

# FOOD AND ME

How adolescents experience nutrition across the world.



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Adolescence provides a second window of opportunity for a high return on investment with nutritional interventions.

UNICEF, The State of the World's Children 2019, p. 86

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

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Image: ©UNICEF Sudan/2019/Idreesy

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# FOREWORD

**Wander through any roadside market, canteen or mall in the afternoon in any big city, and chances are you will come across groups of teenagers sharing snacks, drinking sodas and laughing and talking about their lives. For young people stepping out of the family circle and into the world for the first time, eating and drinking together provides moments of shared joy. Such memories can last a lifetime.**

There may be other long-lasting influences, too: Habits and attitudes developed around food and diets during this time of life often linger, shaping eating behaviours for years to come. And the diets of adolescents during these years of rapid change are instrumental in ensuring healthy growth and mental development.

Sadly, the healthy development of far too many adolescents is being compromised by poor diets. And, as UNICEF's *The State of the World's Children 2019* showed, children and young people who eat poorly live poorly. Poor diets mean many adolescents suffer deficiencies of essential nutrients leading, for example, to high rates of iron-deficiency anaemia among adolescent girls; poor diets also explain why rates of overweight and obesity have soared since the mid-1970s as more and more young people eat foods high in calories but low in nutrients.

Young people pay a price, but so do we all. When young people are robbed of their chance to meet their full potential, our societies and economies are robbed of the positive contribution they could have made. And when the diets of children and young people fuel the emergence of cardiovascular and other diet-related non-communicable diseases, we again all pay the price through lowered lifetime potential and increased healthcare costs.

So, diet matters, for our societies and economies and – ultimately – the achievement of the Sustainable Development Goals. We all need to do more to better support children and young people to eat nutritious and safe diets. But for that to happen we need to learn more about their knowledge of good nutrition, and their attitudes and behaviours with respect to food.

To help do that, teams from UNICEF and Western Sydney University's Young and Resilient Research Centre designed a unique set of dialogues, implemented by UNICEF Country Teams and National Committees in 18 countries across the world, to give young people a voice on food and nutrition. We have heard such voices all too rarely, especially from poor and marginalised communities. As this report on those dialogues shows, young people have plenty to say and plenty of ideas on how they and their families can eat healthier diets.

From Serbia to Sudan, young people told us about the problems they face in eating well. "I want to eat healthy," said one, "but I don't have big choice of food in school." Said another: "We can't get [healthy] foods in our local shops because shopkeepers are selling low quality foods." For a number of participants, the challenge was eating at all: "Some did not eat dinner last night or just drank milk," one facilitator noted.

Despite the obstacles, the young people demonstrate their belief in change. They spoke of how technologies like social media could be used to better educate people about diets, about how their schools should promote healthy food environments and stop the sale of unhealthy foods, and about the roles that community leaders, government and young people themselves could play in improving diets.

Just as young people have been in the forefront of action on climate change, they can also become agents of change for better nutrition. We hope that this *Food and Me* project, along with our parallel *Feeding My Child* project, will inspire them to go on making their voices heard and to demand nutritious, safe, affordable and sustainable diets for themselves, their families and their communities.



**Henrietta H. Fore**  
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# MAIN MESSAGES

In 2019, more than 600 adolescents took part in workshops in 18 countries to talk about what and how they eat and the challenges they face in accessing nutritious, safe and affordable diets. Here are some of the key findings.



# Main messages from adolescents in this study

## Ideas about 'health' and 'wellness' vary for adolescents across the globe

Ideas varied according to location, age, cultural and economic background. For some, health meant a well-defined musculature, while for others, health meant maintaining a balanced lifestyle that incorporates physical activity and eating well.

Adolescents saw nutritious diets and healthy eating as a priority. Across all countries, food was perceived to be important for health, providing them the energy to function and have a fulfilling life. Good nutrition was also viewed as important for mental health, intelligence and school achievement, therefore influencing adolescents' future success.

Alongside physical activity, adolescents tended to associate health, wellness, and improved longevity with 'eating well' or 'good nutrition'. Most commonly they identified food and nutrition as being essential to their growth, development and capacity to build 'strength'.

## Adolescents' dietary intake is poor

In the previous 24 hours, most adolescents ate less than the recommended amount of fruit and vegetables and the protein they ate was mostly from animal food sources. A third of what they consumed was ultra-processed food or drink with wrapped candy the most common ultra-processed food consumed.

Sentimental and cultural attachments meant adolescents generally chose healthy food options when asked about 'favourite foods'. However, when asked about 'wished-for foods' ultra-processed foods were preferred.

## Adolescents have limited nutritional knowledge

Workshops showed a lack of knowledge in identifying processed and unprocessed food and a poor understanding of the ultra-processed foods. Most adolescents said that healthy eating is 'good' and needed for growth and hygiene, yet disease prevention was poorly understood.

Adolescents from a range of countries said they do not have the knowledge and ability to be able to eat healthily, often identifying a lack of cooking and shopping skills.

## Adolescents reported high levels of body dissatisfaction

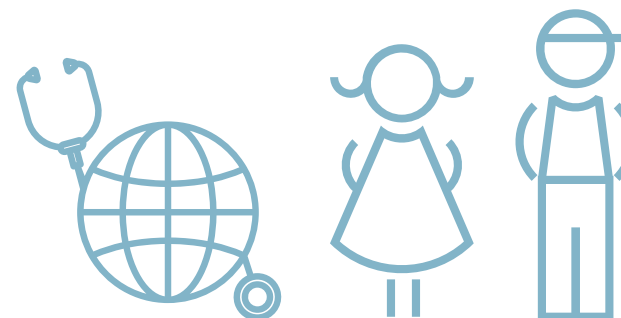
Seventy percent of participants expressed their desire to change their body shape. Girls tended to 'wish' for their body shape to be thinner, whereas boys tended to 'wish' for a broader body. Of concern was the young age of those who want to be 'thinner'. Forty-seven percent of adolescents aged 13 and 34% aged 14 desired a body size classified as underweight.

Many adolescents across all countries discussed making conscious efforts to change their diet and physical activity routines so as to change or maintain their current body shape.

## Family, social media and peers are the greatest influences on food choice for adolescents

Parents played a large role in food decisions, yet adolescents identified that parents lack nutritional knowledge and needed to be part of the solution for better nutrition. Some adolescents discussed rules, restrictions and controls they feel their parents use to shape food choices and meals at home.

The influence of peers was also apparent, with friends and social outings commonly discussed as a factor in adolescent food choices, gravitating mostly towards unhealthy choices. Adolescents reported that social media was more influential on their dietary habits than other forms of media and was used to shape their health identities.



## Individual elements including taste also drive adolescent food choice

Adolescents commonly reported not liking the taste of healthy foods and preferring unhealthy foods. Adolescents also described a reluctance to change, saying that while they understand the need for a healthy diet, they just do not want to change from an unhealthy diet to one including more fruit and vegetables.

## Financial, geography and gender barriers are deciding factors in food choices

Economic, geographical (rural/urban), and gender factors profoundly influences dietary choices. In this study, 60% of adolescents across LICs, MICs and HICs consistently identified financial constraints as the greatest barrier to healthy eating.

Adolescents were aware of how their economic status limited food sufficiency and choice. Both economic status and geographical location (rural or urban) impacted on how and where they socialised and made their food choices. For example, urban adolescents were more likely to 'hang out' in shopping centres and eat takeaway foods, while rural adolescents seemed to use school, outdoors and church more for social gathering, and made healthier food choices.

Gender roles in directing food choices were common in some cultures. Often the father or brother had more control over decisions about food, location and company for meals. In other cultures, mothers, aunties and sisters played more of a role in meal choices at home. Gender differences were also noted in the choices when adolescents ate outside the home.

## Food choices are based on access to food sources in the external food environment

Adolescents said their food choices are based on access to food sources, such as street vendors near school gates. Adolescents also reported that a major barrier is the lack of access to healthy foods at school and that, if available, it is expensive. Adolescents identified there is limited access to nutrition information in their school curriculum.

## Media influences diets and lifestyle

Adolescents were highly connected on social media, and this directly influenced choices around food and body perception. Technology also played a role in how meals were eaten at home, with adolescents often reporting eating their main meal in front of the television or digital devices.

## Adolescents identified the need for family, community and governments to work together and all be a part of the solution

In all countries, adolescents reported assuming individual responsibility for changing their circumstances, as opposed to relying on government, communities or other individuals to enact change. However, they identified the need for all stakeholders to come together and be part of the solution.

Key areas identified for action by adolescents were: lack of nutritional knowledge in their families, communities and themselves; food insecurity; poverty; access to nutritious, safe, affordable and sustainable food and clean water; junk food sales at school; chemical and fertiliser use; food labelling and marketing; and unhealthy snacking.





Image: ©UNICEF India/2019/Lambam

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Healthy food intake  
determines our future. »

(Indonesia, male, age 15)



Image: ©UNICEF Guatemala/2019/Escobar

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# INTRODUCTION



**Adolescence is defined by the World Health Organisation (WHO) as the period between ages 10 and 19. It can be seen as one of the ‘healthiest’ times of life, sitting between early life mortality and chronic disease in adulthood. However, this is also a time of great physical, emotional and social change, with rapid biological growth requiring additional nutrition. Adolescents have particularly high energy and protein requirements, especially between ages 15 to 19. Further, to ensure optimal growth, micronutrient requirements need be met for iron, iodine, calcium, zinc and vitamin D<sup>(1)(2)</sup>**

At a time when global childhood mortality rates are decreasing, the Sustainable Development Goals (SDGs) highlight that for the future health of the globe, children and adolescents need not only to survive, but also thrive in their ability to form relationships, learn, explore, build economic opportunities and contribute to society.

But, 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 is not growing well<sup>(2)</sup>. Less visible, but just as worrying, is the extent of the ‘hidden hunger’ of deficiencies in vitamins and other essential nutrients, which affects tens of millions of adolescents. Adolescents are especially vulnerable to all these forms of malnutrition, in part due to their rapid growth and increased nutritional needs at this stage of life, along with a failure to consume a healthy diet. This then limits an adolescent’s physical and intellectual potential and perpetuates inequality across the generations, adding to the global burdens of communicable and non-communicable diseases.

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 both food prices and in the prevalence of malnutrition, such as childhood wasting<sup>(3)</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 actors involved in producing, processing, distributing, preparing and consuming foods. When it comes to improving adolescent nutrition, the ways in which adolescents interact with these complex food systems is vital.

It was this thinking that lay behind the planning and implementation of an unprecedented series of workshops conducted 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 600 adolescents from 18 countries participated in workshops designed to gather information about food and nutrition practices in diverse and engaging ways. This companion report presents findings from the workshops (a separate report, “Feeding My Child,” presents findings from a parallel set of workshops carried out with mothers of young children).



**For the future health of the globe, children and adolescents need to survive and thrive in their ability to learn, explore, build economic opportunities and contribute to society.**

Image: ©UNICEF/UN0339621/Zhagiparov



**The study aimed to:**

- canvass and represent the views of a wide range of adolescents living in 18 countries on their dietary choices, food intake, access to nutritious, safe, affordable and sustainable diets, nutrition literacy, and the influences on and barriers to these
- investigate how adolescents' experiences of surrounding food environments drive their food choices
- identify commonalities and points of divergence between the knowledge and experiences of adolescents in different settings.

The adolescents' mean age was 15 and the study included 378 girls and 238 boys. Adolescents worked individually and in groups with a workshop facilitator to describe what they ate and drank in a 24-hour period, discuss how they viewed their own health, the importance of nutrition for health, and explain elements around their body awareness. Adolescents demonstrated their nutritional knowledge by identifying what they thought were healthy and unhealthy foods. Finally, adolescents discussed what the key drivers of their food choices were and what barriers prevented consumption of a healthy diet each day. The workshops were also used to elicit solutions from adolescents to promote healthy eating and active lifestyles, establish an enabling food system and improve nutrition literacy.

This report first explains the data gathering and analysis methods used to document and interpret adolescents' perspectives on these themes. It then outlines the study's key findings, drawing attention to the commonalities and key differences between adolescents' experiences in different countries, and makes recommendations to guide future policy and programming. We hope that policymakers, Non-Governmental Organisations (NGOs) and professionals who work with adolescents will draw on this research to support the development of new knowledge and interventions around the world.



# BACKGROUND





Although adolescents arguably already represent a marginalised and disempowered population, certain groups such as young girls are disproportionately marginalised.

Image: ©UNICEF/UNI394529/Dejongh

**Adolescents are often some of the most marginalised and vulnerable populations across the globe, and thus, despite their increased nutritional needs, can be exposed to nutritional deficiencies that affect their long-term growth and ability to thrive<sup>(2, 4)</sup>. During this key period of development, the absence of adequate nutrition contributes to impaired cognitive function, nutritional deficiencies and malnutrition. This all inhibits an adolescent's ability to thrive and participate fully in social, cultural and economic life in their countries<sup>(2, 5)</sup>. To enable adolescents to thrive, we must consider the following elements unique to this period of life.**

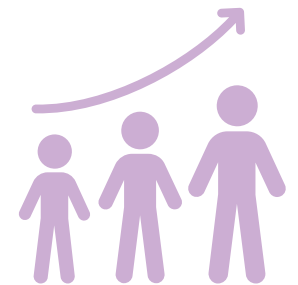
### Malnutrition

With good nutrition, rapid growth during adolescence can be a crucial window in which 'catch up' growth occurs, reducing the long-term physiological effects of stunting<sup>(10)</sup>. However, if this fails to occur during this time, adolescents are at increased risk of impaired neurological development, school absenteeism and psychological distress<sup>(4, 11)</sup>. This underscores the importance of good nutrition during adolescence.

However, the paradigm of malnutrition for adolescents is rapidly shifting. While undernutrition has previously been a major concern, now, in certain parts of the world rates of overweight and obesity are increasing<sup>(12)</sup>. The prevalence of overweight is four times higher in upper-middle- (UMICs) and high-income countries (HICs) than in LMICs or LICs, and it is similar for obesity<sup>(12)</sup>.

### Micronutrient deficiencies

During adolescence, individuals undergo rapid physiological growth, rendering them susceptible to micronutrient deficiencies such as iron-deficiency anaemia and iodine-deficiency disorders. Iron deficiency anaemia is the leading cause of disability adjusted life years for adolescents, affecting an estimated 619 million in 2013 and significantly impacting their capacity to thrive and function in the long-term<sup>(6)</sup>.



## Gender differences

Although adolescents arguably already represent a marginalised and disempowered population, certain groups such as young girls are disproportionately marginalised<sup>(7,8)</sup>. They are especially vulnerable to exploitation, fewer opportunities for education, social isolation, early marriage and childbearing<sup>(7,9)</sup>. Across the globe, 16 million adolescent girls aged 15 to 19 give birth each year<sup>(2)</sup>. The combined increase in physiological demands of adolescent growth and pregnancy places many young girls and their children at risk of malnutrition<sup>(10)</sup>. Young women who experience stunting in childhood often continue to do so as adults and, without the necessary dietary support during adolescent pregnancy, their children are more likely to also experience stunting. As such, girls' nutritional deficiencies potentially perpetuate the intergenerational cycle of malnutrition<sup>(10)</sup>.

## Poor diets

A catalyst for this paradigm shift in malnutrition for adolescence is the poor dietary intake and habits of adolescents. A systematic review by Keats et al 2018<sup>(13)</sup> found the diet quality of adolescent girls in LICs countries to be poor, with a low daily consumption of nutritious foods and an increased intake of energy-dense, nutrient-poor foods, such as sweet snacks, salty snacks, fast foods and sugar-sweetened beverages.

Similarly, in HICs, adolescents often have diets high in sweetened drinks, excess salt and processed foods, along with unhealthy dietary habits that include skipping meals and snacking. All of these factors are associated with obesity and overweight<sup>(14)</sup>.

## Food environments

The poor dietary choices and habits of adolescents reflect the food systems and environments with which they interact. These can provide more barriers than enablers to adolescents' access to healthy foods<sup>(15, 16)</sup>.

With ease of access to fast, cheap ultra-processed foods around schools and in social settings, adolescents face an array of unhealthy food choices in their everyday environments<sup>(17, 18)</sup>. This is compounded by adolescents' high rates of exposure to seductive food marketing techniques promoting unhealthy food choices, at a time of life when the brain is especially vulnerable to food marketing messages<sup>(19, 20)</sup>. Improving nutritional outcomes for adolescents during this critical time of life requires enhanced policy and action.

## Policy environments

Despite global consensus that adolescents are vulnerable to developing poor dietary habits, which have lifelong and intergenerational health implications, coordinated policy and intervention to improve adolescent nutrition remains limited<sup>(6)</sup>. Several reports have highlighted the vulnerability of adolescents – especially girls who, internationally, face greater food insecurity and nutritional inadequacy – and called for greater political commitment to and investment in adolescent nutrition<sup>(9, 10)</sup>.

In particular, there is limited policy around the regulation of food environments and systems for adolescents. UNICEF's proposed conceptual framework (the *Innocenti Framework on Food Systems for Children and Adolescents*) provides a platform for nutrition policy and program development to address food systems and environments for adolescents, including consideration of proximal and distal environments<sup>(5)</sup>.

## Food literacy

With limited regulation of adolescent food environments, an opportunity exists to empower adolescents dietary change through enhanced food literacy<sup>(21)</sup>. Food literacy refers to an individual's proficiency in food related skills and knowledge which can enable adolescents to make appropriate food decisions and meet nutritional needs to support health<sup>(22)</sup>. Evidence has shown, improving food literacy enhanced adolescents' dietary behaviours with increased consumption of fruit and vegetables and reduced consumption of packaged or processed snacks<sup>(23)</sup>. Increased food literacy among adolescents has the potential to facilitate healthy dietary behaviours. *How* adolescents across the globe increase their food literacy remains a challenge, but changes to school curriculum will play a vital role<sup>(23)</sup>.

We are supposed to have enough food.  
We are supposed to have agricultural equipment  
to make adequate food. People need to be  
educated. We need advocacy for change.

(Zimbabwe, group activity)

# METHODS



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

## Adolescents' perceptions and 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. Details of workshops and activities can be found in the SOWC2019 Adolescents' Workshop Manual, available online at: [https://www.westernsydney.edu.au/young-and-resilient/documents/SOWC2019\\_Workshop\\_Manual\\_Adolescents.pdf](https://www.westernsydney.edu.au/young-and-resilient/documents/SOWC2019_Workshop_Manual_Adolescents.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 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

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

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 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 a 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

Thirty-seven workshops, involving a total of 656 adolescents 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 adolescents, including those within specific and sometime highly vulnerable, groups; for example, internally displaced refugees in Sudan. On average, workshops involved 18 participants; however, there was considerable variation in size across countries (attendance ranged from nine to 28 participants; see Table 1 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 adolescent participant age and gender by country**

UN Code	Country	Number of Workshops	Number of Participants	Mean Age (Years)	Gender		
					F	M	N/R <sup>1</sup>
AFG	Afghanistan	2	20	15.7	20	0	0
AUS	Australia	1	9	14.2	7	2	0
BGD	Bangladesh	2	41	15.4	22	19	0
CHN	China	2	27	14.8	16	11	0
EGY	Egypt	2	32	16.3	23	9	0
ETH	Ethiopia	2	33	15.3	27	5	1
GHA	Ghana	2	40	15.6	24	16	0
GTM	Guatemala	2	36	15.3	20	16	0
IND	India	2	36	14.6	20	16	0
IDN	Indonesia	2	34	14.9	17	17	0
KGZ	Kyrgyzstan	2	40	14.3	24	16	0
MEX	Mexico	2	41	13.9	21	20	0
NGA	Nigeria	2	40	15.2	22	17	1
PHL	Philippines	1	14	N/R <sup>1</sup>	0	0	14
SRB	Serbia	2	42	15.8	35	7	0
SDN	Sudan	5	104	14.4	42	40	22
USA	United States of America	2	28	15.6	19	9	0
ZWE	Zimbabwe	2	39	16.0	19	18	2
<b>OVERALL TOTALS</b>		<b>37</b>	<b>656</b>	<b>15.1</b>	<b>378</b>	<b>238</b>	<b>40</b>

<sup>1</sup>N/R = not reported

## Data collection and analysis

### Standardised data collection methods

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' (see Table 2) was based on the 24-hour dietary recall methodology to determine the participant's dietary intake. The 24-hour multi pass diet recall is a thorough assessment of dietary intake with limited participant burden<sup>(24, 25)</sup>. The tool has been shown to be the most accurate method to measure dietary assessment in children<sup>(26)</sup>.

The development for activity 'Food and your body: body talk', was based on the validated Peterson Body Mass Index – Silhouette Matching Test (BMI - SMT)<sup>(27)</sup>. Designed for adolescents aged 13 years and over, the validated measure presents participants a scale of silhouettes that represent BMI scores 18, 24, 30 and 36 for both female and male figures and asks them to: 1. Identify their current appearance, and 2. indicate the appearance (or body shape) they would most like to look like<sup>(27)</sup>. The validated silhouette size figures were taken from the Canadian Dietetic Associations scale of BMI-based silhouette figures<sup>(27)</sup>. To adapt this tool for use in the workshops the silhouette figures were replaced with fruit images that represented the similar BMI size increments and gendered body image shape. The use of an object rather than a human figure was to ensure the activity met cultural and religious requirements for all countries participating.

### 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>(28)</sup>. NOVA 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.

**The use of pictures of apple and pear illustrating various shapes offered excellent ideas to participants to select and choose the types of shapes they have and those that they aspire to have.**

(Workshop Nutritionist, Ghana)

Foods and drinks were grouped as Unprocessed/minimally processed (MP), Processed culinary ingredients (PCI), Processed (P) or Ultra-processed foods (UP), and then further classified as:

- **foods consumed by themselves (e.g., fruits, nuts, milk)**
- **main item in a culinary preparation (e.g., vegetables, grains, flours, meat, eggs)**
- **accompanying items (e.g., oil, salt, sugar, herbs, spices)**
- **ultra-processed foods ready to consume (e.g., bread, cheese, ham, packaged snacks, soft drinks, pre-prepared frozen dishes)**

NOVA is a validated tool for nutrition and public health research endorsed widely in scientific work, including by the Food and Agriculture Organization of the United Nations and the Pan American Health Organization<sup>(29, 30, 31)</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 outlined in Monteiro, Cannon<sup>(29)</sup>. For a detailed list of coding groups, see Appendix 2.

### 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, country). In some instances, nutritionist or workshop facilitator notes have been quoted.



Table 2. Themes used in data analysis

Topic	Activities	Themes
Everyday food	Your food timeline Imagine your ideal meal	Dietary intake Perceptions of nutrition and healthy food Preferred food Discretionary food Skipped meals
Food and your body	How important is food for your body? Scenarios Body talk Celebrity heads	The importance of health The consequences of unhealthy eating Influences on healthy eating and lifestyle Perceptions of nutrition and healthy food
Food in the media	Food information in the media The power of the brand	Influences on healthy eating and lifestyle Social media/marketing
Food at school	Food education/eating at school	Teaching/learning about food Food in the school environment
Hanging out with friends	Eating away from home Money challenge	Preferred foods Influences on healthy eating and lifestyle Peer influences (Financial) autonomy
Home and family	Who's in your household Your family's main meal Food rules	Influences on healthy eating and lifestyle Food culture/habits Food rules Food preparation (safety, hygiene)
Barriers to healthy eating	Obstacle course	Barriers and workarounds to personal healthy eating
Game changer	Action plans	Challenges and solutions to healthy community/societal nutrition
Culture and occasions/celebrations	Design a celebration	Preferred foods Aspirational foods Food and social mobility/class Cultural contexts
Food sources	My family's food sources	Food access and availability Growing food Food security
Recipe challenge	Recipe challenge	Preferred food Cultural contexts

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 Western Sydney University's Human Research Ethics Committee (Approval No H11101).

As research activities were conducted internationally and involved adolescents 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 might be overlooked and developing research activities 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, 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 workshop facilitators also had some discretion over activity implementation, and key activities could be customised for specific cultural contexts.

# KEY FINDINGS



**Adolescents across the globe said they value good nutrition and believe it strengthens their chances of a prosperous future. Adolescents mostly understood the relationship between good nutrition and positive health, wellness and improved life outcomes.**

There was a disconnect in this study between adolescents' awareness of dietary and nutritional principles and their reported dietary intake. Adolescents' knowledge of nutrition often seemed limited, incomplete, or misinformed. Further, body awareness and, at times, a heightened sense of body dissatisfaction were evident, leading to altered eating behaviours.

Adolescents in this study had limited nutrition literacy and skills (functional, interactive and critical) that would enable them to choose a healthy diet. Many also had limited understanding of broader food systems and other influences on daily food choices.

