timing of introduction of first foods**



Liquids other than breastmilk or breastmilk substitutes were introduced earlier than food and increased over the first months of life, with 54% of infants introduced to other liquids by age four months and 92% by age six months (see Figure 4). Of mothers who introduced other liquids to their infant under one month, 4% indicated they had ceased giving other liquids by three months.

**Figure 4. Proportion of babies introduced to liquids other than breastmilk and breastmilk substitutes**



Some mothers elaborated on the timing of the introduction of first foods. In Serbia, most reported that age six months was the best time, although it appears these mothers commonly introduced first foods between four and six months.

In urban India, mothers reported that the usual practice was to give first foods between seven and nine months. In contrast, in Australia one immigrant Indian mother implied she had moved away from this practice on the advice of her doctor.

**I did not offer the first meal before sixth month.**

(Mother, urban Serbia)

**I just start with the solids at around four months, that's what the doctor said, but with the breastfeeding, that will continue.**

(Immigrant mother, urban Australia)



Image: ©UNICEF Zimbabwe/2019/Gwatiwa

In China the nutritionist reported that first foods were generally offered at six months. However, some mothers indicated that, consistent with responsive feeding principles,<sup>(27)</sup> this decision depended on the child's developmental stage and their readiness, but was around six months.

**“ I was planning to give food at five months of age, but actually it was delayed to six months, because she was a bit fussy. ”**

(Mother, urban China)

Some mothers in rural Afghanistan delayed introducing first foods till twelve months and even as late as 15 months. In Kabul, mothers were more inclined to start first foods at eight months.

**“ I started giving solid foods to my baby at the age of one year as at this age, child needs more than breastfeeding to become stronger. It helps her bone to become stronger. ”**

(Mother, rural Afghanistan)

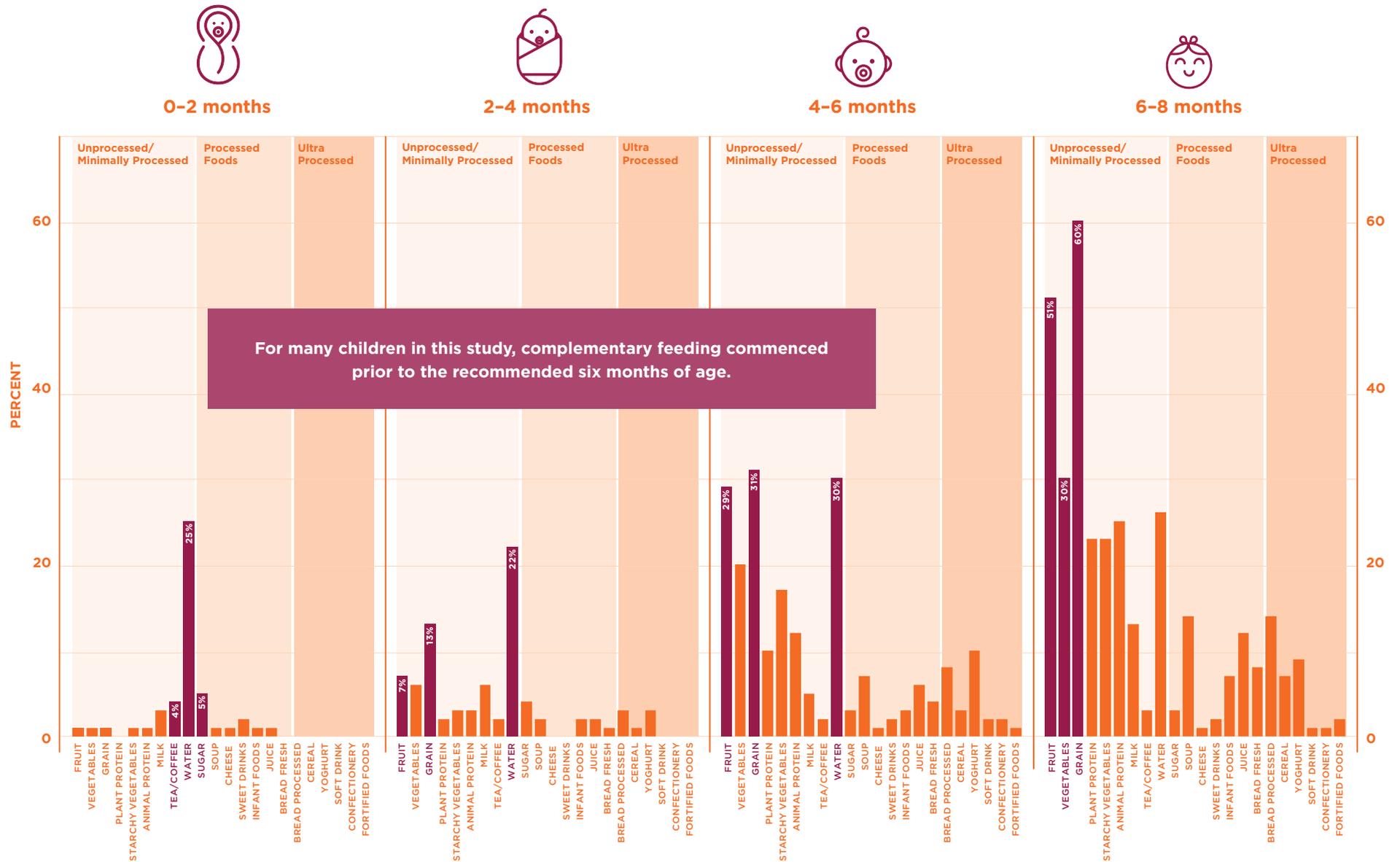
**“ I gave food to my baby at eight months such as: liquids and good foods five times per day. ”**

(Mother, urban Afghanistan)

### **What first foods were introduced**

This subsection describes the first foods that infants were introduced to, from birth to eight months (see Figure 5). Only seven mothers introduced first foods to their infant before age two months. Concerningly, in Egypt four out of 38 mothers introduced five types of unprocessed foods as well as ultra-processed sweet drinks at this early feeding stage. Some mothers also gave their baby sugar with prelacteal feeds. For many children in this study, complementary feeding commenced prior to the recommended six months of age.

Figure 5. Foods introduced from birth to eight months under the NOVA processing classification groups



\* Note - Food groups reported in this table are based on the NOVA classification system. See Appendix 2. Crimson bars represent highest occurrences of relevant variables in this study.



### **Age two to four months**

Between two and four months the most common unprocessed foods introduced were grains, fruit and vegetables, with small numbers of infants introduced to starchy vegetables and animal protein. Ultra-processed foods introduced were bread, cereal, sugar and commercial infant foods.

Mothers in this study from Egypt fed their infants a range of unprocessed food as well as processed bread. Participating mothers in Guatemala, Ghana, Zimbabwe and Nigeria used ultra-processed pre-prepared infant foods. Some mothers introduced liquid yoghurt and soup. Of infants introduced to food and other liquids at this time, 22% were consuming water and 8% commenced consuming tea.

No mothers in the USA, Indonesia, Sudan or Afghanistan reported introducing their child to first foods under age four months.



### **Age four to six months**

Between four and six months, mothers most commonly introduced fruit and grains, followed by vegetables, starchy vegetables, animal protein, processed bread (Figure 5). In Serbia, one in two mothers in the study reported introducing up to five different first foods between four and six months. In Serbia, Zimbabwe, Bangladesh and Guatemala more than three out of five mothers reported that their infant consumed a serving of grains daily. Children from Nigeria and Egypt were mainly introduced to fruit and vegetables at this age. Between four and six months, more mothers introduced water, particularly in Zimbabwe, Ghana, Bangladesh and Guatemala. The countries with the least number of children introduced to foods during this period were in Indonesia, USA, Zimbabwe and Afghanistan. Figure 6 shows that some mothers in the study gave their four-to-six-month-old infants, ultra-processed and processed food and drink.



Image: ©UNICEF China/2019/Li Manwei, Ma Yuyuan

Figure 6. Consumption of ultra-processed food and drink between four and six months



\* Crimson bars represent countries where the highest number of participating children consumed the food, orange represents where consumption was lowest.

It is hard to get my child to eat [healthy food]. Like, he won't eat fruit and basically I will say you can have chocolates or we will go outside to the park if you eat this - basically I do what they like to eat.

(Immigrant mother, urban Australia)



Image: UNICEF Guatemala/2019/Escobar





### Age six to eight months

The majority of children were receiving complementary food and drink between ages six and eight months. As first foods, most were offered unprocessed grains followed by fruit, vegetables, animal protein, plant protein and starchy vegetables. Animal protein as a first food was reported by mothers in Bangladesh, Indonesia, Sudan, Serbia, Mexico and Egypt – most commonly meat, including beef, pork and lamb, followed by fish, chicken and eggs.

Ultra-processed pre-packaged infant foods were used by mothers in India, Zimbabwe, Indonesia, Nigeria and Ghana. Only a few children – in Guatemala and Bangladesh – were receiving fortified foods.

Nutritionists' notes in some countries – in particular, China and Afghanistan – provided more detail on mothers' choices of complementary foods. In China, for example, rice porridge and pasta were reported to be popular foods for young children.

**Rice porridge is a very popular complementary food for infants, which is usually homemade and watery. The rice paste<sup>3</sup> is usually prepared at home using commercially available baby cereals.**

(Nutritionist, rural China)

In this study, three quarters of babies were offered their first foods with a spoon and 19% of mothers reported that babies started eating first foods with their hands. In some countries, babies were fed food or liquid with a spoon prior to age six months, with 17% fed via a spoon by four months and 26.3% by five months.

The finding that almost 30% of infants consumed soft or semi-solid foods prior to age six months aligns with previous research.<sup>(28)</sup> Encouragingly, however, only 5% of mothers introduced first foods under age four months. Findings of this study affirm that there is a need to keep the focus on timely introduction of first foods.



Image: ©UNICEF India/2019/Lambam

<sup>3</sup> Baby cereal.

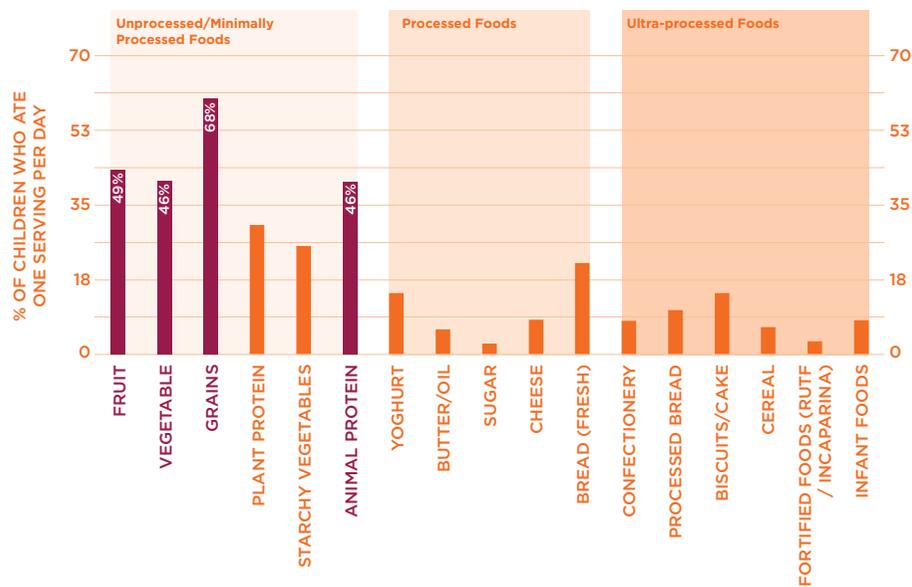
## Dietary intake and diversity for children under two years of age

The quality of a child’s diet directly impacts their growth and development. Nutritional guidelines recommend children aged six to 23 months consume foods from at least five food groups per day.<sup>(2)</sup> This subsection reports on the dietary intake of children aged six to 23 months in the participating countries. Echoing previous studies,<sup>(28, 29)</sup> this study found that many children around the world were fed poor quality diets.

### Children’s dietary intake

For most children, diet quality was poor, particularly in LICs and MICs. Grains were the most commonly consumed food: approximately two thirds of children ate a daily serving (see Figure 7). However, on an average day less than half of children aged six to 23 months across the sample consumed a serving of each of these food groups: fruit, vegetables, starchy vegetables, animal proteins and plant proteins.

**Figure 7. Composition of young children’s diets on an average day**



\* Note - Food groups reported in this table are based on the NOVA classification system. See Appendix 2.

**Our data show that children around the globe are not consuming enough fruit or vegetables to support healthy growth and development.** A daily serving of fruit was consumed by 70% or more of children in only four countries: Mexico, Serbia, Australia and the USA. In contrast, fruit consumption was low amongst participating children in all the African countries other than Zimbabwe. Sixty percent of mothers reported that their child ate at least one serving of fruit per day in Zimbabwe compared with only 20% reporting this in Egypt and 10% in Ethiopia.

Similarly, in only four countries in this study – Serbia, Australia, Mexico, and China – did the majority of children consume at least one serving of vegetables. Ghana was the only African country where mothers reported more than half of children consumed vegetables daily. This contrasted with less than one in six children in Egypt, Ethiopia, Sudan and Zimbabwe, and only 3% in Nigeria. Starchy vegetables were consumed by less than half of children in this study, with the highest reported consumption in Ethiopia. Concerningly, despite the preference for a vegetarian diet in India, only one in three children in this study consumed a serving of vegetables and fruit daily.

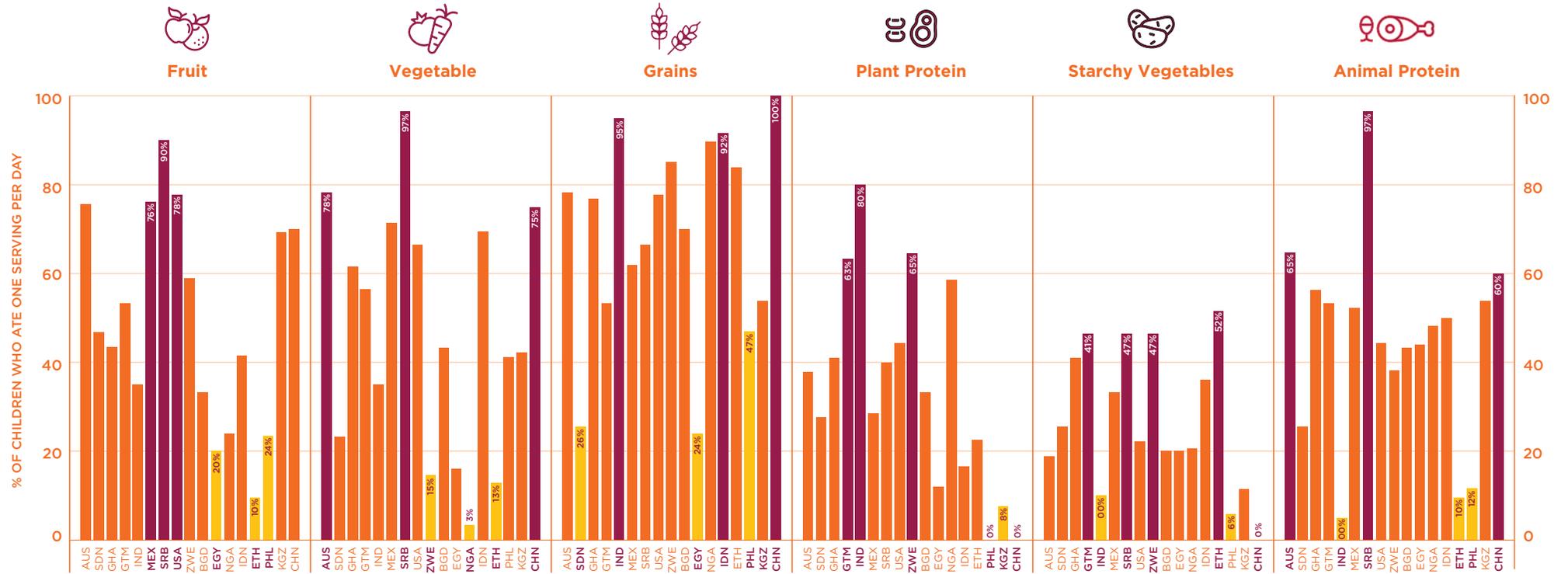
Overall, one in four mothers reported that their child never consumed animal protein. A majority of mothers in Serbia and around three out of five in Australia<sup>4</sup> and China said their children consumed a daily serving of animal protein. Around half of the participating mothers reported that their children ate a serving of animal protein each day in Ghana, Nigeria, Guatemala, Mexico and Indonesia; most commonly meat (beef, pork, lamb or goat), followed by fish, chicken and eggs. All mothers in this study reported low consumption of animal protein; for example, 10% of children in Ethiopia and 12% in the Philippines. These findings are consistent with international research.<sup>(30)</sup>

Due to vegetarian dietary practices, some children consumed more plant proteins than those in other countries; for example, 80% of participating mothers from India reported that their children consumed a serving of plant protein daily.

Mothers said grains were the food group consumed by a majority of children (60%) daily (see Figure 10). While unsurprising, this is lower than the 80% reported by others.<sup>(28)</sup> In some countries where dietary diversity was low, a high proportion of children consumed at least one serving of grains a day, forming a substantive part of their daily nutritional intake. Interestingly, daily grain intake by children in the study was lowest in Egypt and Sudan.

<sup>4</sup> This lower percentage for Australian children reflects the number of Indian immigrant mothers who participated and who indicated they were vegetarian.

Figure 8. Average daily intake of unprocessed/minimally processed food by children, by country



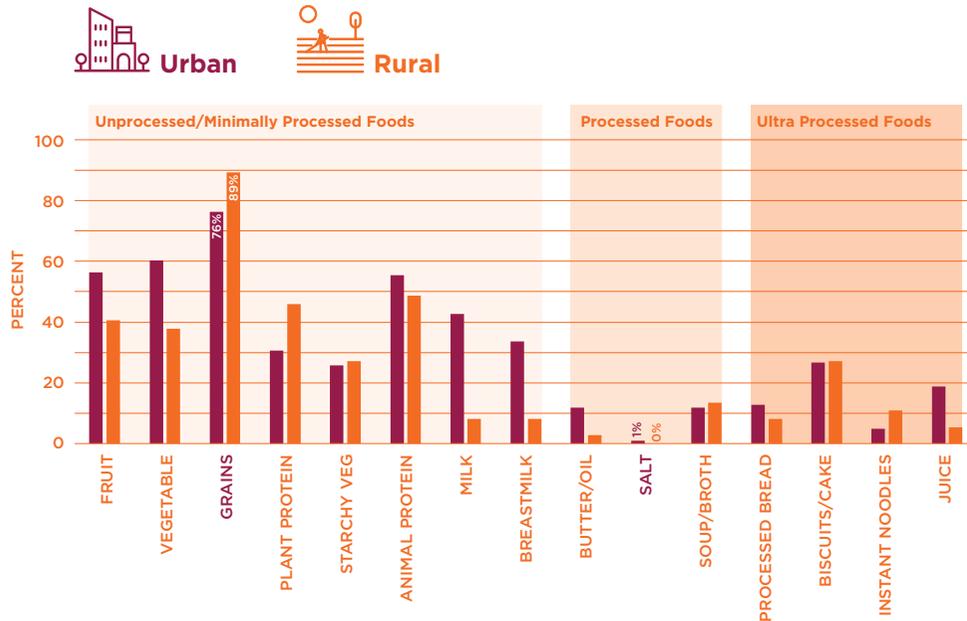
“[We] eat healthy food when we can afford it or it is available. When it’s not, [we] eat whatever is available.”

(Mother, rural Zimbabwe)

\* Note - Food groups reported in this table are based on the NOVA classification system. See Appendix 2. Crimson bars represent countries where participants reported the highest consumption of food groups. Yellow bars represent countries with the lowest consumption of food groups.

Figure 9 indicates that children in urban areas consumed more fruit and vegetables than children in rural areas – although interestingly, mothers reported the converse for their own consumption. It also appears that children in urban areas received more milk as well as breastmilk, aligning with recent research in LICs and HICs.<sup>(31)</sup>

Figure 9. Urban/rural differences in children's average daily diet



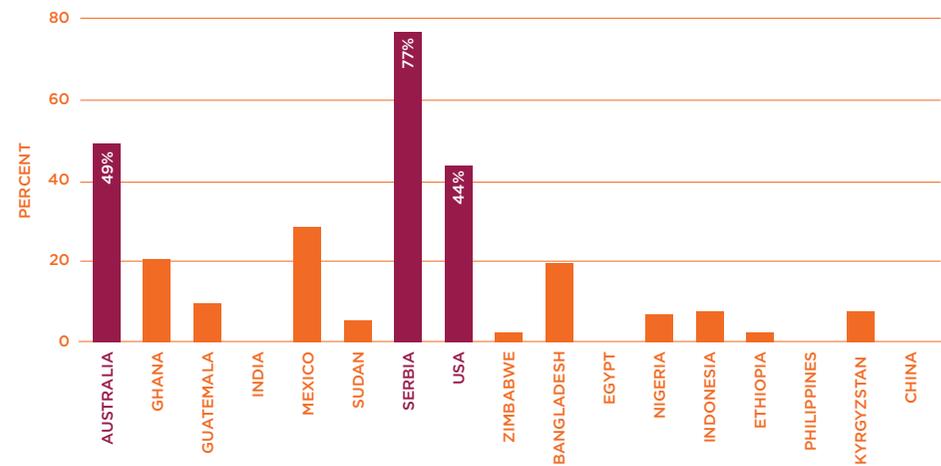
\* Note - Food groups reported in this table are based on the NOVA classification system. See Appendix 2.

### Children's dietary diversity

Young children need to consume a variety of foods in order to meet their nutrient needs and expose them to various tastes and textures.<sup>(1)</sup> There is increasing evidence that the consumption of at least five food groups, including animal-sourced foods, is associated with a reduced risk of stunting in young children.<sup>(30)</sup> Daily consumption of a variety of fruits and vegetables helps ensure adequate intake of essential nutrients.

Mothers across the participating countries reported poor diversity in their children's diets, with only 16% of children consuming five or more food groups per day. The only country where most children (77%) consumed five or more food groups per day was Serbia (see Figure 10). In other participating countries, less than one in two children in this study consumed food from five or more food groups each day, except for India, China and the Philippines, where no children consumed foods from five or more food groups.

