



# Report of the Stakeholders Consultation on Adolescent Girls' Nutrition

Evidence, Guidance, and Gaps

Washington, DC—October 30-31, 2017





# **Report of the Stakeholders Consultation on Adolescent Girls' Nutrition**

Evidence, Guidance, and Gaps

Washington, DC—October 30-31, 2017

## **ABOUT SPRING**

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

## **RECOMMENDED CITATION**

SPRING. 2018. *Report of the Stakeholders Consultation on Adolescent Girls' Nutrition: Evidence, Guidance, and Gaps. Washington, DC—October 30-31, 2017.* Arlington, VA: Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project.

## **DISCLAIMER**

This report is made possible by the generous support of the American people through the United States Agency for International Development (USAID) under the terms of the Cooperative Agreement AID-OAA-A-11-00031, (SPRING), managed by JSI Research & Training Institute, Inc. (JSI). The contents are the responsibility of JSI, and do not necessarily reflect the views of the Pan America Health Organization (PAHO), USAID, or the U.S. Government.

## **ACKNOWLEDGMENTS**

SPRING acknowledges the tremendous collaboration of PAHO in planning, organizing, and co-funding the *Stakeholders Consultation on Adolescent Girls' Nutrition*. Special thanks to consultant Abigail Kaplan Ramage for authoring this report.

## **SPRING**

JSI Research & Training Institute, Inc.  
1616 Fort Myer Drive, 16th Floor  
Arlington, VA 22209 USA  
Phone: 703-528-7474  
Fax: 703-528-7480  
Email: [info@spring-nutrition.org](mailto:info@spring-nutrition.org)  
Internet: [www.spring-nutrition.org](http://www.spring-nutrition.org)

**COVER ILLUSTRATIONS:** Victor Nolasco for SPRING

## Contents

<b>Acronyms and Abbreviations</b> .....	<b>v</b>
<b>Executive Summary</b> .....	<b>vii</b>
<b>Introduction and Background</b> .....	<b>1</b>
How was the stakeholder consultation organized? .....	1
Why adolescent girls now? .....	2
What is unique about adolescent girls?.....	3
Demographic and Health Surveys (DHS): Comparative Analyses of Adolescent Nutrition Indicators .....	4
Discussion and recommendations.....	5
<b>WHO: Effective Actions for Improving Adolescent Nutrition</b> .....	<b>7</b>
Discussion and recommendations.....	7
<b>Diet and Eating Practices among Adolescent Girls in Low- and Middle-Income Countries: A Systematic Review</b> .....	<b>9</b>
Objectives .....	9
Methods.....	9
Systematic review findings .....	10
Discussion and recommendations.....	13
<b>Brazilian Dietary Guidelines: Health, Well-Being, and Sustainably In the Same Plate</b> .....	<b>15</b>
Discussion and recommendations.....	15
<b>Food Systems, Diet, Nutrition, and the Double Burden: Influences and Opportunities for Action</b> .....	<b>17</b>
Discussion and recommendations.....	18
<b>The Double Burden and Double Duty Actions for Adolescents</b> .....	<b>21</b>
Discussion and reflection.....	21
<b>Program Implementation, Gaps, Opportunities, and Future Directions</b> .....	<b>23</b>
Discussion and recommendations.....	24
<b>Research and Evidence Gaps, Actions, and Future Directions</b> .....	<b>27</b>
<b>Conclusions</b> .....	<b>29</b>
<b>Closing Remarks</b> .....	<b>31</b>
<b>Annex 1: Consultation Agenda</b> .....	<b>33</b>
<b>Annex 2: Stakeholder Consultation Participant List</b> .....	<b>35</b>
<b>Annex 3: Summary of Accepted Revisions for Systematic Review</b> .....	<b>39</b>

**Figures**

Figure 1. Conceptual Framework for Adolescent Girls' Nutrition .....3

**Tables**

Table 1. Inclusion and Exclusion Criteria for Systematic Review .....10  
Table 2. Summary of Findings for the Systematic Review on Diet and Eating Practices  
among Adolescent Girls in Low- and Middle-Income Countries .....11  
Table 3. Evidence Gaps, Research Actions, and Future Directions .....27

## Acronyms and Abbreviations

AA-HA!	Accelerated Action for the Health of Adolescents
AHiAP	Adolescent Health in All Policies
BDG	Brazilian Dietary Guidelines
BMI	body mass index
CA	Caribbean
DHS	Demographic and Health Survey
EUR	Europe
FANTA	Food and Nutrition Technical Assistance III Project
FF	fresh food
g	gram
GAIN	Global Alliance for Improved Nutrition
GII	gender inequality index
IFA	iron-folate acid
kcal	kilocalorie
LAC	Latin America and the Caribbean
MENA	Middle East and North Africa
MDD-W	Minimum Dietary Diversity indicator for Women
NCD	non-communicable disease
NI	Nutrition International
PAHO	Pan American Health Organization
PIP	Program Impact Pathways
PYD	Positive Youth Development
Q&A	question and answer
RCT	randomized control trial
SBCC	social and behavior change communication
SPRING	Strengthening Partnerships, Results, Innovations in Nutrition Globally
SRH	sexual and reproductive health
SSB	sugar sweetened beverage
TAG	technical advisory group
USAID	United States Agency for International Development
WASH	water, sanitation, and hygiene
WDDS	Women's Dietary Diversity Score
WHO	World Health Organization
WIFAS	weekly iron and folic acid supplement





## Executive Summary

This report details a two-day high-level stakeholder consultation that was organized and co-hosted by United States Agency for International Development (USAID); the Strengthening Partnerships, Results, Innovations in Nutrition Globally (SPRING) project; and the Pan American Health Organization (PAHO). The meeting was held at the PAHO headquarters in Washington, DC, on October 30–31, 2017. More than 40 global leaders working in adolescent girls' nutrition participated, representing many academic and research institutions, nongovernmental organizations, UNICEF, the World Health Organization (WHO), and donor agencies.