Although adolescents had some awareness of what constituted a 'good diet', several factors overrode this, shaping their food choices and compromising their dietary intake. Individual factors such as taste were key drivers of food choices, with many adolescents preferring 'tasty', ultra-processed foods. Food systems played a large role, with cost and availability of food options impacting what adolescents ate: where unhealthy foods were cheaper and readily available, these were often chosen over healthier options that could be more expensive, harder to find or more difficult to prepare.

While adolescents valued a healthy diet, they were reluctant or found it difficult to improve the quality of their eating, such as eating fewer processed foods or more fruits and vegetables. Common barriers included trouble breaking existing habits or dealing with social pressure such as conforming to friends' or family diets. Adolescents also reported that digital technologies, particularly social media, played a critical role in their decision-making, profoundly influencing their food choices, nutritional knowledge, and body awareness.

Participants around the world reported that the family and the school environment influenced their dietary preferences, decisions and habits both positively and negatively. This is unsurprising given they typically spent most time and consumed most of their meals either at home or at school. They consistently noted that schools provided very limited food options and observed that this should change. They also often advocated for better and more practical food and nutrition education at school.

Across the globe, adolescents spoke passionately about their concerns but also expressed a sense of powerlessness to improve their nutrition. Many felt that 'healthy eating' was beyond their control, most commonly due to their limited economic independence or lack of autonomy over food decisions. They identified economic, geographical and gender divides as challenges that

prevented them from making positive nutritional choices. In some countries, particularly in LICs, food access was a key issue. In some places, poor nutrition was normalised due to a lack of food availability and quality.

Despite the obstacles many faced, adolescents were optimistic that solutions can be found to improve their diet and nutrition, especially in relation to the prevention of malnutrition. Adolescents suggested that efforts should focus on integrating nutrition education in schools. They called on governments, institutions, and community leaders to play a greater role in leading change by developing relevant policies, laws, regulations and infrastructure.

In what follows, we outline the key findings from consultations with adolescents in all 18 countries. Overall, adolescents painted a rich picture of the complexities of nutrition as it plays out in their daily lives. Their insights provide concrete suggestions for changes in policies and practices, from food systems to investments in nutrition, leading to sustainable improvements in adolescents' health and well-being across the globe.

**Across the globe, adolescents spoke passionately about their concerns but also expressed a sense of powerlessness to improve their nutrition.**

## Section 1: What Adolescents Eat and How They View Nutrition and Their Bodies

### Views on nutrition

Globally, there is a call to action to improve and invest in the health and wellbeing of adolescents<sup>(4, 32)</sup>. The influences and contexts that shape adolescents' health and wellbeing are broad-ranging and complex. How an individual defines personal wellbeing and health can vary substantially across cultures and contexts. Global action on adolescent health must be responsive to cultural diversity.

Adolescents from the 18 participating countries highlighted deep interconnections between their diet and nutrition and health and well-being. The data gathered shows the critical role culture and developmental stage play in shaping adolescents' ideas about diet, nutrition, wellness, and good health. This section focuses on how adolescents think about diet and nutrition as it relates to their personal health and wellbeing, identifying the commonalities and differences across cultures.

### Adolescents' visions of health and wellness

Overall, in this study adolescents' geographical location, economic status, age and cultural background strongly influenced their ideas about what constituted 'health' and 'wellness'. For some, health meant a well-defined musculature, while for others health was about maintaining a balanced lifestyle that incorporated physical activity and eating well.

**Amongst the boys, across ages, the notion of being 'healthy' was different. For the older boys it meant having biceps, for some it meant being active. For others, eating home cooked food and doing some physical activity, even a stroll after dinner was considered healthy.**

(Workshop Facilitator, India)

At the same time, adolescents in this study shared some fundamental ideas about what constituted health. While being healthy was in part seen to be about being free of disease, they also noted that good health is about being strong, enjoying life, and doing or achieving the things that are important to them.



The influences and contexts that shape adolescents' health and wellbeing are broad-ranging and complex.

Image: ©Girish Lala

**“To be healthy means to be very strong without tiredness. Healthy food contains essential vitamins and it has a positive impact on our body. When the body is healthy it means there is no disease.”**

(Sudan, female, age 16)

**“I am free of diseases because of [eating well]; with good health I can do what I want.”**

(Guatemala, male, age 16)

Adolescents perceived deep interconnections between physical and mental health. They generally understood physical health as fundamental to their broader wellbeing, as well as their intellectual acuity, and many understood health in holistic terms that encompass both mind and body.

**“A healthy mind needs a body so I can think extra good without being vulnerable to diseases.”**

(Zimbabwe, male, age 16)

**“The goodness of life can only be felt if we are healthy.”**

(Indonesia, male, age 16)

**“Staying healthy is maybe the most important thing in life. Because without health we couldn't do anything. When we're not healthy, we're not happy.”**

(Serbia, female, age 15)

## Health as a priority

For most adolescents, being 'healthy' was a priority. They talked about their health as an asset, although they acknowledged that they do not always do everything they should to stay healthy.

**“Health is something we need to maintain, but it [requires] a lot of care [and] sometimes we forget or we do not practice [a good diet].”**

(Guatemala, female, age 14)

Recent research highlights that adolescents place limited value on the future dimensions of their health and were more focused on the 'now'<sup>(33)</sup>. In contrast, the adolescents in the present study explicitly linked their views about health and wellbeing to their hopes and aspirations for the future, stating that maintaining good health helps them complete daily tasks, such as education and sports or physical activity, that will support a positive future for them.

**“If we don't stay healthy, it will harm our education. We won't be able to do our family work. We won't be able to attend school regularly, so we will miss [out on] the scholarship. If we don't stay healthy, we won't be able to step ahead in our life.”**

(Bangladesh, female, age 16)

They also discussed how good health supports more abstract goals relating to happiness, longevity and raising their own children later in life.

**“In future, I want to go for sports, running/jogging. My health will have influence on my children that is why I will try to eat healthy food. We have morning exercises every day at school (we've practising this for 11 to 15 years).”**

(Kyrgyzstan, female, age 14)

Some adolescents said that being healthy helps them to focus on the things that matter or keep them on the 'right path'.

**“Healthiness removes laziness, increases our [capacity] to do daily work... An idle brain is the devil's workshop. So, it's important to stay healthy.”**

(Bangladesh, male, age 15)

They often felt keenly their dependence on their families and wanted to contribute to family income. Many highlighted the importance of maintaining good health and wellbeing to ensure they fulfill family and other duties, minimise additional costs or worry for their families, and set themselves up for the future.

**“[Staying healthy] frees my family from worrying. When you are healthy, you can do whatever you want. It is said that ‘life lies in movement’. Continuing to exercise will keep me healthy.”**

(China, female, age 15)

## Nutrition as a priority

Alongside physical activity, adolescents tended to associate health, wellness and improved longevity with ‘eating well’ or ‘good nutrition’. When adolescents had the opportunity to reflect on their dietary choices and the role of nutrition in their lives, they placed a strong priority on nutrition. Across all 18 countries, 99% of participants identified good nutrition as being important for their bodies and everyday function.

Most commonly, adolescents identified that food and nutrition was essential to their growth and development and their capacity to build ‘strength’.

**“[Nutritious food] helps me... grow. I will have energy. I will be powerful.”**

(Ethiopia, female, age 15)

**“We get power from nutritious food. It helps in development of the body. It ensures we do not have anaemia. And we should always eat nutritious food, it helps in sharpening our eyesight. Eating bitter gourd helps in cleansing our blood.”**

(India, female, age 13)

The next most common purpose of nutrition identified by participants was to prevent illness. Good nutrition was seen to play a role in different types of disease prevention by building ‘immunity’ to non-specific diseases and reducing non-communicable diseases.

**“[Good nutrition means] I won’t have nutrition[-related] problems like heart diseases, obesity.”**

(Mexico, male, age 13)

**“[Good diet means] we are protected from germs... It does not let any disease grow in our body... Our body remains healthy and we feel good within.”**

(India, male, age 14)

Adolescents also frequently noted that, without adequate nutrition, their energy would be compromised and that would be an issue for them in their daily lives.

**“[I eat well] to maintain a lot of energy; to do activities like play football and basketball and to maintain health.”**

(Guatemala, male, age 15)

**“[The] benefits of food for our body [include]: (1) Gives us energy. (2) For every task we need food. (3) We need food for walking, reading and to maintain psychological balance. (4) Our body develops. (5) Food is very important to complete daily tasks.”**

(India, male, age 13)

Good nutrition was also seen as a way to maintain mental health, intelligence and learning, thereby influencing their success in the future.

**“Roasted beef and water is important because it gives me mental stimulation.”**

(Zimbabwe, male, age 17)

**“It is important to stay healthy because eating the foods we have contains various nutrients to keep our body tough against diseases, our mind sharp, and our energy to be replenished.”**

(Philippines, gender and age not recorded)

Participants said that good nutrition supports them to work effectively and efficiently, ensuring they can fulfil their obligations to themselves, their families and others.

**“(1) We can do any work when we are healthy. (2) We will be able to help our mom/dad in household chores. (3) We will be able to study well. (4) We will be able to go to school regularly.”**

(Bangladesh, female, age 13)

**“Staying healthy is important because it is only when one is healthy that it will be possible to work or carry out our normal daily activities efficiently. A healthy body will readily fight away diseases and a healthy mind will think well.”**

(Nigeria, male, age 16)

Some research has suggested that adolescents are “too young to be worried about their health”<sup>(34, 35)</sup>.

Adolescents in this study, however, generally understood the importance good nutrition could play in helping them achieve a better or fulfilling future.

**“Eating healthy for me is to eat properly and with foods that benefit our body’s development for its proper functioning. For me, it is important to be healthy, since it helps to generate energy that serves us in the day and that we can grow in a correct way, because in the future it will help us.”**

(Mexico, female, age 14)

## What adolescents eat

Adolescence is a crucial period for lifelong nutrition<sup>(2)</sup>. During this period, adolescents establish dietary habits they will carry forward into adulthood. Dietary intake during this life period has been shown to be a key predictor of non-communicable disease risk<sup>(36, 37)</sup>. Despite adolescent participants in this study identifying nutrition as a clear priority for their health and future, these findings show that there was often a disconnect between their intentions to eat well and their actual dietary habits.

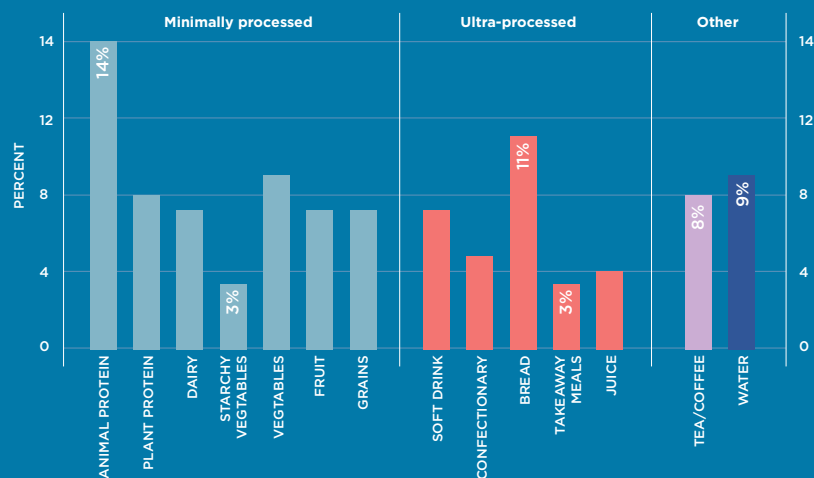
Overall, the findings from the present study confirm those of previous dietary intake reviews, which show that adolescents in low income countries (LICs) and middle income countries (MICs) have a poor dietary intake characterised by high consumption of processed foods<sup>(13)</sup>. The evidence is unequivocal: there is a clear need for effective action to improve nutritional intake for this vulnerable population.

## What are adolescents eating?

In general, in this study, adolescents across all countries reported that one third of their dietary intake consumed in the previous 24 hours was from ultra-processed food and drink, with the remainder being unprocessed or minimally processed (see Figure 1). The largest portion of unprocessed food consisted of animal protein; there was minimal intake of fruit and vegetables. Similar to findings discussed in *The State of the World's Children 2019: Children, Food and Nutrition*, adolescents in high income countries (HICs) and MICs consumed a greater proportion of ultra-processed foods, whilst those in LICs had a higher fruit and vegetable intake<sup>(1, 2, 4, 3)</sup>.

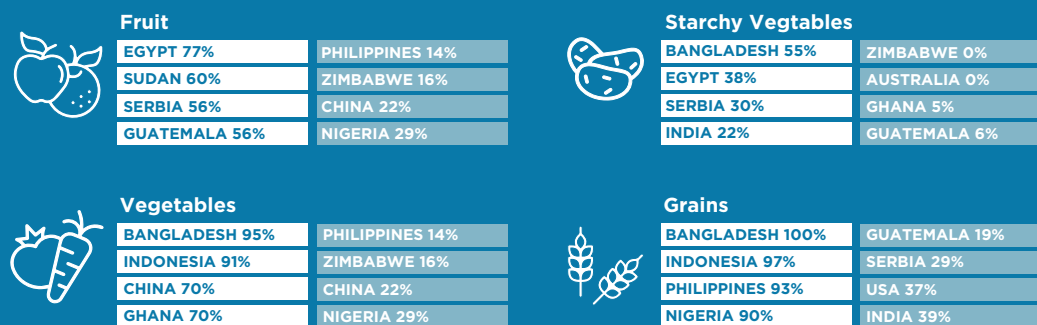
**Adolescents participating in this study reported consuming in the previous 24 hours one third of their dietary intake from ultra processed food and drink.**

**Figure 1. Foods participating adolescents consumed in the previous 24 hours**



In the previous 24 hours, adolescents across the 18 countries varied their fruit and vegetable intake. For example, Egypt had the highest intake of fruit in a 24-hour period and the lowest percentages reported in the Philippines and Zimbabwe. In only six countries did half or more participants report consuming one serve of fruit in the previous 24 hours. Adolescents reported consuming one or more serves of vegetables in the previous 24 hours in Bangladesh, Indonesia, Ghana, China and India, while those in Ethiopia and Nigeria reported a comparatively low intake of vegetables. Overall, participants reported relatively low intake of starchy vegetables in the previous 24 hours, with the highest intake in Bangladesh and Egypt.

**Figure 2. Fruit, vegetable and grains consumed in the previous 24 hours by participating adolescents**



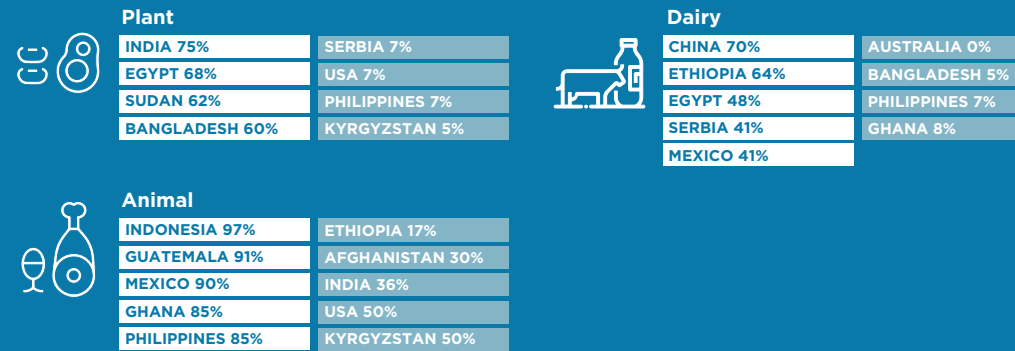
High grain intake was reported across most participating LICs in the previous 24 hour period (see Figure 2), with the highest in Bangladesh, Indonesia, the Philippines and Ghana. The lowest intake was seen in Guatemala. In over half of the participating countries, at least 50% of participants reported having one serving of grain in the previous 24 hours.

Animal protein was the main reported source of protein (see Figure 3). In over half the countries, participants reported having one serve of animal protein in the previous 24 hours. The highest amounts of animal protein were consumed in Indonesia, Guatemala and Mexico, with the least consumed in Ethiopia, Afghanistan and India. For non-animal proteins the highest consumption in the previous 24 hours was in India, Sudan and Ghana.

Across all countries, very little dairy was consumed in the previous 24 hours, with the highest rates reported in China and Ethiopia. Only one participant in both Bangladesh and the Philippines reported consuming dairy.



Figure 3. Animal and plant source foods consumed in the previous 24 hours by participating adolescents



The most commonly consumed ultra-processed food in the previous 24 hours (see Figure 4) in the majority of countries was white processed bread. This constituted the largest portion of adolescents' daily reported food consumed in the previous 24 hours for participants in Guatemala, India, Mexico, Serbia, the USA, Zimbabwe, Ethiopia and Kyrgyzstan.

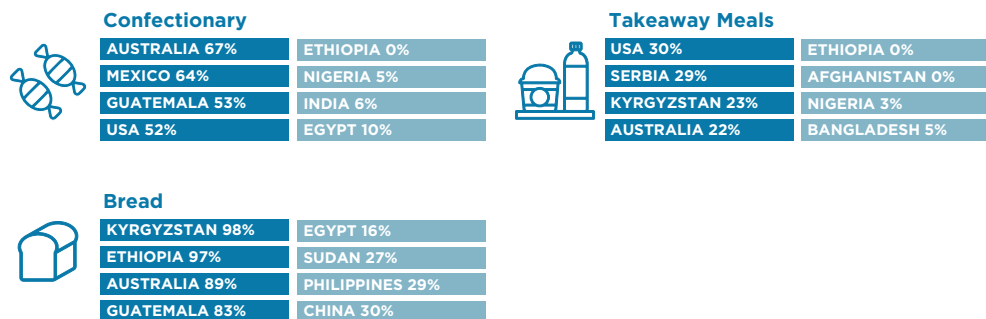


In the previous 24 hours, participating adolescents more commonly consumed confectionery (candy) as opposed to soft drinks.

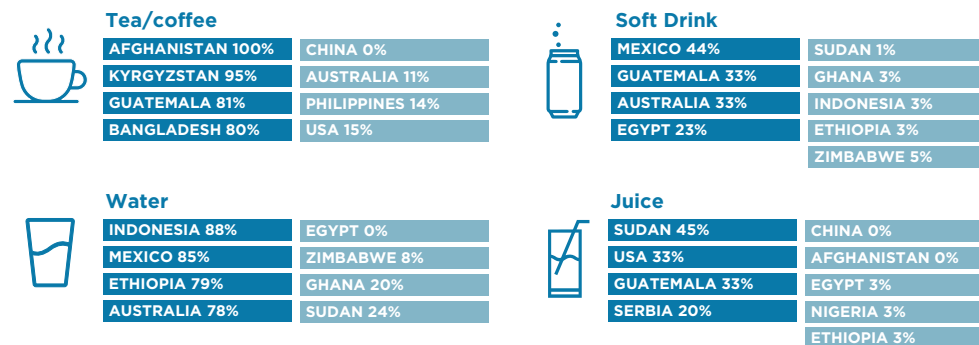
For most countries, in the previous 24 hours participating adolescents recorded limited takeaway and processed meat consumption, with the USA and Serbia reporting the highest intake.



**Figure 4. Ultra-processed food intake in the previous 24 hours by participating adolescents**



**Figure 5. Drinks consumed in the previous 24 hours by participating adolescents**



## Drinks

Adolescents in eight LICs indicated a low water intake across a 24-hour period (see Figure 5). In Egypt, none reported water intake and they appeared to compensate by consuming higher rates of other drinks. High water intake was reported in Australia, Indonesia, Mexico and Ethiopia. Adolescents in seven LMIC countries reported a high daily intake of coffee and/or tea, with the highest rates in Guatemala and Bangladesh. In fact, in nine countries, coffee and/or tea consumption was higher than water in a 24 hour period possibly due to limited clean water access and/or limited knowledge about the importance of water consumption for a healthy diet. Further exploration is needed to better understand these results.

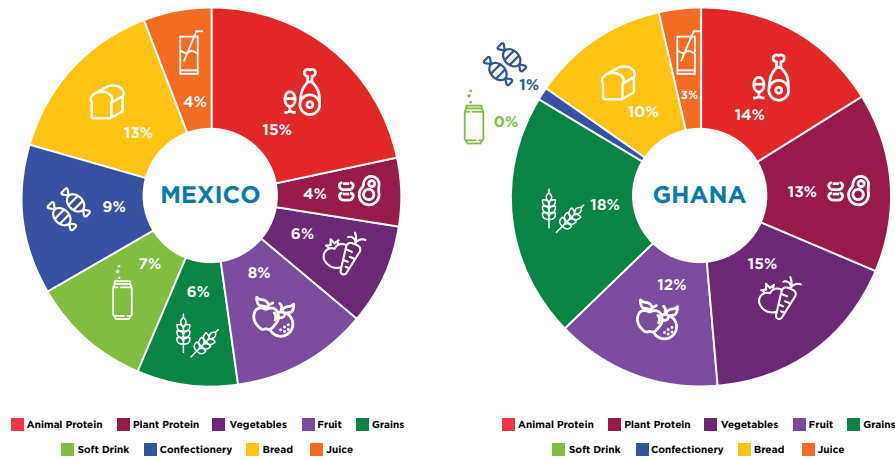
The largest number of participants reporting daily soft drink consumption in a 24-hour period came from Bangladesh, followed by Mexico, Guatemala, Nigeria and Egypt. Overall, less than half of participants reported consuming soft drinks in that same period. Fruit juice was more commonly consumed in the previous 24 hours, with a high intake reported in Australia, Sudan, Bangladesh, Guatemala and the USA.

## Differences in foods consumed in the previous 24 hours

Key differences emerged about the foods consumed in the previous 24 hours in participating countries. Adolescents in several countries – notably, Australia, Guatemala, Mexico, Serbia and the USA – reported that the majority of the foods they had eaten in the previous 24 hours were ultra-processed. Adolescents in Ghana, Indonesia, Bangladesh and Egypt reported the majority foods consumed in the previous 24 hours were unprocessed such as fruit, vegetables and grains. Mexico as a high MIC had high intake of soft drink and confectionery, with 16% of participants reporting consuming confectionery and soft drinks in the previous 24 hours as opposed to only 1% of Ghanaian participants from a low MIC (see Figure 6).

**Adolescents in several countries - notably, Australia, Guatemala, Mexico, Serbia and the USA - reported most of the foods they had consumed in the previous 24 hours were ultra-processed.**

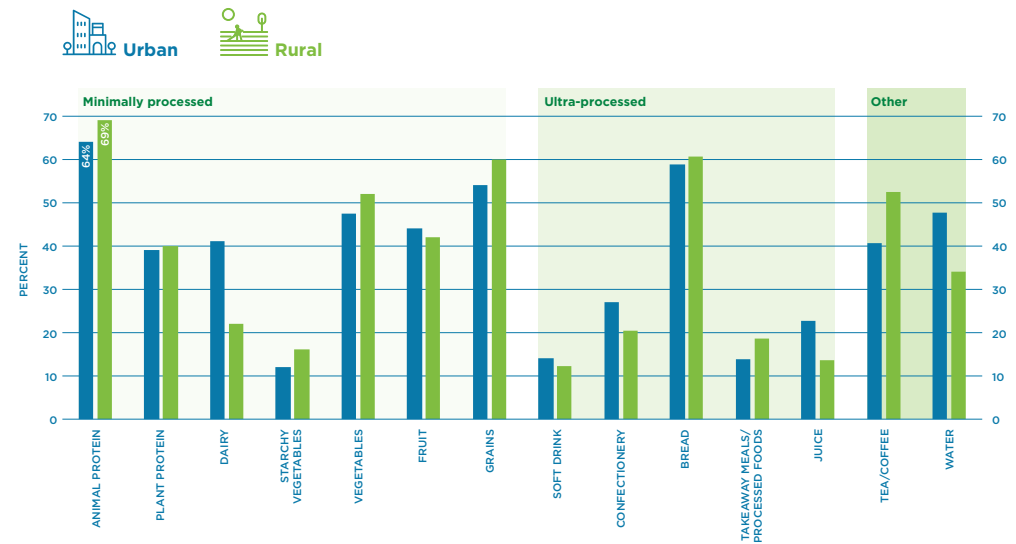
**Figure 6. Food and Drinks consumed in a 24-hour period by adolescents from Ghana and Mexico**



In the previous 24 hours adolescents from Sudan, Zimbabwe, Nigeria, Ethiopia, the Philippines and Kyrgyzstan reported limited amounts and variety of foods consumed. For these countries the majority of foods consumed were from grains, processed breads, juice and coffee or tea rather than fresh fruit, vegetables and animal protein.