Figure 10. Proportion of participating children consuming five or more food groups per day



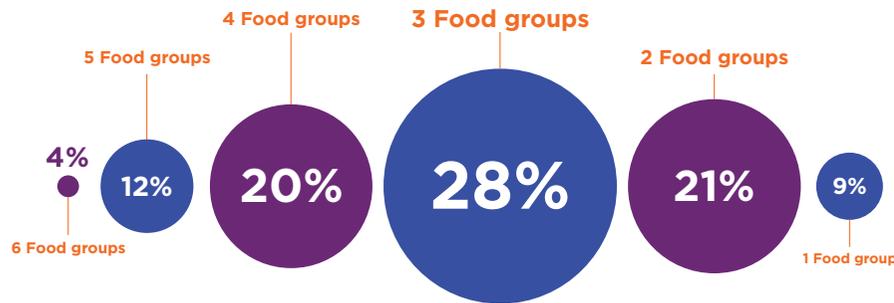
\* Note - data reported here uses the Infant and Young Child Feeding Practices Diet Diversity Indicator. See methods section.

“There is not enough money in our house to buy different foods for my child and even if I did have the money the food is not available.”

(Mother, rural Ghana)

In this study, most children consumed only between two and four food groups daily, which is below the WHO and UNICEF minimal dietary diversity (MDD) recommendations for children to consume five to eight food groups per day to meet their nutrient needs.<sup>(1)</sup> For the 30% of children consuming three food groups, these were primarily grains, vegetables and fruit or animal protein (see Figure 11). It is very concerning that 21% of children in this study, aged 14 months on average, were only consuming two food groups daily, well below the MDD recommendations. Almost all children reported by mothers to be consuming only one food group were under six months of age and were partially breastfed.

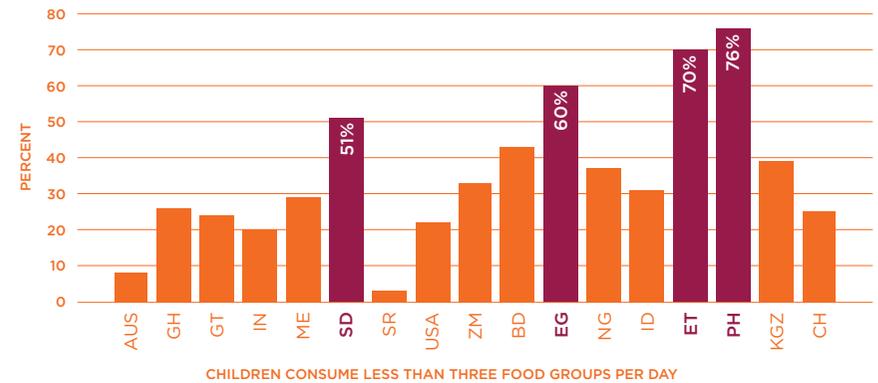
**Figure 11. Number of food groups consumed daily by children**



\* Note - data reported here uses the Infant and Young Child Feeding Practices Diet Diversity Indicator. See methods section.

Figure 12 shows that the highest proportion of children in this study consuming food from only two food groups daily were in Ethiopia, where three out of five children typically ate grains and dairy (milk) or starchy vegetables. Low dietary diversity was also reported for one in three children in Sudan, Egypt and the Philippines where for one in three children consumed foods from only two food groups. In this study, the highest proportions of children consuming only three food groups daily were in India, Nigeria and Sudan. In China, one in two children consumed four food groups.

**Figure 12. Children in the study consuming less than three food groups per day**



\* Note - data reported here uses the Infant and Young Child Feeding Practices Diet Diversity Indicator. See methods section.

A higher proportion of children living in rural areas consumed food from only two or three food groups, compared with children in urban locations. Children in urban locations appeared to have greater dietary diversity, with a higher proportion consuming food from four or five food groups (see Figure 13).

**Figure 13. Urban/rural differences in children's dietary diversity**

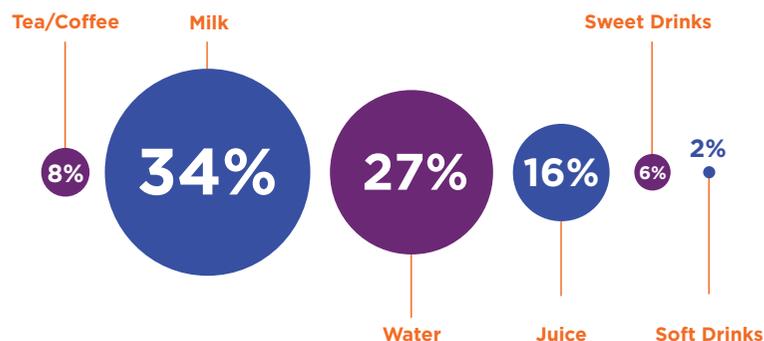


\* Note - data reported here uses the Infant and Young Child Feeding Practices Diet Diversity Indicator. See methods section.

## Children's average daily drink consumption

In addition to breastmilk, beverages form an important component of children's diets from six to 23 months of age. Thirty per cent of children in the study were still being breastfed and some were also receiving infant formula. Figure 14 shows children's average daily consumption of drinks.<sup>5</sup>

**Figure 14. Children's average daily consumption of drinks**



One in three participating mothers indicated that their child, aged between 13 and 24 months, consumed dairy/cows' milk daily, with milk consumption high amongst participants from Australia (76%), Ethiopia (71%) and Serbia (70%). However, in Mexico, Zimbabwe and Indonesia, less than 10% of children in the same age range consumed dairy/cows' milk daily (see Figure 15). Mothers rarely reported the type of milk given, but it appears that participating mothers in Ethiopia and India had access to locally produced milk. In many countries where foods such as meat, eggs and milk are not easily stored, they are only included in a child's diet when and where they are produced.

On average, across the sample only 27% of children consumed water on a daily basis.<sup>6</sup> However, in Mexico, Serbia, the Philippines, China and Bangladesh half the children consumed water daily. While many children and mothers have poor access to clean water and risk exposure to disease in local water supplies,<sup>(2)</sup> it is also the case globally that many children over the age of twelve months do not consume water as their key source of fluid.

<sup>5</sup> Mothers were asked to list the food and drink that their child consumed on an average day. We found that often mothers only reported the food and not the drink consumed.

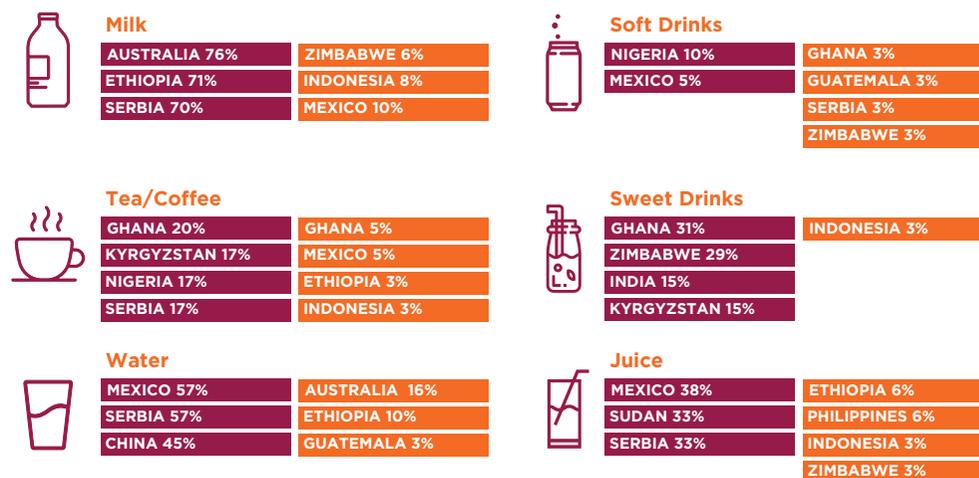
<sup>6</sup> As noted above, mothers did not always list drinks consumed by their child, and may not have thought to include water.

Consumption of drinks that are 100% juice is not recommended until a child is over twelve months and then in only small quantities.<sup>(32)</sup> In this study, 100% juice was consumed daily by around one in three children in Nigeria and Sudan, on average twelve months old, and also in Serbia and Mexico, where children were slightly older, with an average age of 18 to 21 months.

Less than one in ten children consumed sweetened beverages daily, except in Zimbabwe and Ghana, where one in three had sweet drinks daily, including bottled juices, and in Nigeria, where 10% of children had soft drink daily.

This high intake of sweetened beverages in some countries is concerning, as it is a risk factor for poor diet quality overall, leading to rapid weight gain and poor oral health, obesity and type 2 diabetes later in life. High intake of sweetened beverages is a major public health challenge both in LICs and HICs.

**Figure 15. Children's daily drink consumption, by country**



## Processed and ultra-processed food

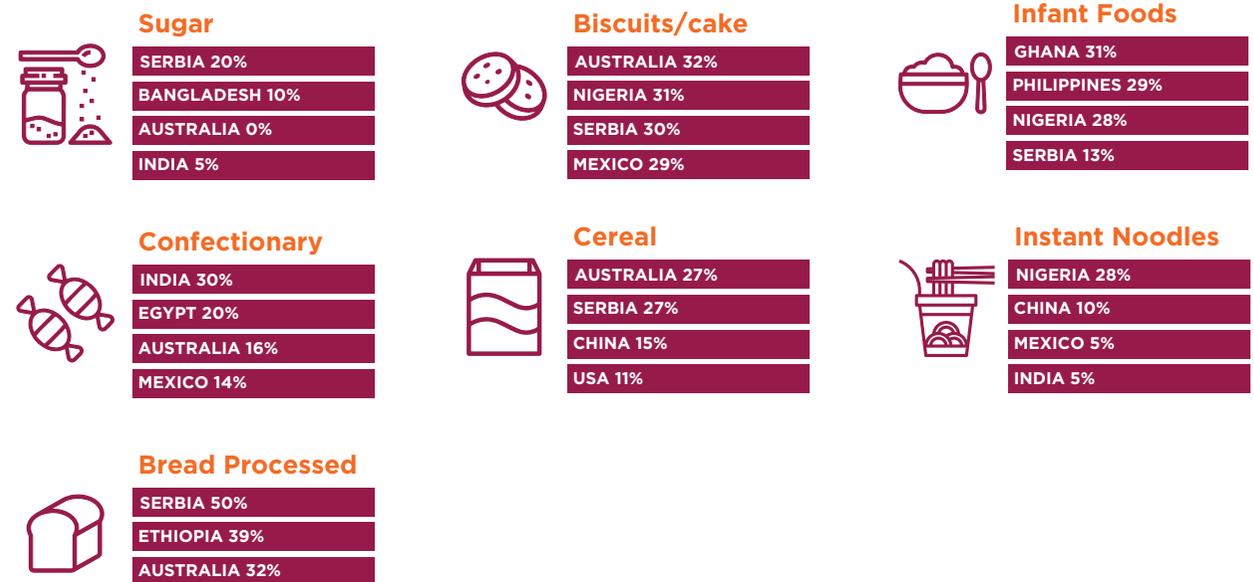
Globally, children's consumption of processed and ultra-processed foods is increasing in countries of all income levels, negatively impacting child health and development. (29, 33, 34)

In this study, less than one in four mothers reported that their child consumed processed and ultra-processed food daily. However, in some countries higher rates of consumption of processed foods were reported, which is concerning (see Figure 16). For example, in this study, although the majority of children in Australia and Serbia had among the most diverse diets, they also consumed more processed foods than children in other countries. Half of children in Serbia and one third in Australia consumed ultra-processed bread daily and one third in both countries consumed biscuits or cakes daily. In India, mothers participating in this study reported almost one in three children consumed confectionery on a daily basis.

High consumption of processed foods also occurred in several African countries, with two out of five children in the study from Ethiopia reportedly consuming ultra-processed bread daily and one in five in Egypt consuming confectionery/wrapped candy daily.

These findings are concerning. In particular, reported low consumption of disease-protective dietary elements, such as fruit and vegetables, combined with the knowledge that a diet high in ultra-processed and processed foods can place children aged six to 23 months at an increased risk of childhood obesity,<sup>(35)</sup> indicates a need for greater nutrition education and counselling for mothers and their children.

Figure 16. Ultra-processed food consumed by children on an average day



Globally, children's consumption of processed and ultra-processed foods and drink is increasing in countries of all income levels, negatively impacting child health and development.

Children's fruit, vegetable, animal protein and dairy intake is inadequate. Grains are important but are often the main or only food source for some children. Paradoxically, in the two countries in this study where dietary diversity was highest – Serbia and China – intake of processed foods was also high.



Image: © UNICEF/UN0202872/Serbia

## Food and drink outside the home

Mothers mapped where they bought food or ate outside the home. Most commonly this was in a local market or supermarket. Some mentioned they ate at a restaurant or shopping mall food court, as well as eating with family and friends (see Figure 17).

In Australia, immigrant mothers ate outside the home, at large supermarkets and takeaway food chains such as McDonalds. By contrast, high-middle income urban mothers in Australia were more likely to go to a café with their child and have a cappuccino with a piece of cake.

**“ Well it is a bit of a habit but when we are out, we often meet a friend at a café. I will usually have a coffee and sometimes a cake to share with my child and he will have a babycino.<sup>7</sup> ”**

(Mother, urban Australia)

Mothers, particularly in the USA, highlighted convenience – where they could easily obtain food and drink.

**“ We eat at the Mexican restaurant 100 metres away. ”**

(Mother, urban USA)

Urban mothers tend to have access to a range of venues for eating outside the home, compared with their counterparts in rural locations.

**“ We go to parks, café and restaurants and to friends’ houses with our children too and also out to these places for celebrations. ”**

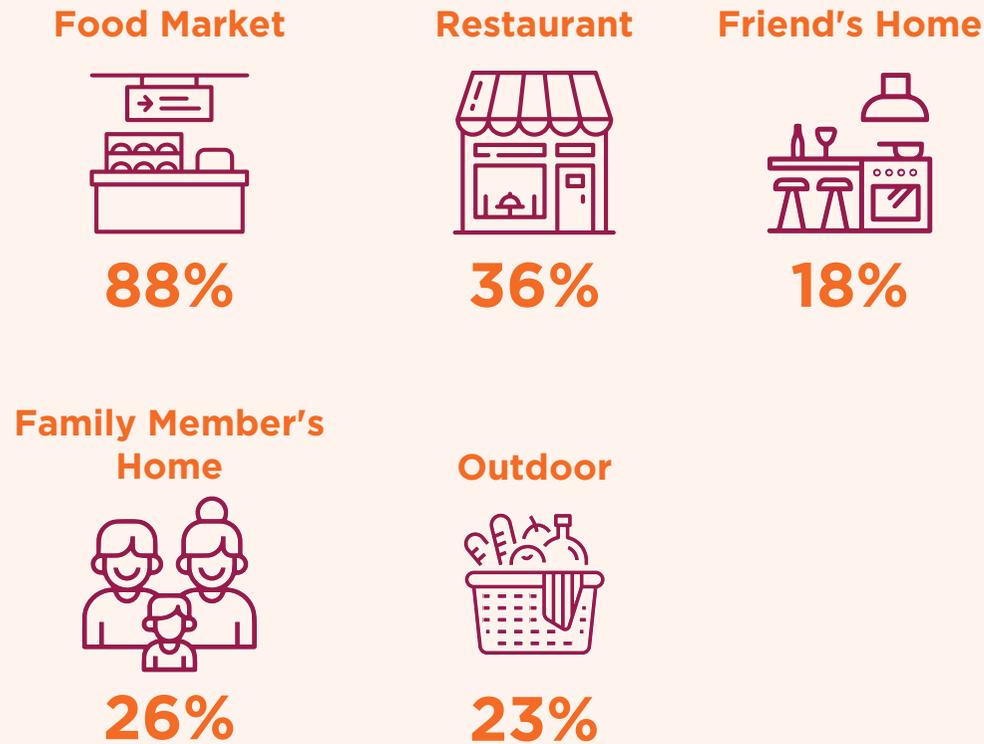
(Mother, urban Serbia)

**“ We do not go out to eat so much, if we go out with our babies, it [is] for a walk, around the village. ”**

(Mother, rural Serbia)

<sup>7</sup> A frothy milk drink.

Figure 17. Places where food was bought or consumed outside the home



“Sometime I desire to taste foods at the bazaar as well. Then I order some foods from bazaar like kebab, mantou,<sup>8</sup> sweets like ones from India.”

(Mother, urban Afghanistan)

Eating outside the home was an opportunity for mothers to treat themselves or their child to foods they otherwise would not consume. This included food specific to their culture and cuisine from other countries.



Image: Bangladesh © UNICEF/UNI210989/Sujan

<sup>8</sup> A white and soft type of steamed bread, similar to a steamed bun, with a savoury or sweet filling.



Image: Ethiopia © UNICEF/UN0140300/Ayene

**My favourite food is street food (meatball soup, fried rice, fried snack, satay); breastfeeding mothers are often hungry and do not think about healthy food.**

(Mother, urban Indonesia)

**I want to eat fatty food; I really want to eat more than just instant and spicy food.**

(Mother, urban Indonesia)

**Sometimes I buy salty snacks and fast food (pizza, pancake).**

(Mother, urban Serbia)

Typically, these are processed foods containing high amounts of sugar and saturated fats. This is illustrated by the list of snacks or 'treats' that mothers in Australia and Egypt listed as food they 'sometimes' bought for their child or themselves.

**Snacks consumed by children and mothers in Australia**

Snacks bought for child	Snacks I buy for myself
- chips – not hot	- yoghurt
- chips and burger	- oranges – fruit
- sushi	- doughnut
- fish and salad	- ice cream
- fresh fruit	- biscuits
- biscuits	- apple juice

In the Philippines, the nutritionist also observed mothers' preferences for the food offered during breaks in the workshops.

**During lunch...mothers opted to take meat dishes (viands) and did not even take portions of the salad/vegetable dishes.**

(Nutritionist notes, urban Philippines)

However, most mothers preferred to take food from home to feed their young children when they were out of the home, as it was healthier and less expensive.

**It is common to see parents bringing along food using thermos cup for young children when going to park or visiting friends.**

(Mother, urban China)

**We usually take fruit or some commercial baby food.**

(Mother, urban Serbia)

Nevertheless, it seems that one factor was also the convenience of ready-to-go packaged foods.

**On-the-go food, sliced avocado, Cheerios<sup>9</sup>, apple slice and pouches<sup>10</sup> are good when out.**

(Mother, urban USA)

In urban Bangladesh, mothers described the food they prepared.

**[If the child is under twelve months] I will prepare some food, such as noodles, fruits, formula and bring this along to feed the child when we are outside.**

(Mother, urban Bangladesh)

<sup>9</sup> An American brand of cereal consisting of pulverised oats, low in protein content.

<sup>10</sup> Premade purées of food in a squeezable packet.

The majority of mothers in Guatemala, Nigeria and Afghanistan typically ate out at the homes of other family members, and in Indonesia mothers said they ate at friends' homes (see Figure 17).

Mothers chose to eat at the homes of friends and family because they believed they could access healthy food options while benefiting from the social engagement with others. Some felt confident stipulating with friends and family that they wished to eat healthy food and reciprocated by preparing healthy food when hosting others.

**Whenever I go to my friend's home, I ask them to cook good foods for me because I am frank with them. So mostly I eat fish in their home. It is the same in the house of my sister. I ask them to make good food for me. When I visit my father's home, they try to make good food for me because I am always their special guest.**

(Mother, rural Afghanistan)

**If I am cooking for people in my house, we always get the vegetables and meat from the market.**

(Mother, rural Afghanistan)

Mothers in Serbia, Australia and Afghanistan noted that they would also eat outside the home on special occasions.

**When there is a wedding in our neighbourhood, we go there and eat food there... When it is Eid, we go to [the] park and when we are travelling to Kabul or to some other city, we eat foods on the way in hotels.**

(Mother, rural Afghanistan)

Mothers in the study thought about how to feed their infant or young child when out and talked about their attempts to provide healthy snack food. But it was also the case that on most trips outside of the house particularly in Australia, the USA and urban Serbia, food was purchased for the child.

## The diets of mothers of young children

Maternal nutrition during the first 1,000 days is critical for child growth and development, particularly from conception to six months.<sup>(2, 36)</sup> This part of the report addresses the everyday diet of mothers of infants and young children.

### Mothers' diets in pregnancy

Maternal undernutrition contributes significantly to child undernutrition in LICs and MICs, and this problem is intergenerational.<sup>(37)</sup> For example, short mothers, especially those who were small for gestational age at birth, are at higher risk of giving birth to low birth weight babies. These children are in turn at higher risk of being stunted and wasted during their early years,<sup>(37)</sup> and for girl children the cycle is repeated as they become mothers. Indeed, short stature of mothers reflects genetic and environmental factors, such as nutritional stresses, experienced throughout their lives,<sup>(37)</sup> especially in the first 1,000 days.

This intergenerational issue has not yet been adequately addressed. Across the globe, many women in pregnancy continue to have poor nutrition, and mothers experience energy and micronutrient deficiencies that contribute to poor birth outcomes.

In this study, almost 70% of mothers consumed at least one serving of vegetables daily in pregnancy (see Figure 18). In Egypt, however, vegetable consumption was very low, with only one in ten mothers consuming a daily serving of vegetables in pregnancy.

Just under two thirds of women consumed fruit, including pineapple and papaya, even though these are among the fruits pregnant women commonly avoid. The lowest fruit consumption was reported by mothers from Zimbabwe, Egypt and Sudan.

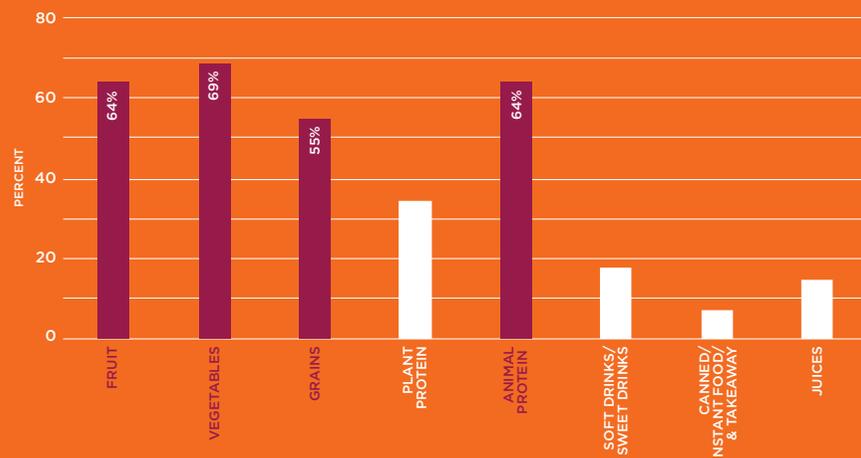
Approximately two thirds of women consumed animal protein daily in pregnancy, including red meat, fish, eggs and chicken, contrasting starkly with their intake of animal protein beyond pregnancy. As expected, mothers from India reported low animal protein consumption.