This consultation built on an earlier meeting hosted by USAID, SPRING, PAHO, and the Food and Nutrition Technical Assistance III Project (FANTA) in 2015: the Technical Meeting on the Diet and Eating Practices of Adolescent Girls and Women of Reproductive Age. The 2017 stakeholder consultation brought experts in the field together again to review a new draft report—*Diet and Eating Practices among Adolescent Girls in Low- and Middle-Income Countries: A Systematic Review*. The consultation participants also discussed a summary of the forthcoming WHO document—*Effective actions for improving adolescent nutrition*—to share new background data and guidance documents and to define key evidence and implementation gaps, prioritize future research, and propose next steps in moving the adolescent nutrition agenda forward.

**A growing focus on adolescent girls' nutrition:** The nutrition of the 900 million adolescent girls (ages 10–19) living today will have a profound impact on their current and future health. By sustaining healthy diet and eating practices during adolescence, they have the potential to address nutritional deficits and linear growth-faltering generated during the first decade of life and may limit harmful behaviors contributing to the epidemic of obesity and non-communicable diseases (NCD) in adulthood. Investing in female adolescent health brings triple dividends: better health for adolescents now, for their future adult lives, and for the lives of their children. Given that 16 million girls between the ages of 15 and 19 give birth each year, their nutritional status is important not only for them, but also for the health of their offspring.

The nutrition of adolescent girls was identified as a key priority in the 2013 *The Lancet* series on maternal and child nutrition. Furthermore, the global *Accelerated Action for the Health of Adolescents (AA-HA!) Guidance* to support country implementation revealed stark differences in the causes of death and disabilities when separating the adolescent age groups and sexes. The *Global Strategy for Women's, Children's and Adolescents' Health 2016-2030*—which aims to achieve the highest attainable standard of health for all women, children, and adolescents—underscores the importance of adolescent girls' nutrition, for themselves and for their infants and children, if and when they become mothers.

However, current nutrition programming often does not prioritize this critical population. Although adolescent girls have shown growing interest in nutrition, knowledge of their current dietary practices and the impact of the changing food environment is limited, especially in low- and middle-income countries. Additionally, evidence is limited on the effectiveness of program interventions specifically targeting adolescent girls.

**How the stakeholder consultation was structured:** USAID, SPRING, and PAHO worked together to design the agenda for the stakeholder consultation, prioritizing issues and identifying research and program experiences to share. They invited experts and structured the agenda around three topics: evidence, guidance, and gaps. The objectives focused on reviewing the current state of evidence, existing guidance, relevant program and implementation experience, and research gaps and priorities related to adolescent girls' nutrition. The presentations included (1) a review of the current evidence, with an in-depth presentation from the Demographic and Health Surveys (DHS) program on the

comparative analyses of adolescent nutrition indicators by Dr. Rukundo Benedict; (2) the methods and findings from the systematic review on diet and eating practices among adolescent girls in low- and middle-income countries by Dr. Zulfiqar Bhutta and Dr. Emily Keats; (3) current WHO nutrition-related recommendations targeting adolescents by Dr. Pura Rayco-Solon; (4) Brazil’s food-based dietary guidelines by Dr. Carlos Montiero; (5) the interaction between food systems, food environments, diets, and nutrition among adolescents by Dr. Jessica Fanzo; and (6) the double burden and double duty actions for adolescents by Dr. Corinna Hawkes. Dr. Luz María De-Regil, Dr. Alison Tumilowicz, and Marcia Griffiths also presented examples of their work and facilitated discussions on program implementation, gaps, and challenges. Reflecting on the earlier presentations and inputs from various stakeholders, Dr. Rafael Pérez-Escamilla and Dr. Zulfiqar Bhutta led a final discussion on research gaps, challenges, and recommendations for future research.

**Results and recommendations:** The consultation produced a list of key evidence and implementation gaps about the diet and eating practices of adolescent girls in low- and middle-income countries and a summary of areas where additional guidelines and/or policy guidance may be needed:

### Evidence Gaps, Research Actions, and Future Directions

Evidence Gaps and Research Actions	Future Directions
<ul style="list-style-type: none"> <li>• <b>Collect more quality nutrition data:</b> Collect contextual, nationally representative data on adolescent health and nutrition across the full age range and by country, including distribution on micronutrient deficiencies and body composition information.</li> <li>• <b>Develop indicators and gain consensus on measurement:</b> Develop standardized indicators and data collection instruments for measuring, assessing and monitoring diet, diet quality, and dietary patterns. Gain consensus on indicators and data collection instruments. This is relevant for ongoing surveys and national surveys using increasingly standardized tools.</li> <li>• <b>Conduct implementation research:</b> Conduct implementation research to assess factors (barriers and enablers) that affect implementation quality and impact in nutrition programs for adolescents.</li> <li>• <b>Identify efficacious interventions:</b> Identify and conduct research on efficacious interventions (as well as appropriate delivery platforms) aimed to improve the diets of adolescents, and use this information to influence the development and implementation of future interventions.</li> <li>• <b>Identify dietary patterns:</b> Identify current dietary patterns and factors that shape dietary behaviors and preferences among adolescents in different contexts. When assessing dietary patterns, the surrounding micro-food environments (urban slum, rural, school, conflict zones), information technology and marketing, and the adolescents’ psycho-social context must be considered.</li> <li>• <b>Look at behavior and age:</b> Understand how younger adolescents differ from older adolescents in</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Conduct a global survey:</b> Conduct a representative high-quality global survey on adolescent health and nutrition, including nutrition environment and risk factor mapping.</li> <li>• <b>Conduct social network analysis:</b> Conduct social network analysis to understand how best to reach and disseminate programs among adolescents.</li> <li>• <b>Monitor dietary patterns:</b> Monitor dietary patterns. Include the total diet (not simply nutrient or individual food intakes) and household food insecurity among adolescents.</li> <li>• <b>Differentiate between age groups:</b> Differentiate between younger and older adolescents in all research and evaluations with potential links to school –age children.</li> <li>• <b>Include all adolescents:</b> Include both girls/women and boys/men in the adolescent agenda. The behaviors and nutrition of adolescent boys are important in themselves and as they relate to the nutrition of adolescent girls. Include adolescents in the dialogue throughout the entire program and policy development process and give them meaningful opportunities to contribute and shape actions to meet their needs.</li> <li>• <b>Disseminate and operationalize WHO recommendations for adolescent nutrition:</b> Support the dissemination,</li> </ul>

Evidence Gaps and Research Actions	Future Directions
<p>neurological development and behavior and how this may influence program design.</p> <ul style="list-style-type: none"> <li>• <b>Learn how to engage adolescents:</b> Understand how to effectively engage and partner with adolescents in policy decisions, program design, and intervention delivery. Look at lessons from SRH programming.</li> <li>• <b>Consider household food insecurity:</b> Understand the impact of household food insecurity on dietary behaviors and psychosocial wellbeing of adolescents</li> <li>• <b>Look at food industry influences:</b> Understand how low-income countries are being exposed to the food industry and how they are being affected. Learn from the tactics used by the food industry to market their products among adolescents (including social media). Look at middle-income countries for guidance on how to deal with food industry encroaching on diets and dietary patterns in low-income countries</li> <li>• <b>Assess impact of taxes:</b> Look at how excise taxes on sugar sweetened beverages and junk foods, front of package food labeling, marketing regulation, and food product reformulation affect adolescents’ dietary choices and practices.</li> <li>• <b>Physical activity:</b> Gain a deeper understanding of adolescents’ physical activity behavior and how it can be improved. Assess the impact of open space physical activity programs (e.g., Ciclovías Recreativas) on adolescents’ physical activity behaviors.</li> </ul>	<p>country adaptation, and implementation process for the WHO adolescent nutrition guidance.</p> <ul style="list-style-type: none"> <li>• <b>Design integrated programs employing best practices:</b> Develop behavioral profiles of adolescents in relation to their diet and eating patterns, and design food and nutrition programs through effective behavior change interventions that take into account known dietary behaviors (e.g., breakfast skipping, high consumption of SSBs and junk food, etc.) in the context of the key brain development milestones during adolescence. Conduct and use Program Impact Pathways (PIP) analyses to guide the development, implementation, and evaluation of food and nutrition programs targeting adolescents.</li> <li>• <b>Evaluate at-scale interventions:</b> Conduct rigorous evaluations of large-scale interventions to improve adolescent dietary patterns and eating practices and nutrition status.</li> <li>• <b>Work multi-sectorally:</b> Generate new and strengthen existing partnerships for effectively engaging in multi-sectoral action.</li> </ul>

By the end of the consultation, stakeholders agreed on the need to raise further awareness about the evidence and implementation gaps, and to provide investment guidance. They also expressed interest in disseminating and operationalizing WHO recommendations on adolescent nutrition; conducting a global survey on adolescent nutrition, including qualitative research; developing indicators and gaining consensus on measurement; employing best practices in program design, encouraging investment in, and evaluating at-scale interventions; working multi-sectorally and including adolescents—to the greatest extent possible—throughout the entire research, program, and policy development processes.



## Introduction and Background

This report of a two-day high-level stakeholder consultation was organized and co-hosted by United States Agency for International Development (USAID); the Strengthening Partnerships, Results, Innovations in Nutrition Globally (SPRING) project; and the Pan American Health Organization (PAHO); it was held at the PAHO headquarters in Washington, DC, on October 30–31, 2017. More than 40 global leaders working in adolescent girls' nutrition participated in the consultation; they represented many academic and research institutions, nongovernmental organizations, UNICEF, the World Health Organization (WHO), and donor agencies.