There were also notable differences in the foods consumed in the previous 24 hours between urban and rural adolescents. Generally, urban participants reported a slightly higher amount of ultra-processed foods – such as confectionery, juice and soft drink – in the previous 24 hours than rural participants (see Figure 7). Urban participants were also more likely to eat fruit and dairy and to drink water, which is possibly due to better access to food products and clean drinking water. In contrast, rural participants more often reported a higher consumption in 24 hours of vegetables, grains, animal protein and starchy vegetables. These foods are more likely to be available in farming regions and often provide staple food sources in lower socio-economic, rural areas<sup>(2)</sup>.

**Figure 7. Rural/Urban 2-hour dietary intake comparison for adolescents across 18 countries**

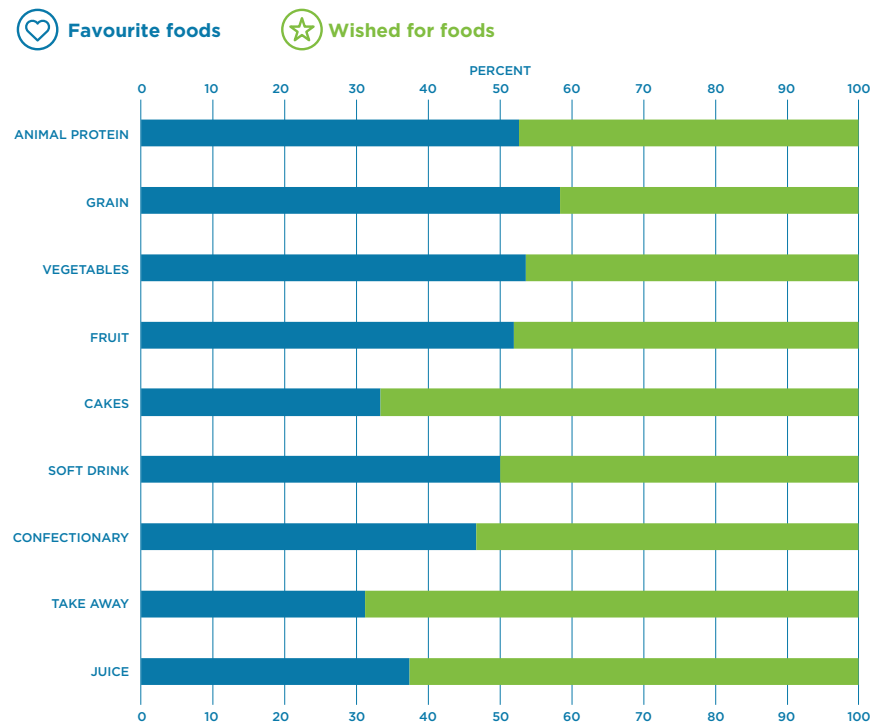


**There were also notable differences in the consumption patterns of urban and rural adolescents.**

## Adolescents' favourite foods

Among the foods adolescents reported eating, their favourite foods were primarily healthy. Most commonly, favourite foods were unprocessed foods, such as animal protein, grain, vegetables and fruit (see Figure 8). Adolescents chose these foods over heavily marketed ultra-processed ones both for nutritional and sentimental or cultural value. Even so, a small number of adolescents identified a variety of ultra-processed foods, such as cakes, soft drinks and confectionery, as their favourites.

**Figure 8. Adolescent favourite and 'wished for' food preferences**



## Adolescents' 'wished-for' foods

Alongside their favourite foods, adolescents identified foods they 'dreamed about' or aspired to eat. Interestingly these foods were often from other cultures. For example, most Australian adolescents 'wished for' Japanese cuisine. Adolescents also commonly identified ultra-processed foods as the ones they desired (see Figure 10). Some adolescents from LICs and MICs identified foods that were not readily accessible or affordable, such as takeaway foods.

The ideal meals of most participants in the workshop included chicken biryani. A number of adolescents also listed pizzas and burgers in their ideal meals. [They] mention[ed] a number of Indian snacks such as Samosa: a fried or baked pastry with a savoury filling. Chole bhature: a combination of chana masala (spicy chick peas) and bhatoora (a fried bread made of maida flour) from India and cottage cheese dishes in their meals. Most adolescents also wrote junk and fast food as their ideal meal.

(Workshop facilitator, India rural)



Image: ©UNICEF Sudan/2019/Idreesy

## The following factors motivated adolescents' identification of their favourite foods:

### Convenience

“I can cook and eat Biryani: rice; Indian spices, meat, Dahi chutney lentil items by myself whenever I want.”

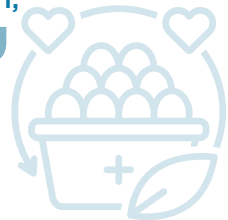
(Bangladesh, group activity)



### Nutrition

“[My favourite food is] Banku: a Ghanaian dish cooked using a proportionate mixture of fermented corn and cassava dough in hot water [mixed] into a smooth, whitish consistent paste. Served with soup, stew or a pepper sauce with fish and rice. Rice is a big source of carbohydrates, fish is a big source of protein, meat is a source of protein.”

(Ghana, group activity)



### Energy

“When I ate Akple: corn dough food eaten with soups including palm nut, okra and other vegetable sauce with okra soup and meat, I gained a lot of energy to work in the farm.”

(Ghana, group activity)



### Geography/culture

“[My favourite] foods are [those that are] available in our country and...connected with our culture. We are Bengali [because we eat] rice and fish.”

(Bangladesh, group activity)

“I am proud of the food.”

(Ghana, group activity)



### Mind/body

“Akpel is the local food [that has] carbohydrates in it. Mango is a vegetable and [has] vitamin B to make our mental work very fast.”

(Ghana, group activity)



### Taste

“[I like] soft drink [for] its flavour and I consume them a lot.”

(Mexico, group activity)

“Chocolate is very tasty and sweet.”

(Kyrgyzstan, group activity)

“Jiggles [processed food snacks] [are my favourite] because I like eating fast food.”

(Zimbabwe, group activity)



### Habit/sentiment

“Mango, ice cream and plantain [are my favourite foods] because since I was a little girl my mother prepared those foods for me.”

(Guatemala, group activity)

“Juice, chocolate bar and sandwiches [are my favourite foods] because it is my habit to eat this food every day.”

(Serbia, group activity)



## How are adolescents eating their meals?

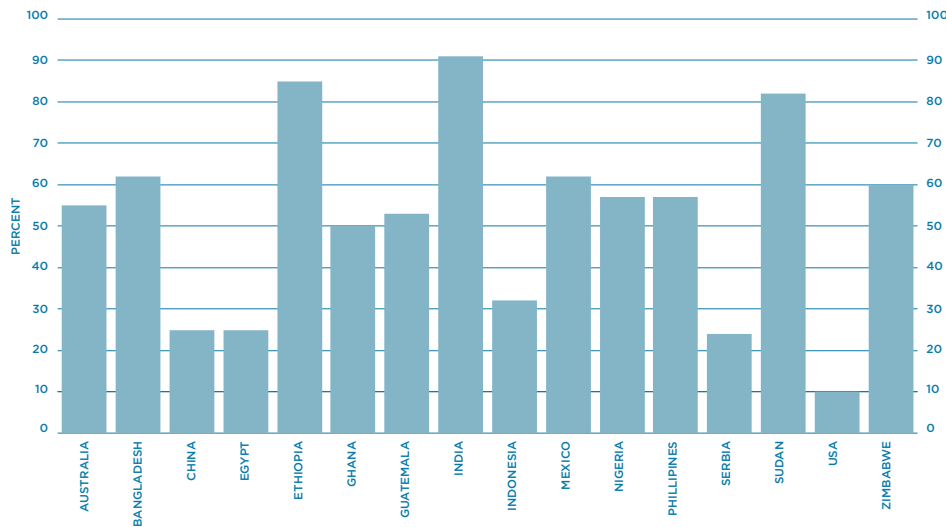
The family meal provides a time when adolescents can communicate, share values and bond with family members, often resulting in greater family connection, parental monitoring and role modelling<sup>(38)</sup>.

### Family meals

Adolescents in the study were asked how and how often their family ate meals together and reported the timing and frequency of meals across a 24-hour period.

In India, Mexico, Ethiopia, Zimbabwe and Bangladesh mostly families ate at least one meal together, whereas in Australia, Ghana, Guatemala, Egypt and the Philippines only 50% of adolescents ate one meal a day with their family. In China, Indonesia, Serbia and Nigeria, less than 20% of participants reported consuming at least one meal a day with their family. In the USA, only 10% (of participants shared a meal with their family once a day (see Figure 9).

**Figure 9. How many adolescents ate one meal or more a day with their family?**



In countries, where families were less likely to eat meals together daily, adolescents reported sharing a meal only once or twice a week or very rarely at all.

**“We have different obligations [so] we rarely have a meal together. We gather a few times a week, usually on the weekend.”**

(Serbia, group activity)

Interestingly in those countries – such as Sudan, Bangladesh and India – where families ate together more frequently, adolescents also reported a more varied diet. This substantiates previous studies, which find an association between higher family meal frequency and greater diet variety in adolescents<sup>(38, 39)</sup>.



Image: ©UNICEF Egypt/2019/Rehab Khaled Eldalil

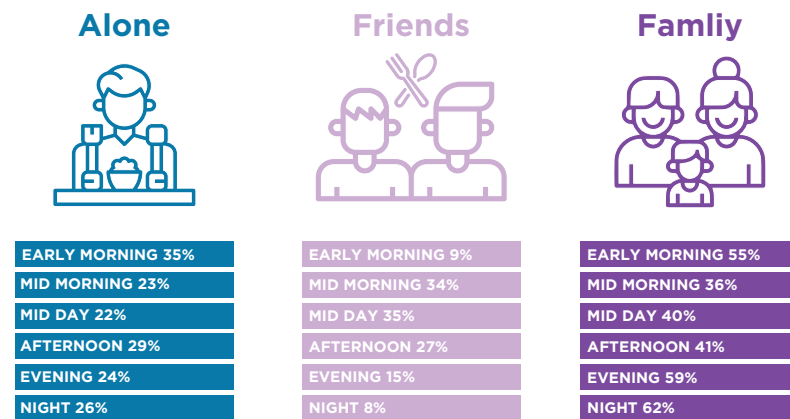
## Timing of meals

Adolescents shared a main meal with their family at different times in different parts of the world. This variation reflects families' different cultural and religious practices, as well as work and school routines. Interestingly shared family meals tended to peak in the early morning before sunrise and later in the evening around 8pm. Not surprisingly, family meals reduced during the day, reflecting the times adolescents were at school or work.

**Dinner was reported to be usually served around 8pm, which is after the evening prayer (Mahgrib – the sunset prayer).**

(Nutritionist, Afghanistan)

**Figure 10. Who did adolescents eat their meals with throughout the day?**



## Who adolescents consume meals with

Adolescents consistently reported that, across a 24-hour period, they were most likely to eat alongside one or more members of their family – including siblings, parents, grandparents and extended family – followed by eating alone or with friends, depending on the time of day (see Figure 10).

## Eating meals alone

Adolescents are most likely to eat alone in the early morning (35%), but between 22% and 29% eat alone at all other times of day. Eating alone is shown to negatively affect dietary intake and weight status in adolescents due to perceived limited parental support for healthy eating<sup>(40)</sup>. Eating alone was reported to be especially high in Indonesia, Ghana, Serbia, Kyrgyzstan, the USA, Nigeria and China.

**Interestingly many students have dinner alone at home and few of them eat vegetables more than once a day.**

(Workshop facilitator, Indonesia rural)

High rates of adolescents in Serbia (52%), Indonesia (44%), the USA (38%) and Ghana (38%) reported eating their evening meal alone.

**For the shared family meal activity, most of students were confused what to tick as they don't have family meals together.**

(Workshop facilitator, Indonesia urban)

Adolescents' tendency to eat alone is also reflected in previous studies. These show that long parental working hours and changes in family structures have led to decreases in family dinner time<sup>(41, 42)</sup>. Parents' long working hours and commute times can lead to a decrease in meal preparation time and planning within the home and can result in adolescents filling this role in the house and/or eating alone. This often leads them to develop unhealthy eating patterns<sup>(41)</sup>.

Participants in Mexico and Serbia, had the highest reporting of eating alone followed by Indonesia and Egypt. In Bangladesh and Ethiopia participants did not report eating alone.

**Most of them mention they don't have family meals because their fathers are not yet home, and they don't eat meals with their mothers. In the city the commuting time is long, so working parents are late to get home.**

(Workshop facilitator, Indonesia urban)



Image: ©Girish Lala

Although adolescents believed good nutrition promotes a healthy future, they demonstrated clear nutritional knowledge deficits.

## Knowledge

Nutrition education comprises of strategies for empowering children with knowledge, skills and motivations for voluntary adoption of good diets and lifestyle choices, which help build a strong foundation for a healthy and active life<sup>(43)</sup>. The workshops explored what level of knowledge adolescents had about nutrition and their health. Yet, although adolescents believed good nutrition promotes a healthy future, they demonstrated clear nutritional knowledge deficits. This section explores both adolescents' awareness of good nutrition and the knowledge gaps across all 18 countries.

### What adolescents know about nutrition

#### Awareness of good nutrition

Adolescents in most countries could discuss basic nutritional knowledge and healthy eating.

“To have a healthy body it is important to eat healthy food, fruits and vegetables.”

(Guatemala, female, age 15)

“I avoid foods with high level of cholesterol e.g., margarine, I also eat foods rich in vegetables.”

(Nigeria, male, age 16)

“We should eat healthy food like drinking milk; eat green vegetables and almonds so that our brain remains fine.”

(India, male, age 13)

However, adolescents in some LICs, such as Afghanistan, appeared to have less nutritional knowledge, possibly indicating limited nutrition education.

“Girls were largely unaware of the types of foods which were necessary for a balanced and nutritious diet.”

(Workshop facilitator, Afghanistan)

Adolescents could list healthy and unhealthy foods, demonstrating nutritional knowledge gained through schools, community based programs and public health messaging. Yet such knowledge was often mechanistic and not necessarily applied to their lived eating practices, highlighting that awareness campaigns do not always translate into behaviour change.

“[Adolescents' perceptions of what it means] to be 'healthy' tended to be something normative out of a textbook. Most of the answers described the 'musts', 'should' and 'to dos'.”

(Workshop facilitator, India)

“I understand that it is not good to eat junk food such as soda, chips, fried bread (kirieshki), fast food etc. However, sometimes I can't control my wish to eat junk food.”

(Kyrgyzstan, female, age 14)

For example, in Mexico, adolescents knew they should limit soft drink consumption, because this had been a recent public health focus<sup>(44)</sup>.



**“I avoid...sodas because they make you gain weight and they are bad for our health.”**

(Mexico, female, age 13)

In spite of this, in the self-reported 24 hour period, participants from Mexico reported the highest consumption of soft drinks, indicating a disconnect between awareness and dietary choices.

### Misinformation about nutrition

Sometimes participants' nutritional knowledge was partially correct but contained cultural beliefs that were misguided – such as needing to drink lemon juice before bed – or factual inaccuracies.

**“Drink lemon juice before going to bed; avoid junk food; limit your calories intake/know the calories that you only need to intake in a day; drink water (warm water if possible) 8 times a day (stay hydrated).”**

(Philippines, gender and age not recorded)

At other times, adolescents across all countries demonstrated incorrect nutritional knowledge. This suggests that many must navigate confusing or contradictory information from different sources, indicating a lack of adequate, reliable nutrition information.

**“[Bottled] fruit juice is a very healthy drink. It has many vitamins and microelements. For example, vitamins A, B, C, D and others.”**

(Kyrgyzstan, male, age 15)

**“Strawberry boli [shaved ice treats] hydrate and it is very healthy for us.”**

(Mexico, group activity)

Of concern were adolescents' perceptions that bottled fruit drinks and other sweetened beverages were healthy, as the consumption of these is associated with increased risk of weight gain and obesity<sup>(44)</sup>.

### Gaps in nutrition knowledge

A mixed picture emerged of how well adolescents can identify which of the foods and drinks consumed in the previous 24 hours are healthy. Participants showed uncertainty in the identification of ultra-processed foods they had consumed. They correctly identified just over a third (275) of the ultra-processed foods in their diet, and incorrectly identified 206 foods. Of the ultra-processed foods they identified incorrectly, the most common were sweetened juice, packaged breads, confectionery, cakes and biscuits.

**“Girls widely reported that...the food they ate at home was healthy, including a breakfast made up of green tea and bread. Bread in Afghanistan is made from highly processed white flour and either bought at local bakeries every morning or made at home.”**

(Workshop Facilitator, Afghanistan)

Thus, adolescents showed limited understanding of the ultra-processed foods they were consuming and their nutritional value.

### Skills in nutrition

Adolescents from a range of countries identified that they did not have practical skills, such as cooking and shopping skills, to be able to eat healthily.

**“No skill (bad cooking skill).”**

(China, group activity)

**“I don't know too much of cooking.”**

(Guatemala, female, age 15)

Limitations in cooking skills have been identified as a key food literacy issue for adolescents, with 12-17 year old school children found to be lacking these skills due to limited learning opportunities in the home and school environment<sup>(23)</sup>.

## Adolescent understanding of nutrition in disease prevention through three fictional scenarios

Adolescents recognised the importance of eating well for growth and hygiene, however, they had limited knowledge about the relationship between nutritional intake and certain disease outcomes. To explore adolescents' knowledge of diet and disease prevention, workshop activities explored three fictional scenarios on obesity, anaemia and pregnancy.

### Obesity

Rasif (17 years) is hanging out with some school friends down at the mall. At the mall they have lots of options to eat different foods such as pizza, pasta, ice cream, burgers. 'OMG!' grins one of the boys, patting his stomach. 'I'm very full. I've just eaten some Spaghetti Bolognese.' Rafsi ate rice with seafood. He's trying to lose a bit of weight, but it's not easy: His parents drive him to school and long days in the classroom make it hard to find time for exercise. 'I didn't do any sports, but now I go to the gym... I hope that I will lose more [weight] because still right now I'm overweight.' But he admits it's not easy to resist the tempting food around him: 'It's difficult to eat healthy when our friends are eating delicious foods than healthy foods.'

There has been a continued increase in overweight and obesity for adolescents in most regions across the world<sup>(2, 12)</sup>. Participants were asked to consider the connections between dietary intake, weight gain and non-communicable disease outcomes in the scenario above. Only half of all participants correctly identified that Rafsi would be at risk of being overweight by continuing to consume large amounts of ultra-processed foods, accompanied by little physical activity. Adolescents in Guatemala, Nigeria, Mexico, Serbia, and India frequently identified the implications of Rafsi's diet on long-term, non-communicable disease outcomes. Of those who did, just over half provided appropriate suggestions for diet and physical activity to mitigate this risk. The suggestions, discussed below, indicate good knowledge about disease prevention through dietary intake.

A majority of all participants illustrated their knowledge around the need for a varied diet that excludes ultra-processed foods to minimise weight gain. Their comments show their knowledge of the benefits of fruit and vegetable consumption for disease prevention.

**“ [Rafsi] has a very unhealthy [diet]. Fast food and energy drinks are very bad for your health. It is bad that he replaced the water with energy drinks and healthy dinners at home with hamburgers. ”**

(Serbia, group activity)

**“ [Rafsi] should eat nutritious food. He should not eat outside food. [He] should take care of his health [by] eat[ing] fruits, meat, fish and eggs etc. ”**

(India, group activity)

Adolescents also discussed portion control or regulation of food intake.

**“ He should resist the tempting food and also, sometimes trek to school. ”**

(Nigeria, group activity)

**“ He should either eat food he likes in smaller amounts or...eat only healthy food and...the food he likes. ”**

(Serbia, group activity)

Adolescents reported some understanding around dietary intake and disease outcomes – even if not always medically accurate.

**“ [Rafsi] will have deadly obesity and he will have health problems and it is bad for his life. ”**

(Mexico, group activity)

**“ [Rafsi] should change his diet to balanced diet and stop eating sweet food because it can lead to tooth decay and it can cause diabetes.”**

(Nigeria, group activity)

Remarkably, 42% of participants believed Rafsi would have a better future health outcome if he continued to eat unprocessed food, indicating a knowledge deficit regarding dietary intake and non-communicable disease prevention. Adolescents in Ethiopia, Bangladesh and Sudan further indicated the greatest knowledge deficit in this area, with one third providing misinformed answers.

Misinformation constellated around incorrect nutritional information and an indication that adolescents were unable to make the link between diet and disease.

**“ He shouldn’t limit [his diet] that much because [he needs to look after] his mental health.”**

(Serbia, group activity)

**“ If he eats outside food like this then he can fall sick. He may suffer from many diseases in future such as...indigestion, food poisoning, pain and vomiting.”**

(India, group activity)

Overall, adolescents showed some nutritional knowledge around dietary intake, potential weight gain and possible non-communicable disease outcomes. However, at times their information was vague or incorrect, indicating a need for further education about the implications of a diet that includes a large amount of ultra-processed foods.

## Anaemia

Gabriella (15 years) keeps feeling tired and falling asleep at school. Often when she stands up after sitting down all day at school she feels dizzy and nearly passes out. She knows that eating more beans can help her iron levels and give her more energy but her friends and her don’t want to eat these foods because they want to stay in shape. Gabriella doesn’t want to eat beans because she thinks they will make her gain weight.

Iron deficiency anaemia is the leading cause of disability adjusted life years lost for adolescents and creates functional limitations on adolescents’ growth and success<sup>(2)</sup>. Educating adolescents on how to obtain iron through diet and understand the link between iron-rich foods and good health outcomes is an important prevention mechanism.

All adolescent groups identified that Gabriella would have poor health outcomes if she continued with her current diet. However, only three groups, in Mexico, India and Nigeria, identified anaemia as the health issue of concern.

**“ If she continues to eat like this...she may face more difficulties in future like malaria, typhoid and her life may be in danger and she may have iron deficiency.”**

(India, group activity)

A large majority of adolescents identified the health issue as malnutrition or ‘low immunity and getting sick’ rather than anaemia. Some predicted extreme consequences for Gabriella.

**“[Gabriella] will get sick; she may die; she will not be able to attend her education; this may create problem when she gives birth.”**

(Ethiopia, group activity)

The vast majority of groups provided healthy eating advice, suggesting that Gabriella needed to eat a more balanced diet for better energy. However, these suggestions made no mention of iron-rich foods.

**“She should eat more diverse food and not to avoid healthy food. Because the health is more important than outlook, and even if she eats some healthy food, she can look nice and feel good and healthy.”**

(Serbia, group activity)

Only two groups mentioned the importance of iron-rich foods to help address her health and there was no suggestion of iron supplements being taken.

**“She should eat green vegetable, saag [curry] so that she does not fall ill in future. She should not feel lazy [so that] after marriage she is able to work properly.”**

(India, group activity)

**“Gabriella should change to other foods that will give her energy e.g., plantain, vegetable, fruits. She should also start eating beans. She should take foods that are rich in iron like shrimps.”**

(Nigeria, group activity)

Overall, there appeared to be limited knowledge around iron-rich foods and the importance of this for adolescent health.

## Adolescent pregnancy

Malak (19 years) works long days farming with her husband to earn money for her family and she is unable to go to school. Recently Malak found out she was having her first baby. With her pregnancy she has been very tired but still needs to work on the farm, often she skips meals to keep working. To help give her more energy Malak has been drinking an energy drink during the day when she does not have time to eat to keep her energy levels up.

Increased nutritional intake is critical during pregnancy for both mother and child, and especially for adolescents, who are still growing<sup>(2)</sup>. To ensure that both mother and baby have the best opportunity to grow and flourish, adolescents need to understand the importance of good nutrition during pregnancy.

In response to this scenario, all participants identified that Malak was not eating sufficiently for her child's healthy development.

All groups indicated she needed to increase her dietary intake and/or reduce energy drinks and expressed the following concerns around the unborn child's development.

**“Her health will be impacted badly and her child would not develop properly.”**

(India, group activity)

Loss of the child through miscarriage due to Gabriella's poor diet was also mentioned by adolescents.

**“[She] can have a spontaneous abortion, or her baby can be born with some disability.”**

(Guatemala, group activity)

**She will lose a baby and harm her own health.**

(Serbia, group activity)

**She might end up having a miscarriage due to the fact that she does not eat and the baby needs food to stay alive moreover.**

(Nigeria, group activity)

Concern was raised by participants about how much physical work Gabriella was doing whilst pregnant.

**A pregnant woman should do less work; a pregnant woman should eat food frequently and exercise.**

(India, group activity)

**Malak should change her working time and stop skipping her meals to become healthy.**

(Bangladesh, group activity)

The consumption of excessive energy drink throughout the day was viewed as bad for her health.