Some women appear to limit their grain intake during pregnancy, with just over half reporting daily consumption. By contrast, 70% of these women reported daily intake of grains when not pregnant.

One in three women consumed plant protein during pregnancy, most commonly in India, where diets are primarily vegetarian, and also in Guatemala and Mexico, where beans are a core part of diets.

While less than 20% of mothers said they consumed carbonated drinks in pregnancy, the high rate of consumption of these drinks by mothers in Zimbabwe and Nigeria is concerning.

Figure 18. Main foods and drinks consumed during pregnancy



### Mothers' perspectives on diet in pregnancy

Mothers reported eating a range of foods they considered healthy during pregnancy to cater to their growing baby's needs.

**I used to eat meat, turnip, yogurt, dhal<sup>11</sup> during pregnancy. Eating fruits is also very important for health of pregnant woman. It helps both mother and the baby inside the body to become strong.**

(Mother, rural Afghanistan)

**[I] eat a lot of vegetables and milk and eggs to increase calcium during pregnancy.**

(Mother, rural Egypt)

Some mothers reported that they consumed both healthy and unhealthy food and drink together. While their lists detailed a range of healthy foods, they often included sweet carbonated drinks and fatty or fried foods, indicating they were unaware these foods are not healthy in pregnancy.

<sup>11</sup> A term used in the Indian subcontinent for dried, split pulses for example, lentils.

**Rice, fish, lentil, potato mash, mango juice, cold soft drinks, mango, jackfruit, vegetables, anything what was available. I had these foods because they will make the child fatty and healthy.**

(Mother, urban Bangladesh)

**Chepsi<sup>12</sup>; hawawshi<sup>13</sup>; soft cheese; mahshi<sup>14</sup>; vegetables such as bell peppers, aubergines, zucchini, tomatoes, vine leaves and cabbages, stuffed with rice and herbs and sometimes meat. They are a delicacy in Egypt.**

(Mother, urban Egypt)

**I ate rice, fruits, beans, Coke, Fanta, soya milk, Milo, bread, agidi<sup>15</sup> with soup, fufu<sup>16</sup> with okra soup and malt drink, pepper soup.**

(Mother, urban Nigeria)

Indeed, nutritionists often expressed concern about mothers' knowledge of which foods to eat during pregnancy.

**Most mothers did not really know what food is unhealthy for mother and child during pregnancy.**

(Nutritionist notes, rural Afghanistan)

Some mothers in India, Serbia and Indonesia indicated that food in pregnancy included supplementation.

**[I consumed] pregnancy milk and biscuits for the pregnant mother.**

(Mother, urban Indonesia)

<sup>12</sup> Brand of potato chips.

<sup>13</sup> Crispy pita bread filled with minced and seasoned meat.

<sup>14</sup> A dish of vegetables stuffed with ground beef and rice.

<sup>15</sup> A popular breakfast meal in Nigeria, made from corn flour, also known as Eko.

<sup>16</sup> A dish similar to a dumpling and consisting of starchy foods, such as cassava, yams, or plantains.

In contrast, mothers in Guatemala emphasised that they 'did not take tablets' during pregnancy.

**I do not take the [nutritional] supplements during pregnancy.**

(Mother, urban Guatemala)

Some mothers indicated that they were experiencing gestational diabetes, although this did not seem to bother them too much.

**I avoid white bread; sweets; only have small amounts of potato and rice, all according to endocrinologist's advice because I have insulin resistance.**

(Mother, urban Serbia)

**I was insulin dependent and avoided cakes/ fruits/chocolate; soft cheese; cold meat; alcohol; couldn't eat chicken and other meats.**

(Immigrant mother, urban Australia)

Mothers also reported a variety of foods they avoided in pregnancy (see Figure 19). Despite meat being consumed by two thirds of women, almost 40% indicated that they avoided meat; typically, raw meat or cold meat. Some also avoided soft eggs. Almost one in two women listed a fruit or vegetable that they avoided during pregnancy and, because of cultural practices, 17% of women specifically avoided pineapple and papaya. Less than 20% indicated that they specifically avoided energy-dense food and drink, such as sweets, sugary foods, caffeine and energy drinks. Some women avoided foods they considered unhealthy, such as soft cheese.

**Figure 19. Foods and drinks avoided during pregnancy**

Nutritionists explained that women often avoided these foods due to cultural traditions or on their family's advice.



**There are a lot of food related myths prevalent in India. For instance, papaya is a strict no-no during pregnancy. It is considered to cause abortion. Similarly, there is a strong belief around hot and cold foods in many families. Examples of cold foods include curd and rice. Chicken, fish and egg are perceived as hot foods. In winters it is advised to avoid cold foods, while in summers it is advised to avoid hot foods.**

(Nutritionist notes, rural India)

- Overall mothers' diets in pregnancy were poor, although a higher proportion of women consumed vegetables, fruit and animal protein in pregnancy than in the two-year period following pregnancy.
- One in three mothers in Zimbabwe and Nigeria consumed carbonated drink in pregnancy.
- Some mothers did not adhere to recommendations to continue with supplements during pregnancy.
- Mothers with gestational diabetes seemed unconcerned by the condition.



Image: ©UNICEF Zimbabwe/2019/Gwatiwa

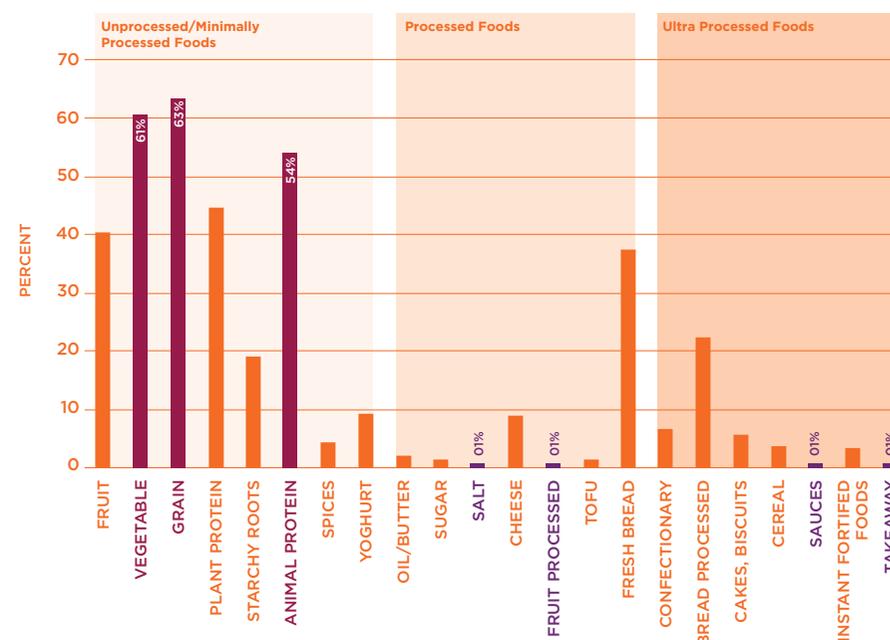
Image: ©UNICEF Serbia/2019/Jovanović

## Dietary intake of mothers

Mothers in the study reported limited dietary intake. On an average day, three in five mothers consumed a serving of grains and vegetables and just over half of mothers consumed a serving of animal protein. Less than half consumed a serving of fruit or plant proteins and less than one in five consumed a serving of starchy vegetables (see Figure 20). Thirty-seven per cent of mothers reported that they consumed a serving of fresh homemade bread and just over one in five had a serving of processed bread.

This overall picture is concerning, especially given many mothers were still breastfeeding. Such poor dietary intake puts mothers at risk of nutritional deficiencies and hidden hunger<sup>(36, 38)</sup> and does not provide mothers with the nutrition they need, particularly during lactation.

Figure 20. Foods consumed by mothers on an average day



\* Note - Food groups reported in this table are based on the NOVA classification system. See Appendix 2.

A majority of participating mothers in only four out of the 18 countries – Serbia, China, the USA and Kyrgyzstan (see Figure 21) – consumed a daily serving of fruit. All mothers in Afghanistan indicated that they consumed a serving of fruit daily. Less than one in five mothers in Ethiopia, Bangladesh and Egypt, and just over one in five in India, consumed a daily serving of fruit.

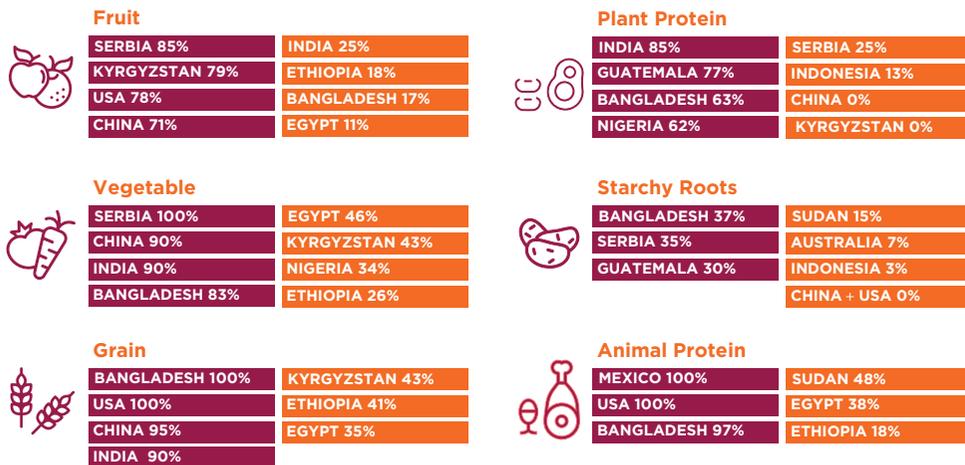
Vegetable consumption was higher than fruit consumption. The majority of mothers in eight countries (Serbia, India, China, Bangladesh, Australia, Mexico, the USA and Indonesia) consumed at least one serving of vegetables daily and often more. Only one in four mothers in Ethiopia consumed vegetables daily, the lowest percentage across the sample. In the other five African countries, daily vegetable consumption ranged between 34% (Nigeria) and 48% (Sudan). The overall low fruit and vegetable intake of mothers in this study aligns with the findings of other research.

Plant protein was consumed by the majority of mothers in India (85%) and Guatemala (77%); primarily pulses, including lentils, soybean, chickpeas and red and black beans. On an average day, plant protein was consumed by around three out of five mothers in Bangladesh (63%), Nigeria (62%) and Ghana (58%), including beans and ground nuts (peanuts, palm nuts).

A serving of animal protein was consumed by all mothers in Mexico and the USA, and most mothers in Bangladesh (97%), and Serbia (90%). Three out of four mothers in China and Kyrgyzstan consumed one serving of animal protein daily. As expected, due to the predominance of vegetarian diets, the lowest animal protein consumption was in India. Less than one in three mothers in Ethiopia and Nigeria consumed meat daily and almost two in five in Egypt. The most common type of animal protein was meat, including beef, goat and occasionally pork. Fish was equally common, followed by eggs and chicken.

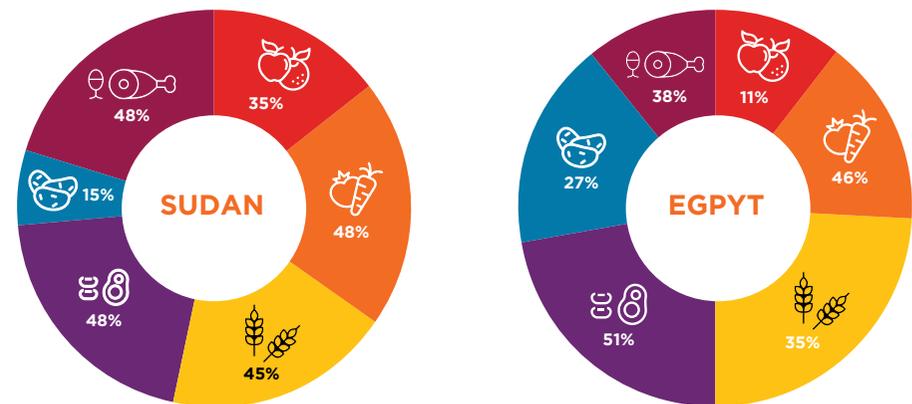
All mothers in Bangladesh and USA consumed grains daily, followed by China (95%) and India (90%). However, consumption of grains was low in some African countries: Egypt (35%), Ethiopia (41%) and Sudan (45%).

**Figure 21. Mothers' average daily food group intake, by country**



Mothers in the study also reported differences in dietary diversity. Figure 22 shows that mothers in Sudan and Egypt had the poorest dietary diversity, with few mothers reporting a daily serving of fruit, vegetables, grains, animal protein or starchy vegetables. This pattern was also seen in the Philippines. In Ethiopia and Nigeria, the majority of mothers had a serving of grains. In Nigeria half had a serving of plant protein, and in Ethiopia half had a serving of starchy vegetables.

**Figure 22. Mothers' daily intake of unprocessed/minimally processed foods as reported from Sudan and Egypt**



**“I cannot eat healthy food because I have no money and my husband has no job.”**

(Mother, rural Sudan)

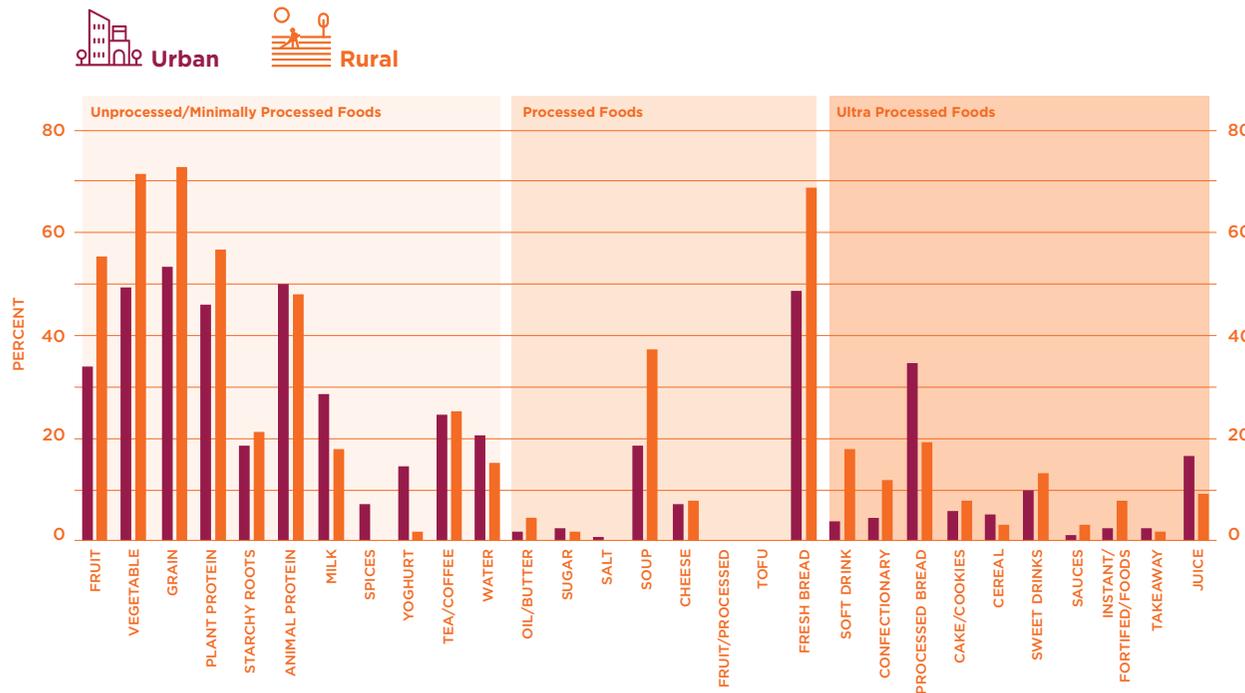
**“I like unhealthy food like fizzy drinks and chips.”**

(Mother, urban Egypt)

## Urban/rural differences

In contrast to some other studies,<sup>(39)</sup> this study found that a greater proportion of mothers in rural areas consumed fruit, vegetables and grains on a daily basis than those living in urban areas (see Figure 23). Mothers in rural areas also consumed more homemade bread and soup. A greater proportion of mothers in urban areas consumed more processed bread and juice compared to rural mothers.

**Figure 23. Urban/rural differences in mothers' average daily dietary intake**



\* Note - Food groups reported in this table are based on the NOVA classification system. See Appendix 2.

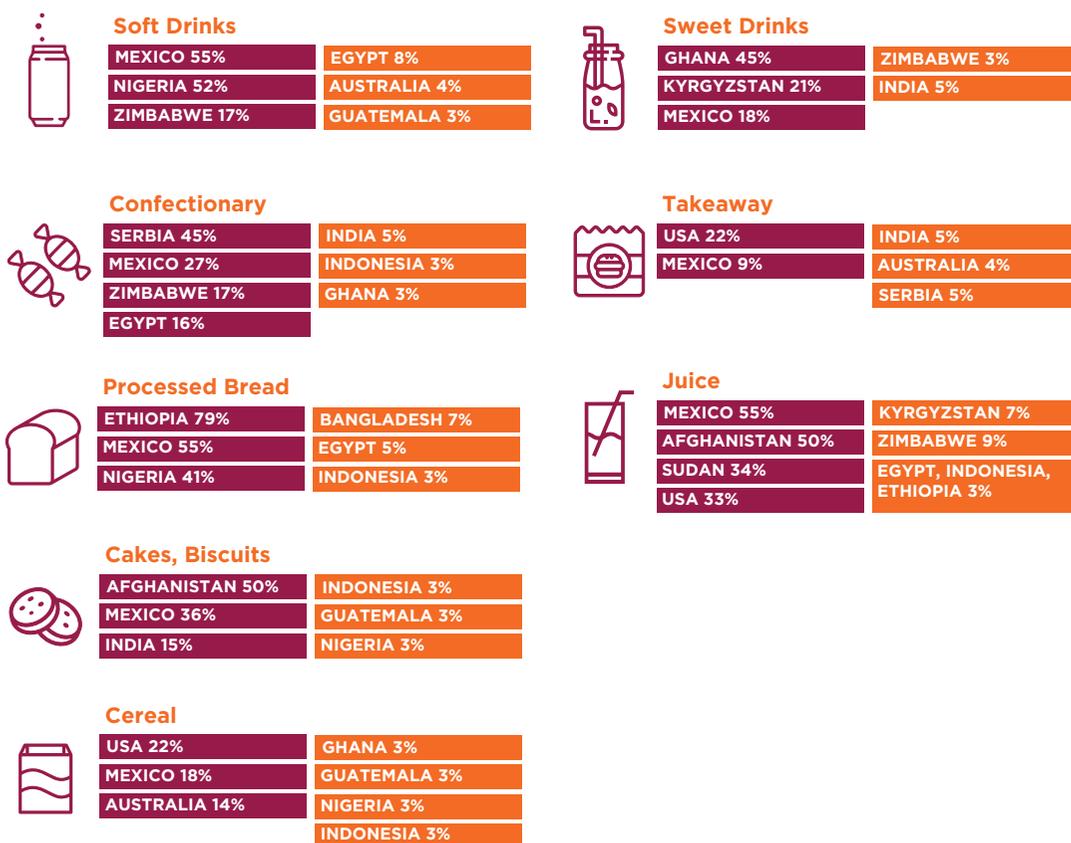
## Ultra-processed food and drink

Beyond pregnancy, just over one in five mothers consumed processed bread daily, with the highest rates of daily processed bread consumption in Ethiopia (80%) and Mexico (50%) (see Figure 24). Less than 10% reported consuming confectionery or drinking juice or soft drinks daily; however, almost half of mothers in Serbia indicated that they consumed confectionery daily. **One in two mothers in the USA ate takeaway food daily.**

Overall, 13% of mothers consumed juice daily, and intake of sugar-sweetened beverages was low, with less than 10% consuming soft drinks or sweet drinks daily. Mothers' highest reported consumption of juice daily occurred in Mexico (55%) and Afghanistan (50%). One in three mothers in Sudan and the USA consumed juice daily. Over half of mothers in Nigeria and Mexico reported consuming soft drink daily. Forty-five per cent of mothers in Ghana consumed sweet drinks daily and 25% in Kyrgyzstan (see Figure 24).

Overall, 13% of mothers in this study consumed juice daily, and intake of sugar-sweetened beverages was low, with less than 10% consuming soft drinks or sweet drinks daily.

Figure 24. Mothers' daily consumption of ultra-processed food and drink, by country



Overall, the diet quality of mothers in this study was poor, particularly in the African countries.

Many did not eat a serving of fruit or animal protein daily, and in some countries consumption of processed food and sweetened beverages was high.

Mothers in Mexico reported the highest consumption of processed food and drink.



Image: ©UNICEF Serbia/2019/Jovanović

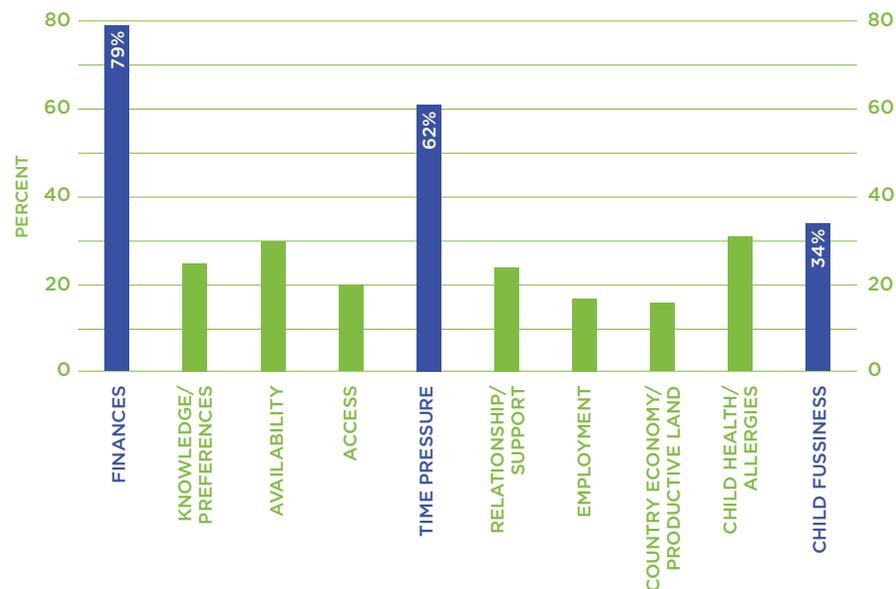


Image: ©UNICEF Nigeria/2019.