This consultation built on an earlier meeting hosted by USAID, SPRING, PAHO, and the Food and Nutrition Technical Assistance III Project (FANTA) in 2015, Technical Meeting on the Diet and Eating Practices of Adolescent Girls and Women of Reproductive Age. USAID and SPRING commissioned two papers as background for discussions during that meeting: (1) *Adolescent girls', women's and maternal nutrition in low- and middle-income countries: current context and scientific basis for moving forward*, which assessed the current scientific evidence; and (2) *Review of Programmatic Responses to Adolescent and Women's Nutritional Needs in Low and Middle Income Countries*, which reviewed the current programming efforts. This meeting concluded with the agreement that, while developing formal guidelines was important, not enough evidence was available on which to issue specific global guidance on diet and eating practices.<sup>1</sup>

Based on the recommendations from the 2015 technical meeting, and to contribute to the evidence base, USAID and SPRING supported Dr. Zulfiqar Bhutta and his research team at The Mother and Child Care Trust to conduct a systematic review focused on the diet and eating practices of adolescent girls. SPRING established an adolescent nutrition technical advisory group to provide guidance on the research protocol and conceptual framework on adolescent girls' nutrition. To consolidate the existing guidance into a single document, SPRING also supported WHO's Department of Nutrition for Health and Development, and other partners, in developing the summary of key WHO nutrition-related recommendations targeting adolescents. The 2017 stakeholder consultation brought together experts in the field to review the draft research report—*Diet and Eating Practices among Adolescent Girls in Low- and Middle-Income Countries: A Systematic Review*—to discuss a summary of the forthcoming WHO document, *Effective actions for improving adolescent nutrition*, to share other new background data and guidance documents; and to define key evidence and implementation gaps, prioritize future research, and propose next steps in moving the adolescent nutrition agenda forward.

### **How was the stakeholder consultation organized?**

USAID, SPRING, and PAHO developed the agenda (see Annex 1: Consultation Agenda), which prioritizes issues and identifies research and program experiences to share. They invited experts (see Annex 2: Participant List) and structured the agenda around three topics: evidence, guidance, and gaps. The objectives focused on reviewing the current state of evidence, existing guidance, relevant program and implementation experience, and research gaps and priorities related to adolescent girls' nutrition.

The stated objectives of the consultation were to—

1. present the WHO recommendations that address adolescent girls' nutrition
2. present the findings of the report on *Diet and Eating Practices among Adolescent Girls in Low- and Middle-Income Countries: A Systematic Review*

---

<sup>1</sup> <https://www.spring-nutrition.org/events/technical-meeting-diet-and-eating-practices-adolescent-girls-and-women-reproductive-age>

3. define key evidence and implementation gaps, prioritize future research, and propose next steps.

The two expected results for this consultation included a—

1. list of key evidence and implementation gaps about the diet and eating practices of adolescent girls in low- and middle-income countries
2. summary of areas where additional guidelines and/or policy guidance may be needed.

The formal presentations included (1) a review of the current evidence with an in-depth presentation from the Demographic and Health Surveys (DHS) program on the comparative analyses of adolescent nutrition indicators by Dr. Rukundo Benedict; (2) the methods and findings from the systematic review on diet and eating practices among adolescent girls in low- and middle-income countries by Dr. Zulfiqar Bhutta and Dr. Emily Keats; (3) current WHO nutrition-related recommendations targeting adolescents by Dr. Pura Rayco-Solon; (4) Brazil's food-based dietary guidelines by Dr. Carlos Montiero; (5) the interaction between food systems, food environments, diets, and nutrition among adolescents by Dr. Jessica Fanzo; and (6) the double burden and double duty actions for adolescents by Dr. Corinna Hawkes. Dr. Luz María De-Regil, Dr. Alison Tumilowicz, and Marcia Griffiths; they also presented examples of their work and facilitated discussions on program implementation, gaps, and challenges. Reflecting on the earlier presentations and inputs from various stakeholders, Dr. Rafael Pérez-Escamilla and Dr. Zulfiqar Bhutta led a final discussion on research gaps, challenges, and recommendations for future research.

### ***Why adolescent girls now?***

The nutrition of the 900 million adolescent girls (ages 10–19) living today will have a profound impact on their current and future health. A sustained healthy diet and eating practices during adolescence may address nutritional deficits and linear growth-faltering generated during the first decade of life; and it may limit harmful behaviors contributing to the epidemic of obesity and NCDs in adulthood. Investing in female adolescent health brings triple dividends: better health for adolescents now, for their future adult lives, and for the lives of their children. Given that 16 million girls between the ages of 15 and 19 give birth each year, their nutritional status is important, not only for them, but also for the health of their offspring.

The nutrition of adolescent girls was identified as a key priority in the 2013 *The Lancet* series on maternal and child nutrition.<sup>2</sup> Furthermore, the *Global Accelerated Action for the Health of Adolescents (AA-HA!): Guidance to Support Country Implementation*<sup>3</sup>, revealed stark differences in the causes of death and disabilities when separating the adolescent age groups and sexes. The *Global Strategy for Women's, Children's and Adolescents' Health 2016-2030*<sup>4</sup>, which aims to achieve the highest attainable standard of health for all women, children, and adolescents, underscores the importance of adolescent girls' nutrition—for themselves and for their infants and children, if and when they become mothers.

Often, however, current nutrition programming does not prioritize this critical population. Although there is growing interest in nutrition among adolescent girls, knowledge of their current dietary practices and the impact of the changing food environment landscape is limited, especially in low- and middle-income countries. Additionally, evidence on the effectiveness of program interventions specifically targeting adolescent girls is limited.