**Excessive energy drink is not good for her health; She will be suffering from malnutrition or she will become unhealthy.**

(Nigeria, group activity)

Overall adolescents had mixed and at times often limited nutritional knowledge and how nutrition links to certain diseases. This was seen with a limited identification of ultra-processed foods and how eating these foods can result in disease outcomes such as obesity. Adolescents also demonstrated limited knowledge around iron deficiency anaemia and how best to increase iron into their diet to prevent anaemia.

## Body awareness

Despite concerns raised in the literature to date, relatively little is known about the extent and impact of body dissatisfaction and eating disorders in LICs and MICs<sup>(45)</sup>. One suggested explanation for symptoms of eating disorders in these settings is a shift in cultural views of body image, towards a greater adoption of HICs' beauty ideals<sup>(45)</sup>.

When participants were asked how they viewed both their current and their ideal body shape, most reported a strong body awareness, at times a heightened body dissatisfaction and a strong desire to look different.

### How adolescents viewed their current body shape: comparing 'apples' and 'pears'

Participants often mentioned their pursuit of body ideals without being specifically questioned. Their comments indicated they are conscious about body image and that it is a consistent factor in their daily decision-making about nutritional intake and health outcomes.

**Exercise helps me to look good physically.**

(Mexico, male, age 15)

**Food is important because it makes me look attractive.**

(Nigeria, male, age not reported)

**I want to feel good about myself and look good.**

(USA, female, age 17)

An activity was specifically modelled on the validated BMI Silhouette Matching Test methods<sup>(47)</sup> to assess adolescents' perceptions of their current body image. Studies that use these methods have shown that adolescents generally have an accurate body perception and are able to select silhouettes which most align with their actual body shape<sup>(47)</sup>. In this study, participants were asked to choose whether their body shape was more like an apple or a pear. Apples were nominally designed to represent a masculine body shape and pears a feminine one.

No anthropometric measurements were taken and participants based their perceptions of the BMI-SMT from a validated and adapted measure, where the validated silhouette represented adult BMI scores of 18, 24, 30 and 36 for both female and male figures. See methods for further information.

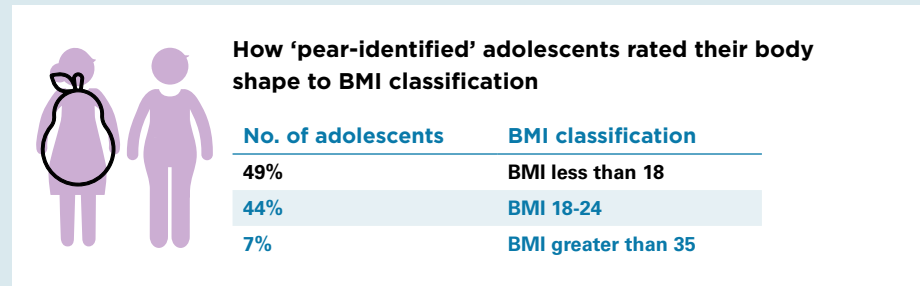
However, participants could choose either the apple or pear to describe their body shape. They were shown a range of corresponding images of small (corresponding to BMI underweight), average (corresponding to BMI healthy weight) and large (corresponding to BMI overweight/obese) apples or pears, and asked to select the image that best matched their current body size and shape (activity worksheet are available in the online workshop manual).

Overall, from 13 of the 18 participating countries, slightly more participants identified their current body shape as 'pear' (55%) compared with 'apple' (45.5%). When later asked which of these images represented a healthy body shape, slightly more indicated the 'apple' (49%) than the 'pear' (47%).

## Pears

Females were much more likely to identify their current body shape as a pear than males. Adolescents aged 15 and 16 were also most likely to identify as a pear.

Those who identified as a pear rated their body shape according to the following adult BMI classifications:

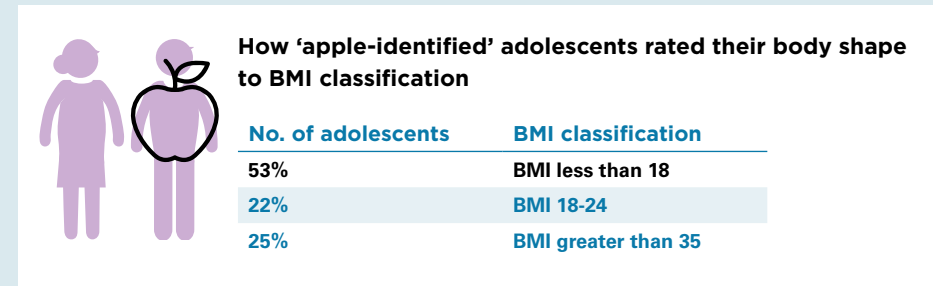


The countries with the most participants who self-identified as having a BMI of less than 18 and pear-shaped bodies were Serbia (80%), Egypt (78%), Sudan (61%) and Nigeria (45%). Participants from the USA (20%), Indonesia (14%) and Mexico (10%) were the most likely to identify with a BMI of greater than 35, pear-shaped body. These results adhere to current epidemiological profiling of childhood obesity across the globe, which demonstrate higher rates in the USA, Mexico and Indonesia than in African countries<sup>(2)</sup>.

No anthropometric measurements were taken and participants based their perceptions of the BMI-SMT from a validated and adapted measure, where the validated silhouette represented adult BMI scores of 18, 24, 30 and 36 for both female and male figures. See methods for further information.

## Apples

Those who identified their current body shape as an apple were more likely to be male (56%) than female (44%) and aged 15 (23%) and 16 (23%).



Countries with the most participants who self-identified as having a BMI of less than 18 and apple-shaped bodies were Nigeria (70%), Ethiopia (65%), India (56%) and Sudan (50%). Participants from the USA (25%), Mexico (22%) and China (13%) were most likely to identify a BMI of greater than 35, apple-shaped body. As with those who identified as pear-shaped, the BMI self-identifications matched the epidemiological profiling for global childhood obesity<sup>(2)</sup>.

## Adolescents' desire to change their body shape

When asked to identify their desired body shape, overall adolescents reported a high level of body dissatisfaction, with over 70% indicating they wanted to change their current body shape. Girls (76%) were more likely to wish their body shape was a pear, while boys (56%) were more likely to desire to be an apple than girls (44%). Ideal body shape also seemed related to age, with 17-year-olds most likely to express the desire to be pear-shaped (40%) and 15- and 16-year-olds most likely to wish to be apple-shaped (50%).

Interestingly those who identified as a 'pear' were much more likely to wish to be 'thinner' than they currently were, compared with those who identified as an apple, who, overall, were more likely to wish to be 'wider' than they currently were. This confirms findings in the existing literature, which indicate that those with more masculine body shape ideals often experience dissatisfaction around perceived musculature and a desire to be 'bigger', while those with more feminine ideals often wish to be 'thinner'<sup>(46)</sup>.

## Body ideals for self-identified 'pears'

Of the 207 participants who self-identified with the 'pear' body shape, only 27% indicated that they were happy with their current body shape, as indicated by participants not selecting a different body shape from their original selection. Of those who were dissatisfied with their body shape and wanted to be thinner or wider, 73% were female. Of concern is the young age at which adolescents indicated a desire to be 'thinner', as well as the extreme thinness that was desired. Forty seven percent of 13-year-olds and 34% of 14-year-olds reported wanting to be the shape of the pear that corresponded to a less than 18 or underweight BMI. Also striking is that 80% of boys wanted to be smaller or larger than their current size, a very high rate of dissatisfaction for males.

**More than half of the participants in workshop do not like their current body figure.**

(Workshop facilitator, Philippines)



Image: ©UNICEF Nigeria/2019

The following table indicates, by gender, how many participants identifying as a 'pear' wanted to be thinner or wider.

### The 'wished-for' body shape of 'pear-identified' adolescents



UNDERWEIGHT

I want to gain weight or be bigger (wider).

**I would like to gain some more weight.**

(Kyrgyzstan, group activity)



HEALTHY WEIGHT

I am happy to be this healthy shape.

**I like the way my body looks now and so I continue eating proteins and vegetables to maintain my body size.**

(Nigeria, male, age 16)



OVERWEIGHT/OBESE

I wish to be thinner and lose weight.

**I want to change my body shape because I am sort of fat already.**

(China, male, age 16)

Countries where adolescents were most satisfied with their current body shape were Egypt, Ghana, Serbia and Indonesia. Countries where adolescents most frequently wished to be thinner were Mexico, the USA and Nigeria.

## Body ideals for self-identified 'apples'

Of the healthy weight participants that self-identified with an 'apple' body shape, 32% indicated they were happy with their current body shape. Of those who wished to change their body shape, 61% were male and they tended to be older (45% of this group were aged 17).

The following table indicates, by gender, how many participants identifying as an apple wanted to be thinner or wider.

### The 'wished-for' body shape of 'apple-identified' adolescents



UNDERWEIGHT

I want to gain weight or be bigger (wider).

I want to gain weight because of that I change my food habits.

(Serbia, female, age 17)



HEALTHY WEIGHT

I am happy to be this healthy shape.

I don't want to change anything. I am a healthy boy.

(Serbia, male, age 16)



OVERWEIGHT/OBESE

I wish to be thinner and lose weight.

I want to be slim.

(Zimbabwe, female, age 14)

## Cultural differences in desired body shape

The way adolescents desired their bodies to look often differed between countries. Western HICs such as the USA and Australia idealised 'thinness'. Further, findings from this study echo those of Pedro et al. (2016)<sup>(45)</sup> showing that many adolescents in LICs and MICs appeared to follow western ideals. Adolescents in Mexico, Zimbabwe, Ghana and China all identified that they wished to be thinner.

Yes, if I get fat, I will mainly eat vegetables and fruit to be thinner.

(China, male, age 14)

In some countries, such as Afghanistan, India and Sudan, participants noted that cultural beliefs associated 'fatness' with success and affluence. A 'chubby' person was seen to be prosperous, and many adolescents desired this body shape.

Most girls referred to the need to increase their weight. As in many developing countries, positions of affluence and status are generally connected to an individual's weight, such that the heavier a person is, the most affluent and respected they are. As such, girls largely referred to the need to put on weight and would do so by eating more carbohydrate-based foods such as rice and potatoes. They also suggested that doing less activity and movement would help them to increase their weight.

(Nutritionist, Afghanistan urban)

Findings from this study showed that many adolescents in LICs and MICs appeared to follow western ideals and desired their bodies to be 'thinner'.



## Using physical activity and diet to change body shape

Across all countries, many adolescents reported consciously monitoring and/or changing their food intake and physical activity routines to maintain or transform their current body shape.

### Physical activity

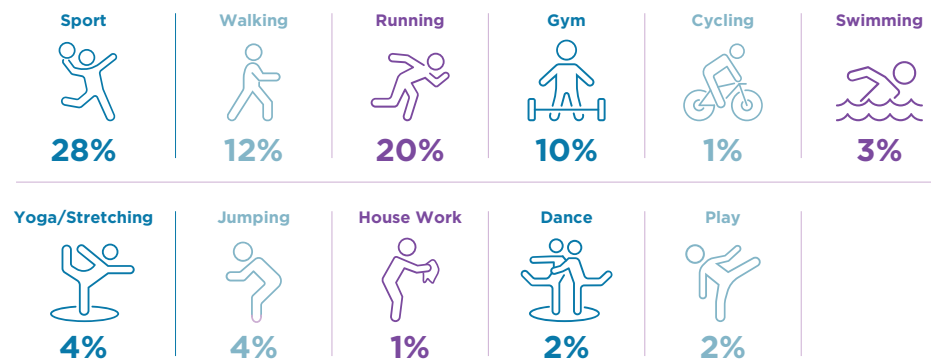
Eighty-six percent of participating adolescents reported engaging in physical activity for the main purpose of changing their body shape, as opposed to the functional aim of achieving physical fitness. Girls were more likely to follow physical activity routines to change body shape (82%) compared to boys (72%). Of the 10% who did not engage in physical activity to change their body shape, the majority were from Mexico, China and the USA.

**I run every day because I want to be slim.**

(Ghana, female, age 18)

Overall, adolescents most commonly identified sport and running as their primary form of physical activity, followed by walking and the gym (see Figure 11). There were statistically significant gender differences as, to change their body shape, boys were more likely than girls to engage in sport to change their body shape, while girls were more likely to engage in walking.

**Figure 11. Types of physical activity use by adolescents to change their body shape**



## Dieting practices

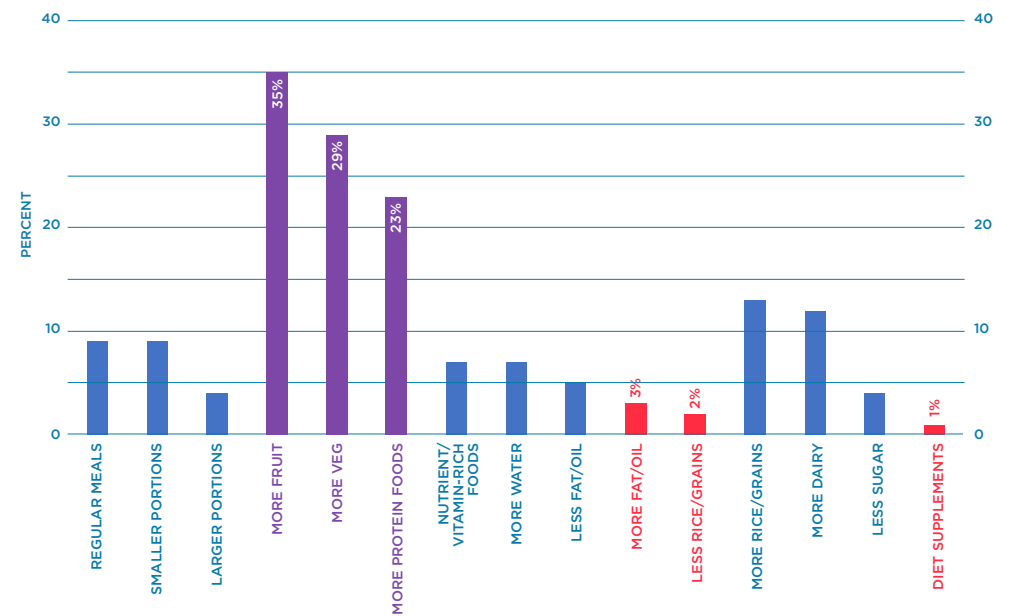
Overall, 78% of the adolescents identified that they actively change their eating behaviours to alter their body shape. These intentions and behaviours were pervasive in Bangladesh (100%), Sudan (98%) and Nigeria (97%), where almost all participants said that their desire to transform their bodies influences their food consumption.

**I eat different kind of food in order to change my body but I need to be fatter than I was.**

(Nigeria, male, age 14)

Research shows that body dissatisfaction and/or idealisation in adolescents is often coupled with dieting habits<sup>(47)</sup> and this is a key relationship in the development and maintenance of disordered eating pathologies. Adolescents from LICs are exposed to media (and social media) from HICs, which may lead to them following or mimicking dieting trends from those countries.

**Figure 12. Dieting practices most used by adolescents to change their body shape**



Adolescents discussed how they directly incorporated these dieting behaviours into their lives. Some reported introducing diet changes to increase variety and thereby improve or maintain their weight (see Figure 12).

**“Vegetables and Vitamin A rich fruits to make me slim.”**

(Ghana, male, age 13)

**“I eat nutritious food which control my weight.”**

(Bangladesh, female, age 16)

Others talked about restricting certain foods, skipping meals, tracking their meals or reducing portion sizes to reduce or maintain their weight.

**“I track my eating habits.”**

(Australia, female, age 15)

**“A few adolescents – primarily girls – accepted eating less and skipping meals to stay thin.”**

(Nutritionist, India urban)

**“I avoid eating a lot in a day; sometimes I eat only in the afternoon and night to avoid the amount of calories I’m consuming.”**

(USA, female, age 18)

**“They eat less food, particularly at dinner, so that they could remain thin or become thinner.”**

(Nutritionist, Afghanistan urban)

Reflecting current dieting trends in western countries, some USA adolescents reported fasting to reduce weight.

**“I use intermittent fasting and eat less.”**

(USA, male, age 18)

Others reported consuming more to gain weight and muscle mass.

**“I have to eat a little more to fatten.”**

(Guatemala, female, age 13)

**“I used to have three meals a day. Now I have six meals a day to increase my muscle mass.”**

(Egypt, male, age 17)

Adolescents also reported actively increasing protein to increase their size and muscle mass.

**“I am using proteins.”**

(Serbia, male, age 16)

**“I eat a high-carb and protein, low-fat diet to look like Scott [Adkins].”**

(Zimbabwe, male, age 16)

Additional diet modifications involved reducing carbohydrate and fat intake to reduce weight or increasing carbohydrates to gain weight.

**“I eat more salads and less carbs/junk if I am trying to lose weight.”**

(USA, male, age 17)

**“I eat a lot of food which contains a lot of fats and carbohydrates.”**

(Zimbabwe, male, age 15)

Home remedies for ‘dieting’ were also identified and well-known in different cultural groups.

**“I want to be slim. I must eat as much lemons as I can consume and eat small amounts of food especially with less fat.”**

(Zimbabwe, female, age 14)

**“Sometimes I take lime for it to burn fat in my body.”**

(Ghana, female, age 17)

Statistically significant gender differences were found indicating that girls were more likely to eat smaller portions to lose weight compared to boys, whereas boys were more likely to consume larger portions to gain weight compared to girls.

For girls, this more commonly involved restrictive feeding practices such as fasting or meal skipping, whereas for boy’s larger meal sizes and intake of protein was common to gain weight



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

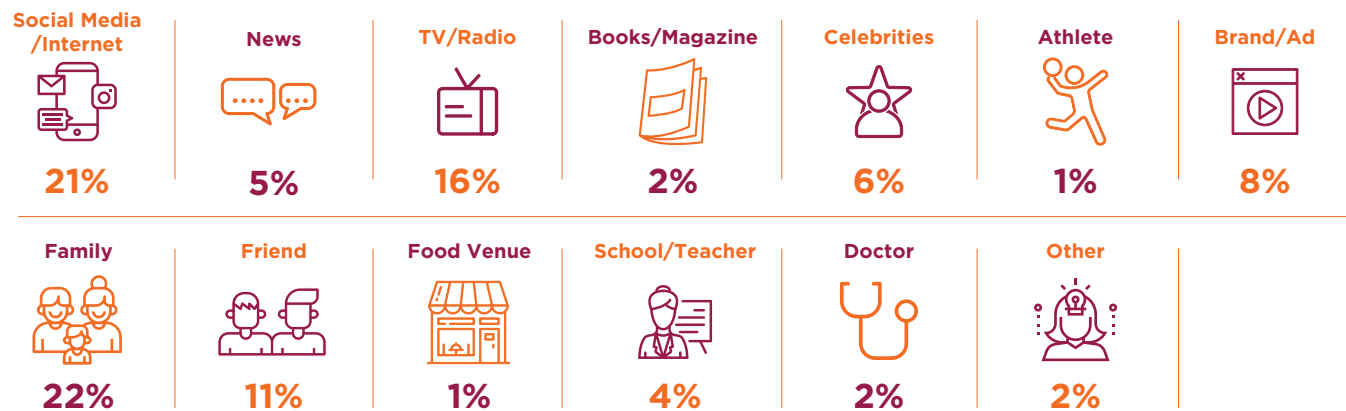
## Section 2: Drivers of Food Choice and Barriers to Healthy Eating

**Across the globe, children and adolescents are victim to a triple burden of malnutrition<sup>(2)</sup>. To achieve positive, sustainable change in nutritional outcomes for adolescents globally, we need to understand what they themselves perceive as the drivers of and barriers to their food choices.**

Study participants in all 18 countries identified a range of drivers of food choices and barriers to healthy eating. It appears that adolescents' immediate relationships and the media are key drivers of their food consumption practices. Institutional actors such as doctors and teachers appeared to be much less influential than might be assumed, raising important questions about the veracity and reliability of the information that adolescents use to make food decisions. However, this also highlights opportunities to leverage adolescents' social ties and the media they engage with to effectively reach them.

Family, social media and the internet stood out as primary drivers of adolescents' food choices, followed by television and radio, friends, branding and advertising and celebrity endorsements.

**Figure 13. Drivers that influence adolescents' food choice**



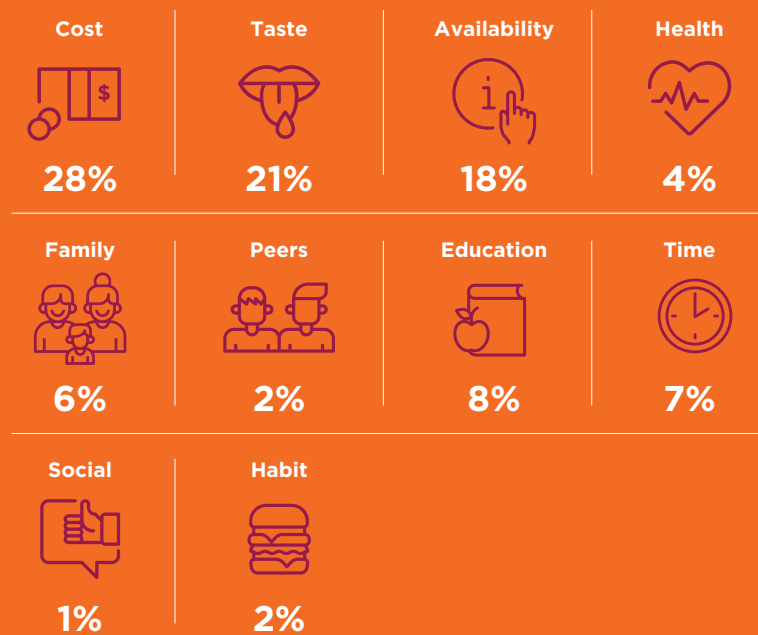
The triple burden of malnutrition is undernutrition, hidden hunger and overweight.



It appears that adolescents' immediate relationships and the media are key drivers of their food consumption practices.

Image: ©UNICEF/UNI209842/Karimova

Figure 14. Barriers to healthy eating for adolescents



Adolescents in this study reported key structural barriers relating to financial constraints and food environments at home, school and in the community. However, other barriers also surfaced, with adolescents frequently referring to the sensory properties of food – especially taste – as obstacles to healthy eating.

Drawing on the UNICEF Office of Research *Innocenti Framework on Food Systems for Children and Adolescents*<sup>(2)</sup> the following section analyses drivers and barriers through a focus on the behaviours of caregivers, children and adolescents, personal food environments and external food environments.

Image: ©UNICEF India/2019/Lambam

## Behaviour of caregivers, peers and adolescents themselves

Adolescents' food preferences, sensory acceptance, knowledge and self-efficacy are key individual-level influences on their food choices.

### Adolescents' tastes and preferences

Adolescents commonly reported that sensory appeal and taste shaped their food choices and preferences, with a high percentage identifying taste properties as their key reason for liking certain foods.

**Ice cream, chocolate and chips are delicious. So, these are my favourite foods.**

(Bangladesh, female, age 16)

**[I like] burgers, tea and orange juice because [they're] tasty and light.**

(Egypt, male, age 17)

**[Rice chicken] has a good taste and gives [the] body energy.**

(Ghana, female, age 18)

**[I enjoy] a soda and tostada because of the flavour, taste and the combination they make.**

(Guatemala, male, age 15)

**[I love] fried rice and egg because it is yummy and makes me feel full. The egg is so tasty.**

(Indonesia, female, age 16)

Adolescents also identified the taste of healthy foods as the second-greatest barrier to healthy eating, with nearly half reporting the sensory properties of these foods as a deterrent to their consumption.

**The healthy foods are very bitter to me. I don't like it.**

(Ghana, male, age 14)

**We are not able to eat healthy food because its taste is not good... [On] seeing healthy food, we do not feel like having it.**

(India, female, age 13)

**I do not like the taste of healthy food (broccoli, carrot).**

(Kyrgyzstan, female, age 14)

Taste was also a key driver of adolescents' desire to eat unhealthy foods. They reported that unhealthy foods often taste better.

**We do not like healthy food. We prefer food with fat.**

(Guatemala, female, age 15)

**[I don't eat healthy] because I have developed the taste for other foods that are delicious.**

(Ghana, male, age 17)

**I eat fried tortilla, tea, lollypop, salchicha [sausage] every day as it tastes good.**

(Mexico, group activity)

From this it is evident that even where adolescents have some nutritional knowledge about healthy and unhealthy foods, the taste of foods nonetheless shapes their food choices.

## Adolescents' self-efficacy and personal temptation

Adolescents also discussed being tempted by the taste and texture of junk foods, reporting that the temptation of unhealthy foods sometimes overrides their desire to eat well. For individuals who have a heightened sensitivity to sensory properties, the palatability of junk foods has been shown to lead to over consumption of unhealthy foods<sup>(48)</sup>.