## Section 2: Drivers of nutrition in infants, young children and their mothers

Around the world, mothers are primarily responsible for child care. Understanding mothers' perceptions and practices regarding healthy food and nutrition for their children and themselves is critical. However, mothers also report the many obstacles they experience in providing a healthy diet. Obstacles include their knowledge and perceptions about healthy and unhealthy food and nutrition, and how they manage their child's food preferences. Mothers' decisions are also impacted by poverty and limited financial resources as well as the prohibitive costs of fresh or healthy foods. Other factors, such as negative family influences and time pressures, also influence the food choices mothers can make for their children and themselves (see Figure 25).

**Figure 25. Mothers' reporting of key obstacles to a healthy diet for their children and themselves**



\* Note - Blue bars represent highest occurrences of relevant variables in this study.

### Mothers' knowledge and practices related to healthy food and drink for infants and young children

This subsection explores mothers' knowledge and perceptions of healthy and unhealthy food and drink for their infants and young children, and what mothers wish they could feed their young children. Firstly, mothers' perceptions of breastfeeding are discussed, including decisions to use breastmilk substitutes or offer prelacteal feeds. Then their perceptions of foods that are healthy and unhealthy for their children and themselves are analysed.

#### Breastfeeding perceptions and experiences

In spite of the global promotion of breastfeeding as crucial for the development of their babies, mothers' knowledge of recommended breastfeeding practices varies greatly.<sup>(21, 40)</sup> In this study, overall, mothers demonstrated positive attitudes towards breastfeeding, reporting that breastfeeding is the accepted way to feed a baby.

“Babies should breastfeed a lot.”

(Mother, urban Zimbabwe)

“Nobody helped me [decide to breastfeed]. I knew that I have to breastfeed.”

(Mother, rural Afghanistan)

**“Breastfeeding is normal.”**

(Immigrant mother, urban Australia)

Some indicated that this knowledge is embedded in their culture or is ‘instinctive’.

**“In India there is only one way – breastfeed, we don’t give formula or things like that. Yeah. It is actually part of our culture to feed the baby.”**

(Immigrant mother from India, Australia)

**“Mothers mostly followed their instinct and fed their babies accordingly.”**

(Nutritionist, rural India)

In the majority of countries, mothers had a strong sense of why breastfeeding is important, with a general perception that breastmilk provides all the nutrients a growing baby needs, that it can enhance a baby’s immunity, and that it is safer than preparing formula.

**“I breastfeed as it has everything the baby requires and it is the correct temperature.”**

(Mother, urban Zimbabwe)

**“It is best for my baby, gives more immunity.”**

(Mother, urban Australia)

**“It is more hygienic compared to breastmilk substitutes.”**

(Mother, urban Mexico)

**“Colostrum is...very good; it is like medicine.”**

(Immigrant mother, urban Australia)

Others reported that breastfeeding strengthens the emotional bond between mother and baby, and that there are also economic benefits.

**“The emotional bond between the mother and her baby is strengthened.”**

(Mother, urban Afghanistan)

**“It is common practice for economic reasons, it would be very expensive.”**

(Mother, urban Mexico)

Some mothers, however, said breastfeeding was difficult, and they worried that they did not have enough milk or that it was not nutritious enough. Some had difficulties with attachment. These concerns were primarily raised by mothers in China, Mexico, Australia, and the USA.

**“I want to continue breastfeeding but I don’t have enough breastmilk.”**

(Mother, rural China)

**“It was so difficult at the start, I had very sore, cracked nipples and he would not latch on properly, I then got mastitis.”**

(Immigrant mother, urban Australia).

Research spanning over 20 years shows that mothers continue to perceive they have insufficient breastmilk supply to exclusively breastfeed.<sup>(19, 20, 41, 42)</sup> In this study however, mothers in Serbia, Afghanistan, Egypt, Ethiopia, Ghana, Nigeria, Sudan and Zimbabwe rarely reported such difficulties.

To deal with breastfeeding difficulties, some mothers modified their own diets. In rural China, for example, mothers gave up some foods, such as spicy foods, as they believed these were harmful to babies.

**“There is a common belief that some food, such as curry, seafood, hot pepper, would produce internal heat in body, which will make a mother and her breastfeeding baby sick.”**

(Nutritionist notes, rural China)

Mothers in India and Bangladesh and immigrant mothers in Australia consumed Ayurveda herbs to support their breastfeeding.

**“My mother suggests that fenugreek seeds and fennel are very good for breastfeeding.”**

(Immigrant mother, Australia)

Because of breastfeeding difficulties, many women either ceased breastfeeding or introduced breastmilk substitutes.

## Breastmilk substitutes: mothers' knowledge and practices

Many factors influence mothers' decisions to introduce breastmilk substitutes prior to age six months.<sup>(43)</sup> Mothers' concerns about infant weight gain,<sup>(44)</sup> family beliefs, access to formal and informal support, the accessibility and cultural appropriateness of breastfeeding information, and importantly, commercial pressure from formula companies<sup>(24)</sup> are all factors in their decision-making.

In this study mothers reported introducing breastmilk substitutes for many of the same reasons that they ceased breastfeeding. Mothers had concerns that breastmilk provides inadequate nutrition for a growing baby and believed that commercially available infant formula is beneficial for their babies.

**[Infant formula is] nourishing and good for babies.**

(Mother, urban India)

**[They believed that] their breastmilk had inadequate nutrition and they should supplement with formula.**

(Nutritionist, urban China)

Mothers in China, Serbia and Mexico said they used breastmilk substitutes in the days following birth, because breastfeeding was tiring.

**Breastfeeding is very hard work after birth and affects mother's rest.**

(Mother, urban China)

Eleven mothers in the study reported that they returned to exclusive breastfeeding after using formula in the first month.

**My baby only weighed 2,250 grams and the doctors were worried, so he went to the nursery. There he was given formula and to keep his weight up I had to keep giving him the formula but by one month I had stopped that and only breastfed.**

(Immigrant mother, urban Australia)

However, the majority of mothers that introduced breastmilk substitutes very early continued to breastfeed at the same time.

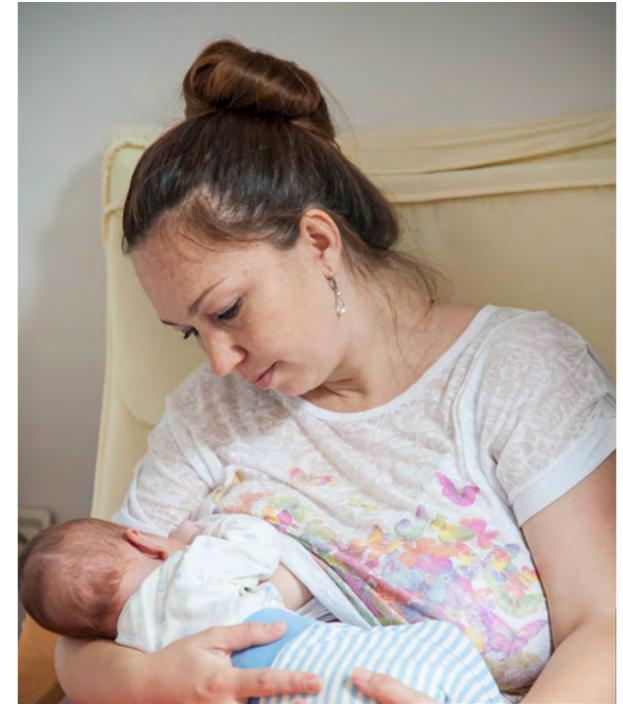
**The mothers had difficulty in the beginning with breastfeeding and decided to introduce the breastmilk substitute very soon after birth to manage this. Most however continued to breastfeed their babies during the first six months, almost exclusively.**

(Nutritionist, urban Serbia)

Some mothers reported that they had to introduce breastmilk substitutes so they could undertake paid work.

**I need to work and so my child must have formula, but the child refuses infant formula.**

(Mother, urban Indonesia)



Overall, while mothers well understood the importance of breastfeeding, far too many did not exclusively breastfeed or abandoned breastfeeding early.

Image: © UNICEF/UN0202895/Serbia

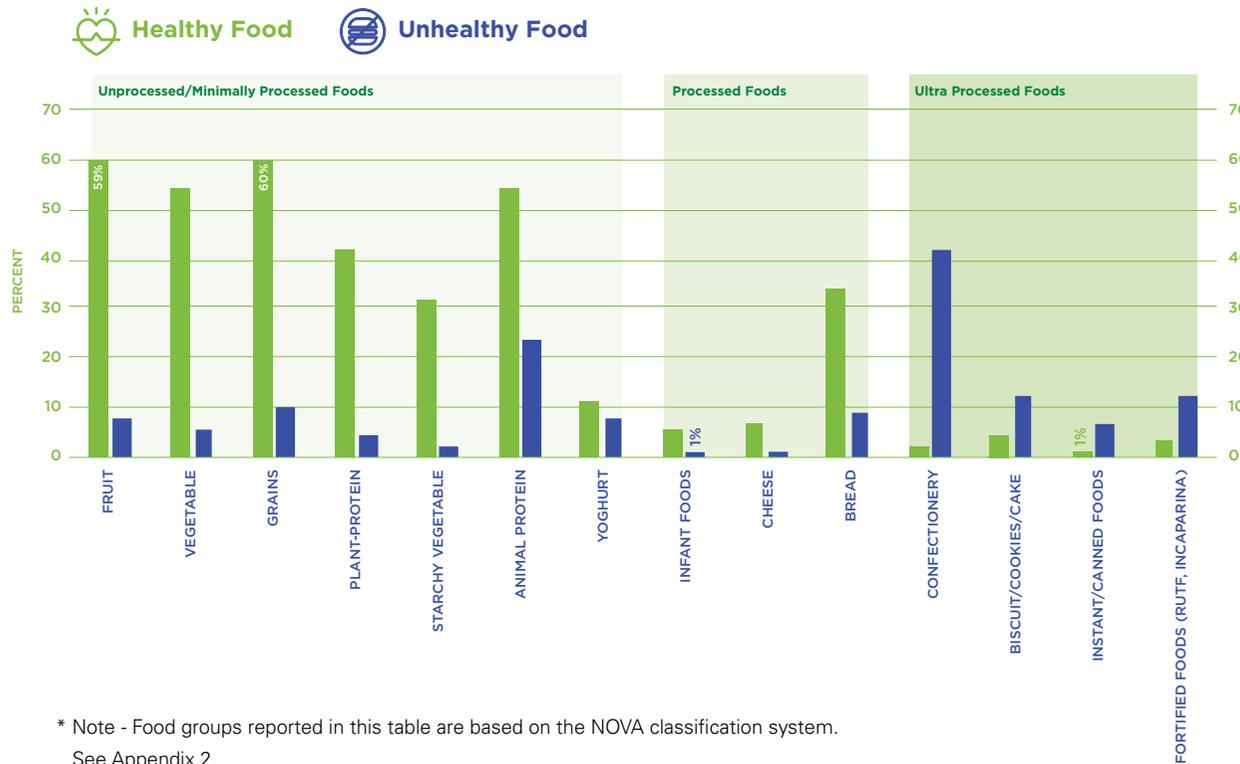
## Mothers' perceptions of healthy food and drink for their children

Mothers' decision-making about what they feed their children is complex. Both the cost and availability of food are major influencing factors. However, mothers' perceptions and knowledge about nutrition are also influenced by social status, preference, meal preparation time and cultural expectations.

In this study, mothers indicated – many of them accurately – whether they thought the food their child consumed on an average day was healthy or unhealthy (see Figure 26). Less than 10% of mothers who listed fruit, vegetables, grains, plant protein or starchy vegetables as part of their child's diet identified these foods as unhealthy.

Almost one in four mothers rated animal proteins as unhealthy, including 60% of mothers in the USA and Serbia, in contrast to one third in India, where more families are vegetarian.

**Figure 26. Mothers' perceptions of healthy and unhealthy foods for children**



\* Note - Food groups reported in this table are based on the NOVA classification system. See Appendix 2.



**Mothers' decision-making about what they feed their children is complex. Both the cost and availability of food are major influencing factors.**

Image: ©UNICEF Egypt/2019/Rehab Khaled Eldalil

Mothers in Afghanistan who described their child's diet overall as 'very healthy' indicated that fresh, home-cooked food is best.

**The healthiest foods are those prepared at home, as well as vegetables and fruits.**

(Mother, rural Afghanistan)

For Mexican mothers, healthy foods provided vitamins and fibre, and for those in Bangladesh healthy foods satiated their children's appetites.

**Give food with fibre so that babies do not strain.**

(Mother, urban Mexico)

**Healthy foods are those that are fulfilling for their babies' tummy for a long time.**

(Nutritionist notes, rural Bangladesh)

Mothers identified a range of foods they believe are healthy, including fruit, and vegetables.

**Egg, vegetable and fruit are healthy because they have nutrition components, vitamin C and much water.**

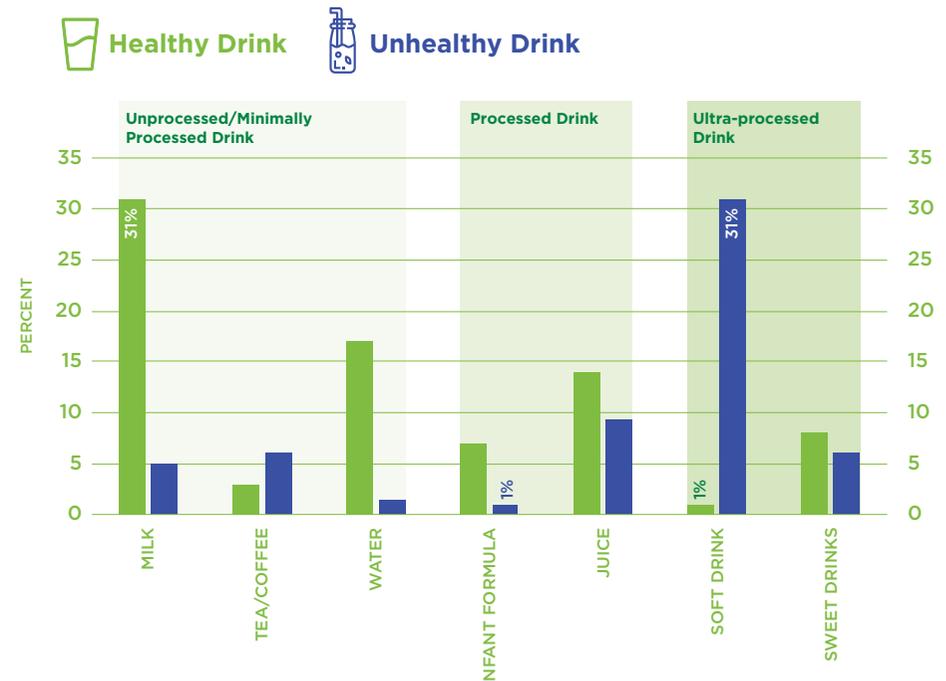
(Mother, urban China)

**I was told to give a lot of vegetables.**

(Mother, urban Egypt)

Of those who listed and rated drinks, one third rated milk (whole or powered) as healthy, and only one in six rated water as healthy (see Figure 27). The perception that water may not be healthy may arise from concerns about the quality of local drinking water and indicates there is scope to raise understanding of both the benefits of drinking milk and the importance of hydration. Very few mothers (1%) rated soft drink as healthy; however, 8% thought sweet drinks were healthy and 14% rated juice as healthy.

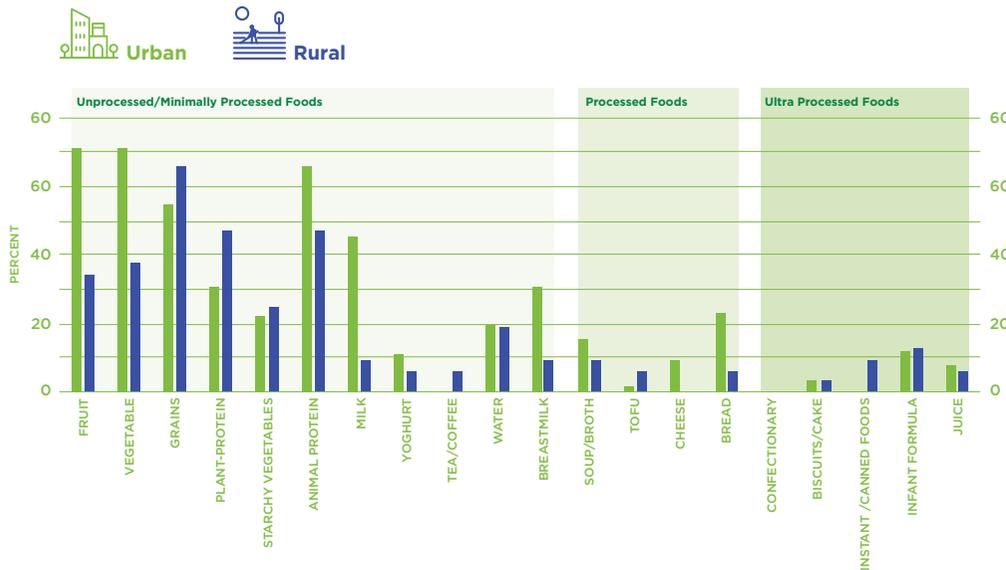
**Figure 27. Mothers' perceptions of healthy and unhealthy drinks for children**



\* Note - Food groups reported in this table are based on the NOVA classification system. See Appendix 2.

Urban mothers more often considered fruit, vegetables, animal protein, milk, breastmilk and bread to be healthy for their baby, compared with rural mothers (see Figure 28), but rural mothers were more likely to rate plant protein as healthy. These findings highlight the need for nutrition education and counselling to focus on what constitutes a healthy diet for young children, across both rural and urban settings.

**Figure 28. Mother's perceptions of healthy food and drink for children – urban/rural comparison**



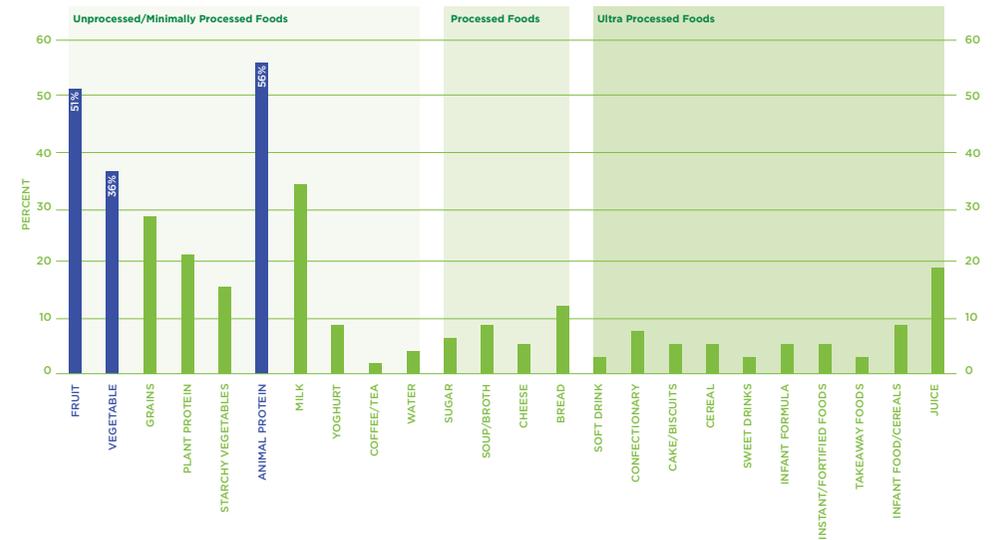
\* Note - Food groups reported in this table are based on the NOVA classification system. See Appendix 2.

### Mothers' 'wished-for' foods for their children

Mothers identified the foods they wished they could feed their young children (see Figure 29). Typically, these foods included those that mothers had difficulty obtaining but perceived as healthy.

Only one third of mothers in the study believed soft drinks were unhealthy, and just under 10% rated juice or sweet drinks as unhealthy.

**Figure 29. Mothers' 'wished-for' foods and drinks for their children**



\* Note - Food groups reported in this table are based on the NOVA classification system. See Appendix 2.

Poverty constrains women's choices about what they feed their children. Mothers' wish lists illustrate the foods that are often inaccessible in low income settings, including dairy products, fruit and animal protein. Overall, half of mothers wished they could feed their child fruit and animal protein – particularly mothers in Bangladesh, Egypt, Ethiopia, Ghana, Nigeria, Sudan, Zimbabwe, Indonesia and Guatemala – indicating that in many contexts animal protein is not readily accessible or affordable.

Most of the mothers have chosen dairy products, fruits and protein-containing food and drinks as a wish list food for their babies. This is because these foods are unaffordable for them to consume on a regular basis.

(Nutritionist notes, rural Bangladesh)

**I wish to provide baby some food rich in protein from meat for their health.**

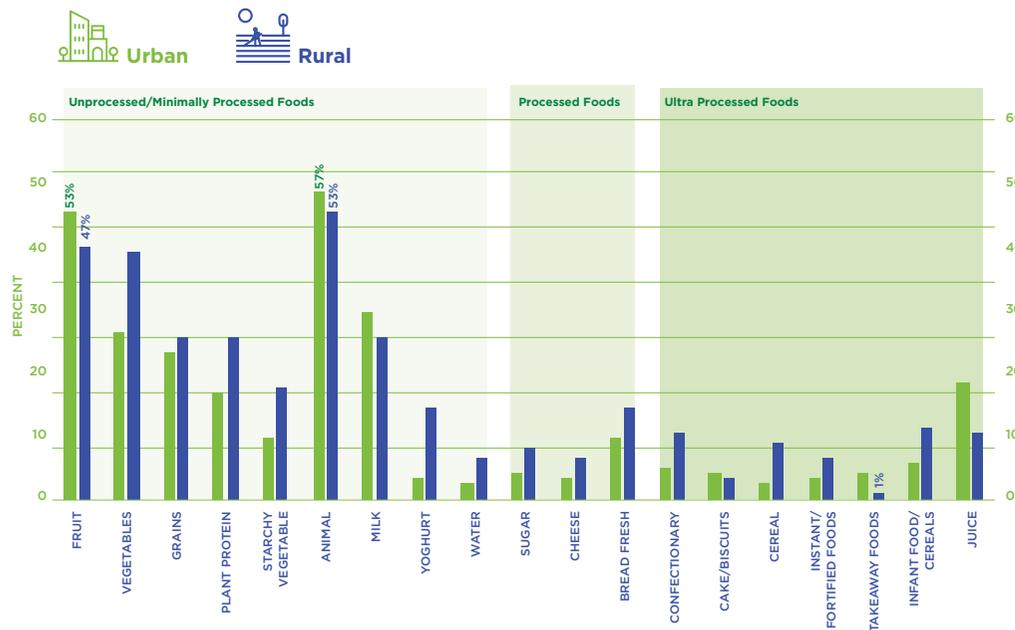
(Mother, urban Philippines)

Milk was high on the wish list for mothers in Egypt, India, Sudan and Ethiopia.