---

<sup>2</sup> Bhutta et al., Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *Lancet*, June 2013. [http://dx.doi.org/10.1016/S0140-6736\(13\)60996-4](http://dx.doi.org/10.1016/S0140-6736(13)60996-4).

<sup>3</sup> [http://www.who.int/maternal\\_child\\_adolescent/topics/adolescence/framework-accelerated-action/en/](http://www.who.int/maternal_child_adolescent/topics/adolescence/framework-accelerated-action/en/)

<sup>4</sup> <http://www.who.int/life-course/publications/global-strategy-2016-2030/en/>

## What is unique about adolescent girls?

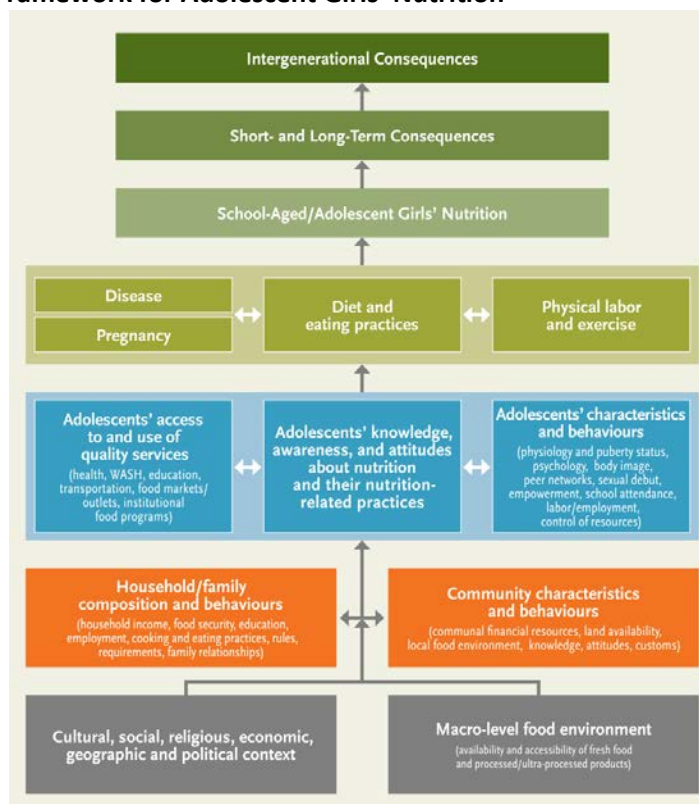
The nutrient needs of adolescents increase to meet pubertal growth demands, particularly for iron, calcium, zinc, vitamin A, and vitamin D (Calcitriol) in girls. It is estimated that a moderately active adolescent girl requires a caloric intake of 2,300 kilocalorie (kcal) per day and that all adolescents should consume up to 0.5 grams of protein per pound of body weight (Kleinman 2013).<sup>5</sup>

Adolescence is a time of increased autonomy, engagement with the environment, and receptivity to new ideas. It is also when identities, values, capacities, and attitudes are formed, including those that may shape lifelong health, dietary habits, and eating practices. Factors influencing their dietary habits and eating practices include their own brain development and their own understanding of matters that might affect their health, as well as the broader familial, peer, socio-cultural, and economic environments in which adolescents live, eat, study, work, and play.

Improving adolescent girls' nutrition requires multi-sectoral policies and laws that both understand and consider adolescent girls' needs in relation to their physical, psychological, and psychosocial development. This also requires addressing how the role of the globalized food system and the growing production and availability of affordable ultra-processed food products shapes adolescents' food environments and their food choices.

To organize these factors, SPRING, Dr. Bhutta's research group, and members of the technical advisory group established to support the systematic review, collaboratively developed a conceptual framework on the determinants of adolescent girls' nutrition (see Figure 1).

**Figure 1: Conceptual Framework for Adolescent Girls' Nutrition**



<sup>5</sup> Kleinman, Ronald E. 2013. *Pediatric Nutrition, 7th Edition*. Elk Grove Village, IL: American Academy of Pediatrics Committee on Nutrition.



The summaries below share the key points from all the presentations and discussions over the course of two-day technical consultation. These summaries are based on a careful review of presentation slides, consultation materials, notes, and recordings. See Annex 3 for a summary of additional analysis and revisions to the systematic review, proposed by stakeholders during the consultation. Presentations and other relevant consultation documents can be found on a dedicated consultation webpage<sup>6</sup> on the SPRING website.

## ***Demographic and Health Surveys (DHS): Comparative Analyses of Adolescent Nutrition Indicators***

*Dr. Rukundo Benedict, Nutrition Technical Specialist with the DHS Program*

Dr. Rukundo Benedict presented the preliminary findings of her in-depth analysis of DHS data on adolescent girls ages 15–19 using data between 2000–2016 from 62 countries. The full report will be finalized and disseminated in early 2018. The analysis describes country and regional prevalence and trends of nutrition indicators for body mass index (BMI), anemia, and the Women’s Dietary Diversity Score (WDDS), as well as the relationships between these outcomes; and the covariates of residence (urban/rural), wealth status, education, and age. The adolescents surveyed may or may not have children.

### **BMI among non-pregnant adolescent girls ages 15–19**

Data on BMI prevalence show that the double burden of malnutrition is evident in the adolescent population. In Latin America and the Caribbean, overweight and obesity reaches a prevalence of 20 percent; while in South Asia, problems of thinness dominate, reaching a prevalence of 45 percent in the region.