**“Diabetes runs...on both sides of my parents' [families] but it's hard because where I live there is a lot of temptation.”**

(USA, female, age 18)

Adolescents associated their inability to resist the temptation of unhealthy foods with a lack of self-control. Similar findings have been reported from research with Ecuadorian adolescents, who stated they lacked the self-control to resist the “abundance of tasty, yet ‘unhealthy food’ at school and/or at home”<sup>(49, 50)</sup>.

**“[Adolescents reported] they felt attracted to ‘junk food,’ in spite of knowing that it was not good for their health.”**

(Workshop facilitator, Mexico)

**“Most adolescents identified [the] challenge of [being] tempted to eat junk food. They agreed it is difficult to avoid such foods.”**

(Workshop facilitator, India urban)

Coupled with the element of taste, self-efficacy – in this case an individual's belief in their capacity to resist the temptation of unhealthy foods – appears to play a role in driving food choices and thus needs to be considered when developing policy to address adolescents' consumption of unhealthy foods.

## Family

Across countries and cultures, food and family are often deeply intertwined. This study found that families play a crucial role in shaping dietary decisions, intake and food memories, all of which were also interwoven with adolescents' sense of cultural identity.

In the workshops, the family was consistently identified as the greatest influence on adolescents' food choices. However, adolescents in Mexico, Guatemala, Australia and Bangladesh were most likely to report this.

**“The majority of adolescents indicated that their greatest influence is their family (mom or dad), grandparents or family in general.”**

(Workshop facilitator, Mexico)

By contrast, adolescents in Nigeria and Kyrgyzstan did not list family as influential in their food choices. The reasons for these differences across countries are not clear, but they are not dependent on country income level or culture. Where adolescents did not specify family as a strong influence on food choice, they tended to report a stronger influence by media, advertising and social media.

Family members were identified by 13% of adolescents as a barrier to eating healthily. Adolescents pointed to the role of parents and carers in determining their food intake and how their skill level and reluctance to cook healthy meals is a direct barrier to their own healthy eating.

**“Almost nobody of the children of my family, do not like vegetables and do not prepare them.”**

(Mexico, male, age 14)

**“My family eats a lot of sweets.”**

(USA, female, age 17)

**“Because nobody is in the house to prepare the meal for me. I want to eat apple with ademey soup after school but nobody is there to cook it for me.”**

(Ghana, female, age 13)

How families and adolescents procure and prepare foods in the home also has a great influence on the healthy eating habits of adolescents<sup>(2)</sup>. Indeed, families are a major influence on adolescent eating behaviours in two key ways: a) by providing particular foods; b) by shaping an adolescent's food preferences through caregivers sharing their knowledge, family food rules, parenting styles and role modelling of healthy or unhealthy eating behaviours<sup>(41, 49)</sup>.

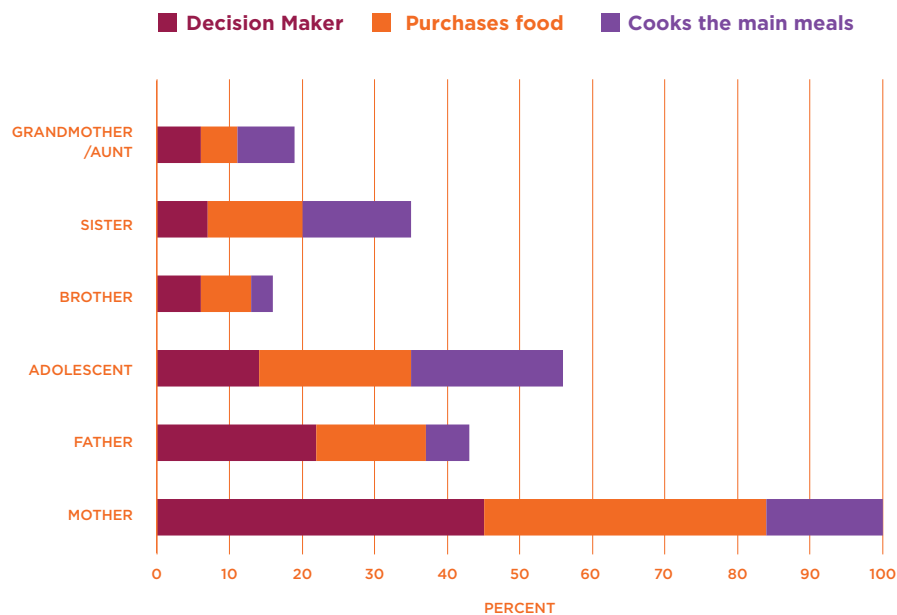
## Provision of food within the home

### Who makes the meal decisions in the family?

Documenting who makes meal decisions for adolescents within their family home can help to pinpoint how household dynamics influence adolescents' dietary intake.

Across all countries and cultures, adolescents reported that parents and caregivers primarily make the decisions about family meals. Almost half said that mothers are more likely to make key decisions but, in some countries, fathers also play this role (see Figure 15).

**Figure 15. Who makes the meal decisions, purchases food and cooks in the family?**



Fathers were most likely to make decisions about what the family ate in India, Mexico, Egypt and China. In these countries, while women often prepared dinner, patriarchal norms dictate that men make the decisions about what families eat and meals are often prepared according to their tastes and preferences.

**“While mothers cooked the meal, decisions about what to be cooked rested with men in the family. They also said what is to be cooked is an important everyday decision. Even if men explicitly did not say what should be cooked...men’s likes and dislikes are given priority while preparing meals. Men also eat before women in many cases. These are subtle norms reflective of patriarchal nature of many Indian families in both urban and rural contexts.”**

(Workshop facilitator, India urban)

### Who purchases and provides money for the family food?

Adolescents reported that immediate family members most often purchase and prepare food for their families. They identified that mothers have the key responsibility for purchasing food, followed by adolescents themselves (see Figure 15). Fathers and siblings also purchased family foods, but to a lesser degree.

**“I do a lot of work for my family like going to the market to buy things.”**

(India, male, age 15)

Even so, across most countries, in three quarters of adolescents' families, fathers were most likely to provide money for food purchases. Very few adolescents provided the money to purchase family foods. This suggests that, while women assume primary responsibility for food preparation, male family members often control the family budget.



In LICs, this pattern was particularly pronounced. For example, in Ethiopia, no adolescents reported that their mothers provide money for family foods. By contrast, mothers were identified as the key provider of money for buying food for the family in high income western cultures such as Australia and the USA, indicating women's greater financial autonomy in these countries. Research shows that, when women have financial autonomy to make strategic life choices, they can actively improve the nutritional outcomes for their children<sup>(61)</sup>. The findings of this study thus show that greater support for women's financial autonomy is needed to improve nutritional outcomes for adolescents and their families<sup>(7, 9, 51)</sup>.

## Who cooks the family meal?

Around the world, the division of labour associated with preparing the meals adolescents ate was highly gendered. Across countries and cultures, close to half of adolescents reported that mothers assume primary responsibility for preparing and cooking meals, followed by adolescents themselves, sisters, grandmothers and aunts. In comparison, fathers and brothers did very little family cooking. Interestingly only five participants reported that a maid or other paid help did the family cooking.

Adolescents spoke enthusiastically about 'mum's cooking' and 'grandma's cooking', reminding us that food preparation and consumption are often bound together with powerful emotional attachments within families.

**“[The dish] tastes good because of the carrot and potatoes, and because my grandmother does it.”**

(Mexico, male, age 14)

## Caregiver behaviours that shape food choices

### Impact of parental knowledge

Adolescents also discussed how, at times, their parents appeared to have limited nutritional knowledge. This affects the foods that are prepared and available at home. They highlighted the need for nutrition education for parents.

**“Parents don't have knowledge about healthy food, so they cook whatever [is] available in the kiosk near home.”**

(Indonesia, male, age 18)

**“Some parents do not know where to purchase healthy foods.”**

(Nigeria, female, age 15)

**“Everyone in the family should have knowledge of foods, cook foods according to the taste of the family member, buy and cook foods according to the choice and need of all the family members, [and] make the required foods within budget.”**

(Bangladesh, male, age 14)

**“[Please] teach our mothers about healthy food.”**

(Egypt, group activity)

Increased parental nutrition literacy is associated with improved nutritional outcomes for children, especially those relating to weight<sup>(52, 53)</sup>. Parents' nutritional knowledge is often a focus of nutrition intervention for young children. Given adolescents' comments about the influence of parental knowledge on their food choices, it appears parents' nutritional literacy should also be a key focus for future nutrition interventions and policy to enhance adolescents' diet and nutrition.

### Impact of role modelling

Parental modelling of health-related behaviours, especially eating habits, can be both positive and negative<sup>(54)</sup>.

Adolescents discussed how family members' preferences directly influenced what and how they ate at home. Adolescents often noted that, because family members did not prefer healthy foods, compromises were made on meals at home, and that they themselves had little influence over what and how foods were eaten there.

**“My brother does not eat healthily.”**

(Mexico, male, age 14)

Positive food memories and association are a critical part of family role modelling and influence<sup>(55)</sup>. This was reflected in how adolescents discussed associating particular foods with particular family members, time spent as a family and happy memories. Adolescents' favourite foods, or the foods they wished for, were often closely tied to their experiences with family. These associations most often related to home-cooked and traditional family foods.

**Food binds my family together... We talk about life eating our favourite meal.**

(Zimbabwe, male, age 16)

**[Those foods bring me happy memories] because, since I was a little girl, my mother prepared those foods [with me].**

(Guatemala, female, age 14)

**Some [adolescents] are emotionally connected [to] the brand named 'Plasma,' which is a type of biscuit. This biscuit is on the market more than 40 years and...very good quality. A lot of generations had it in their nutrition during early childhood and even after.**

(Workshop facilitator, Serbia)

Research shows that family food rules influence adolescents' food choices by helping to shape their feelings about healthy eating<sup>(56, 57)</sup>. Parenting behaviours and practices often promote or reduce consumption of particular foods, such as unhealthy foods, and can play an important role in shaping an adolescent's dietary intake<sup>(55, 58)</sup>.

Adolescents commonly discussed how their parents implement rules and restrictions around what can be eaten within the home. These restrictions were more commonly discussed by participants from Kyrgyzstan, Serbia, Afghanistan, Guatemala, India, Bangladesh and the USA.

**[In my house] it's prohibited to eat crisps, chips, or drink carbonated beverages.**

(Kyrgyzstan, female, age 15)

**We are only allowed dessert once a week (weekends).**

(USA, female, age 17)

However, adolescents in China, Sudan, Zimbabwe and Mexico also reported being required to follow strict rules at home in relation to food and meals. These rules varied between cultures but tended to relate to how the meal was eaten, the setting, manners during the meal, hygiene, religious requirements, cultural practices and health outcomes (see Figure 16).

Some examples of the food rules identified included:

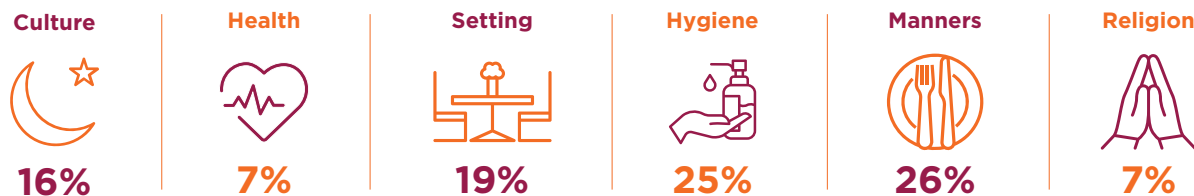
**No chomping; wash hands before eating; say 'Amen' after eating. We start eating only after our father starts. If he is not home, then we look at the elders.**

(Kyrgyzstan, female, age 14)

**If you want some food that isn't yours, ask first; wash your own dishes right after you're done eating; if you're going to have food or juice in the fridge, make sure it's enough for someone else; no sweets before 12pm; clean up after yourself.**

(USA, female, age 17)

**Figure 16. Categories of food rules**

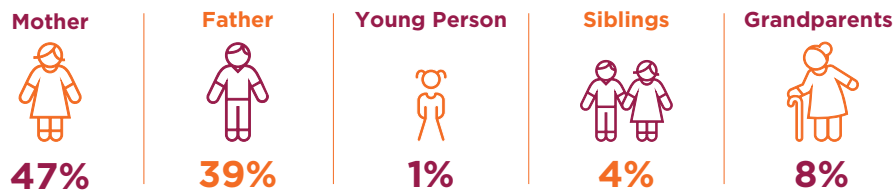


**Do not eat before praying; do not talk whilst eating; do not comment [on] the food; do not walk whilst eating; do not sleep whilst eating; do not eat before washing hands; eat food whilst it is hot; do not eat your totem.**

(Zimbabwe, female, age 18)

Adolescents who reported that their family has food rules most commonly said these rules were made by mothers, followed by fathers. Grandparents and siblings play a minor role in developing food rules within the home (see Figure 17). Very few adolescents reported that they had a role in developing the rules, indicating limited autonomy in family decision-making about meals.

**Figure 17. Who makes the family food rules?**



Adolescents feared breaking the family's food rules because this was often met with physical and verbal punishments.

**They punish me [for] taking out my phone and they won't let me to go out to the street or to play.**

(Guatemala, female, age 16)

**When you break that rule, my father or my mother take [the] stake and starting to beat he or she any who breaks the rules.**

(Zimbabwe, male, age 17)



Image: ©UNICEF Nigeria/2019

**[There is] punishment for breaking the rules, like cleaning the house and 'home arrest'.**

(Kyrgyzstan, male, age 14)

Punishments around food intake can negatively affect adolescents' eating practices. Educating parents around the negative impacts of severe physical or restrictive punishments relating to food rules and supporting them to use different strategies might help adolescents to build healthy relationships with food. Often food rules are ingrained in cultural and religious practice and difficult to alter. However, if parents understand the positive and negative impacts of food rules, this may increase adolescent autonomy to consume healthy foods<sup>55</sup>.

Overall, families were among the greatest influences on nutritional intake for adolescents, with the majority of main meals eaten at home. Grandparents also appeared to play an important role in the preparation and consumption of food, particularly in families with working parents. While parents played a large role in food decisions, adolescents identified that parents lacked nutritional knowledge and thus their education needs to be a part of any solution to enhance adolescent nutrition.

## How peers shape food choices

Adolescence is a period of experimentation and finding one's own way. Peer influence is strong at this time of life. Adolescents spend a substantial amount of time with peers both during and outside school hours, where eating is an important part of socialisation, identity development and functional activity. Peer pressure and a desire to fit in among friends can lead to adolescents engaging in risk taking behaviours including poor dietary choices<sup>(2)</sup>. Across this study, it was evident that peers were an important factor in determining adolescents' food choices outside home, often resulting in poor diet decisions.

## Fun and enjoyment of food

Adolescents reported that eating out provided an important opportunity to socialise with their peers. Given that many adolescents were restricted both in their mobility and economic autonomy, eating out with friends provided opportunities to be together without adult intervention. Adolescents talked enthusiastically about eating out with their peers, conveying the impression that this was an activity that brought them a lot of joy. They often enjoyed snacks and meals specific to their culture, such as local street food, which likely contributed to their sense of belonging to a particular culture and generation.

**“Hanging out in friend’s house is very common to have chit-chat and laugh.”**

(Philippines, gender and age not reported)

**“I like to go out with all my friends and family and find something to drink and eat together. We eat all types of food like hamburgers, fries, pasta, chocolate, brownies, ice cream and Asian food.”**

(USA, male, age 12)

**“Eating noodles with friends is much fun than doing that alone.”**

(Guatemala, female, age 16)

## Consumption of ultra-processed foods

Adolescents commonly reported that they consume ultra-processed foods when out with friends. It appeared that a key motivation here was cost. However, purchasing shareable foods also appeared to be common practice, pointing to how food purchases and eating together are integral to adolescents' sociality. Favourite food brands were often mentioned, such as Kentucky Fried Chicken (KFC) or soft drink brands (Coke and Pepsi), indicating that brands play a role in adolescents' consumption of ultra-processed foods when they are with peers.

**“I shop for food like milk tea, snacks [and] pancake with my good friends.”**

(China, male, age 15)

**“My friends and I go to eat [KFC].”**

(Egypt, female, age 17)

**“It’s interesting to eat crepes, Fanta (or any other soda), pumpkin seeds and popcorn when I’m with friends.”**

(Serbia, female, age 15)

Peer influence was also directly reported as a factor in adolescents' food choices when hanging out with friends.

**“Friends told me to eat [ice cream].”**

(India, male, age 14)

**“If schoolmates eat candies, I like to eat them too.”**

(Guatemala, female, age 13)

These results suggest that, if provided with autonomy over a small amount of funds, adolescents choose to share poor-quality foods with friends outside the home. These choices appear to be price- and/or peer-driven.

**Adolescents commonly reported that they consume ultra-processed foods when out with friends.**

## Personal food environments

Elements of personal food environments, such as individual purchasing power, time and convenience, all influence the purchase of foods. Adolescents in the workshops explained that these elements are important drivers of their food choices.



Image: ©UNICEF Mexico/2019

### How time and convenience impact food choices

Previous research has found that time constraints and convenience often determine adolescents' food choices. In particular, they reported that they are 'too busy' to eat well<sup>(41)</sup>. Adolescents in this study noted that time constraints constitute a barrier to healthy eating at home, suggesting, for example, that unhealthy foods are quicker to source or prepare, or they sometimes do not have sufficient time to locate or cook healthy foods.

**“Sometimes my mum does not have time [to buy healthy food].”**

(Guatemala, female, age 15)

**“I can't take care about my nutrition due to my commitments, so usually I eat what is easy for me to make.”**

(Serbia, female, age 16)

Often adolescents reported that they or their family members lack time to cook and, if purchasing a meal outside the home is easier, they often do so.

**“Sometimes there is no time to cook so I eat fast food.”**

(Guatemala, female, age 15)

**“We eat...foods [that are] quick... because we will be [in a] rush and [we don't] need to wait for [it] to be cooked, plus the food are also cheap.”**

(Zimbabwe, male, age 15)

### How financial autonomy impacts food choices

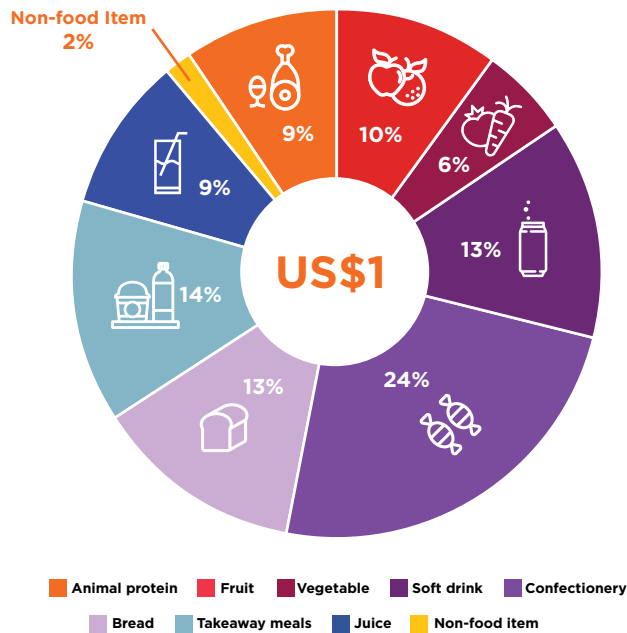
Studies have shown cost to be a common driver of adolescents' food choices<sup>(59)</sup>. The price of food affects adolescents on two levels. On the environmental level, the family's financial position and food security affects the foods adolescents can access. On the individual or intrapersonal level, the degree to which an adolescent experiences financial autonomy also determines whether adolescents can afford certain foods<sup>(49)</sup>.

When asked to imagine what foods or drinks they would purchase with US\$1 (or country equivalent) while hanging out with friends, three quarters of adolescents listed a processed food, such as confectionery, takeaway foods and carbonated drinks with relatively few listing fruit or vegetables (see Figure 18).

Interestingly in countries where adolescents had identified strict food rules and less autonomy in food decisions at home, greater numbers desired to purchase processed foods. Over half of adolescents in Kyrgyzstan, Serbia, the USA and Mexico, where adolescents said strict food rules applied, proposed spending their money on takeaway, confectionery or soft drink.

By contrast, in Sudan and Ethiopia, where family food rules were less strict, around 70% said they would purchase a fruit or vegetable. This may also be an indicator of food insecurity within these countries. Some participants from LICs chose to spend their money on non-food items such as clothes, stationery or school fees, suggesting that adolescents in these countries prioritise education and other essentials over food.

**Figure 18. Foods purchased with US\$1**



When adolescents had financial autonomy, they often preferred unhealthy food choices because they were cheaper or easy to access.

**“Sometimes when we have money then we only eat junk food.”**

(India, female, age 13)

**“When we [go out] with friends, we eat [junk] foods because of our budgets. We all do not go to work... so we will only have little money in our pockets.”**

(Zimbabwe, male, age not reported)

Across LICs, MICs and HICs, many adolescents perceived healthy foods to be more expensive, which influence their purchasing decisions.

**“[Healthy foods] are expensive... The money you have is not enough for buying them.”**

(Ghana, male, age 15)

**“Healthy food is more expensive.”**

(USA, male, age 17)

**“Cheap food is not healthy, healthy food is not cheap.”**

(China, female, age 13)

Some adolescents reported they never had money to spend on food or other purchases.

**“I don’t have enough money for the food I need.”**

(Serbia, female, age 16)

**“As children we have no money.”**

(Zimbabwe, male, age 15)

When given the opportunity, adolescents make personal food choices based on cost. Because ultra-processed foods often cost less to buy, these are the logical foods for adolescents to choose.

**Healthy options need to be available at a price that adolescents see as affordable and competitive with unhealthy food choices.**

## External food environments

At least one third of adolescents' meals are eaten outside the home<sup>(41)</sup>. As such, an adolescent's food choices and dietary intake are deeply influenced by their physical food environments, including access to food in markets, school environments and other locations<sup>(2)</sup>. Price, marketing, accessibility of vendors and retail outlets and the availability of foods in schools greatly influence adolescent food choices outside the home<sup>(2)</sup>.

### Where adolescents eat outside the home

Adolescents identified various locations, including restaurants, shops, churches, parks and public transport, where they ate outside the home (see Figure 19). Across all countries, of all the places where adolescents consumed food outside the home, the most commonly reported were markets and malls (51%), restaurants and cafés, parks, schools and friends or neighbours' houses.

**I eat at the junction mall because it's the closest and special place to eat from my home.**

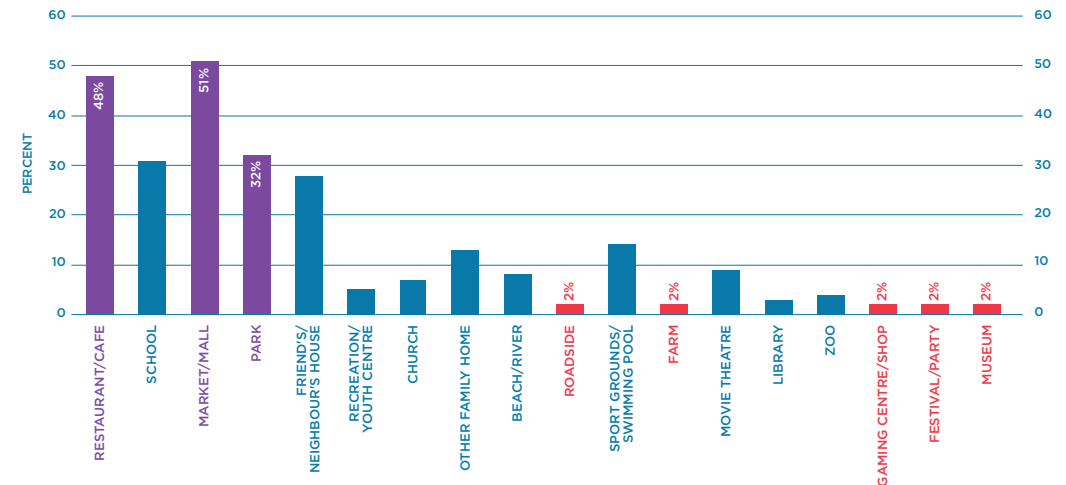
(Ghana, male, age 17)

**I like to eat fish in the park, which are very much delicious. We get the fish fresh from the river and they cook it for us in oil.**

(Bangladesh, female, age 16)

Across all countries, of all the places where adolescents consumed food outside the home, the most commonly reported were markets and malls (51%), restaurants and cafés, parks, schools and friends or neighbours' 'houses.

**Figure 19. Places where adolescents consume food outside the home**



Adolescents said they ate at different places outside the home, according to the time of day. They said they frequent shops and restaurants more in the afternoon and evening, after school finished, reminding us that the majority of adolescents have limited opportunities to eat socially outside home and school commitments.

Some adolescents reported that they eat out on special occasions, usually with family.