Only 20% wished to give their child juice and less than 10% wished they could give their child processed foods such as cereal, cakes and confectionery.

There were some differences between rural and urban settings (Figure 30), with more mothers in rural areas wishing to give their child more vegetables, plant protein and starchy vegetables compared with those in urban areas. Slightly more mothers in urban areas wished to give their child juice, compared with rural areas.

**Figure 30. Mothers' 'wished-for' foods and drinks for their children - urban/rural comparison**



\* Note - Food groups reported in this table are based on the NOVA classification system. See Appendix 2.

**Mothers' perceptions of what foods are unhealthy for their children**

In addition to identifying foods they believed were healthy, mothers were asked to name foods and drinks they viewed as unhealthy (see Figures 26 and 27). Their responses suggest there is still confusion or misinformation about energy-dense foods. For example, only 40% rated confectionery/wrapped candy as unhealthy, and very few rated cakes and biscuits as unhealthy. **Only one third believed soft drinks were unhealthy, and just under 10% rated juice or sweet drinks as unhealthy.**

Mothers perceived that many snack foods and sugary or carbonated drinks are not healthy for children and should be avoided.

**Foods made by Chipsi,<sup>17</sup> tea-based drinks, soft drinks such as Pepsi, salty food, fruit juice pulp.**

(Mothers in urban Egypt)

**Kurkure<sup>18</sup> is very unhealthy for the baby.**

(Mother, urban India)

**Carbonated drinks are very unhealthy because they are junk food and are very sweet.**

(Mother, urban China)

This suggests that mothers are heeding messages about the high sugar content in carbonated drinks; **however, only one quarter said that they never give their child soft drink or confectionery.**

Mothers also had concerns about the way food is cooked. Many considered oily foods unhealthy, with some mothers worrying about their child's weight gain.

<sup>17</sup> A company making flavoured potato chips.

<sup>18</sup> A puffed snack with over 50% fat and 40% carbohydrate content.

**I avoid feeding chapatti<sup>19</sup> to my baby because it could make the child's tummy fat.**

(Mother, rural India)

**Fried food contains a lot of oil and fat but little nutrition.**

(Mother, urban China)

**Fast food is too fatty.**

(Mother, urban Philippines)

While mothers were aware that some foods are unhealthy – such as hotpot and barbecued food – they nonetheless acknowledged that they are enjoyable.

**These [unhealthy] foods are tasty and attractive.**

(Mother, rural China)

Further, while some mothers identified processed snack foods as unhealthy (see Figure 26), they also included these foods and drinks in their wish lists (see Figure 29), suggesting that at times convenience outweighs nutrition in their decision-making.

Chinese mothers also emphasised that pickled foods are unhealthy because of the salt content, and in India mothers often listed spicy foods as unhealthy.

**Pickled food has a lot of salt and preservatives.**

(Mother, urban China)

**I don't give spicy foods to my baby because it would affect the liver.**

(Mother, rural India)

Mothers in Mexico also indicated that processed or ultra-processed foods are potential allergens.

**Foods considered unhealthy for both mothers and children were industrialised foods, such as fried foods, soft drinks and snacks, like chips and puffed wheat snacks. Mothers considered these to be potential allergens.**

(Nutritionist, urban Mexico)

**Mothers' knowledge of the differences between healthy and unhealthy foods for their children.**

One in five mothers across most participating countries reported that they lack knowledge about healthy and unhealthy food and drink and how to prepare healthy meals for their children. Notably, in Ethiopia, Sudan and Nigeria, 50% of mothers in the study claimed to have poor knowledge.

**[I have] poor knowledge on proper feeding and healthy diet.**

(Mother, urban Ethiopia)

**[I don't have] much idea on the type of food to give to the baby.**

(Mother, rural Nigeria)

**There is no information; and I do not visit doctors too often; I am busy with household tasks.**

(Mother, rural Kyrgyzstan)

Some mothers highlighted that they particularly lacked information about how best to prepare food for their child.

**I do not know if cooking your vegetables is best or if I should use seasoning; my baby is not eating food yet but I do not know if I should cook vegetables [for baby] as they may contain salt and spices.**

(Mother, urban Mexico)

Fewer mothers in Australia and the USA reported a lack of knowledge as an obstacle to healthy eating, although immigrant mothers in Australia reported they sometimes lacked the necessary knowledge.

**We don't know the facts about the food items.**

(Immigrant mother, Australia).

Nutritionists frequently raised concerns about mothers' limited knowledge of healthy food and drink, particularly concerning the nutritional value of particular foods, babies' capacity to digest and the lack of diversity of important foods.

**The mothers give insufficient animal food to their infants because they believe infants cannot digest them.**

(Nutritionist notes, rural China)

<sup>19</sup> A round flat unleavened bread of India that is usually made of whole wheat flour.

**“The packed juices and fruit concentrates of brands such as Réal and Frooti were considered healthy options for children.”**

(Nutritionist notes, rural India)

**“[Mothers identified] processed milk/ breastmilk substitute, and fruits [as healthy] with no mention of vegetables in the discussion.”**

(Nutritionist notes, Philippines)

Exemplifying these concerns, sometimes mothers were misguided or unsure about what constitutes healthy foods.

**“The energy drinks may be good only once a week or so just to digest foods and get some energy.”**

(Mother, rural Afghanistan)

Sometimes, mothers were aware certain foods are unhealthy, but not entirely sure why.

**“Fast foods and energy drinks are not good for both elders and babies, especially for babies because babies’ immune system is not strong enough to combat germs and diseases and the drinks are germs for their liver and kidneys.”**

(Mother, rural Afghanistan)

Nutritionists noted that this problem is compounded by confusing food labelling.

**“Food labelling leads to confusion – fruit juice and fruit juice beverage, milk and milk beverage.”**

(Nutritionist notes, urban Bangladesh).

## Mothers’ knowledge and practices related to healthy food and drink for themselves

In general, mothers appropriately identify what is healthy and unhealthy for them to eat and drink when lactating or raising young children. However, this knowledge does not translate to practice for many reasons, including knowledge of healthy food and nutrition, cooking skills, their own preferences and that of their family, cost of food and availability.

In this study, two thirds of mothers rated animal protein and vegetables as healthy. However, less than half rated fruit, plant protein and starchy vegetables as healthy (see Figure 31). Only 19% of mothers in Egypt rated fruit as healthy, and one third of mothers in each of Ethiopia, Sudan and Nigeria.

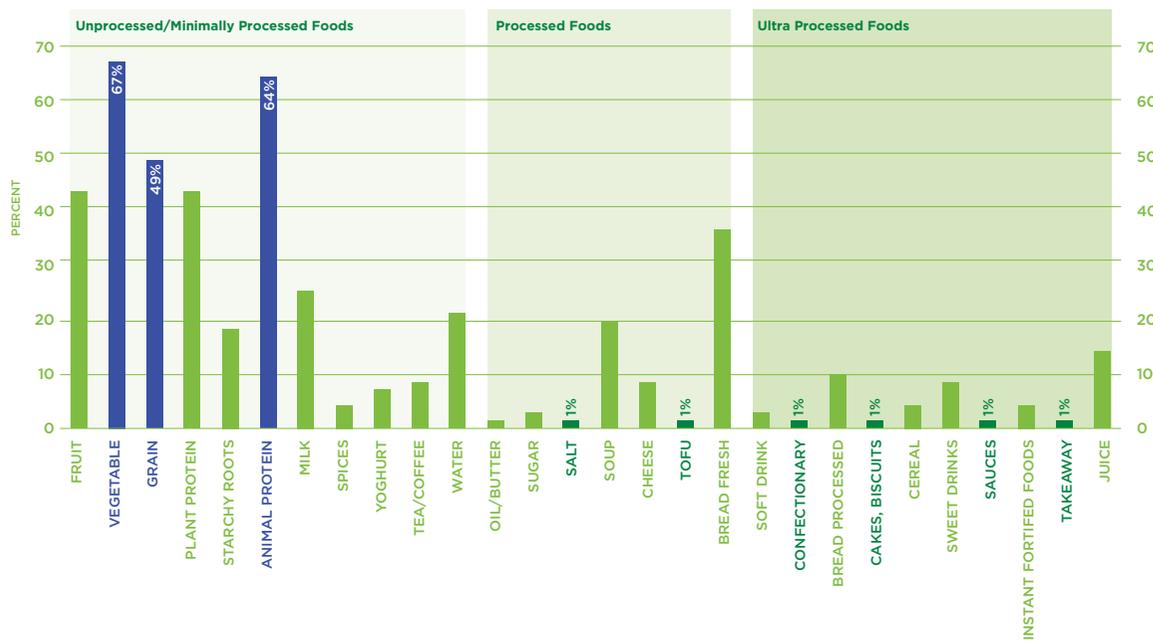
Many more mothers rated vegetables as healthy, although in Sudan less than half rated vegetables as healthy. Grains were considered healthy by a majority in China, India and Ghana. Plant proteins were considered healthy by two thirds of mothers in Guatemala and India and by less than half in Serbia.

Many mothers could identify foods that were healthy or unhealthy, although in many countries, foods considered unhealthy were consumed frequently. This was often an issue of cost and access as much as lack of knowledge.



Image: ©UNICEF Indonesia/2019/Roshita, Sukotjo

**Figure 31. Mothers' rating of food and drink for themselves as healthy**



\* Note - Food groups reported in this table are based on the NOVA classification system. See Appendix 2.

There did not appear to be any difference between how urban and rural mothers rated food groups and drinks as healthy or unhealthy.

Mothers generally believed that they eat a healthy diet and make a conscious effort to do so. Indeed, some, especially immigrant mothers in Australia, expressed a strong preference for eating healthy food.

**I eat everything healthy; I plant some vegetables and some herbal plants in my balcony; I also make some fruit smoothies at night for us.**

(Immigrant mother, Australia)

Mothers highlighted the importance of vegetables, fruit and pulses in providing fibre, vitamins and energy. Mothers in Mexico emphasised the benefits of home-cooked food.

**The foods most often mentioned as healthy were those they considered to have a great supply of vitamins and fibre.**

(Nutritionist notes, urban Mexico)

**The healthiest foods are those prepared at home, as well as vegetables and fruits.**

(Mother, urban Mexico)

**I don't like vegetables but knowing that they are healthy and good for you, I am now open to try.**

(Mother, urban Philippines)

Interestingly, reflecting a growing preference for organic foods in HICs, mothers in Serbia were concerned about whether pesticides were used in the production of their food.

**Food that is not treated with different chemicals, pesticides, also meat from farms and fruit and vegetables not exposed to pesticides [are best].**

(Mother, urban Serbia)

Egypt stood out as a place where many participating mothers did not consume a healthy diet. Even so, some Egyptian mothers were aware of what comprises a varied and healthy diet, suggesting that there continues to be a disconnect between knowledge and practice.

**Healthy daily food for myself includes milk, eggs, fish, vegetables, spinach, honey, beets, fruits.**

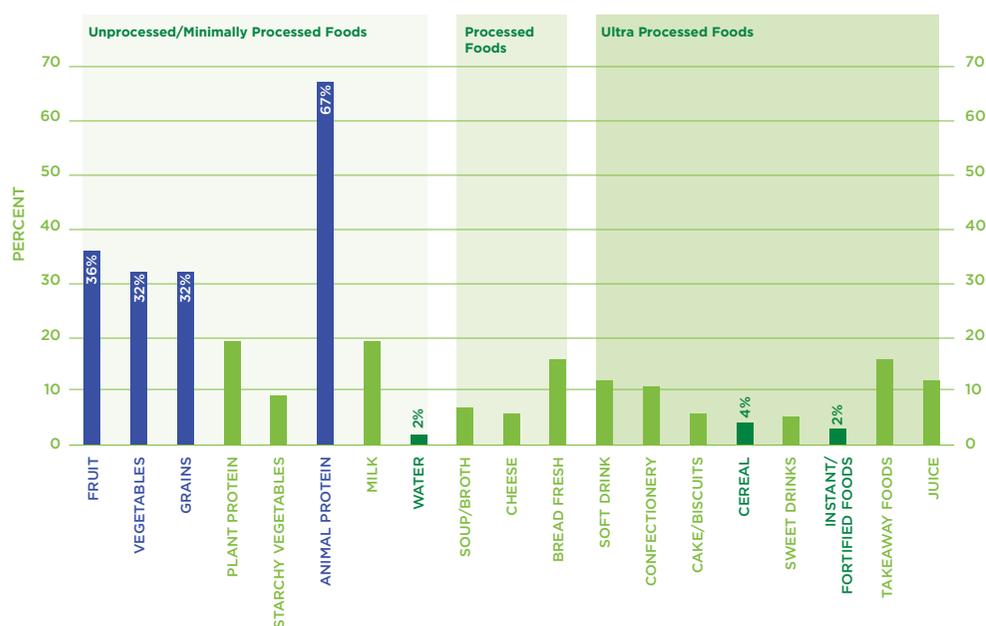
(Mother, urban Egypt)

Mothers in many workshops also indicated foods they never consumed, for health and other reasons. Of these, alcohol was the most commonly listed drink, and some mothers also indicated that they never have carbonated or soda drinks.

## Mothers' 'wished-for' food and drink for themselves

Among the foods mothers wished they could have for themselves, animal protein stood out (see Figure 32). Two thirds of mothers, and particularly mothers in Guatemala, Ethiopia, Ghana, Nigeria, Sudan and Zimbabwe, wished they could consume more animal protein, expressing a desire for more meat, including beef, goat and pork. Fish, chicken and eggs were less frequently desired. The desire for more animal protein most likely reflects limited availability and access to certain animal products in participating countries.

**Figure 32. Mothers' 'wished-for' foods and drinks for themselves**



\* Note - Food groups reported in this table are based on the NOVA classification system. See Appendix 2.

Nutritionists noted that mothers generally wished for healthy foods over unhealthy foods.

**Mothers' own list of wish list foods prominently included healthy foods such as ghee<sup>20</sup>, fruits and dry fruits. Almost no one mentioned packaged foods, junk foods or fast foods in their list.**

(Nutritionist notes, rural India)

One in three mothers in this study wished for more fruit, vegetables and grains. Mothers in Kyrgyzstan, Mexico and Sudan commonly listed fruit, and three out of five mothers in India and around half of mothers in Bangladesh, Nigeria and Mexico wished to have more vegetables.

Interestingly, in Egypt, where mothers' fruit and vegetable consumption was low, only one in three mothers wished to consume more fruit, and less than 20% wished for more vegetables (see Figures 20 and 21).

All mothers in Guatemala and almost all mothers in Nigeria and Ethiopia wished to have more animal source protein.

Mothers in Egypt, India, Sudan and Ethiopia, in particular, wished for milk. This may be because they associate the importance of milk consumption for child growth and development with their own health.

Mothers in Ghana, Nigeria, Egypt and India, in particular, wished to eat more grains. In these countries mothers may be offering the meagre grains available to their children rather than eating them themselves.

<sup>20</sup> Ghee is a class of clarified butter that originated in ancient India. It is commonly used in cuisine of the Indian subcontinent.

**“ In Australia many things are expensive like meat and fish, and even some vegetables but I wish I could buy more meat and fish.”**

(Immigrant mother, urban Australia)

More mothers in urban areas wished for milk and soup/broth, and mothers in rural areas reported wishing to have takeaway food and sweet drinks. It may be that rural mothers have greater access to farm animals that produce milk. Similarly, urban mothers may have easy access to shops selling sweet drinks or takeaway food.

### Mothers’ perceptions of unhealthy food and drink for themselves

Some mothers had clear views about foods that are unhealthy for them to eat themselves.

**“ An unhealthy diet includes processed meat, pickled vegetables, Pepsi, pumpkin and sunflower seeds.”**

(Mother, urban Egypt)

Most mothers rated processed food and drink, such as confectionery, processed bread and sweet drinks as unhealthy. Yet in some countries these foods were consumed daily.

In Egypt, in particular, a high proportion of mothers and their children in this study consumed large amounts of processed food and drink.

**“ In Egypt generally there is little recognition of the harm of a high carb diet. Families enjoy sweet desserts.”**

(Nutritionist notes, urban Egypt)

Table 3 lists foods eaten outside the home that Egyptian mothers in this study considered to be healthy or unhealthy. The reasons mothers gave for why they considered foods unhealthy show that they are misinformed about nutrition facts – for example, that carbonated drinks cause osteoporosis – and they appear to have a focus on whether preservatives are added or not.

**Table 3. Why food outside the home is unhealthy: perceptions of Egyptian mothers**

Food my child and I eat when I am out	Why this food is healthy or unhealthy
Crepes	Too much carbohydrate
Shawarma <sup>21</sup>	Contains fat
Chepsi <sup>22</sup>	Has preservatives
Juices	Fresh food
Koshary <sup>23</sup>	Contains carbohydrates
Pulses	Healthy
Yoghurt	Healthy
Fizzy drinks	Cause osteoporosis
Pizza	Contains carbohydrates
Vegetables	Healthy
Liver	Its quality is not guaranteed if eaten outside the house
Kofta <sup>24</sup>	Contains fat, and its quality is not guaranteed if eaten outside the house
KFC (Kentucky Fried Chicken)	Its quality is not guaranteed, plus high fat
Cake	Has preservatives
Commercial packaged juices	Has preservatives
Biscuits / Cookie	Kids like its taste and its filling, but it contains gluten and preservatives
Mashed potato	Has no preservatives

<sup>21</sup> Marinated meat, often lamb or chicken, stuffed in a bread wrap.

<sup>22</sup> Commercial potato chips.

<sup>23</sup> Egyptian national dish, made with rice, lentils, chickpeas and macaroni, topped with a spicy tomato sauce and fried onions.

<sup>24</sup> Balls of ground meat, usually beef, chicken, lamb, pork, or a mixture, mixed with spices or onions.

In this study, mothers accounted for their consumption of unhealthy foods in various ways. Sometimes, mothers did not know what food was healthy or unhealthy.

**“I do not understand what is healthy and unhealthy. I just eat everything.”**

(Mother, rural India)

**“I lack knowledge of healthy food for myself.”**

(Mother, urban Zimbabwe)

Availability of food was also a barrier to mothers eating healthy foods.

**“It’s often easier to get... less healthy foods.”**

(Mother, urban Mexico)

For some mothers, lack of time was a key concern, with mothers in Serbia and the USA expressing a desire to change their habits to improve their nutrition.

**“I wish I could eat less processed foods, less quick grab and go foods and less quick and convenient foods such as cereals and frozen foods and take out. I want to prepare healthier dinners and have less snack bars.”**

(Mother, urban Serbia)

Sometimes mothers consumed unhealthy foods because of personal preference or taste. For example, in urban India, mothers said they enjoy non-vegetarian food, viewing it as very tasty. They desired takeaway meals such as burgers, pizzas and nachos<sup>25</sup>.

**“[I would like to eat burgers] because they add variety from the normal everyday food – they are a change when you are tired of eating the same food.”**

(Vegetarian mother, urban India)

**“I would like to have pizzas, burgers, nachos, as well as local food pozole<sup>26</sup> and traditional food cochinita<sup>27</sup>, and bottle Coke and beer.”**

(Mother, urban Mexico)

Other mothers do not like the taste of healthy food, with some expressing specific dislikes of foods they consider healthy.

**“I do not like the flavour [of healthy food].”**

(Mother, urban China)

**“Me and my husband do not like much healthy food.”**

(Mother, urban Mexico)

**“Sometimes I don’t like healthy food like milk so I can put it in other forms like pudding.”**

(Mother, urban Egypt)

**“If I try to make something tasty then it does not remain healthy.”**

(Mother, rural India)

While mothers living in participating African countries other than Egypt did not comment on their specific food likes or dislikes, mothers in Sudan mentioned that their daily diet is bland and tasteless.

Mothers also reported that even though they sometimes desire unhealthy foods they refrain from eating them.

**“I cannot eat [sweets, potatoes, French fries and pasta] because of my obesity.”**

(Mother, urban Serbia)

Overall, there are some significant gaps in mothers’ knowledge about which foods are unhealthy.

It is notable that the most desired food for both mothers and their children was animal protein.

Importantly, for mothers with a good understanding of what constitutes healthy eating, the study’s findings point to a gap between awareness and behaviour change, which requires targeted intervention.

It appears that overall, mothers are more alert to feeding their children well than they are about their own diet and nutrition.

<sup>25</sup> Tortilla chips topped with melted cheese and often additional savoury toppings, such as hot peppers or beans.

<sup>26</sup> A Mexican corn soup or stew with meat, traditionally pork, seasoned with spices.

<sup>27</sup> Roast pig or marinated pulled pork shoulder.

## Managing children's food preferences

Two in five mothers in this study worried that their young children were not eating enough or refused the healthy foods they offered them. Some said that this was frustrating, describing their child as 'fussy'. Mothers also said it was difficult to feed children who were sick or had allergies. Some feared that they were not a good mother if the child was fussy or misbehaved during mealtimes.

These findings are supported by other research, particularly in HICs,<sup>(45, 46)</sup> highlighting the need for policy and education to support a shift from parent-directed feeding practices to responsive feeding<sup>(27)</sup> in LICs and MICs as well as HICs.

### Children who do not eat enough

Some mothers worried that their child did not eat all the food they were served at mealtimes. This concern was most common for mothers in Indonesia, Bangladesh, India and China, and among immigrant women in Australia.

**“[I am] worried my child is not eating enough: they don't want to eat enough.”**

(Mother, rural Bangladesh)

Indonesian mothers commonly highlighted that their child would only have a certain number of mouthfuls and then close their mouth.

**“Sometimes he just does not want to eat, just closes his mouth; sometimes after 2-3 spoons of food he does not want to eat. He is full.”**

(Mother, urban Indonesia)

Nutritionists in urban China commented similarly, suggesting that mothers were possibly overfeeding their children.