The prevalence of thinness among adolescents is generally decreasing in all regions; however, some countries have an upward trend: notably Gabon, Congo Brazzaville, Mali, Colombia, Honduras, and Jordan. In contrast, the prevalence of overweight and obesity is increasing in many countries: particularly, Rwanda, Kenya, Benin, Zambia, Jordan, and Egypt.

The data show that *the risk of thinness is higher and the risk of overweight and obesity is lower among most rural residents.*

The risk of obesity/overweight is greatest among adolescents living in the wealthiest households, older adolescents, and adolescents who attend secondary school. The risk of thinness is lower in wealthier households and decreases as adolescents age and achieve higher levels of education. These patterns are similar across regions, with some exceptions. For example, in Guatemala and Honduras the risk of thinness is greater in the higher wealth quintiles.

### **Anemia among non-pregnant adolescent girls ages 15–19**

Approximately 64 percent of countries have an anemia burden of over 30 percent. The prevalence of anemia among non-pregnant adolescents ranges from 20 percent in Latin America and the Caribbean to 56 percent in South Asia. Among pregnant adolescents, the prevalence of anemia is higher across all regions. In Africa, the trends in anemia are decreasing in most of the countries surveyed. The decrease in prevalence of anemia is also seen in other world regions, with exceptions in countries, such as Bolivia, Jordan, and Armenia.

---

<sup>6</sup> <http://www.spring-nutrition.org/2017-adolescent-girls-consultation>



The covariates of residence (urban/rural), wealth status, education, and age showed fewer significant associations with anemia compared to BMI and dietary diversity. However, the odds of anemia tend to be lower among rural residents in Africa and higher among those with secondary education in South Asia.

### Age differences in nutritional status

Adolescent girls are more likely to be thin compared with older women (age 20–49) and have lower rates of obesity than their older counterparts. Anemia prevalence is greater among adolescents in Africa, South Asia, and East Asia; and greater in older women in Latin America and the Caribbean, the Middle East and North Africa, and Europe and Central Asia.

### WDDS

Adolescent girls did not achieve the optimal dietary diversity score in any of the countries studied. The WDDS measures diversity of intake, not the quantity of food consumed.

Consumption of meat/poultry/fish, vitamin A fruits and vegetables, eggs, and sugary foods among adolescent girls varied between regions. In Africa, consumption of meat/poultry/fish (34 percent to 88 percent) and vitamin A fruits and vegetables (52 percent to 89 percent) is fairly high, while consumption of eggs (8 percent to 20 percent) and sugary foods (8 percent to 30 percent)—with the exception of Swaziland (43 percent consumption of sugary foods)—is relatively low. In Latin America and the Caribbean, consumption of flesh foods and vitamin A–rich foods is similar to that of Africa, but consumption of eggs (32 percent to 61 percent) and sugary foods (36 percent to 87 percent) is considerably higher.

### Discussion and recommendations

*“I think the best money that USAID spends for the world of public health is DHS- let’s make more use of it for nutrition.”*

*-Carolyn Hart, Project Director, SPRING*

- **Power:** Given that DHS surveys may not be independently powered for regressions with adolescents, there was some concern about the accuracy of estimates for the adolescent age group. To address this, DHS pooled the data for pregnant and non-pregnant women by world region, which resulted in a sufficient level of power at the regional level, but not at the country level for some countries. To further address the issue of achieving sufficient power at the country level, stakeholders recommended that DHS consider combining their data with some of the national nutrition surveys that are independently powered for adolescents.
- **Younger adolescents:** Information on the age of menarche, as well as data on the 10–14 year-old-age group is needed for programming. However, finding representative samples of this population is difficult, especially because they are often in school and not present during surveys. New strategies are needed for collecting information on this age group.
- **Anthropometry (stature and BMI):** Current use of BMI cut-offs may underestimate the severity of the problems. It was recommended to assess at stature independently and also present BMI as a distribution, in addition to the cut-offs.
- **Interpreting BMI:** In some countries, reductions in overweight and obesity may result from a crisis rather than deliberate public health nutrition actions. Additionally, social norms around optimal

weight will determine what is acceptable, desired, and culturally relevant. Consider the context carefully when presenting and interpreting BMI prevalence and trends.

- **Interpreting iron deficiency and anemia:** Anemia may have numerous different causes. Consider the country context when analyzing anemia prevalence.
- **HIV, BMI, and anemia:** When possible, consider looking at HIV, BMI, and anemia in combination, because the three may be related.
- **In- and out-of-school adolescents:** In- and out-of-school adolescents will probably show differences in nutrition. Consider looking at the adolescent age group by place of occupation.

## WHO: Effective Actions for Improving Adolescent Nutrition

*Dr. Pura Rayco-Solon, epidemiologist in the Department of Nutrition for Health and Development at the World Health Organization*

Dr. Rayco-Solon presented an overview of *Effective actions for improving adolescent nutrition*, draft document, to consolidate recommendations from the existing WHO guidelines, to inform member states, policy makers, and program implementers.

A conceptual framework on the determinants of adolescent nutrition focused on actions to (1) promote healthy diets; (2) provide micronutrients, including fortification of staple foods and targeted supplementation; (3) manage severe acute malnutrition; (4) promote reproductive health programming to delay adolescent pregnancy; (5) promote preconception and antenatal nutrition; (6) provide access to safe water, sanitation, and hygiene; and (7) promote physical activity. The current WHO recommendations for each of these actions were presented during the meeting.