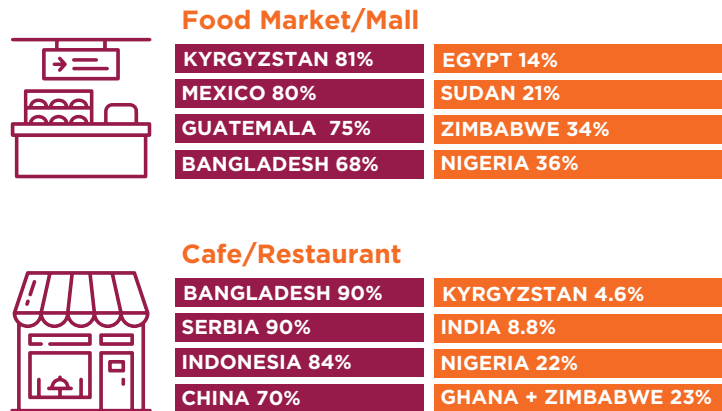
**I normally [eat at a] restaurant when my father gets some leisure time.**

(Bangladesh, female, age 16)

However, the majority of adolescents reported they most commonly eat with friends; more so than family and well above eating alone. They reported that hanging out with friends outside the home most often centred around purchasing takeaway or convenience foods at markets, malls, restaurants or cafés.

Figure 20 shows the cross-country variation in where adolescents ate out with friends. Adolescents from Kyrgyzstan, Mexico, Guatemala, China, Bangladesh, Indonesia and Australia were most likely to hang out with friends in markets or malls. By contrast, adolescents in Afghanistan, Egypt and Sudan were least likely to use these spaces.

**Figure 20. Percentage of adolescents that ate with friends at a market/mall or café/restaurant**



In countries where adolescents hang out in restaurants and cafés with friends (see Figure 20), they were much less likely to visit malls and markets for this purpose. These countries included Serbia, Sudan, Egypt and the USA. Conversely, in Mexico, India, Ghana and Kyrgyzstan, adolescents regularly frequented markets and malls with their friends, but socialised less in restaurants and cafes. Adolescents in Bangladesh, Indonesia and China regularly used both malls and markets and restaurants and cafés to socialise and eat with friends.

**“The places that students hang out with friends are home, friends’ homes, the shopping plaza, supermarket, basketball court, milk bubble tea, etc.”**

(Workshop facilitator, China urban)

Due to cultural practices, female adolescents in Afghanistan reported that they did not eat out with friends in any of these spaces.

**“Girls noted that when eating outside of the house, they either went to another family member’s house – like their uncle, or they ate in the park with friends and other family member.”**

(Afghanistan, Workshop facilitator)

After markets, malls, restaurants and cafes, adolescents most commonly reported that they consumed food outside the home at school, with peers and teachers. During the middle of the day, adolescents ate mostly with peers at school.

## Availability and accessibility of foods

As already noted, adolescents identified some significant barriers to healthy eating outside the home, especially around the availability and accessibility of nourishing food and drink. In general, adolescents reported that it is often hard to find healthy food when eating out.

**“Most of the time when we’re outdoors, we don’t find places where we can buy healthy food.”**

(Egypt, female, age 15)

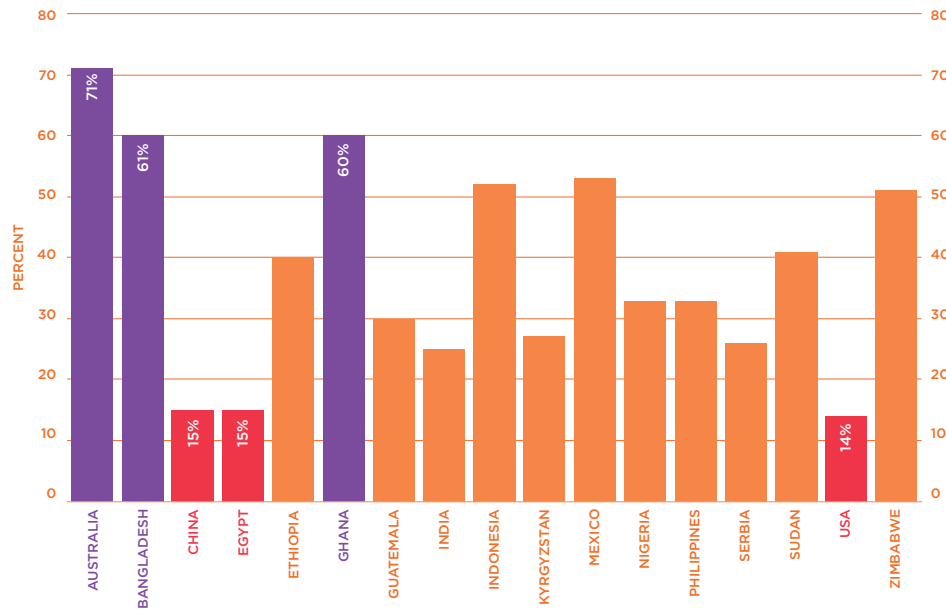
Adolescents’ ability to regularly consume a healthy diet is deeply dependent on the foods that are available for purchase in their local stores, markets and supermarkets<sup>(2)</sup>. Research shows that greater accessibility to healthy food in the external food environment is linked to fewer perceived barriers to healthy eating, along with a greater understanding of healthy food<sup>(50)</sup>.

In this study, over one third of adolescents identified access and/or availability in their communities as a key barrier to their consumption of healthy foods. Overall, adolescents reported that limited access to healthy foods, combined with relative ease of access to unhealthy foods, operated against their healthy diet.



Access issues were highlighted across countries of all income levels, including HICs such as Australia (see Figure 21). Equally, adolescents in HICs and LICs reported easy access to unhealthy foods within their physical food environments.

**Figure 21. Reported access to healthy food options by country**



Many adolescents reported that healthy and nutritious foods were not readily available for purchase at local food markets or school canteens. This was particularly noted in Ghana, Bangladesh, Mexico, Egypt, Sudan, Ethiopia, Nigeria, the Philippines, Zimbabwe and Guatemala.

**“We can’t get [healthy] foods in our local shops because shopkeepers are selling low quality foods and vegetables.”**

(Afghanistan, gender and age not reported)

**“We do not get fresh food where we live.”**

(India, female, age 13)

To purchase healthy foods, adolescents or family members often had to travel far from their local communities. In some cases, even when adolescents or their families had money to acquire healthy foods, they could not travel the distance to purchase them.

**“Lack of transportation for purchasing (the foods are far from us and we need transportation, but none available for us).”**

(Ghana, male, age 15)

**“There are [healthy foods], but they are far from where you are.”**

(Mexico, male, age 13)

Adolescents also reported limited access to specific healthy foods, especially animal protein foods and fruit and vegetables.

**“Availability of meat. We have the money but where we buy the meat is unavailable.”**

(Ghana, female, age 15)

**“Not all products are available in our place... Because of the weather conditions, tomatoes, eggplants etc. do not grow here.”**

(Kyrgyzstan, female, age 14)

**“Fruits and vegetables are very much healthy and tasty and unfortunately we don’t have access to these foods in our local shops.”**

(Workshop facilitator, Afghanistan)

According to adolescents, shopping centres, markets and supermarkets frequently had limited or no healthy foods.

**Unavailability of fresh foods in market is an obstacle [to eating well].**

(Bangladesh, female, age 16)

**[There is a] lack of healthy items in the market.**

(Nigeria, gender and age not reported)

**Not enough locations that make the healthy food we want to eat.**

(Australia, female, age 14)

These results are of concern given that maintaining adequate growth during adolescence requires increased micronutrients and protein.

Another significant barrier to healthy eating is easy access to unhealthy food. This was observed by adolescents in Australia, Indonesia, Serbia, Kyrgyzstan, India, China and the USA, who also noted that it created temptation that was hard to resist.

**Unhealthy food is easier to come by.**

(USA, male, age 17)

The prevalence of street vendors tempted adolescents in Indonesia, India and Afghanistan to make unhealthy food choices.

**We mostly get oily food here. It is difficult to resist.**

(India, female, age 13)

**When eating outside, girls regularly referred to eating local street food, including samosa, noodles or fish. They also reported that they enjoyed eating ice-cream when outside of the house.**

(Workshop facilitator, Afghanistan)

In Sudan, adolescents recruited from a refugee camp were nearly three times more likely to identify financial barriers to healthy eating than Sudanese participants from a rural area. They also identified accessibility of healthy foods as a key barrier.



Image: ©UNICEF Sudan/2019/Idreesy



Image: ©UNICEF Ghana/2019

In Ghana, the nutrition facilitator commented that: Generally low income families lack food. Culturally accepted practices around food habits such as eating 'Akple' as a staple food in Ghana is considered a main obstacle. Families see 'Akple' and 'Fufu' as most affordable meals to prepare since maize and cassava are locally produced and less expensive to buy.

Akple is made from corn flour and cassava dough  
Fufu is made from cassava and unripe plantains

## School food environment

School going adolescents spend at least one third of their day during the week at school. The school environment thus constitutes a powerful influence on adolescent eating behaviours<sup>(16, 18, 59)</sup>. Further, research shows that, if this food environment promotes the development of healthy eating as a normative behaviour, adolescents have better dietary outcomes<sup>(59)</sup>.

In this study, one in five adolescents identified the school environment as a barrier to their healthy eating. This suggests that schools could be more effectively harnessed to enhance students' diet and nutrition outcomes.

### Access to healthy food at school

Across both HICs and lower-middle income countries (LMICs), adolescents generally concurred that the unavailability of healthy foods at school is a major barrier to healthy eating. In most countries, less than half of adolescents reported that healthy food options were available at school. In particular, those in Bangladesh, Mexico and Egypt reported very few healthy meal or snack options available at school (see Figure 22).

**Healthy food is not available at school.**

(Indonesia, female, age 16)

**I want to eat healthy but I don't have big choice of food in the school.**

(Serbia, male, age 16)

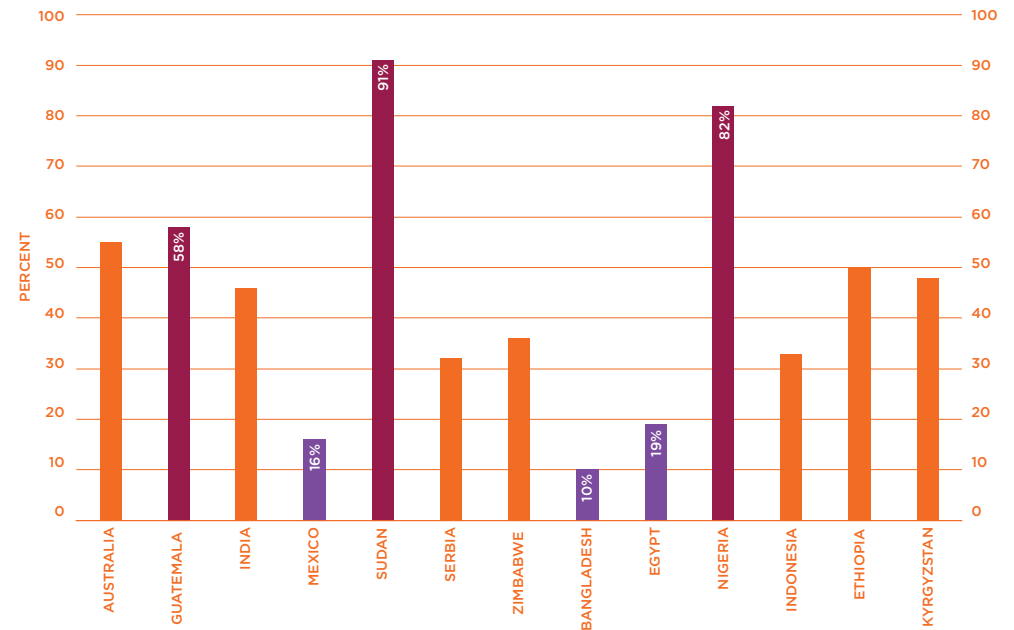
Where healthy food was available at school, adolescents often reported that it was expensive.

**The school does not sell healthy things and if it sells them, they are very expensive.**

(Mexico, male, age 15)

In contrast with many other countries, high numbers of adolescents in Sudan and Nigeria reported that healthy food options are available at school.

**Figure 22. Percentage of adolescents reporting healthy food options available at school**



Note - Participants from five countries did not take part in this activity

### Where adolescents consume food during the school day

The way foods were eaten within the school environment varied greatly between countries participating in the study. In some places, such as Australia, India and Sudan, the norm was for adolescents to bring a packed lunch to school. Elsewhere, adolescents ate in a school canteen, where food was either provided free of charge or purchased by students.

Overall, more adolescents did not bring a prepared lunch to school than those who brought a lunch from home. Adolescents in Mexico, Nigeria and Egypt reported that they predominantly bought their lunch at a school canteen. The high numbers of adolescents buying or being provided food at school demonstrates the importance of healthy food options in the school environment.

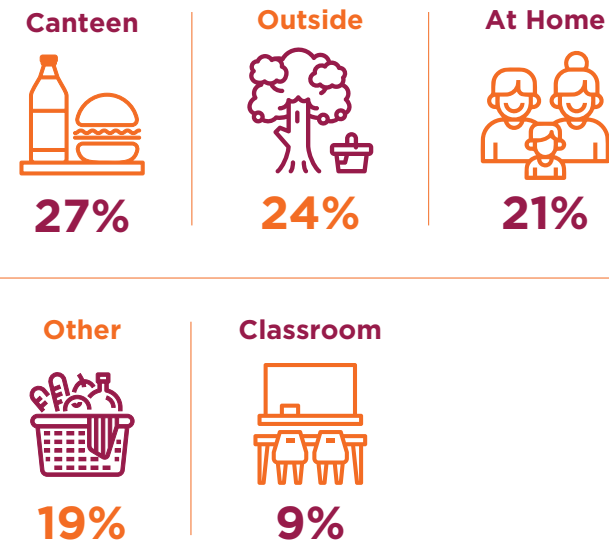
Adolescents from Mexico, Sudan, Nigeria, Indonesia and Kyrgyzstan were mostly likely to eat their lunch in the school canteen (see Figure 23). Those in Australia, India, Zimbabwe and Egypt most commonly ate their lunch outside, in the school grounds, while those in Guatemala and Serbia ate their lunch at home. Interestingly adolescents in China ate their lunch in the classroom or dormitory.

Adolescents reported that long school hours often interfere with the timing of meals and healthy eating.

**“I think that we are too long in school (sometimes until 8.30 PM). [I eat] late in the evening, and I don’t want to eat so late.”**

(Serbia, female, age 17)

**Figure 23. Where food is consumed during the school day**



**“I spend a lot of time at school and then I don’t eat healthy. I just get some fast food or something sweet.”**

(Serbia, female, age 15)

Adolescents offered suggestions about how to improve the accessibility of healthy food options at school, including raising adolescents’ awareness about healthy eating, banning unhealthy foods and improving the quality and range of healthy foods available at schools.

**“[Fund] practical school feeding programs.”**

(Zimbabwe, male, age 17)

**“At the recess time there [should] just be fruit to eat.”**

(Guatemala, male, age 16)

**“School should daily provide milk and eggs to all the children.”**

(India, male, age 17)

**“Ban unhealthy food at school. Encourage students to eat healthy food.”**

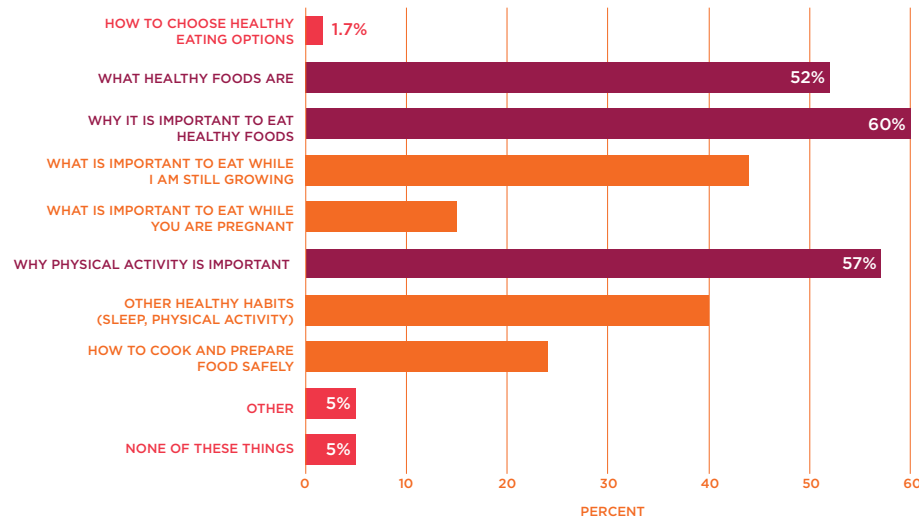
(Egypt, male, age 17)

### Nutrition content in existing school curricula

Adolescents across countries identified major gaps about the nutrition information provided within their school environment and curriculum. Participants from Serbia and Egypt reported receiving no nutritional information at school (see Figure 24). In only two countries – Australia and China – did participants report that they had been taught at school how to choose healthy food options. In relation to learning about nutrition during pregnancy, participants from five countries – Australia, Bangladesh, Ethiopia, Indonesia and China – reported that no information was taught in schools about nutrition and pregnancy. Only a quarter of adolescents, most of whom came from India, Zimbabwe and Nigeria, reported learning practical nutrition skills, such as cooking, at school.

Overall, adolescents most commonly reported that the content taught in schools related to why physical activity is important at healthy foods and physical activity (see Figure 24). However, this was only reported by a small majority of participants, insufficient and varied nutrition education at schools.

**Figure 24. Nutrition information included in school education**



Overall, adolescents most commonly reported that the content taught in schools related to why it is important to eat healthy foods and engage in physical activity.

## Adolescents' suggestions for what could be taught at school

Adolescents provided insightful and constructive suggestions about what they felt was needed to improve nutrition education in their school curricula.

Adolescents called for greater opportunities to learn functional cooking skills, noting that they preferred 'hands on' learning about diet and nutrition to more theoretically-oriented education.

**Practice making healthy food and eat[ing] them together and continuously.**

(Indonesia, male, age 17)

**I would like if we did more practical [learning].**

(Australia, female, age 16)

However, adolescents in some countries highlighted that there were obstacles to undertaking this kind of learning, such as the school's inability to pay for gas or employ teachers with relevant expertise.

**[The school needs to] provide gas so that we learn and cook at the same time.**

(Zimbabwe, female, age 14)

Adolescents looked to schools to provide leadership on diet and nutrition by prioritising nutrition education for both teachers and students and creating opportunities for greater healthy food access.

**Providing healthy food and having more health teachers [would improve students' nutrition].**

(Zimbabwe, female, age not reported)



Image: ©UNICEF Mexico/2019

“We could have more lectures about bad nutrition so that we can see negative effects or it could be more on the website. There could be space in the school where we can find healthy foods for snack.”

(Serbia, female, age 16)

Adolescents also called for diet and nutrition information that was relevant and relatable for their age group. They also called for spaces where they could discuss the issues and develop solutions with their peers.

“Making the content relatable through showing examples and telling human interest stories.”

(Kyrgyzstan, female, age 14)

“Conducting a healthy food bazaar and a healthy food creation competition.”

(Indonesia, male, age 16)

Adolescents expressed the need for trained allied health specialists such as nutritionists to provide more trusted information at school. They indicated a need for quality information to be easily accessible.

“[I would like] a workshop about feeding practices or a ‘food club’.”

(Mexico, female, age 13)

“[The school could] employ... a nutritionist to check the body sustenance.”

(Nigeria, male, age 15)

### Opportunity to purchase unhealthy foods around the school environment.

Adolescents discussed how opportunity to purchase unhealthy foods near the school entrance or from nearby street vendors encourages them to make unhealthy food choices.

“Well, I don’t have so many options because the school is surround with bakeries and supermarkets and not with healthy food stores.”

(Serbia, female, age 15)

“At school I am interested in buying Samosa (local fried pastry with meat and vegetables food) which is very much tasty, it normally has onion and potato in it.”

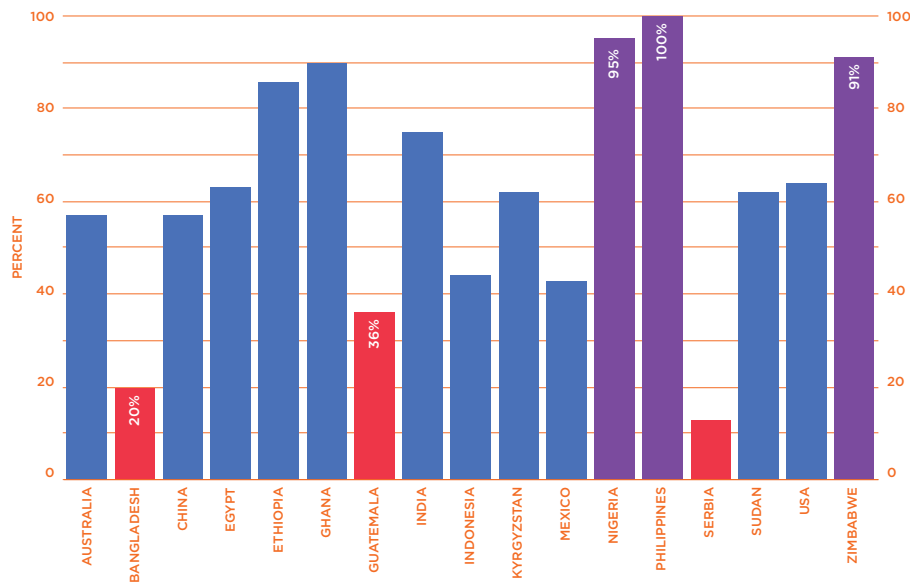
(Afghanistan, female, age not reported)

This indicates that there is a role for governments in regulating the availability of unhealthy foods in the vicinity of schools.

## Price of food and financial barriers

In this study, an average of 60% of adolescents across LICs, MICs and HICs consistently identified financial constraints as the greatest barrier to healthy eating. This is particularly acute for adolescents in LICs, who nominated cost as the key barrier to their healthy food choices, with the highest numbers in the Philippines, Nigeria and Zimbabwe. Even so, a majority of adolescents in the USA and in Australia identified cost as their primary barrier to healthy eating, on a par with countries such as China, Egypt and Serbia (see Figure 25). This suggests that cost is a common barrier to purchasing and consuming healthy food, regardless of a country's income status.

**Figure 25. Cost as a barrier to healthy eating for adolescents**



Due to deep economic constraints, some families struggled to put any kind of food on the table. Adolescents – predominantly those in the global South – reported that their families are unable to afford food or other essentials, such as electricity or firewood to enable cooking. In these contexts, healthy eating was frequently neither a choice nor a priority.

**“We have lack of money here to stay healthy... Our family is unable to find good jobs. We have to run our house with less money.”**

(India, female, age 16)

**“[We don’t] hav[e] enough money to buy ingredients, [or pay] cost of electricity or firewood.”**

(Zimbabwe, female, age 14)

Adolescents in LICs frequently reported that their families cannot afford healthy foods such as meat, dairy products, vegetables and fruit – which has profound implications for the quality of their diets. As noted earlier, adolescents in LICs frequently consumed high rates of carbohydrate and sweet drinks (juice) to meet their energy needs, exposing them to higher risks of malnutrition, hidden hunger and non-communicable disease.

**“Fish [costs] 150 rupees and [if] we only have 10 rupees then we cannot buy it at all.”**

(India, female, age 16)

**“Our main problem and barrier in order to get healthy food is our very low economic condition because we couldn’t buy meat and so many other healthy foods because such foods aren’t cheap.”**

(Afghanistan, female, age not reported)

Food insecurity was also evident in LICs through analysis around the timing and frequency of adolescents’ meals. Often adolescents reported minimal food intake throughout the day, or skipped meals. This was also noted by nutrition specialists who attended the workshops.

**“Some of the adolescents ate only once or twice yesterday.”**

(Workshop facilitator, Philippines)

**Some did not eat dinner last night or just drank milk. Hence, they wrote about what they had the previous night.**

(Workshop facilitator, India rural)

Interestingly economic constraints were also evident in adolescents' identification of the foods they wished for. In LICs, desired foods were primarily those they could not access to due to financial constraints, such as animal protein, grains, vegetables and fruit. This indicates that, in such countries, financial barriers are inhibiting adolescents' access to the most basic elements of a nutritious diet.

Our findings confirm that poverty is the key determinant of adolescents' food choices in LICs and MICs. For many, consuming sufficient food to fulfil their basic growth and energy needs is a persistent everyday challenge.

## How media influence impacts adolescents dietary practices

Adolescents today live in a highly mediated environment<sup>(2)</sup>. A proliferation of rapidly changing and emerging new digital media platforms, such as social media and mobile applications, as well as legacy media like television and radio<sup>(41, 60)</sup> all influence adolescents' diet and nutrition outcomes.