**“Mothers tend to encourage children to take more food than the child is wanting to ensure sufficient nutrients.”**

(Nutritionist, urban China)

### Fussy eating and food refusal

Many mothers reported that their child refused to eat certain foods. Such statements were particularly common in Egypt, India, China, Serbia and Indonesia, and among immigrant mothers in Australia.

**“He refuses to eat healthy food.”**

(Mother, urban Serbia)

**“My child will not eat healthy food; he refuses it.”**

(Immigrant mother from Sudan, Australia)

Children's food refusal, or showing preference or dislike for certain foods, was typically described as fussiness and, for some, revolved around certain foods.

**“My baby does not want to eat healthy food.”**

(Mother, rural Serbia)

**“My son doesn't like eating fish or meat/beef.”**

(Mother, urban Egypt)

For other children, fussiness was associated with mealtimes in general.

**“The child becomes fussy when it comes to the mealtime, sometimes she wants and sometimes she does not want to eat.”**

(Mother, rural Indonesia)

Some mothers indicated difficulty in stopping breastfeeding even after 2 years of age.

**“All he would drink was breastmilk. Even when he was almost two years old, I could not get him to take much else.”**

(Mother, urban Australia)

**“I have breastfed for two years, but now it is difficult to get the baby to eat other food.”**

(Mother, rural Zimbabwe)

In Indonesia, several mothers commented that their children refused to have infant formula, making stopping breastfeeding challenging.

**Now that he is four months, I would like to give him infant formula but the child does not want it.**

(Mother, urban Indonesia)

The nutritionist in China noted that children's refusal can impact mothers' emotional states.

**Mothers are unhappy when their child refuses foods they believe are good for the children, such as nuts.**

(Nutritionist, rural China)

Some mothers framed their children's behaviour at mealtimes as 'uncooperative' or 'restless'. This view was most commonly shared by mothers from Bangladesh, India, Indonesia and China.

**[My child is] too restless to eat, they will not sit still.**

(Mother, urban Bangladesh)

**But children do not eat properly when fed, they are restless and naughty.**

(Mother, rural India)

Mothers across the sample reported that these behaviours were annoying and frustrating and made mealtimes problematic.

**My child does not want to open her mouth, and sometimes she is crying when I try to feed her, this is frustrating.**

(Mother, rural Indonesia)

**Children do not eat easily, children don't listen, they do not want to eat. They cry a lot and it is a challenge.**

(Mother, urban India)

Some mothers believed children should follow particular rules when eating, and some did not tolerate babies playing with or throwing food.

**The child throws food.**

(Mother, rural India)

**He does not eat, he throws everything.**

(Mother, rural Serbia)

Some mothers were self-conscious or embarrassed about their babies' behaviour, in particular when they were outside the home.

**When he is not hungry and throws offered food, it is a problem and when I am out of the house, everyone looks.**

(Mother, urban Serbia)

In contexts such as rural Sudan, Ethiopia, Ghana, where food availability is compromised due to unaffordability or unavailability, mothers reported that they face additional challenges, highlighting that children refuse food because there is so little variety.

**There is no variety to feed the child and the child refuses to have the same food all the time.**

(Mother, rural Zimbabwe)

**The child [is] bored with the same food every day.**

(Mother, rural Indonesia)

**Mothers' worries about not being a 'good mother'**

Participating mothers were deeply invested in feeding their children well and spoke in emotional terms about wanting their child to cooperate at mealtimes or behave well enough for them to take their child outside the home for meals.

**I want my children to eat anything, who could be taken out to eat a meal with others and to sit and eat.**

(Immigrant mother, urban Australia)

Nutritionists also comment on mothers' desire to have their child eat well.

**Mothers expressed that they would want their children to eat all kinds of foods and did not want them to become picky or choosy.**

(Nutritionist notes, urban India)

When their child did not eat well, mothers perceived that this reflected on them as a mother.

**“Mothers bear the burden of all efforts towards making their children’s diet more nutritious. These mothers perceived it was their job to ensure that their child ate healthy food.”**

(Nutritionist notes, urban India)

As a consequence, mothers sometimes went to great lengths to ensure their children ate, sometimes with limited success.

**“She would not eat. I let her watch cartoons, rattled with toys, tried to amuse her during the feeding (fruits). I blend the fruit and put it in the cake... I mix it with some food which she likes.”**

(Mother, urban Serbia)

For some mothers, the last resort appeared to be following the child around the house to get them to eat. Mothers also observed their mother or mother-in-law doing this.

**“My mother-in-law doesn’t allow me to go out of the house with my child. [But the child] needs to go out, and so the child is so restless and running around all the time. So, to feed the child we are running after her.”**

(Mother, urban Bangladesh)

Mothers were often frustrated that they did not know how to encourage their child to eat. Some recognised, however, that it is futile to force the child.

**“Children don’t eat; if we feed them forcefully they vomit and shout.”**

(Mother, urban India)

Other research also identifies that many women judge themselves as mothers, feeling inadequate because they perceive they cannot meet their young child’s needs.<sup>(47)</sup> Health professionals need to be attuned to the strength of mothers’ emotions related to feeding and sensitively support mothers to understand their child’s feeding cues and needs.

### Child-led feeding practices

Some mothers talked much more positively about mealtimes. These mothers’ feeding practices tended to be more child-led and accommodating of their children’s mealtime behaviours. They described how they had learned, often with the support of others, to accept the child’s refusals and trust that the child would eat if they needed to.

**“His grandmother said to me, not to force him to eat. If he refuses ‘he is not hungry’.”**

(Mother, urban Serbia)

Mothers in Serbia and Australia encouraged tactile eating experiences, letting children pick food up themselves or play with utensils.

**“I give her small amount of food on the little plate to play and eat alone and I feed her from the other plate. I give her a spoon or a fork to play and eat.”**

(Mother, urban Serbia)

Another strategy was to persist in providing children with a small number of different options at a meal to encourage them to eat a wider variety of foods.

**“If there are foods that she routinely leaves and does not eat, I continue to introduce that food regularly and after time she will start to eat it.”**

(Mother, urban Australia)

Mothers also used playful distraction techniques when feeding their children.

**“I animate him, we play ‘green market’ and ‘planes’.”**

(Mother, urban India)

**“I give him a toy car to play [shifting his attention to some other subject].”**

(Mother, urban Serbia)

Many mothers agreed that playful feeding helped the situation but were reluctant to establish this as a routine practice, as it meant expending more time and effort. Some dealt with fussiness and other forms of refusal and economised on time by preparing meals they knew their child would eat.

**“I prepare the food he likes. It’s not difficult for me to feed him because I know how to make him eat.”**

(Mother, urban USA)

The perceptions and feeding practices that some mothers expressed are concerning. Research in HICs, particularly research focused on obesity, shows an association between parenting styles and practices and children's food intake.<sup>(48)</sup> Parent feeding practices and interactions with the child during mealtimes can directly shape a child's lifelong dietary intake<sup>(49)</sup> and impact on the parent-child relationship.<sup>(50)</sup> Positive parental feeding practices such as responsive feeding,<sup>28</sup> modelling healthy eating, encouraging children to try new food and involving children in food choice and preparation are associated with healthy food preferences in preschool-aged children.<sup>(51, 52)</sup>

Image: ©UNICEF Indonesia/2019/Roshita, Sukotjo



**28** Responsive feeding during the preschool years is characterised by caregiver guidance and recognition of the child's cues of hunger and satiety.

## Childhood allergies and sickness

Some mothers reported challenges feeding their child when the child was unwell or had allergies. Child allergies were foregrounded in several countries; particularly Bangladesh, Egypt, Ghana, Zimbabwe, India and Mexico.

**“ [It is difficult to feed] when children develop negative reactions to some foods. ”**

(Mother, rural Zimbabwe)

Interestingly, allergies were not mentioned by mothers in Afghanistan or in the immigrant groups in Australia.

Some mothers of children with food allergies knew which foods their children were allergic to and how to feed them accordingly. Notably, several mothers in India and Indonesia said that their child had an allergy to cow's milk.

**“ My baby can only digest powdered milk and not cow or buffalo milk. ”**

(Mother, urban India)

Other mothers were less sure about whether their child had allergies, and were experimenting with eliminating foods, sometimes with professional support.

**“ My child refuses to eat when he is sick and having food that has too much more cholesterol in it seems to make him sick. My doctor says don't use this food because it might be causing him an allergy. ”**

(Mother, rural Egypt)

Among those whose children did not have allergies, some worried, nonetheless, that their child may develop an allergy which would make it difficult to provide the right foods. It appears that family and health professionals often provide advice relating to suspected allergies or how to prevent allergies.

**“ My doctor and my mother-in-law tell not to eat chilli with meals [because] it causes allergies for me and my baby. ”**

(Mother, urban Mexico)

Mothers also faced challenges feeding sick children, reporting that they frequently could not or would not eat certain foods.

**“ I find it difficult to feed my child when he is sick or feverish. ”**

(Mother, urban Egypt)

In LICs and lower-middle income countries (LMICs) such as Bangladesh, Zimbabwe and Kyrgyzstan, mothers noted that their children could not eat when they had diarrhoea.

**“ [I cannot feed because of the] liquid stool of the child. ”**

(Mother, urban Kyrgyzstan)

This reminds us that the prevalence of food- or water-borne illnesses remains a challenge in many low income contexts.

## Family and health worker influences on food and nutrition for infants, young children and mothers

Research consistently shows that the influence of other family members on mothers' decisions relating to food for their child and themselves should not be underestimated.

In some participating countries, mothers and their children lived in large households with up to ten other people, who exerted influence over what the child and mother ate or drank. Other households were smaller, but it was common that mothers, husbands and their children lived with the children's grandparents.

While family members, particularly the mothers' own mothers, were influential in decisions about feeding infants and young children, it appears that health workers, including nurses and doctors, had little influence over mothers' decisions, even though health workers were the 'go-to' people for information.

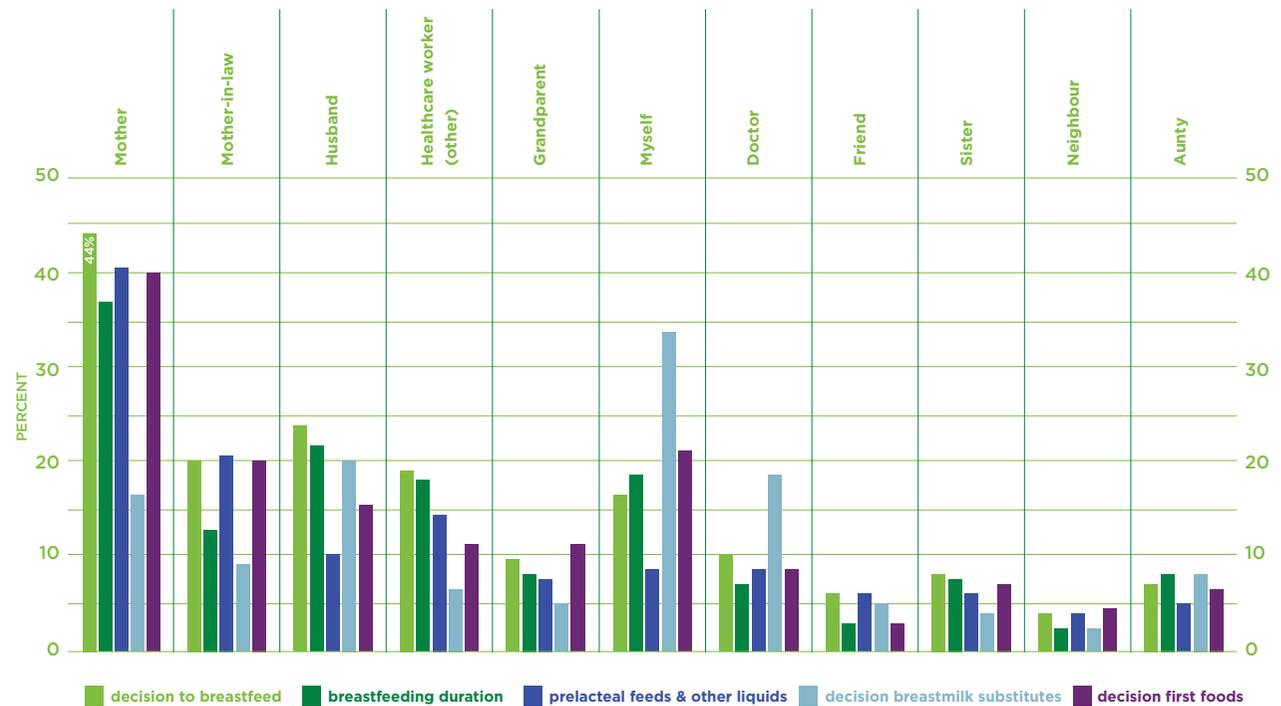
### Family influences on breastfeeding

Traditionally, mothers and mothers-in-law<sup>(53)</sup> and husbands<sup>(54)</sup> are particularly influential on breastfeeding decisions. In many LICs and MICs women's mothers and/or mothers-in-law offer extensive practical support to enable mothers to undertake subsistence and labour activities.<sup>(55)</sup>

In this study, mothers' responses varied across countries, with fewer women than expected in some countries reporting that their mother or mother-in-law was influential.

Almost one fifth of mothers identified that they decided for themselves whether to breastfeed and for how long. Some also indicated that their husband or mother supported their decisions.

Figure 33. Who influenced mothers' decisions about feeding their children



“My mother said things were different then, do what you think is right.”

(Mother, urban USA)

Just over 40% of mothers said their own mother influenced their decision to breastfeed, and just over a third reported that their own mother guided them about how long to breastfeed (see Figure 33). In Indonesia, Guatemala, Sudan and Afghanistan around 60% of mothers indicated that their own mother was influential, while in Ghana, Zimbabwe, India and Egypt this was only true for 25–33% of mothers.

Mothers were generally positive about their mother's influence and, as noted below, some were also positive about messages from their mother-in-law. **These key family members have strong cultural traditions of breastfeeding and are an important source of information. Opportunities exist to leverage these positive voices to support new mothers.**

By contrast, only 20% reported that their mother-in-law influenced their decision to breastfeed, and 13% indicated that their mother-in-law guided the duration of breastfeeding (see Figure 33). This positive influence was most commonly reported by women in Afghanistan and Egypt.

**“My mother in law helped me and showed me what I needed to do.”**

(Mother, rural Afghanistan)

Some mothers reported that they received helpful advice about breastfeeding from their mother or mother-in-law.

**“My mother-in-law said do not wait for the baby to cry before feeding as they have no way of communicating they are hungry.”**

(Mother, urban Zimbabwe)

However, messages from mothers and mothers-in-law were not always encouraging, with some mothers feeling distressed by the advice or judgements of others.

**“My mother told me I had small breasts and should give the baby porridge before the baby was six months of age.”**

(Mother, urban China)

An Australian mother cried in the workshop when she described her mother-in-law's criticisms.

**“I had difficulty with breastfeeding, my baby would not settle and did not seem to be putting on weight. My mother in law told me my milk was not good enough and that he needed formula.”**

(Middle income mother, Australia)

Some nutritionists noted that grandmothers (mothers and mothers-in-law) strongly influence mothers' decisions to breastfeed but do not always provide sound advice.

**“Grandmothers are also the main sources of wrong information about breastfeeding.”**

(Nutritionist notes, urban Zimbabwe)

In this study, husbands were more influential than mothers-in-law, with 24% of women reporting their husband positively influenced their decision to breastfeed (see Figure 33). Three quarters of mothers in Indonesia and one in three in Egypt, Ethiopia, Sudan and China reported that their husbands positively influenced this decision.

**“My husband refuses to let me give the child anything besides breastmilk.”**

(Mother, rural Egypt)

Almost a quarter of mothers reported that their husbands positively influenced breastfeeding duration, particularly in Zimbabwe, Indonesia and urban Afghanistan. In Australia, immigrant mothers noted that their husbands encouraged a longer duration of breastfeeding, even up to two years, and were also supportive of using traditional herbs. There may be lessons to learn from these cultures about how to encourage husbands to support women's decisions in relation to breastfeeding.

Small numbers of women reported that their sister, friends or aunt influenced them (see Figure 33). Mothers sometimes agreed with this advice, and sometimes did not.

**“I was encouraged to breastfeed a lot by my aunt and the baby has never been sick.”**

(Mother, rural Zimbabwe)

**“A close family friend who is a nurse practitioner, said to be persistent with breastfeeding after 4–6 weeks.”**

(Mother, urban USA)

**“My friend told me to always wash the breast before breastfeeding as father may have touched the breast but I didn't agree.”**

(Mother, urban Zimbabwe)

**These findings highlight the opportunity to increase support for breastfeeding mothers by offering guidance or education for grandmothers and partners.**

## **Influence of health workers on breastfeeding**

Well-trained health workers are critical to promoting and supporting breastfeeding, particularly in relation to increasing women's and their communities' knowledge about breastfeeding.<sup>(56, 57)</sup>

In this study, only 20% of mothers indicated that a health worker, nurse or midwife influenced their breastfeeding decisions (see Figure 33), and only 9% reported that doctors were influential in this regard. The role of medical professionals in women's decision-making about breastfeeding varied significantly from country to country. In Ghana and Ethiopia, 30% of mothers reported that health workers influenced their breastfeeding decisions, compared with no mothers in Egypt or China, two in Sudan and three in India.

It is telling that just a few mothers in the study felt that a health professional had influenced their initial breastfeeding decisions. This indicates a need to ensure that health workers have the skills to effectively counsel breastfeeding mothers.

### Influences on mothers to give prelacteal feeds and other liquids

Figure 33 shows that the child's maternal grandmother was seen as the strongest influence on the giving of prelacteal feeds and other fluids. This was particularly so amongst immigrant mothers in Australia and mothers in the USA. Only 20% of mothers reported that their mother-in-law influenced their decisions about giving other liquids, and compared to breastfeeding, husbands were less influential in this domain.

Mothers who gave prelacteal feeds reported that it had been recommended by their family member or, in some cases, a health professional.

In general, health professionals were not identified as influential in relation to prelacteal feeds and other fluids, with the exception of all mothers in Ethiopia and two in five mothers in Guatemala, who identified health workers and nurses as a strong influence, and three out of five mothers in the USA, who indicated that doctors influenced decisions to give other fluids.

It appears that those mothers who supplemented breastmilk with water often did so on the basis of misleading advice.

**It seemed that they [mothers] were advised by the paediatrician to add the water or other liquids in case that baby had jaundice.**

(Nutritionist notes, urban Serbia)

29 Mothers in Zimbabwe rated this tip as bad advice.

**Some mothers have added water during feeding because they stated the baby would get inflamed if he/she is fed by breastmilk without water or they feel the baby should have some water as a mouthwash after having breastmilk.**

(Nutritionist notes, urban China)

**One mother did not give water to the child for first six months. While this is a good thing, she did not have the right reason. [The mother] said: 'For babies born in winter months (September to January), the reason for not giving them water is that they would feel cold.'**

(Nutritionist notes, urban India)

**I was told babies should be given water as a sunken fontanelle is a sign of lack of water.<sup>29</sup>**

(Mother, urban Zimbabwe)

Many mothers in this study were advised to give prelacteal feeds for reasons similar to those reported in other research, including the beliefs that colostrum is dirty<sup>(24)</sup> or that breastmilk is insufficient,<sup>(56, 57)</sup> or because the mother had a caesarean birth.<sup>(22)</sup> This practice impacts on the establishment of breastfeeding, but educational indicatives have not yet been successful in countering such beliefs. Health workers, in collaboration with community advocates, are critical to delivering the right message to pregnant women, their families and the community.

### Influences on mothers to use breastmilk substitutes

Family members – mothers, mothers-in-law and partners – are reported to be particularly influential in decisions related to the use of breastmilk substitutes.<sup>(24, 53, 54)</sup>

In this study, over a third of mothers reported that they made their own decision to use breastmilk substitutes, suggesting that other family members and health professionals are less influential (see Figure 33). Interestingly, more than half of mothers in Ghana, Zimbabwe, Nigeria and Mexico indicated they made the decision themselves.



Image: ©UNICEF Kyrgyzstan/2019/Alymbekova, Sydygalieva, Moltaeva

One in five mothers reported that their husband influenced their decision to use breastmilk substitutes, and this was substantiated by nutritionists in the study.

**Commonly they were advised by their husbands to start feeding breastmilk substitutes before returning to work so that other members of their family can easily manage their babies at home.**

(Nutritionist notes, rural Bangladesh)

Less than 20% indicated that their mother or mother-in-law influenced the decision to use breastmilk substitutes, with mothers in the USA most likely to report this. Only a few mothers indicated that other people, such as friends, sisters and aunts, influenced this decision.

Seventeen per cent of mothers reported that they introduced formula on a doctor's advice, most notably in Egypt, where this was reported by a majority of mothers. Only 8% of mothers across the sample reported that a nurse or health worker influenced them in the introduction of breastmilk substitutes.

Mothers were clear that the decision to use breastmilk substitutes was their own. At the same time, they often talked about the advice or information they gathered from friends.

### Influences on the choice of babies' first foods

Research in HICs indicates that many factors influence mothers' decisions and practices in the transition from milk feeding to family foods.<sup>(58)</sup> Decisions about introducing foods are made based on perceived signs

of infant-readiness for solids; to satisfy hunger, enhance infant contentment and promote sleep; and based on intergenerational, community and cultural beliefs and practices related to infant feeding.<sup>(58)</sup>

In this study, the decision about what food to give the baby as their first food, and when, was greatly influenced by others. Only 18% of mothers indicated they made this decision by themselves (see Figure 33), and these mothers were mostly in the USA and China. This compares with around 40% of mothers who indicated that their own mother influenced this decision, 18% who indicated that their mother-in-law was influential and 13% who indicated their husband wielded influence. It was rare for mothers to report the influence of a nurse or doctor.

The mother's mother appeared to be most influential amongst immigrant mothers in Australia and mothers in Afghanistan, as well as in the USA, Guatemala and Mexico, where this influence was reported by half of mothers. Mothers-in-law appeared to be more influential in Egypt and China. Husbands were noted as influential in the USA and Ethiopia, and mothers in Mexico listed their grandparents as influential.

Only 10% of mothers were influenced by health workers – nurses (11%) and doctors (9%) (see Figure 33) – although one in three mothers in Guatemala and Ethiopia reported this.

### Family influences as obstacles

Overall, while some mothers reported that the key figures influencing their decisions about their children's healthy eating were their own mother, their husband or partner and their mother-in-law, mothers did not always perceive this influence as positive. Indeed, many mothers reported having limited autonomy over decisions about sourcing or preparing food for their children, noting that this could be a cause of household tension.