Dr. Rayco-Solon also presented a summary of the rigorous WHO guideline development process, highlighting the evidence requirements, expert panel reviews, and time frame that is normally involved; this further underscored the value of this consolidated set of recommendations.

The WHO guideline development multi-step process outlined in the WHO handbook for guideline development includes: 1) identification of priority questions and critical outcomes; 2) retrieval of the evidence; 3) assessment and synthesis of the evidence; 4) formulation of recommendations, including research priorities; and 5) planning for dissemination, implementation (including a careful consideration of equity and ethics), impact evaluation, and updating of the guideline.

### *Discussion and recommendations*

- **Addressing adolescent nutrition multi-sectorally:** Social protection, education, age of marriage, and food systems all contribute to adolescent health and nutrition. Recognizing this, the Global Accelerated Action for the Health of Adolescents (AA-HA!) recommends that countries take an “Adolescent Health in All Policies (AHiAP)” approach where adolescent health and wellbeing is addressed across sectors and government ministries during policy formulation, implementation, and monitoring and evaluation.
- **Context, implementation, and evaluation:** WHO develops guidelines to help end users make informed decisions on whether to undertake or select from a range of specific interventions or public health measures to achieve the best outcome possible. The implementation of a guideline is considered from the beginning of the guideline development. WHO supports member states in adaptation, implementation, and evaluation activities, taking into account what local circumstances and resource considerations can be done at the regional, national, or subnational levels. This is also expounded on in chapter 13 of the *WHO Handbook for Guideline Development* and *The Global Accelerated Action for the Health of Adolescents (AA-HA!): Guidance to Support Country Implementation* further provides country-specific case studies that may aid in adapting the WHO recommendations relevant to adolescent health.
- **Adolescents in conflict zones, emergencies, and refugee populations:** There is a concern that this group is ignored in interventions and recommendations globally and that there isn’t enough being done for these populations. *The Global Accelerated Action for the Health of Adolescents (AA-HA!): Guidance to Support Country Implementation* discusses the burdens of humanitarian and fragile settings, including key health concerns among adolescents, such as malnutrition. It was recommended that more guidance be developed for these populations.

- **Adolescent-specific social and behavior change communication (SBCC) strategies:** Reaching and communicating with adolescents may require different strategies than those for children and adults. To implement WHO recommendations, adolescent-specific SBCC strategies may need to be developed to address (1) how to reach, speak to, and support adolescents; (2) how to enroll and keep adolescents in programs; and (3) what to say to adolescents, considering their age-related stages of development.
- **Accounting for agency and recognizing gender differences:** In many contexts, adolescent girls may not have agency—the ability and opportunity to make decisions on their own behalf. When implementing recommendations for adolescent nutrition, it is important to think about the systems to address gender differences and build adolescent girls’ agency.
- **Evidence and interventions for catch up growth in adolescents needed:** The “second window of opportunity” for catch-up growth is commonly highlighted when discussing adolescent nutrition. WHO continues to work on this and other issues related to adolescent nutrition.

# Diet and Eating Practices among Adolescent Girls in Low- and Middle-Income Countries: A Systematic Review

In early 2017, SPRING contracted Dr. Zulfiqar Bhutta, Dr. Emily Keats, and a team of researchers to conduct a systematic review of diet and eating practices among adolescent girls in low- and middle-income countries. SPRING organized a technical advisory group (TAG) to serve as technical reviewers during the entire systematic review process to support the protocol development and the conceptual framework, to review the drafts, and to provide additional feedback while attending the stakeholder consultation.

## Objectives

The objectives of the systematic review were to (1) synthesize and critically appraise current literature on dietary intake (e.g., types of food consumed), eating practices (e.g., time, place, and frequency of consumption) and meal patterns (e.g., snacking, skipping meals) of adolescent girls ages 10–19.9 in low- and middle-income countries between 2007–2017; and (2) summarize the available information to develop a Call to Action and key recommendations for policies, programming, advocacy, or further action.

The systematic review team and the SPRING adolescent nutrition TAG jointly developed a conceptual framework on the determinants of adolescent girls' nutrition, including diet and eating practices, physical activity, disease burden, and pregnancy (see Figure 1). While diet and eating practices were the central focus of the review, the myriad components influencing these behaviors, such as determinants of food choice, could not be addressed because of data and time limitations.

## Methods

*Dr. Zulfiqar Bhutta*, founding director of the Center of Excellence in Women and Child Health at Aga Khan University and co-director and director of research at the Centre for Global Child Health, Hospital for Sick Children, Toronto.

Dr. Zulfiqar Bhutta, co-leader of the systematic review, explained the research methods. The primary outcomes explored in the systematic review included (1) types of food consumed, including grains, fruits and vegetables, pulses, meat/poultry/fish, and eggs; (2) frequency of consumption (times per week or month); (3) macronutrient intake (protein, fat, carbohydrate); (4) energy intake (kcal); (5) place of consumption (in or outside of the home); and (6) meal patterns (such as breakfast skipping and snacking). In addition, the review explored BMI using the WHO BMI-for-age growth charts for girls ages 5–19.