### Media ecologies and adolescents' health

Around the world, adolescents' media ecologies are comprised of access to television, newspapers, magazines, radio, billboards, social media (including visual social media), messaging apps, websites, search engines and video sharing platforms. Consequently, a variety

of platforms potentially influence their food choices and model eating behaviours. Legacy media – television, newspapers and radio – seemed to play a more significant role in the lives of adolescents living in LICs and MICs, while digital media characterised those of adolescents in HICs. Even so, digital media played an important role in shaping adolescents' food choices and behaviours in LICs, with data showing a strong shift towards digital media use and a preference for audio-visual over print media (Figure 26).

**TV; Instagram; magazines; newspapers; radio; WhatsApp; Facebook; Google.**

(Kyrgyzstan, male, age 15)

**Favourite celebrity endorsement; social media; celebrity recommendations.**

(China, female, age 13)

**I just look at magazines and some videos.**

(Zimbabwe, female, age 14)

Given the integration of diverse media in adolescents' lives, food companies have multiple possible touch points for influencing adolescents. This rich media environment also presents opportunities for governments and civil society organisations to positively shape adolescents' dietary choices and behaviours.

Adolescents regard social media and digital platforms as the most influential form of media for their diet and nutrition, followed by television and radio

(see Figure 26). Branding and advertisements, celebrity and athlete endorsements and blogs, news items, and books/magazines also influenced their dietary choices.

While media content plays a key role in adolescents' food choices, media hardware also plays a structuring role in their lives, sometimes determining where and when they eat, with consequences for their dietary habits. For example, some adolescents reported eating their main meal in front of the television or with a digital device. So too, nutritionists reported that adolescents' game play or video watching can encourage them to skip meals.

**Most of the adolescents wrote that they have their meals in the living room in front of the TV.**

(Workshop facilitator, Indonesian, rural)

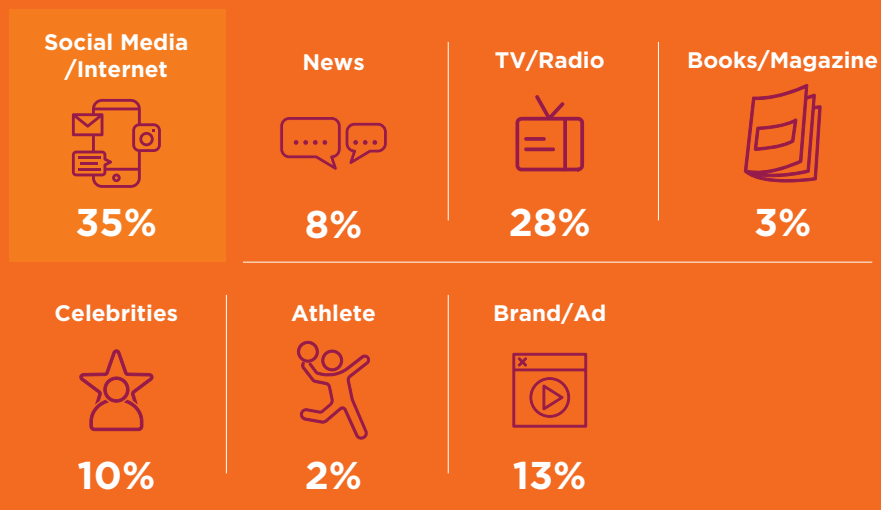
**Use of mobile phone was perceived as an obstacle. Adolescents are using Facebook, mobile games, and watching videos in YouTube. With this behaviour, they sometimes skip meals because they are already sleepy.**

(Workshop facilitator, Philippines)

**Adolescents regard social media and digital platforms as the most influential form of media for their diet and nutrition.**



Figure 26. Media influences on food choice for adolescents



### Influence of social media

Adolescents reported that social media is more influential over their dietary practices than other forms of media. The social media landscape is vast and continually expanding, with multiple platforms for interaction and communication<sup>(19, 61)</sup>.

Adolescents in this study were highly connected on social media, reporting that they used these platforms daily. The countries that most commonly reported social media as a major influence on food choice were Kyrgyzstan, India and Serbia (see Figure 25).

Some adolescents said they found health information on gaining and losing weight or maintaining health through diet and physical activity via social media platforms. They also reported that social media shaped their health identities.

**“I go to YouTube and download the tips, because my mom tells me to gain weight.”**

(Mexico, male, age 13)

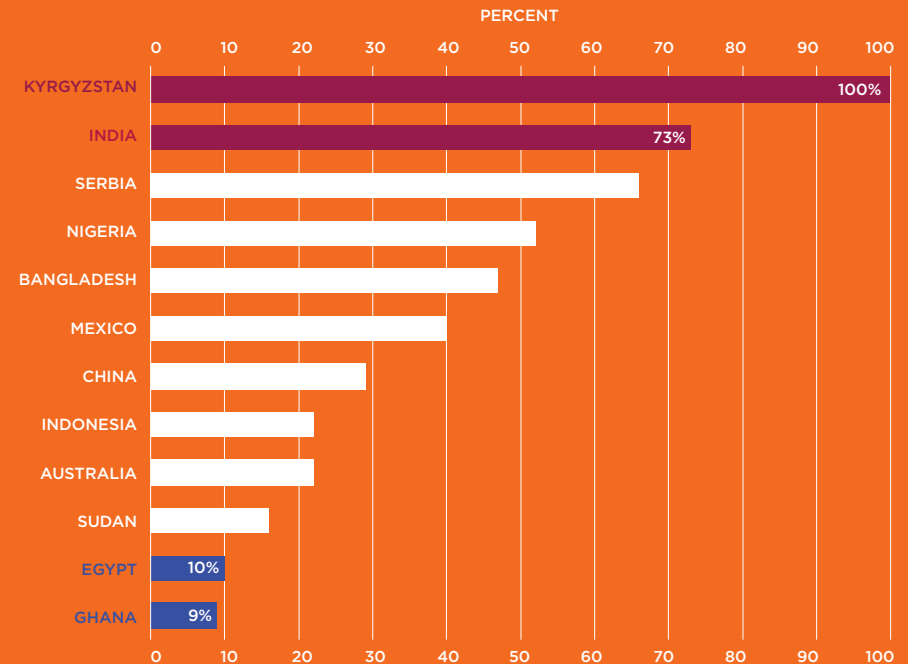
**“Social media platforms such as TikTok, YouTube and WhatsApp were important sources of information on different kinds of exercises and foods.”**

(Workshop facilitator, India)

**“I search on YouTube. I write ‘images for the perfect figure’, and I write on how to keep fit’.”**

(Egypt, group activity)

Figure 27. Participants that reported social media use and influence on diet



Note - participants from six countries did not take part in this activity

## How food marketing influences adolescents' food choices

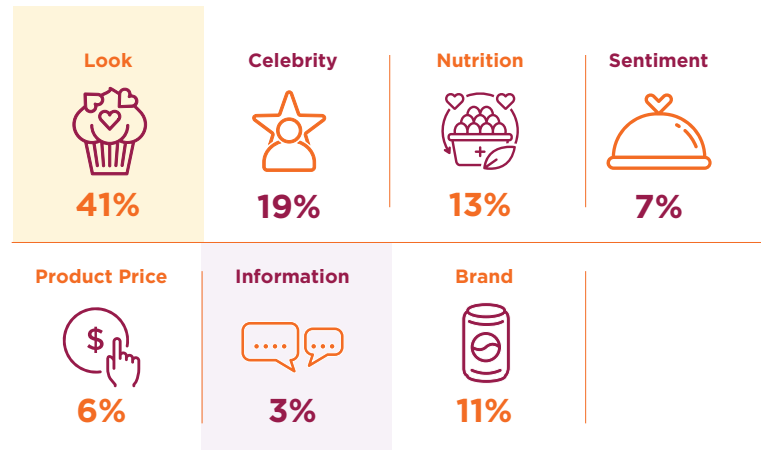
Food marketing in the external food environment strongly influences food purchasing decisions<sup>(2)</sup>, thereby contributing to poor diet quality in children and adolescents<sup>(19, 20, 62, 64)</sup>.

Adolescents receive various information, especially those on food products, through internet, TV programs and advertisement.

(Workshop facilitator, China)

To build understanding of the appeal of food marketing to adolescents, participants were asked about their favourite food advertisement: what they liked about it, how often they saw the advertisement and whether it influenced them to purchase the product.

**Figure 28 What makes the advertisement appealing to adolescents?**



Overall, adolescents reported that they most enjoyed – and found persuasive – advertisements for ultra-processed foods. Of the advertisements identified as appealing, the largest proportion promoted soft drinks – principally Pepsi and Coke – and other sweet drinks, such as bubble tea, chocolate drinks and yoghurt drinks.

Coke commercials... always [have] cute stories/videos of friends and couples in the current season (i.e., summer, winter).

(USA, group activity)

Pepsi song and video.

(Sudan, group activity)

The one on Coca-Cola.

(Guatemala, group activity)

These were followed by well-known brands of ultra-processed, takeaway foods such as KFC, Pollo Campero, Pizza Hut and McDonalds.

Particularly powerful were the drawings adolescents produced when asked about their favourite food brand that visually identified key 'brand features'.

Pepsi image drawn by participant group in Sudan



Coca-Cola image drawn by participant group in Guatemala



KFC advertisement drawn by participant group in China

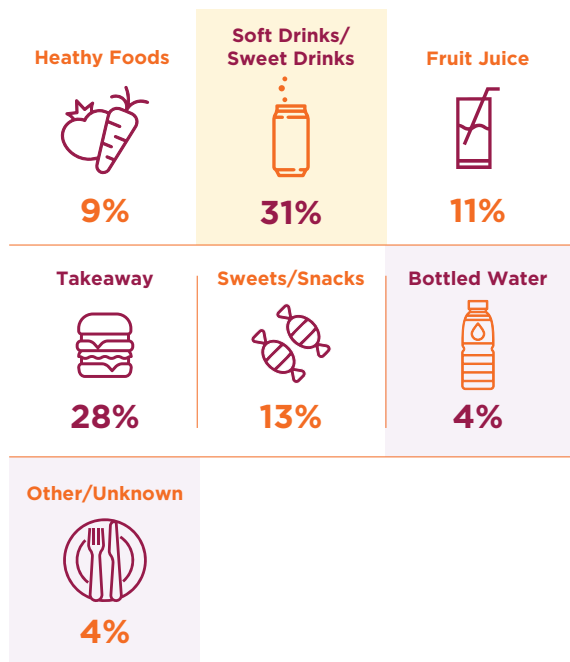


Other selected advertisements promoted sweet and savoury snacks such as cakes, cookies, chocolate and chips and bottled fruit juices. Healthy options made up less than 10% of the chosen advertisements, but included fruit, vegetables, oats, noodles, chicken, yoghurt and milk (see Figure 29).

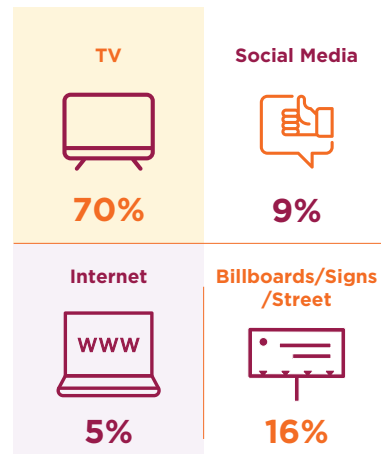
When adolescents were asked what made advertised food appealing, broad themes emerged, including: the branding of the product (brand loyalty), the look and 'feel' of the advertisement (appealing graphics and characters), celebrity endorsement and/or use (e.g., use by sports stars), advertised nutritional value (e.g., when food was promoted as 'healthy' or 'good'), sentimental value (connection to adolescents' memories), affordable price point and dietary information provided by the advertisement (see Table 3).

While adolescents nominated social media as their primary influence on diet and nutrition, they reported that television advertising was their primary source of exposure to food marketing (see Figure 29). This was followed by billboards or street signs, social media and the internet. It appears that ambient and cross-platform marketing, which infiltrate the spaces where adolescents spent time in daily life, significantly raises the prominence of multinational food chains and entices adolescents to purchase.

**Figure 29. Favourite food advertisement categories**



**Places where food advertisements were viewed by adolescents**



**“I viewed the Burger King ad [for a cheese Whopper burger with iced tea] via billboard twice a month because...I’ll go to Tita’s house on the bus. I see [the] TV commercial every day.”**







(Philippines, gender and age not reported)



**While adolescents nominated social media as their primary influence on diet and nutrition, they reported that television advertising was their primary source of exposure to food marketing.**

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

**Table 3. Adolescents report on what makes food advertising appealing to them**

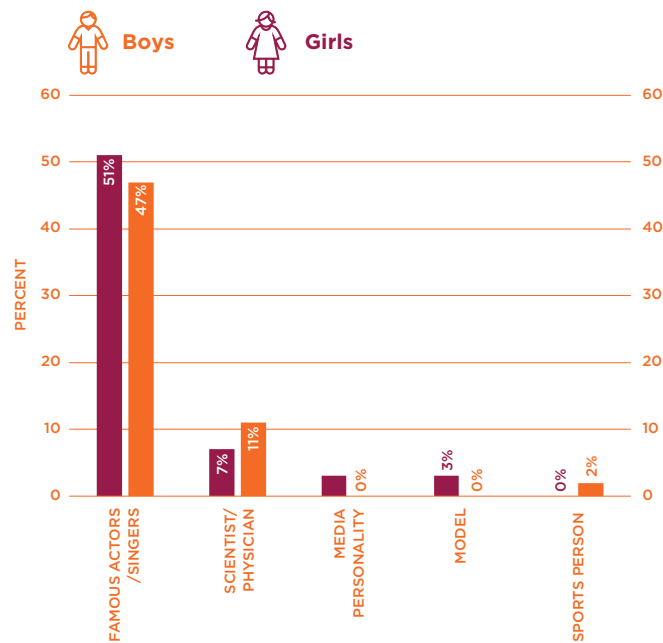
 <p><b>Look</b></p> <p>The way the ad/product is presented</p>	 <p><b>Fame</b></p> <p>Celebrity endorsement of product</p>	 <p><b>Nutrition</b></p> <p>Ad presents nutritious value of product</p>	 <p><b>Sentiment</b></p> <p>Stories, relationship links to childhood memories</p>	 <p><b>Price</b></p> <p>Of the food product</p>	 <p><b>Information</b></p> <p>Communication of product information</p>
<p>The shape of the food is attractive, especially when I'm hungry. (Egypt)</p>	<p>[If] a celebrity does the advertisement...we feel like buying it more. (India)</p>	<p>This drink is made from nutritious fruits. (Bangladesh)</p>	<p>I feel like a child; it reminds me of wonderful taste. (Serbia)</p>	<p>It comes for twelve rupees. It is...easily available in all shops. (India)</p>	<p>[The advertisement] shows...when and which balanced foods we should eat. It informed us about a balanced diet. (Bangladesh)</p>
<p>[This advertisement is good] because of the design of [the] avengers end game. (Guatemala)</p>	<p>The food is attractive... when a celebrity I like is presenting the ad. (Egypt)</p>	<p>[This advertisement works] because [we know it] is important for us to become healthy. (Sudan)</p>	<p>They make their commercials really catchy by relating it to real life stories. (Philippines)</p>	<p>The shape, smell and taste of the food as well as its price. (Egypt)</p>	<p>[The advertisement] has attracted us and communication is so clear. (Bangladesh)</p>
<p>[The advertisement] has contagious rhythms and beautiful faces and choreographies. (Serbia)</p>	<p>The advertisement has good music, participation of celebrities and creative scenario. (Serbia)</p>	<p>[This advertisement works because of] the variety of flavours and the vitamins they have. (Guatemala)</p>	<p>By watching this advertisement and listening to its dialogue we feel enthused. (India)</p>	<p>I like how they advertise their food and the prices are all affordable. (Philippines)</p>	<p>It's my favourite ad [because] it gives me the right information about the drink, the food values and how good it is. (Bangladesh)</p>

## How celebrities influence adolescents' body images

Internationally, food and beverage companies are mobilising celebrity endorsements, particularly via social media, to promote their products, which are largely ultra-processed. Research shows that celebrity endorsements powerfully influence adolescents' eating behaviour and food choices by enhancing their brand, desirability and positive associations<sup>(64, 20)</sup>.

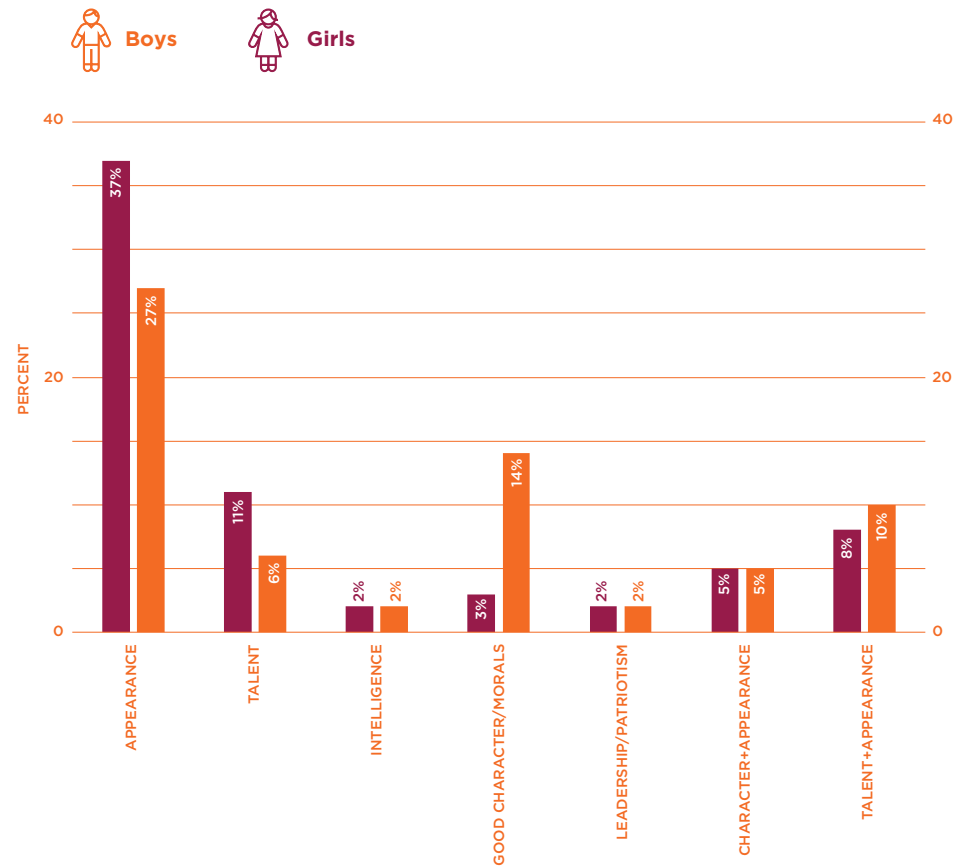
In this study, three quarters of adolescents identified that they most related to famous actors and singers, followed by physicians or scientists. Importantly, a gender difference played out in adolescents' identification of influential celebrities. Girls were more likely to identify singers, actors and models as influential than boys. By contrast, boys were twice as likely as girls to identify scientists, politicians, sports stars and physicians as influential on their dietary choices. This suggests food marketing reproduces conventional gender norms (see Figure 30).

**Figure 30. Celebrity influences on body image perception for adolescents**



Adolescents reported that the most appealing dimension of the celebrities they identified is their appearance, followed by their talent, and their morals and/or good character (see Figure 31). Of concern was that almost three quarters of girls rated physical attributes as the most appealing feature, compared with one third of boys. By contrast, boys were more likely to identify intelligence, character and morals over physical attributes as celebrities' appealing features.

**Figure 31. Type of personal feature identified to be most appealing for adolescents**



Research shows that repeated exposure via social media to images of thin and attractive female celebrities negatively affects adolescents' body images<sup>(65)</sup>. Indeed, in this study, adolescents across participating countries reported that the celebrities they encountered via social media, television and magazines play a key role in determining how they perceive the ideal body shape.

**“We go on Instagram, to see their pictures and on YouTube we watch their gym videos. We get to know more about them through Google.”**

(India, group activity)

**“Many also suggested that seeing a celebrity drink or eat a product helped to endorse it, and made the girls trust the product more and want to try it.”**

(Workshop facilitator, Afghanistan rural)

Adolescents reported that they responded in different ways to the body ideals promoted by celebrities. When asked how seeing these images made them feel, they often noted that advertising makes them feel dissatisfied with their current body shape.

**“I feel less attractive because I won't be able to achieve a body like theirs.”**

(USA, group activity)

Some adolescents felt ambivalent or somewhat conflicted about the body ideals which celebrities represent. Some note that they enjoy watching celebrities but that this also makes them feel bad about themselves, while others said celebrities motivate them to aspire to healthier body ideals.

**“Sometimes it would make us feel bad. But it also motivates us to go on with a healthy and better lifestyle.”**

(Guatemala, group activity)

**“We get [a] good feeling. [We] are jealous but we feel good to look at them.”**

(India, group activity)

Finally, for a few adolescents – notably those in Mexico – celebrity endorsement was not strong enough to motivate them to modify their diet or physical activity routines.

**“They said that by observing the celebrities' bodies they feel the desire to be like them, but that in general it does not impact them enough to make drastic changes in their diet or physical activity.”**

(Workshop facilitator, Mexico)

These findings show that adolescents frequently encounter powerful marketing campaigns promoting highly processed foods, which potentially negatively shape their food choices. Adolescents identified specific teen-targeted food marketing strategies that they positively associate with foods they like and would purchase. They also highlighted how social media celebrities influence the ways they perceive 'desirable' body images, and sometimes fuel negative self-perceptions and feelings.

**Some participants also commented that when looking at images of their celebrities they may feel unhappy with their current body or image, and that this could affect their self-esteem.**

(Workshop facilitator, Mexico)



Image: ©UNICEF Mexico/2019



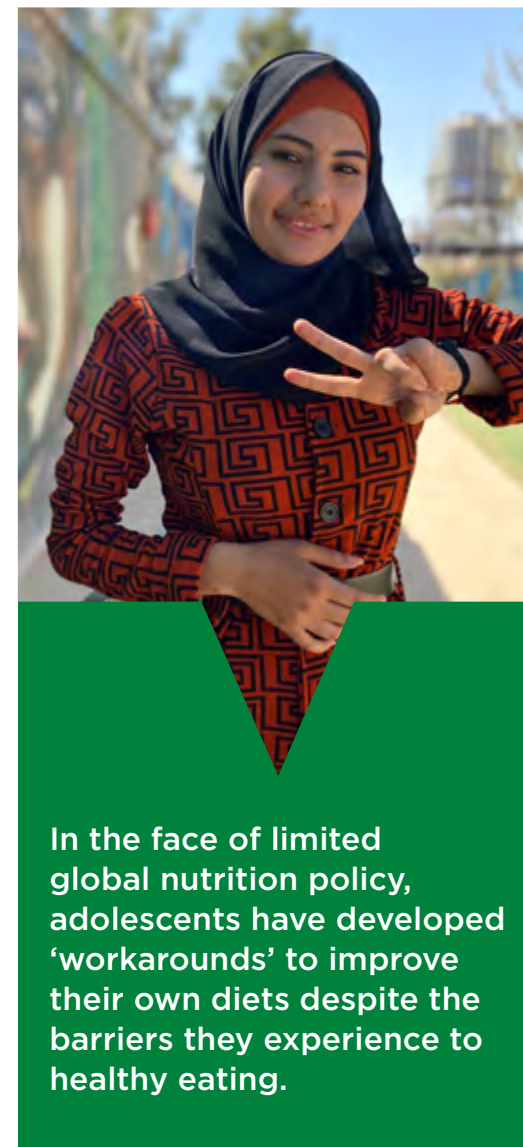
Image: ©UNICEF Nigeria/2019

## Section 3: 'Workarounds' and Action Plans – Solutions Voiced by Adolescents for Better Nutrition and Healthy Eating

**As evidenced by the workshops, adolescents are biologically, emotionally and developmentally primed for engagement beyond their families and into their communities<sup>(66)</sup>. For the final component of the workshop, adolescents talked about how they navigate daily barriers to enable healthy eating and outlined long-term action plans for sustainable food systems change.**

### Workarounds: how do adolescents improve their own diets?

In the face of limited global nutrition policy, adolescents have developed 'workarounds' to improve their own diets despite the barriers they experience to healthy eating. It was evident that adolescents feel a high degree of responsibility and agency in their use of workarounds to address the barriers they experience to healthy eating, ranging from minor changes in daily behaviours to supporting peers to make healthy food choices.