**My husband and the mother in law make the decision about what the baby will eat and what I will eat as well.**

(Mother, rural Bangladesh)

Mothers sometimes singled out mothers-in-law as 'meddling' and cited instances where their mother-in-law did not let them seek support for their child's nutrition and health from health workers or nutrition services.

**My mother-in-law prohibits me to go to OTP (Outpatients Therapeutic Program to obtain the RUFT<sup>30</sup>) as she thinks they measure child every week and this measuring reduces the child's weight.**

(Mother, rural Bangladesh)

Patriarchal norms powerfully regulated women's decision-making autonomy in relation to healthy eating for their children, with some mothers commenting that their husbands controlled the household budget, restricting their capacity to prioritise healthy food.

**Husbands don't want to give us money [for healthy food].**

(Mother, rural Guatemala)

A few other mothers pointed to how their husband's food preferences dictated what they could prepare for the family to eat.

**“I want to eat healthy food but my husband wants junk food so I cannot make both. I have to choose junk food.”**

(Immigrant mother, urban Australia)

Further, highlighting how gender dynamics delimit mothers' capacity to feed their children well, a few mothers also reported that, often, men or male children were fed first, or the best food was reserved for them.

**“[I] need to provide more foods to the husband and other male members.”**

(Mother, rural Bangladesh)

**“[I] have to give more food to boy child.”**

(Mother, rural Bangladesh)



Image: ©UNICEF Nigeria/2019

The nutritionist in India succinctly captured some of the complex ways gendered power relations inside the family impact mothers' decision-making about how to feed their children.

**“In-laws and husbands are authority figures in the house. They have a lot of say in decision-making related to various matters of family. Mothers-in-law often guide women what to cook based on preferences of male members of the family. Thus, in many cases male preference for foods is prioritised even by women of the family. These are subtle signs of patriarchal mindsets of the Indian society perpetuated both by men and women.”**

(Nutritionist notes, rural India)

In households with extended family members, many mothers reported having to 'fit in' with the food preparation routines and preferences of others, limiting their capacity to prepare the meals they wanted for their children and to establish healthy eating patterns for their children.

**“I have to eat according to the rest of the family because I live in a joint family.”**

(Mother, urban India)

Mothers had less say over what their children are fed in households where the majority of food preparation was undertaken by grandparents or other extended family members.

**“Those who cook (parents-in-law) do not get the idea of 'healthy food'.”**

(Mother, urban China)

**“At home my father-in-law and mother-in-law cook our meal. They do not really pay attention to what is healthy.”**

(Mother, urban China)

Many mothers indicated they often disagreed with the recommendations or practices of their mothers-in-law or other family members and that it was important not to let this get them down.

**“According to the mother in law, rice will make the child's stomach bloated [and] fish will [give them] worms.”**

(Mother, urban Bangladesh)

**“My child is eight months old. My mother-in-law wants to feed her noodles and congee every day because these are easy-to-digest foods. I want the child to have all kinds of food.”**

(Mother, rural China)

Mothers – particularly those that lived in African countries, and especially in Zimbabwe – also recounted how cultural and religious traditions present barriers to their capacity to provide healthy food for children.

**Because of what family and friends think, I am not able to achieve my aim [of raising a child who eats well]. Sometimes cultural beliefs make it difficult. ]**

(Mother, urban Ghana)

**Rules by the church [limit what I can feed my children]. ]**

(Mother, rural Zimbabwe)

Mothers in many of the participating countries felt they had limited autonomy to resist what they saw as the undesirable influence of other family members. Instead, they 'put up with' difficult family relationships as the most practical way of handling them.

**I try not to get weighed down about what my mother-in-law does, I just put up with it and get on with things. ]**

(Mother, urban China)

Some mothers, particularly in China, talked about having to slowly educate or inform their family, drawing where possible on expert information they sourced elsewhere.

**I will communicate with my mother-in-law and explain to her that having more vegetables, fruits and high-protein food is good for the child's growth and development. ]**

(Mother, rural China)

**[I have] to find reliable sources as possible as I can and to tell my family. ]**

(Mother, urban China)

By contrast, middle-income mothers in HICs reported greater autonomy to trust their own judgement and to take charge of the child's nutritional intake.

**Trust yourself, pay attention to your baby and learn cues. Don't worry about external influences. ]**

(Mother, urban USA)

Mothers value the opinions of trusted family members who they believe have their best interests at heart. Key family members can be influential, but intergenerational change may mean that many more women are wanting to make their own decisions, albeit in the context of prevailing cultural norms. There is still scope for harnessing the positive influence of family members through social and behaviour change programs. However, it seems that health professional education and counselling is still lacking, perpetuating non-evidence-based practices.

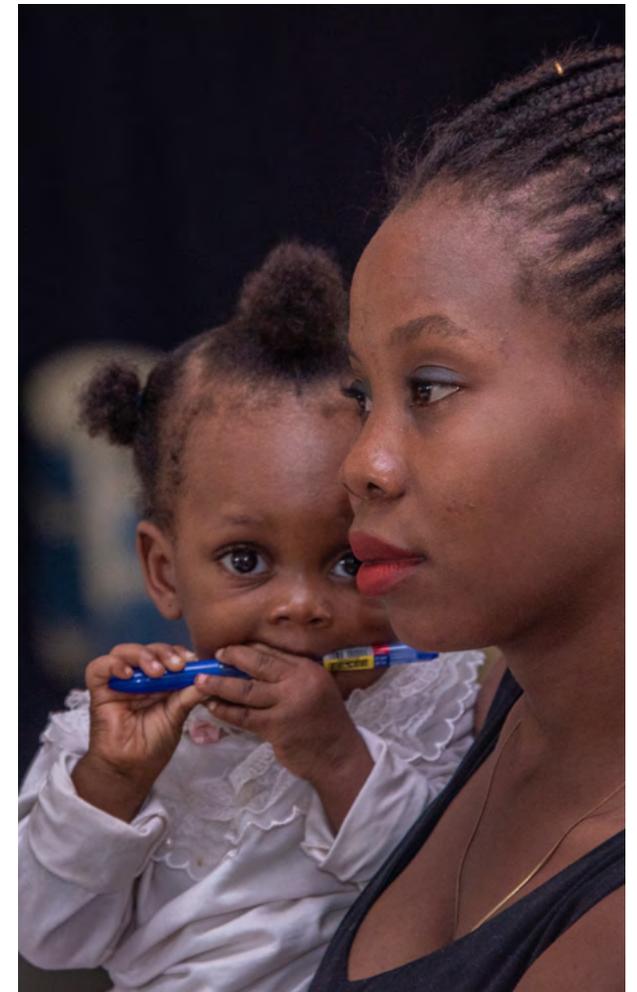
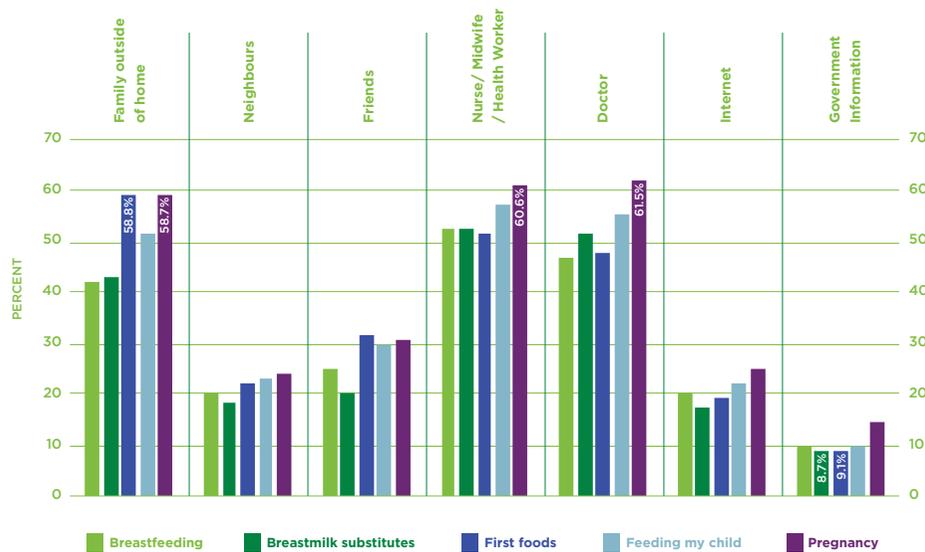


Image: ©UNICEF Nigeria/2019

## Sourcing advice on food and nutrition outside the home

When asked to indicate who they would most likely go to for information and advice outside the home about feeding their infant and young child, mothers overwhelmingly nominated health professionals – nurses, midwives, health workers and doctors – as the ‘go-to’ people (see Figure 34).

**Figure 34: Sources of advice or information**



### Health professionals as a key information source

In the previous section, mothers indicated that health professionals did not influence their initial decisions about breastfeeding, breastmilk substitutes and first foods. However, one in two mothers in this study reported that they would most likely go to a nurse or doctor for information about breastfeeding, breastmilk substitutes, first foods and healthy food and drink for their child. Health professionals were also considered the ‘go-to’ people for information about pregnancy for around three in five mothers. In many instances, family members who did not live with the mother, were also an important source of information, advice and support.

Preference for seeking information from a health professional (nurse or doctor) varied between, and at times within, countries. For example, when wanting information about food and nutrition for their six to 23-month-old child, most mothers in Ethiopia, Zimbabwe and Nigeria indicated they would seek information from a nurse rather than a doctor. Mothers in the Philippines and Indonesia indicated they were equally likely to seek information from a doctor or a nurse. By contrast, mothers in Egypt, India, the USA and Australia preferred to seek information from a doctor and would only sometimes or rarely seek information from a nurse or other health worker. Only a few mothers from Bangladesh and Guatemala responded to this question, suggesting they have limited access to health care.



Image: ©UNICEF Guatemala/2019/Escobar

On average, urban mothers said they were most likely to seek help from a doctor, while rural mothers were more likely to ask a nurse. Even so, overall, mothers were a lot less likely to reach out to health workers for advice about feeding their child than to reach out to them for advice about breastfeeding.

**Compared to the rural participants, fewer people in the [urban] group depended on government provisions like an ASHA<sup>31</sup> worker as they did not seem to trust these sources.**

(Nutritionist notes, urban India)

Nutritionists suggested these differences most likely relate to access to health professionals.

**Most of the mothers do not have proper information regarding nutritious food habits as they have limited access to a health worker.**

(Nutritionist notes, rural Bangladesh)

In many LICs and LMICs there is limited access to health workers, and often health workers have inadequate training.<sup>(59)</sup> In HICs like Australia there is relatively easy access to health professionals, but some mothers prefer to see a doctor rather than a child health nurse.

It is likely that mothers' inclination to seek information and advice from health professionals is influenced by previous experiences, both positive and negative.<sup>(60)</sup> In this study, some mothers reported they had experienced positive encounters with health professionals, which had supported their mental health and wellbeing.

**The nurse provided the following good advice about breastfeeding: to allow you to feel what is right, what is intuitive and give yourself the space to process what you're feeling.**

(Mother, urban USA)

Others reported negative experiences, with some highlighting a lack of clear advice and experiences of confusion.

**She was advised not to breastfeed her child by the doctor but she was unaware why this was the case.**

(Mother, urban India)

Mothers from middle income groups in Australia and in the USA described feeling disempowered after following professional advice that did not result in the outcomes they were looking for.

**[I got the] worst advice from a nurse [who]...to avoid nipple confusion, recommended spoon-feeding. [My] breastmilk and [my child's] birth weight got very low and doctors recommended formula.**

(Mother, urban USA)

**I was told to give my baby formula because she was not putting on weight, but no alternatives were suggested before going straight to formula.**

(Mother, urban Australia)

Mothers who receive appropriate support and information related to infant and young child feeding, including breastfeeding, are likely to maintain positive practices.<sup>(27)</sup>

### Information from family members outside the home

Family outside the home were particularly important sources of information and advice for mothers in relation to pregnancy, babies' first foods and healthy food and drink for their children. This was reported by 50–60% of mothers in most countries, but by less than one in three mothers in Ghana.

**Many participants despite their migration to the city still have close links with their families in the village. Calling their mother or aunt on the phone for advice about feeding their child is common.**

(Nutritionist notes, urban India)

**I have to call my mother all the time for how to cook traditional food, I am missing my mother's recipes which I like very much.**

(Immigrant mother, Australia)

<sup>31</sup> Accredited Social Health Activist.

**“I trust my sister, mother and grandmother because they are honest to me.”**

(Mother, rural Afghanistan)

However, as discussed earlier, many mothers reported that family members – particularly mothers-in-law – were a major obstacle to providing healthy food for their child.

### The internet as information source

In this study, just over one in five mothers turned to the internet for information about infant and young child feeding, perhaps indicating limited access to reliable connectivity. Mothers who used the internet for information more often lived in urban (22%) rather than rural (10%) areas.

It appears there is significant scope to increase mothers’ access to high quality and reliable information about feeding their infants or young children via online sources. For the majority of the women in this study – whose internet access is likely to be via a smartphone, such resources must be mobile compatible.

### Information from friends and neighbours

Around 30% of mothers sought information from friends in relation to pregnancy, first foods and healthy food and drink for their child. However, only 10% or fewer mothers in rural locations said they would seek such information from friends or neighbours.

Mothers did not rate neighbours as likely sources of information. Only one in five indicated they would seek information about infant feeding from neighbours. However, this varied greatly between countries: half of mothers in Sudan and Ethiopia indicated they would seek information from friends and neighbours, while mothers in the Philippines, India and Australia would rarely do this. Similarly, mothers in Ghana, Nigeria, Egypt and India were unlikely to seek information from neighbours or friends.

Nutritionists in Serbia and China reported that friends played an important role in influencing mothers in relation to breastmilk substitutes.

**“They get advice about formula brands from their friend.”**

(Nutritionist, rural Serbia)

**“If a mother is caring for the child by herself in her home without mother or mother-in-law, she is affected by her friend but makes her own decision. If the mother lives with her or her husband’s parents, the parents affect her decision.”**

(Nutritionist, urban China)

A nutritionist in India explained the impact of migration from an urban location to a rural village area and the importance of mothers developing new social networks for support.

**“Those women who lived in nuclear families and had moved to the village after marriage, depended more on the internet or doctors, ASHA<sup>32</sup>/ community health workers and the local dispensary for information, more than neighbours or friends. This is probably because their social networks were less developed. On the other hand, those who had been living in the village for longer duration of time relied on neighbours for information on foods for their babies and themselves.”**

(Nutritionist notes, rural India)

One immigrant mother in Australia captured the need for community to help a child learn about family and community meals.

**“What you need is a community to help your child to learn to eat.”**

(Immigrant mother, urban Australia)

<sup>32</sup> Accredited Social Health Activist.

## Government information

Less than one in ten mothers said they would access government information in relation to breastfeeding, breastmilk substitutes, first foods or complementary food or drink for their young children. Around one in eight said they would seek information about pregnancy from government sources. This is concerning given the volume of information that is produced and distributed by governments and suggests that governments need to better target their resources.

Mothers primarily viewed health professionals – midwives, nurses, health workers and doctors – as the ‘go-to’ people for information about infant and young child feeding. If the service was difficult to access or encounters were unhelpful, then mothers were less likely to return.

This raises important issues about training for health professionals.

## Poverty and limited financial resources

Internationally, poverty is among the most entrenched obstacles to healthy eating, with a clear link to lack of dietary diversity and low consumption of fruit and vegetables.<sup>(2)</sup> The impact of poverty was clear in the workshops, with lack of money constituting the top concern of all mothers from Ethiopia, Ghana, Nigeria, Sudan, Zimbabwe and Guatemala and most mothers in India, Bangladesh, Kyrgyzstan, the Philippines and Mexico.

“I have no money to provide all the baby needs.”

(Mother, urban Nigeria)

“I cannot even afford to give my baby unhealthy foods as I do not have the money.”

(Mother, rural Zimbabwe)

By contrast, financial concerns were rarely mentioned by mothers in China, Egypt, the USA, Australia, Serbia and, surprisingly, Indonesia. In the latter two countries, some indicated that healthy food is affordable.

“Healthy food is not always expensive.”

(Mother, rural Indonesia)

Money was a particular concern for rural mothers and sometimes a worry for urban mothers, although they were more likely to highlight access to food as the major obstacle to healthy eating.

“Sometimes...you have the money but you don't have the foodstuff available to buy.”

(Mother, urban Ghana)

For some mothers, limited finances were a periodic concern.

“Sometimes we don't have money; sometimes we don't have any food to give; I have to send my child to my family [a distance away] to eat.”

(Mother, rural Ghana)

“We do not have money at the right time to eat the food we like, we are not able to eat healthy food because of this, and this is a big problem.”

(Mother, urban India)

Mothers felt stressed when they did not have enough money to buy food, with some feeling that it challenged their capacity to be the kind of mother they aspired to be.

“If I had money I would purchase and prepare food, [like] the mother that I want to be.”

(Mother, rural Guatemala)

**“Because most of the foods in the supermarket are very costly, so I have to buy the ones that I can afford with the money I have. Most of my friends mock me for giving my baby custard and milk, but I don’t care about what they say, because I know that if I had the money I will do the best for my son.”**

(Mother, urban Nigeria)

Mothers reported that general economic conditions, minimal education and lack of work are key reasons for poverty. This frustrates them, as there are no obvious workarounds for this challenge. Indeed, their commentary was pervaded by a strong sense that this is the way things are.

**“There is a lack of work that would earn me money.”**

(Mother, rural Ghana)

**“[I experience] a lack of money because I don’t have high studies [qualifications].”**

(Mother, rural Guatemala)

Many mothers highlighted how the gendered division of labour impacted their capacity to feed their children well, with some indicating that the greatest concern was that their husband or male household members could not get work.

**“My husband cannot get work, there is no work.”**

(Mother, urban Guatemala)

**“Because there is no male person at home to earn money, I will have to take a loan to buy food.”**

(Mother, urban Bangladesh)

Responding to this challenge, mothers from Zimbabwe, notably, offered suggestions. For example, some said they bartered or sold farm products or other commercial goods to supplement their income.

**“Selling cell phones; selling lamps; selling stationary.”**

(Mother, rural Zimbabwe)

**“We can farm maize and sell to the grain marketing board to get money.”**

(Mother, rural Zimbabwe)

Others suggested that part-time employment, taking on odd jobs or small projects and utilising financial schemes supported by aid organisations could help them find money to purchase food.

**“[I supplement the family income by] doing small projects which earn me money.”**

(Mother, rural Zimbabwe)

**“Getting a part-time job which can help you earn money [will help me find the money to purchase food].”**

(Mother, rural Zimbabwe)

Some purchased seasonal produce to save money.

**“The seasonal fruits are cheaper.”**

(Mother, urban Mexico)

Others grew some of their food themselves.

**“We can grow the food [we] eat/feed and look for knowledge from others.”**

(Mother, rural Zimbabwe)

The study supported numerous other findings that poverty is a major obstacle to adequate nutrition for many families, particularly in LICs and in rural areas <sup>(12, 38, 48, 61)</sup>.



Image: ©UNICEF Nigeria/2019

## Availability of and access to healthy foods

The quality of mothers' and children's dietary intake and nutritional status is impacted by their food environment; that is, the "interface where people interact with the wider food system to acquire and consume foods" (12, p 387) In this study, many mothers, particularly those from the five countries in sub-Saharan Africa, reported that the accessibility of markets (distance/transport) and the availability of quality produce were major obstacles to healthy eating.

## Where mothers obtained food outside the home

The majority of mothers (88%) indicated that they purchased food from indoor food markets or local shops.

This was anticipated in the LICs and MICS, where small and medium-sized market-based vendors dominate. (12) Only one in three mothers described going to a supermarket or other shop to purchase food. Of these mothers, a high proportion were from Ethiopia, Guatemala and Kyrgyzstan.

Many mothers explained that they do the best they can to obtain quality produce but sometimes this is not possible. The majority (73%) said they purchase their fresh fruit and vegetables from a grocer, a market store or a stall in a shopping mall. Around one in four mothers specifically described this as an outdoor market.

**“In China usually the farmers' market is set up in residential areas so that local residents could have easy access to it.”**

(Mother, rural China)

**“The food is from the market in our village, sometimes it is from a cart and a man comes to our street and sells it.”**

(Mother, rural Afghanistan)

Mothers in China noted that there is a common belief that farmers' markets supply the freshest produce.

**“The elderly believe food from farmers' market is fresher than that provided in supermarket.”**

(Mother, rural China)

One in four mothers indicated that fresh fruit and vegetables came from their own home or a family or friend's garden, suggesting that some mothers have the knowledge and resources to supplement shop-bought foods with home-grown produce.

**“Our families share vegetables we grow in our garden with neighbours and relatives.”**

(Mother, rural Bangladesh)

**“We get the food from the farms in the village or from our own households or farms/gardens.”**

(Mother, rural Serbia)

The nutritionist at a workshop in urban Bangladesh indicated there were 'specialist' baby food stores in the country that offered Blanket Supplementary Feeding Program products and that these are popular amongst mothers.

**“Many mothers buy food for their baby from these shops because they believe that commercial baby food is good for baby, with less salt.”**

(Nutritionist, rural Bangladesh)

**In the USA, mothers emphasised the value of convenience shopping.**

**“Four times a week I go to local co-op. It is a 5 min walk.”**

(Mother, urban USA)

**“On the way from day care, I can pick up groceries and prepared snacks (fruit, granola bars, premade sandwiches, egg salad sandwiches).”**

(Mother, urban USA)

**“Co-op store for weekly pick up and it is 30 steps away from where I live.”**

(Mother, urban USA)

**“Formula is the most common purchase at a nearby drugstore; walking distance, 0.5 miles.”**

(Mother, urban USA)

Mothers in the USA also indicated that they had their weekly food delivered to their home, as did mothers in Bangladesh.

**Shopping online is popular and convenient for young mothers.**

(Nutritionist notes, urban Bangladesh)

### Availability of healthy food

Availability of healthy food is a significant issue for many children and mothers. Food availability is related not just to the supply chain but also to seasonal weather conditions which, with rapid global warming, are predicted to further constrain food availability.<sup>(12, 62)</sup>

More than half the mothers in the study reported that they and their children did not eat the recommended daily intake of fruit, animal protein and, in many cases, vegetables.

Mothers did not always have access to fresh food grown locally, with many highlighting limited availability of fresh fruit and vegetables. Some described how food that is not grown locally must be brought in, and some societies have better infrastructure to facilitate this than others.