**In the face of limited global nutrition policy, adolescents have developed 'workarounds' to improve their own diets despite the barriers they experience to healthy eating.**

Image: ©UNICEF/UN0343755/AIHattab





Image: ©UNICEF Philippines/2019

## Individual workarounds to barriers to healthy eating

Adolescents reported that they try to advocate for healthy eating among their peers, and some highlighted the availability of professional support for good nutrition.

**“I try to avoid junk food as much as I can. I try to eat only vegetables. I try and make my friends also understand sometimes.”**

(India, female, age 15)

**“You can go to a professional nutritionist to help you overcome your own obstacles.”**

(Philippines, gender and age not reported)

Others reported that they try to advocate for healthy eating at home with their family.

**“I try to suggest to my parents some foods we should eat and [that] parents buy foodstuffs in bulk.”**

(Ghana, male, age 17)

Some adolescents manage their time carefully in order to navigate food environment barriers.

**“Upon leaving the school [I] can go to the market to buy.”**

(Guatemala, male, age 15)

**“[I] arrange time properly to have enough time to eat [and] start cooking for myself.”**

(China, female, age 13)

A large number of adolescents valued eating well and set goals to ensure healthy food intake.

**“[I try] to make a better plan of what I’m going to do during the day to avoid those types of [unhealthy] food.”**

(Serbia, female, age 15)

**“I am finding the food stuffs which are healthy on magazines, books.”**

(Zimbabwe, female, age 18)

**“[We] arrang[e] our schedules so we have more time to prepare something healthy instead of something quick and harmful.”**

(Mexico, male, age 15)

Adolescents generally understood that some foods – in particular, fast food, highly processed foods and confectionery – are not healthy and took active steps to restrict their intake:

**“I try to make a cheat day for myself, so most of the time I eat healthy and get fast food once every two weeks.”**

(USA, male, age 12)

**“[I] avoid the things that will affect [me, like eating] too much... junk food and street food.”**

(Philippines, gender and age not reported)

**“I try to eat more natural sweets like fruits instead of industrial produced foods (biscuits, chocolate).”**

(Serbia, female, age 17)

Some adolescents avoided eating unhealthy foods by substituting eating with other healthy activities.

**“ [I] eat sweets in moderation (I’ll eat a cookie but only half). If I get tempted to binge, I’ll go for a walk, take a nap, or call a friend or talk to my mom. I think about how I’m going to feel later. ”**

(USA, female, age 17)

Some adolescents said they ate foods they regarded as healthy but not very tasty in order to safeguard their health.

**“ I can force myself to eat healthy foods since I know they’re good for me. ”**

(USA, female, age 17)

**“ I can tolerate the bad taste for the sake of my health. ”**

(Egypt, female, age 17)

Participants also reported that they got around financial barriers by trying to save money and searching for cheap, healthy foods.

**“ Sometimes I save some money during the week so that I can buy healthy food. ”**

(Serbia, female, age 16)

**“ [I] find cheap, healthy foods. ”**

(USA, female, age 15)



Image: ©UNICEF Zimbabwe/2019/Gwatiwa

## Action plans: adolescents’ ideas for improving their diets now and in the future

In all countries, adolescents reported already taking personal action to eat well and many see themselves as key agents in a whole-of-community approach to improving healthy eating. In this way, adolescents assume individual responsibility for changing their circumstances, as opposed to relying on government, communities or other individuals to enact change.

During the workshops, adolescents identified key issues which need to be addressed in order to improve their nutritional outcomes such as food insecurity, unhealthy eating and limited nutritional knowledge (see Figure 32). The action plans they developed to address these underlying barriers often involved bringing their communities together, indicating that adolescents see themselves as having a key role to play in finding the necessary solutions.

The four issues adolescents identified as requiring urgent change, along with their strategies for addressing them, are outlined as follows.

## Issue: limited nutritional knowledge

### Action: raising awareness through education

Adolescents reported that raising awareness about diet and nutrition and strengthening knowledge and healthy practices are key priorities to promote healthy eating for themselves and their communities. They see a role for public health campaigns, as well as informal and formal education initiatives.

Acknowledging the critical role media play in influencing dietary habits, adolescents suggested that education initiatives should leverage traditional (e.g., posters, billboards, lectures) and new (e.g., social media) communication and behavioural change platforms.

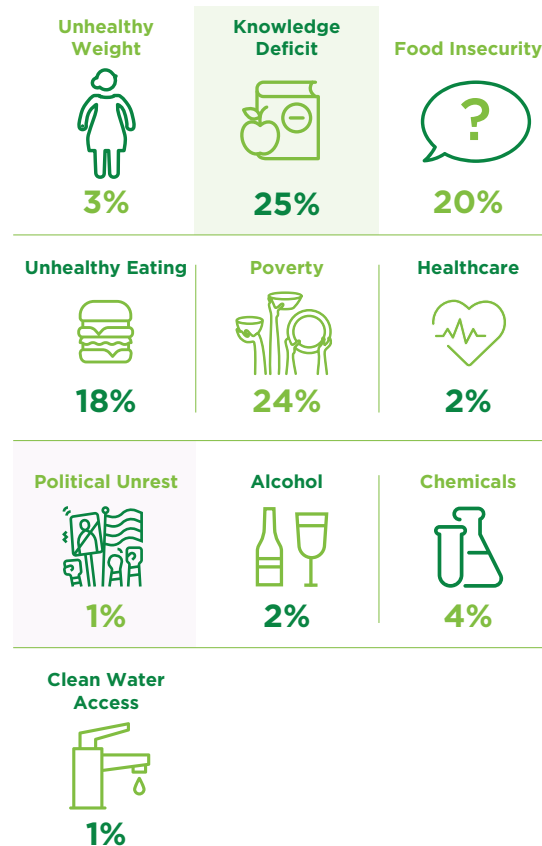
**Educate people in the community through public education about healthy lifestyles. Through the mass media, for example, radio stations, television stations.**

(Ghana, group activity)

**Forming clubs educating those who do not have the knowledge. Encouraging the villagers to visit health centres regularly [to] check... their health status.**

(Zimbabwe, group activity)

**Figure 32. Issues raised by adolescents requiring action to improve their health**



**Educate people. Urge people to eat healthy meals. Make meetings at the village library.**

(Egypt, group activity)

Interestingly adolescents also highlighted that the community-building potential of social media could be harnessed to support people to develop and sustain healthy eating habits and to collaboratively generate solutions to collective challenges.

**Raising awareness of the society [by] creating a Facebook group to talk about healthy meals.**

(Egypt, group activity)

## Issue: food insecurity

### Action: self-subsistence

A significant number of participants identified growing and preparing food at home as a solution to financial barriers to healthy eating, highlighting that this also facilitates ready access to fresh foods.

**We can have vegetables in our kitchen gardens.**

(Kyrgyzstan, female, age 14)

**I will make a backyard garden to plant some of the vegetables in it, to reduce expense[s] of food stuff.**

(Ghana, female, age 18)

## Issue: poverty

### Action: work opportunities to generate more income for healthy food

Adolescents identified increased appropriate employment opportunities within their countries as a way to address financial barriers to eating well. Those in LMICs such as Ghana, India and Sudan most commonly identified work as a solution to financial barriers.

“Since there is no money to buy it, I have to...work...in order to get the money to buy it.”

(Ghana, male, age 14)

“[If I] work...to have money then I will buy food for my family.”

(Sudan, male, age 13)

Adolescents have identified increased appropriate work opportunities for adolescents within their countries as a way to deal with financial obstacles to eating well.

## Issue: unhealthy eating

### Action: food system structural change through policy and regulation

As stated earlier in this report, many adolescents' eating practices are profoundly impacted by the limited availability and/or affordability of healthy foods in their communities. Adolescents used the workshops to call on governments to intervene decisively in food systems to support sustainable change. They highlighted the role of governments, institutions and community leaders in leading structural change through the provision of policies, laws, regulations and infrastructure to better enable healthy eating.

“Bakeries and fast food stores [need] to be replaced with healthy food stores.”

(Serbia, group activity)

“[We can] try to seek help from different [government] departments.”

(Zimbabwe, male, age 16)

They also urged leaders to play a more active role in bringing the community on board with structural change.

“We need community leaders to talk to parents.”

(Ghana, group activity)

## Country-specific issues

Adolescents in individual countries also identified context-specific barriers relating to their food environments, culture and economic background and proposed action plans they could advocate for, facilitate and implement at a local level.

### Mexico: junk food sales in schools

**Required change:** Adolescents identified a need to better regulate and/or reduce the availability of junk food for purchase at their schools because they recognised regular consumption of such foods is unhealthy and contributes to health issues such as obesity.

**Actions proposed:** To tackle the ready availability of unhealthy foods in schools, adolescents proposed that schools, parents and vendors work together to address the issue in a whole-of-community approach. They suggested they could talk to teachers, write letters to the principal and put up posters around the school to raise students' awareness of healthy eating.

“Stop selling junk food at the ‘cooperatives’ [school vendors] and to sell fruits and vegetables.”

(Mexico, group activity)

## China: unhealthy snacking at school

**Required change:** Adolescents living in dorms in China suggested that, to improve their snack choices and support them to eat balanced meals, they needed better support from the school environment, teachers and peers.

**Actions proposed:** The participants in China had limited autonomy over their food choices, as meals were provided by the school. Students often supplement school meals with unhealthy snacks. To improve their snacking habits at boarding schools, adolescents proposed working with teachers, writing a letter to the principal and putting up posters around the school to raise students' awareness of the need to consume less snacks – especially high-energy and ultra-processed snacks – and eat balanced meals.

“Roommate eats snacks, instant noodles, sunflower seed before going to bed and doesn't eat meal school provided.”

(China, group activity)

## Egypt: food quality and use of chemicals in the food supply system

**Required change:** Adolescents in Egypt wanted to improve the quality of their food (e.g., minimise the prevalence of preservatives in their food) and reduce the use of chemicals, such as chemical fertilisers, in their food supply system.

**Actions proposed:** Adolescents proposed awareness campaigns to improve both the community's and the food industry's understanding of the health effects of chemicals in foods. They suggested that such campaigns should deploy advertising via legacy media and social media. They also wanted to lobby government to introduce policy and regulation to address the level of preservatives in foods available in their community and to ensure that foods are grown and produced in environments free from pollution.

“Banning of preservatives and carbonated drinks and use of chemicals in agriculture. Preventing disposal of waste in the River Nile.”

(Egypt, group activity)

## Indonesia: unhealthy food sales at school

**Required change:** Adolescents in Indonesia were concerned about the ready availability of unhealthy foods for purchase in their schools. They identified a need for their school community to better support change so as to reduce the sale of unhealthy food at school.

**Actions proposed:** Adolescents proposed organising information talks about the importance of healthy food, asking teachers and students to bring food from home to school, conducting nutrition checks of food provided at school canteen and organising a healthy food and drink bazaar.

“Need to introduce healthy lifestyle in an elementary school to support change.”

(Indonesia, group activity)

## Australia: food labelling and marketing

**Required change:** Adolescents identified the need for corporations to be held accountable about misleading commercials promoting unhealthy foods. They also identified the need for food labelling to be more 'readable' for adolescents.

**Actions proposed:** Adolescents suggested that governments need to enforce legislation and regulation to ensure that food companies do not mislead adolescent consumers about the health value of the foods they advertise, and that local governments and councils should provide funding to address the understanding of food marketing laws, legislation and by-laws.

“Commercials [are] not addressing unhealthy consequences. They are labelled as something fancy yet [they are] really unhealthy.”

(Australia, group activity)

## Serbia: cost, availability, lack of information/knowledge

**Required change:** Adolescents identified the need for better food education in schools, availability of better food options at school, and support for parents and students to make healthy food choices.

**Actions proposed:** Adolescents proposed improving nutrition education in schools. Adolescents discussed that this would be best achieved by providing greater support to parents/students during school hours to choose healthy options. Participants also indicated a need for schools to supply healthy food options.

“We don't have power, but school could help and introduce some healthy food shops.”

(Serbia, group activity)

# CONCLUSION

**Voices of adolescents captured in this report strengthen the call for greater investment in adolescent nutrition through improved interventions, programming and nutrition policy<sup>(68)</sup>, including in emergency situations<sup>(69)</sup>. Such efforts must promote enabling environments for adolescents<sup>(5)</sup>, supporting them to thrive, rather than simply survive.**

Adolescence is a period of rapid biological growth, second only to the period of growth that occurs in the first year of life. During this stage of life, adolescents have increased nutritional requirements. Adolescence is also a critical time for the development of lifelong dietary habits<sup>(2)</sup>.

The methods used in this study underscore the importance of creating a space for adolescents themselves to inform decision making about policies and guidelines that affect their lives and their health. Although the findings cannot be generalised across countries, the engagement of adolescents in the workshops suggest there is an important opportunity for ongoing dialogue with young people to inform policy change for sustainable food systems.

Adolescents from the 18 participating countries talked passionately about sharing meals with family and friends, both inside and outside the home. They also talked fondly of favourite foods and memories. Beyond basic nutrition, food, for many of them, is a deep source of physical, social and emotional enjoyment.

Adolescents who engaged and participated in the workshops consider nutrition and healthy eating an everyday priority. Good nutrition is seen as a pathway to good health, happiness and longevity. Participants in this study highlighted the importance of establishing their own healthy eating habits to be able to capably raise their children in the future. This contrasts existing narratives that suggest adolescents find it difficult

to imagine the future implications of their eating habits<sup>(33)</sup>. Adolescents also see good nutrition as a mechanism to support and maintain their mental health and intelligence and learning, which will influence their success in the future.

Across participating countries, adolescents reported high rates of body dissatisfaction. This was compounded by their exposure to targeted food marketing and branding, particularly via social media, which often both propagates unrealistic body image standards and promotes unhealthy food choices.

Overall, adolescents reported poor dietary intake. A concerning number of adolescents described limited or poor-quality daily food intake, characterised by a high consumption of processed foods, especially confectionery and sugar-sweetened beverages. Many regularly skip meals and some eat the majority of their meals alone. Further, in general, adolescents feel they lack the opportunity and support to make positive changes in their eating habits, due primarily to their dependence on their families to source and prepare meals, their lack of nutritional knowledge and functional skills, and their limited financial autonomy.

Perhaps most importantly of all, it appears that, internationally, food systems are failing adolescents and thwarting their ambitions for healthy futures. Across the participant sample, adolescents reported a series of challenges to their everyday consumption of healthy food, whether at home, at school or out and about in their communities. These challenges are exacerbated by often deep economic, geographical and gender divides. Adolescents highlighted affordability and accessibility as key barriers to consuming a nutritious and diverse diet. The reality is that healthy foods are not readily available in many communities around the world and, when they are, their costs are prohibitive for many families. This is particularly pronounced in, but not exclusive to, LICs.

This study shows that it will require a concerted, whole-of-community effort to address the dietary challenges that confront adolescents around the world. Solutions must address the individual, social environmental, physical environmental and macro-systemic drivers of adolescent nutrition. While the challenges ahead are significant, they are not insurmountable. Adolescents themselves are deeply invested in taking an active part in creating the necessary change and have a lot to contribute to such efforts. It is critical that, as the global community grapples with these pressing challenges, adolescents are actively and meaningfully engaged in designing, implementing and evaluating new initiatives. It is by doing so that we can best guarantee that no one is left behind.

**From the adolescent voices captured in this study, there were clear action areas that need to be addressed to ensure adolescent nutritional intake can be improved. Action needs to ensure that adolescents are empowered to access healthy diets, that there is opportunity to build healthy foods environments for adolescents and that adolescents are at the heart of the food system transformation.**

## To enhance food knowledge and nutrition education

Adolescents called for better parent education to enable support for healthy eating within the home and improve dietary intake. Adolescents pointed to the role of parents and carers in determining their food intake, and how the latter's lack of knowledge and skill as well as their reluctance to cook healthy meals were direct barriers to adolescents' healthy eating.

## Promote access to healthy foods for all

Young girls and women should be empowered to have financial autonomy over food purchasing. Compared with HICs, in LMICs, very few adolescents identified that their mothers had financial autonomy over purchasing the family's food. When women are financially empowered and able to make strategic life choices, they can improve their children's nutritional outcomes<sup>(61)</sup>. The findings here show that greater support for women's financial autonomy is needed to enhance nutritional outcomes for adolescents and their families.

When women are financially empowered and able to make strategic life choices, they can improve their children's nutritional outcomes.

## Address food insecurity as a priority

Targeted policy and programming are urgently required to address personal food environments and food security for adolescents. Food insecurity and lack of availability were identified as major barriers to healthy eating by adolescents. Under these circumstances, eating well is not a choice available to many adolescents in LICs. Poverty fundamentally undermines these adolescents' right to health as stipulated by the Convention on the Rights of the Child<sup>(67)</sup>. If the global community is to meet Sustainable Development Goal 2 of ending "all forms of hunger and malnutrition by 2030" and ensuring "all people – especially children – have sufficient and nutritious food all year", targeted policy and programming is urgently required to address hidden hunger and food insecurity.

## Positive engagement on digital platforms

Policy regulation is needed to ensure adolescents are exposed to quality information to inform their nutritional choices. Adolescents are highly connected through digital platforms and social media, which influences food choices and body satisfaction during this crucial period of life. The use of social media platforms can be seen either as harmful for adolescents' nutritional skill development or as an opportunity to partner with agencies to provide positive information rather than misinformation.



Image: ©UNICEF/UNI252700/Haque

## Transform school environments

Stronger school policies that create supportive environments for healthy food choices are required. Unhealthy school food environments were a key point of change identified by adolescents, who reported easy access to unhealthy food choices and lack of nutritional information taught at school. Adolescents called for greater opportunities to learn functional cooking skills. They noted that they prefer 'hands on' learning experiences about diet and nutrition as opposed to more theoretical education. Making nutrition education in schools a priority can help improve nutritional knowledge and ultimately encourage better nutritional choices.

## Promote adolescents' meaningful participation

Place adolescents at the heart of intervention and policy design. Adolescents should be actively engaged in the design, implementation and monitoring of interventions.

As evidenced by the workshops, adolescents are biologically, emotionally and developmentally primed for engagement beyond their families and with their communities<sup>(66)</sup>. Yet we need to enable and create the opportunities for adolescents to meaningfully engage by placing them at the centre of policy with their own voiced solutions<sup>(66)</sup>. Indeed, it is well established that better nutritional outcomes are achieved when effective intervention components place adolescents at the centre<sup>(4)</sup>. However, as the 2018 call to action on adolescent nutrition illustrated, this needs to go further and "partner with adolescents in the design and implementation of research, policies, programs, regulations and guidelines"<sup>(68, p1)</sup>.

Integrating a food systems approach in policies and strategies will yield a positive change in the diets of children and adolescents. Adolescents need to be at the core of food systems, and commitments should be made to support nutritious, safe, affordable and sustainable diets, which would ensure optimal growth and development. To enable adolescents to thrive, the underlying multisector causes of malnutrition need to be addressed. These extend beyond the individual to economic resources, systems and environments influenced by global, national, or local political and ideological factors which can only be addressed holistically through an integrated food systems approach.



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# Appendices

## Appendix 1: Participant Demographic Summary

### Summary of adolescent participant ages and gender by country and workshop

UN Code	Country	Workshop ID	Number of Participants	Mean Age (Years)	Gender		
					F	M	N/R <sup>1</sup>
AFG	Afghanistan	1	10	15.9	10	0	0
		2	10	15.4	10	0	0
	Country totals	2	20	15.7	20	0	0
AUS	Australia	1	9	14.2	7	2	0
	Country totals	1	9	14.2	7	2	0
BGD	Bangladesh	1	21	15.1	12	9	0
		2	20	15.8	10	10	0
	Country totals	2	41	15.5	22	19	0
CHN	China	1	12	15.9	7	5	0
		2	15	13.9	9	6	0
	Country totals	2	27	14.9	16	11	0
EGY	Egypt	1	16	16.4	13	3	0
		2	16	16.2	10	6	0
	Country totals	2	32	16.3	23	9	0
ETH	Ethiopia	1	18	14.9	13	5	0
		2	15	15.7	14	0	1
	Country totals	2	33	15.3	27	5	1
GHA	Ghana	1	20	14.8	14	6	0
		2	20	16.5	10	10	0
	Country totals	2	40	15.7	24	16	0

UN Code	Country	Workshop ID	Number of Participants	Mean Age (Years)	Gender		
					F	M	N/R1
GTM	Guatemala	1	16	15.5	10	6	0
		2	20	15.2	10	10	0
	Country totals	2	36	15.4	20	16	0
IND	India	1	20	14.4	11	9	0
		2	16	14.9	9	7	0
	Country totals	2	36	14.7	20	16	0
IDN	Indonesia	1	16	14.4	8	8	0
		2	18	15.4	9	9	0
	Country totals	2	34	14.9	17	17	0
KGZ	Kyrgyzstan	1	20	14.4	11	9	0
		2	20	14.3	13	7	0
	Country totals	2	40	14.4	24	16	0
MEX	Mexico	1	19	13.8	10	9	0
		2	22	14.0	11	11	0
	Country totals	2	41	13.9	21	20	0
NGA	Nigeria	1	20	15.1	11	9	0
		2	20	15.4	11	8	1
	Country totals	2	40	15.3	22	17	1
PHL	Philippines	1	14	N/R	0	0	14
	Country totals	1	14	N/R	0	0	14

UN Code	Country	Workshop ID	Number of Participants	Mean Age (Years)	Gender		
					F	M	N/R <sup>1</sup>
SRB	Serbia	1	28	16.0	21	7	0
		2	14	15.3	14	0	0
		<b>Country totals</b>	2	42	15.7	35	7
SDN	Sudan	1	21	14.5	15	6	0
		2	20	14.4	13	7	0
		3	21	14.6	6	15	0
		4	20	14.1	8	12	0
		5	22	N/R	0	0	22
		<b>Country totals</b>	5	104	14.4	42	40
USA	United States of America	1	15	14.1	10	5	0
		2	13	17.3	9	4	0
		<b>Country totals</b>	2	28	15.7	19	9
ZWE	Zimbabwe	1	21	16.5	11	10	0
		2	18	15.3	8	8	2
		<b>Country totals</b>	2	39	15.9	19	18
<b>OVERALL TOTALS</b>		37	656	15.1	378	238	40

<sup>1</sup>N/R = not reported



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## Appendix 2: NOVA Classification Details

### NOVA 1: Unprocessed/minimally processed

Fruit: fresh, squeezed, chilled, frozen, dried, pureed	Including juices without any additives. coconut milk
Vegetables: fresh, squeezed, chilled, frozen, dried	Excluding roots
Grains: whole or grits/flakes/flour	Rices, corn cob/kernel, wheat grain, pasta, polenta, cous cous
Plant protein	Pulses/legumes, tofu, nuts, seeds
Starchy roots	Potatoes, cassava, yams
Fungi: fresh or dried	Mushrooms
Animal protein	Whole meats (without seasoning), fish, poultry, eggs
Milk: pasteurised or powdered	Cow, goat
Spices and herbs: fresh or dried	Pepper, cloves, thyme, mint, anise
Plain yoghurt	
Tea/coffee	
Water	

### NOVA 2: Processed culinary ingredients

Oils	Vegetable/seed oils, milk butter, pork lard
Plant starches	Corn starch
Sugars	Cane, beet, molasses, honey, maple syrup
Salt	Sea salt, mined salt
Broths/soups	Chicken broth, plantain broth, vegetable broth, 'soup'

### NOVA 3: Processed foods

Fruits	Canned/bottled/in syrup, jam
Vegetables	Canned/bottled
Meats	Salted, cured, pickled, smoked
Canned fish	Tuna, salmon
Cheeses	
Nuts/seeds	Salted, sugared, seasoned
Fresh bread/pastry	Unpackaged, chapati, naan, roti, BANKU, KENKEY, FUFU, EBA, kanofah, PANCAKES, paratha, injera (teff bread)

<b>NOVA 4: Ultra-processed foods</b>	
Carbonated drinks	Mineral water, soft drinks, energy drinks
Confectionery	Chocolates, candies, ice cream,
Baked goods (mass produced)	Bread, biscuits, cakes and cake mixes, cookies, pastries
Cereals	Breakfast cereals, muesli, energy bars, commercial porridge
Sweet drinks/yoghurts	Chocolate milk, fruit drinks, sugared yoghurts, cocoa drinks (incl. no sugar), malt
Sauces/meat extracts	Commercial meat broths, stock, instant sauces
Instant and fortified foods	Powdered shakes and soups, fortified meal substitutes, slimming products, instant soups, instant desserts, INCAPARINA, RUTF
Takeaway meals/processed meats	Frozen meals, pies, hot dogs, pizza, hot chips, luncheon meats
Other	Peanut butter, medicines, plant milks (almond, soy, rice, etc.)

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