**Vegetables, fruits are not available in the market.**

(Mother, urban Ethiopia)

**It is hard to find fruits/vegetables such as cucumber, carrot, melon, papaya, grapes, watermelon.**

(Mother, urban Guatemala)

**The farmer markets in China might be slightly different from that in other counties. Fresh vegetables, fruit, meat and seafood, etc., sold in market are not necessarily locally produced thanks to the supply and goods logistics system in China.**

(Nutritionist notes, rural China)

As such, mothers' capacity to feed themselves and their children well depended on the conditions shaping local food supply. Indeed, one in three mothers reported that one of the greatest obstacles to healthy eating for their children and themselves was the availability of food in their communities.

**I cannot eat well, as the food is not there, I make do.**

(Mother, urban Ghana)

Generalised food shortages; limited availability of quality or healthy food such as fruit, animal protein and vegetables; and little variety were most frequently reported in LICs and LMICs, particularly in Africa.

**Sometimes I tried or want to feed my baby with some particular food which I know if give her she gets nutrients and be healthy but I cannot buy it.**

(Mother, rural Ghana)

**[There is a] scarcity of any food sometimes.**

(Mother, urban Nigeria)

**Sometimes the market does not have enough healthy food, so I don't know what healthy food I can give to my child.**

(Mother, rural Indonesia)

Many mothers also commented on the poor quality of the food available at markets and other commercial outlets, noting the relatively easy access to unhealthy foods compared with healthy foods.

**Less healthy food [is] sold in the nearest market.**

(Mother, rural Indonesia)

**There is too much fat in the food which is not suitable for [my child].**

(Mother, rural Egypt)

Some mothers found it difficult to work around the limited availability of healthy foods. In some countries, they made do by using seasonal produce or finding dried or frozen substitutes for fresh food. However, some mothers suggested this is not optimal.

**There are similar products in Australian shops like [large supermarkets]. We can use frozen fruits or vegetables.**

(Immigrant mother, urban Australia)

Mothers in MICs and HICs – Serbia, China, Kyrgyzstan and the USA – generally had fewer concerns about accessing healthy foods. However, immigrant mothers in Australia reported challenges finding the variety of animal protein, vegetables and herbs commonly used in their culture's cuisine.

**Here (Australia) I cannot get some of the vegetables and herbs that were readily available in India.**

(Immigrant mother, urban Australia)

### Who purchased the food

Restrictions on women's mobility or decision-making capacity impacts mothers' autonomy over what their children can eat. In some communities, such as in India, mothers were not allowed to leave the house by themselves, particularly if they were young. These women were not responsible for purchasing the family's food.

**Some of the young mothers were not allowed to step out of the house at all, their mobility was severely restricted. These restrictions on mobility of women are common in many rural and urban families for their safety and security.**

(Nutritionist notes, rural India)

Other mothers reported that shopping is not viewed as their responsibility, primarily because mothers-in-law or others make such decisions.

**Their mothers/mothers in law were usually in charge of daily food purchasing, and mostly from nearby farmer markets.**

(Nutritionist notes, urban Bangladesh)

**In most instances food for cooking was collected by a male member of the family in the market, as women we are socially restricted to the home and cannot go out without being accompanied by a male of the household.**

(Mother, rural Afghanistan)

Other than in Afghanistan, very few mothers mentioned the role of fathers in purchasing foods.

### Access to healthy food

Limited availability of fresh food is further impacted by poor access to local markets, and other research reports that children who live near markets that sell more non-staple foods have more diverse diets.<sup>(63)</sup> In this study, in LICs and LMICs – all African countries excluding Egypt, as well as India and Bangladesh – one in three mothers described difficulty accessing food markets, both in urban and rural areas. The key obstacle cited was distance, which was compounded by lack of accessible transport and/or difficult road access. This was particularly the case in rural areas.

**It is difficult to get a vehicle to go to other communities to buy food stuff.**

(Mother, rural Ghana)

**We have no transport.**

(Mother, rural Indonesia)

**The roads are poor so we have no easy access to shops.**

(Mother, urban Ethiopia)

Due to conflicting responsibilities and restrictions on women leaving the house, there was often no one available to travel the distance to purchase food at the market.

**Sometimes accessing food was difficult because there was no one at home who can go to get the food and husband comes late after work.**

(Mother, rural India)

Where they could access food markets, mothers worried about the unhygienic conditions of food stalls and the health consequences for their families.

**Because of unhygienic conditions, flies sit on the food. The place where I live is very dirty.**

(Mother, urban India)

**[There is] too much disease; vomiting; malabsorption [from unhygienic conditions].**

(Mother, urban China)

**Public places [like markets] have diseases.**

(Mother, rural Kyrgyzstan)

Some mothers also worried about environmental pollution, questioning the quality of the food they could access.

**‘[I’m] not sure if the food source is safe.’**

(Mother, urban China)

In some communities prone to drought and other environmental factors impacting food production, mothers noted poor conditions for growing food in their local communities. Some also lacked access to appropriate equipment, which militated against supplementing purchased food with home-grown produce.

**‘There is no suitable place to grow food.’**

(Mother, urban Sudan refugee camp)

**‘The land is not suitable to produce plants, there is no rain.’**

(Mother, urban Guatemala)

**‘Lack of inputs and equipment to grow our own foods.’**

(Mother, rural Zimbabwe)

As discussed earlier in Section 1, Food and drink outside the home, some mothers reported that it was sometimes more convenient to purchase unhealthy food.

**‘It’s easier to get the other not healthy foods than to purchase and cook healthy foods.’**

(Mother, urban Mexico)

Addressing key obstacles is critical. It is very evident that current food systems in all countries do not enable people to make healthy food choices.

- One in three mothers, particularly in Ethiopia, Ghana, Nigeria, Sudan and Zimbabwe experienced food shortages, limited availability of quality food and little variety.
- Many others could not access or afford a healthy diet, and sometimes the food available was spoiled or unhygienic.
- Mothers in the USA emphasised convenience: ready-made food such as packaged dinner meals available four minutes walk away.



Image: ©UNICEF Zimbabwe/2019/Gwatiwa

## Time and work pressure on mothers

Mothers around the world report that the demands of juggling formal work, child care and household responsibilities are stressful,<sup>(20, 40, 64)</sup> and that the competing demands on their time influence undernutrition in their children, particularly in LICs.<sup>(65)</sup>

In the workshops, three in five mothers reported that 'lack of time' constrained their capacity to provide healthy meals for their child and themselves; for example, because of paid work outside the home.

**I have to hunt for time [to prepare food].**

(Mother, urban Indonesia)

**[There is] not enough time to prepare wholesome food.**

(Mother, urban USA)

**You are late coming home from work and have to prepare the meal.**

(Mother, urban Ghana)

Other duties at home also strained mothers' capacity to go shopping for food and to prepare healthy meals. For many, this was a source of frustration and stress.

**The anxiety to finish with one chore to [start] another.**

(Mother, urban Ghana)

**I have other stuff to do than prepare meals like [cleaning, work, relaxing, etc.].**

(Mother, urban USA)

**[I have] difficulty in preparing and eating food since the child is with me all the time (she's still breastfeeding), and this is when I am not working.**

(Mother, urban Indonesia)

Time pressure was perceived to be particularly acute in households where mothers had no other support. This issue was raised primarily, though not exclusively, by mothers in the USA and in Australia, where the dominant family structure is the nuclear family.

**[I struggle to] manage all [my] other responsibilities including my study.**

(Mother, urban USA)

**[I have a] lack of time. I am exhausted as I have obligations outside of the home.**

(Mother, urban USA)

Whether time was an obstacle to healthy eating varied between urban and rural areas. For example, in Ghana and in Serbia all urban mothers working outside the home reported the impact of work pressures, but rural mothers in these countries did not. Often mothers devoted the time they did have to preparing healthy food for their child, sacrificing their own preferences, although sometimes their solutions also compromised the child's consumption of healthy food.

**If limited on time, I will provide a healthy meal for my children but not for myself.**

(Mother, urban USA)

**Not finding time to prepare a healthy menu [for myself is a challenge for me]. Instead I eat the food [I] prepared for the child.**

(Immigrant mother, urban Australia)

Mothers also worked hard to organise their time, reporting some inventive workarounds that saved time without compromising the nutritional value of their child's meals. These included shopping ahead to ensure healthy provisions were always in the house, cooking certain healthy foods that required less preparation time and preparing meals ahead of time.

**It takes a long time to cook pulses. Green vegetables can be cooked faster.**

(Mother, urban India)

“Almost all mothers tried to continue healthy habits in baby’s nutrition besides the fact that they are working and absent [from home]...most of the day. They tried to prepare...food for their babies in advance and take it outside the home. It is not always possible and sometimes they have to buy commercial food for their babies (like fruit juices, fruit or vegetable porridges, grain flakes, etc.).”

(Nutritionist, urban Serbia)

Other mothers relied on female relatives to buy and prepare food, and those with the economic resources to do so outsourced the cooking to others.

“[Mothers] also took the opportunity of having their mothers, grandmothers, women who takes care of baby, prepare the food for the baby and themselves.”

(Nutritionist, urban Serbia)

“I also have my nanny who cooks meals.”

(Mother, urban China)

Some mothers worked around their lack of time by purchasing meals from outside, noting that doing so sometimes came at the expense of the nutritional value of the meal.

“Since I am a working mother, I do not have much time and, as a consequence, I often buy food which sometimes is not healthy but is quick.”

(Mother, urban Indonesia)

“We do not eat well at work and we spend a lot of time at work so we are always eating outside food.”

(Mother, urban Ghana)

The findings confirm reports that the double burden of work and family responsibilities influences what young children and their mothers consume. This impact is increasingly felt by those living in LICs where mothers are multitasking with dwindling family support.<sup>(65)</sup> For example, as mothers reported in this study, in India a major obstacle to healthy meals is that mothers receive little or no help from their husbands and elders in the family and have to seek help from their other children.<sup>(65)</sup>



Image: Zimbabwe © UNICEF/UN0228468/Mpalume

# CONCLUSION

**The insights of mothers in this report provide striking evidence of the challenges far too many families around the world face in feeding their children well.**

**These challenges span the use of breastmilk substitutes, the lack of diversity in children's diets, and the poor quality of mothers' own diets during pregnancy.**

The findings of this study underscore the importance of creating spaces for mothers themselves to inform ongoing decision-making about the policies and guidelines that affect their own lives and the health of their young children, their families and communities. Channelling mother's insights about diet and nutrition into policy and programming will ensure policy and programming efforts meet the everyday needs of children and their families.

For many mothers, particularly in low-income countries, cost is the biggest obstacle to feeding their children a diverse diet of healthy foods. Yet in some cases, even where families have money to buy food, mothers cannot find the right quality or variety of foods. Some also reported that they cannot readily source appropriate foods due to their distance from markets and other food outlets.

Mothers reported that they feel responsible for ensuring their infants and young children are adequately fed. However, many find it difficult to fulfil these obligations. The double burden of mothers' formal and informal work outside the home, often combined with full responsibility for child and household care, impacts the health of mothers and that of their children. Mothers also told us they urgently need more and better targeted information on healthy foods and how best to manage their children's preferences.

The experiences of mothers reported here highlight the underlying barriers to the good diets of children and their mothers. Addressing these barriers will require coordinated action to remedy the limitations of existing food, health, water and sanitation, education and social protection systems. By taking a comprehensive and systems-based approach, the global community can meet children's unique nutritional needs, provide them with nutritious, safe, affordable and sustainable diets and, thereby, support societies to meet the economic, social and environmental challenges of the 21st century.

## The food system

Obstacles to food accessibility, affordability and quality significantly impede mothers' ability to provide healthy diets for their children, themselves and their family. Action is needed across the different levels of the food supply chain to ensure healthy food is available, affordable, of good quality and sold in safe environments.

While some mothers grow their own food or exchange food with neighbours, this is not practical or possible in all contexts. Mothers also worried that market or street food is unhygienic or of poor quality. There is an urgent need to empower families and communities to demand the resources and support to implement the necessary changes.<sup>(2)</sup>

Existing agriculture systems are characterised by an overabundance of staple grains like rice, wheat and maize. Diversifying food production will ensure families have access to a broader range of healthier foods, such as fruit, nuts and vegetables.<sup>(66)</sup>

Meanwhile, highly processed foods are available, cheap and intensively marketed.

Sales of these foods remain high in high-income countries and are growing fast in upper-middle and lower-middle income countries. Indeed, some mothers in this study described the ready availability of processed and ultra-processed foods and, in some instances, these foods were offered to infants as first foods. Concerted effort is required to increase mothers' awareness of the need for their children to consume nutrient-rich, locally available foods during the complementary feeding period and to limit consumption of ultra-processed foods and beverages.<sup>(66)</sup>

Currently, the promotion of healthy foods and practices by government agencies and health and nutrition services is overshadowed by the marketing practices of the infant formula industry and manufacturers of ultra-processed commercial foods. These entities invest in highly effective, tailored messaging that promotes breastmilk substitutes, commercially-produced complementary foods and commercial snack products for young children. Alongside tighter regulation of commercial marketing practices, there is significant scope to enhance the promotion of healthy food and drink for infants and young children. Such efforts, at the local, national and regional level, could be strengthened by embedding the learnings of commercial food marketing and promotion.

**A strong social protection system is essential to ensure that the many mothers and families living in extreme poverty have the financial resources to feed their children well. Significant investment is required to address the intergenerational transmission of malnutrition and to secure a positive future for millions of children. This is particularly critical now, in the midst of a pandemic, which is impacting – and will continue to impact – the most vulnerable.**



Image: Indonesia © UNICEF/UN0246930/Noorani

## Supportive systems

This study confirms that family relationships, community dynamics and the social protection system all significantly influence how mothers feed their children.

In this study, family influences shaped mothers' decisions both positively and negatively. Notably, however, mothers reported experiencing time pressures and little or no support from family in fulfilling the responsibility to feed their young children well. It is critical to extend communities' and local government's efforts to engage and support family members – grandparents, husbands/partners and other extended family members – and peer and community networks to respond appropriately to children's nutritional needs. Strategies to support fathers are particularly important, as fathers' roles are changing rapidly around the world.<sup>(67)</sup>

Strengthening the response capabilities of health systems is critical to improving infant, young child and maternal nutrition. Many mothers admitted they lacked knowledge about what constituted healthy food for their baby and themselves and how to prepare nutritious meals. Mothers indicated they value information from health professionals. However, they only implement such advice if it is tailored to their child and family. Interestingly, mothers rarely turn to government information about food and nutrition, indicating there is scope to improve availability and trust in government sources of nutrition information.

Health professionals have a key role in the education and support of mothers, families and communities and, therefore, require the evidence-based knowledge and skills to deliver information in a way that engages mothers and children and meets their needs. It is particularly important that these professionals are equipped to support parents to understand the principles of responsive feeding. Health workers need sound knowledge and skills to communicate information to families about hunger and satiety cues, developmental milestones that indicate readiness for introduction of solids, and responsive approaches to repeatedly exposing children to a variety of healthy foods and age-appropriate textures.<sup>(27)</sup> Quality training for health professionals, which emphasises not only content knowledge but also appropriate communication skills and strategies, is thus imperative.

In this study, provision of information on the appropriate introduction of first foods stood out as particularly important in countries such as Egypt, where first foods are introduced too early, and Afghanistan, where first foods appear to be introduced too late. It is vital that mothers receive evidence-based information through tailored, culturally resonant nutrition education and counselling on diet during pregnancy and lactation and weight gain during pregnancy.

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Health services must also respond. For example, currently, only one in ten children is born in an accredited 'baby-friendly' health facility.<sup>(10)</sup> This is of concern given the known effectiveness of baby-friendly facilities for improving breastfeeding outcomes internationally.<sup>(68)</sup> Further, the provision of breastmilk substitutes in hospitals persists, despite significant international efforts to implement the Baby-Friendly Hospital Initiative.<sup>(33)</sup>

Children's health forms the foundation of sustainable and prosperous societies. As such, as the global community rallies to meet the 2030 Sustainable Development Goals, improving children's diets is both critical and urgent. Mothers are key to achieving the enhanced nutrition of children around the world. However, they need far better support from family, community and health systems. Commitments to improving infant and young child nutrition must be underpinned by a systems approach and supported by coordinated efforts at local, national and regional scales. United, paying attention to the complexities of scaling effective interventions and programs, and striving to successfully integrate nutrition services across health, food and social protection systems, the global community can achieve the necessary change and improve the lives of all children, their families, communities and societies.

**33** The Baby-Friendly Hospital Initiative is a key component of the World Health Organization/United Nations Children's Fund Global Strategy for Infant and Young Child Feeding.

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# Appendices

## Appendix 1: Participant Demographic Summary

### Summary of mother/baby participant ages by country and workshop

UN code	Country	Workshop ID	Number of participants	Mean age of mothers (years)	Mean age of babies (months)
AFG	Afghanistan	1	10	N/R <sup>1</sup>	12
		2	10	N/R	N/R
	Country totals	2	20	N/R	12
AUS	Australia	1	29	32.7	32
		2	13	33.4	36
		3	4	34.0	12
	Country totals	3	46	33.4	27
BGD	Bangladesh	1	15	23.1	12
		2	15	20.6	12
	Country totals	2	30	21.9	12
CHN	China	1	9	35.6	13
		2	17	30.0	10
	Country totals	2	26	32.8	12
EGY	Egypt	1	15	24.9	14
		2	23	22.6	17
	Country totals	2	38	23.8	16
ETH	Ethiopia	1	18	19.7	12
		2	21	22.1	15
	Country totals	2	39	20.9	14

UN code	Country	Workshop ID	Number of participants	Mean age of mothers (years)	Mean age of babies (months)
GHA	Ghana	1	20	23.0	13
		2	20	21.5	14
	Country totals	2	40	22.3	14
GTM	Guatemala	1	18	22.7	11
		2	15	25.2	9
	Country totals	2	33	24.0	10
IND	India	1	10	23.7	14
		2	10	24.3	12
	Country totals	2	20	24.0	13
IDN	Indonesia	1	18	27.6	11
		2	21	23.7	13
	Country totals	2	39	25.7	12
KGZ	Kyrgyzstan	1	9	22.8	10
		2	9	23.4	15
	Country totals	2	18	23.1	13
MEX	Mexico	1	18	27.1	14
		2	9	28.1	27
	Country totals	2	27	27.6	21
NGA	Nigeria	1	18	23.4	13
		2	18	N/R	12
	Country totals	2	36	23.4	13

UN code	Country	Workshop ID	Number of participants	Mean age of mothers (years)	Mean age of babies (months)
<b>SDN</b>	Sudan	1	17	24.1	14
		2	13	N/R	14
		3	18	26.2	12
		4	20	N/R	14
		Country totals	4	68	25.2
<b>SRB</b>	Serbia	1	13	32.8	15
		2	7	32.3	21
		3	10	31.3	18
		Country totals	3	30	32.1
<b>USA</b>	United States of America	1	5	33.2	8
		2	5	34.8	13
		Country totals	2	10	34.0
<b>ZWE</b>	Zimbabwe	1	17	24.8	13
		2	17	21.8	13
		Country totals	2	34	23.3
<b>OVERALL TOTALS</b>		<b>39</b>	<b>573</b>	<b>25.2</b>	<b>15</b>

<sup>1</sup>N/R = not reported



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## Appendix 2: NOVA Classification Details

NOVA Group classification	Coded Foods	Examples
<b>Unprocessed/minimally processed (UMP)</b>	<b>Fruit</b>	All fruits that are fresh, squeezed, chilled, frozen, dried
	<b>Vegetables</b>	All leafy and root vegetables (excluding starchy root vegetables) fresh, squeezed, chilled, frozen, dried
	<b>Grains</b>	Rices, corn cob/kernal, wheat grain, pasta, polenta, cous cous whole or grits/flakes/flour
	<b>Plant protein</b>	Pulses/legumes, tofu, nuts ,seeds
	<b>Starchy roots</b>	Potatoes, cassava, yams
	<b>Fungi</b>	Mushrooms fresh or dried
	<b>Animal protein</b>	Whole meats (without seasoning), fish, poultry, eggs
	<b>Milk</b>	Cow, goat, pasteurised or powdered
	<b>Spices and herbs</b>	Fresh or dried pepper, cloves, thyme, mint
	<b>Plain yoghurt</b>	
	<b>Tea/coffee</b>	
<b>Water</b>		

NOVA Group classification	Coded Foods	Examples
<b>Processed culinary ingredients (PF)</b>	<b>Oils</b>	Vegetable oils with added anti-oxidants, milk butter, pork lard
	<b>Plant starches</b>	Starches extracted from corn and other plants
	<b>Sugars</b>	Cane, beet, molasses, honey, maple syrup
	<b>Salt</b>	Cooking salt, sea salt, mined salt

NOVA Group classification	Coded Foods	Examples
<b>Processed foods (PF)</b>	<b>Fruits</b>	Fruits in syrup with added anti-oxidants
	<b>Vegetables</b>	Canned/bottled vegetables
	<b>Meats</b>	Dried salted, cured, pickled, smoked animal meats with added preservatives
	<b>Canned fish</b>	Canned tuna, salmon
	<b>Cheeses</b>	
	<b>Nuts/seeds</b>	Salted, sugared, seasoned
	<b>Fresh bread</b>	Freshly made unpackaged

NOVA Group classification	Coded Foods	Examples
<b>Ultra-processed foods (UPF)</b>	<b>Carbonated drinks</b>	Sugar sweetened beverages, energy drinks
	<b>Confectionary</b>	Chocolates, candies, ice cream, sugared lollies
	<b>Baked goods (mass produced)</b>	Bread, biscuits, cakes and cake mixes, cookies, pastries
	<b>Cereals</b>	Breakfast cereals, muesli, energy bars
	<b>Sweet drinks/yoghurts</b>	Chocolate milk, fruit drinks, sugared yoghurts, cocoa drinks
	<b>Sauces/meat extracts</b>	Meat broths, stock, instant sauces
	<b>Infant formula</b>	Formula, follow-on milks
	<b>Powdered and packaged meals</b>	Powdered shakes and soups, fortified meal substitutes, slimming products, instant soups, instant desserts
	<b>Ready-to-heat meals</b>	Frozen meals, pies, hot dogs, pizza
	<b>Baby products</b>	Commercial baby food
	<b>Meat products</b>	Poultry and fish 'nuggets' and 'sticks', sausages, burgers, hot dogs, and other reconstituted meat products
	<b>Takeaway foods</b>	Pre-prepared pies and pasta and pizza dishes

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