Researchers developed and conducted a comprehensive search strategy and criteria for study inclusion and exclusion (see Table 1), and used Cochrane tools to assess the risk of bias, or the National Institutes of Health quality assessment tool to assess the study quality.

The search identified 72,514 titles and abstracts, with 288 articles included in the review and 227 in various analyses. Most of the studies were low quality (64 percent) or medium quality (35 percent).

**Table 1: Inclusion and Exclusion Criteria for Systematic Review**

INCLUSION	EXCLUSION
Low- or middle-income country setting	High-income setting
Must include, but is not restricted to, an adolescent population (10–19 completed years)	Population includes boys only; or the study does not disaggregate outcome data by sex
Reports on one of the following: <ul style="list-style-type: none"> <li>• Types of food consumed</li> <li>• Food composition</li> <li>• Dietary diversity</li> <li>• Meal patterns</li> <li>• Place consumed (e.g., school, home, community centre)</li> <li>• Frequency of consumption</li> <li>• Energy or macronutrient intake</li> <li>• Micronutrient intake.</li> </ul>	Unhealthy study population (e.g., populations with chronic or genetic diseases, such as HIV, tuberculosis, or metabolic disorders)
Relevant study types/designs: <ul style="list-style-type: none"> <li>• Observational studies (e.g., cross-sectional, cohort, case-control)</li> <li>• RCTs with a control arm or baseline nutritional data</li> <li>• Surveys</li> <li>• Program evaluations</li> <li>• Qualitative research studies</li> <li>• Descriptive program/government documents.</li> </ul>	Experimental study designs (e.g., RCTs) that do not have a “standard of care” or “usual practices” arm
Data collection in 2007 or later	Data collection prior to 2007
	Non-English language

Findings for the studies were presented as means or proportions, and, when possible, researchers pooled their analysis and assigned weights based on sample size. To define and classify adequate dietary intake, researchers adapted the Minimum Dietary Diversity indicator for Women (MDD-W) developed by Food and Nutrition Technical Assistance (FANTA). Adaptations included a subdivision of snack foods into sweet snacks and savory/salty and fried snack foods, the addition of fast and convenient foods, and the omission of green leafy vegetables and vitamin A-rich fruits and vegetables (due to lack of information).

### **Systematic review findings**

*Dr. Emily Keats, research associate at the Centre for Global Child Health, Hospital for Sick Children*

Dr. Keats, co-leader of the systematic review research team, explained that most of the studies in the analyses were conducted in a school setting (78 percent) among urban populations (59 percent), and employed a cross-sectional research design (67 percent). While some countries were greatly overrepresented in the data—such as India, Iran, China, and Brazil—others were underrepresented, especial those in Europe and Central Asia. Table 2 presents the summary of the outcomes in the review, and Annex 3 includes a complete list of the studies.

**Table 2: Summary of Findings for the Systematic Review on Diet and Eating Practices among Adolescent Girls in Low- and Middle-Income Countries**

	BMI	BMI status	Energy Intake	Carbohydrate	Protein	Fat	POC	Breakfast skipping	Snacking
10-14y	18.6 ± 2.9	Severely thin: 0.5% Thin: 11% Normal: 63% Overweight: 16% Obese: 9%	1844 kcal/d	249 g/d	61 g/d	64 g/d	33% eat outside the home 1-3 times/week	40%	33%
15-19y	20.1 ± 3.4	Severely thin: 0.3% Thin: 11% Normal: 70% Overweight: 16% Obese: 5%	1834 kcal/d	253 g/d	58 g/d	53 g/d	18% eat outside the home 1-3 times/week	41%	59%
	Pulses	Dairy	Flesh foods	Vegetables	Fruit	SSB	Snacks (sweet and salty)	Fast foods	Alcohol
10-14y	Consumption was lower for most regions	10% consumed dairy daily	In MENA, Africa, and SA, intake was higher	33% consumed vegetables daily	32% consumed fruit; of these, 42% consumed them daily	21% consumed SSBs	74% and 49% consumed sweet and salty snacks daily	24% consumed FF daily, and 20% consumed FF on ≥ 4 days/week	13% consumed alcohol
15-19y	Higher consumption (except in LAC)	60% consumed dairy daily	Intake was higher in EAP and EUR/CA	53% consumed vegetables daily	56% consumed fruit; of these, 49% consumed them daily	35% consumed SSBs	31% and 1% consumed sweet and salty snacks daily	8% consumed FF daily, and 29% consumed FF on ≥ 4 days/week	20% consumed alcohol

## BMI

Two-thirds (65 percent) of the adolescent girls ages 10–19 surveyed had a normal BMI (18.5–24.9), while approximately 12 percent were underweight, 16 percent were overweight, and 7 percent were obese. The prevalence of obesity and overweight was generally higher among younger adolescents (10–14-year-olds) across most regions, although the data is not representative, meaning that this finding reflects the study populations sampled. This is particularly apparent in Latin America and the Caribbean, where prevalence of overweight among adolescent girls reaches 50 percent among younger adolescents, but is less than 15 percent among older adolescents (15–19-year-olds)<sup>7</sup>. Prevalence of underweight was similar across most age groups and regions, but is notably higher in South Asia—almost 45 percent of younger adolescent girls and 40 percent of older adolescents are underweight.

## Macronutrient and energy intake

Macronutrient intake results, reported in grams (g) per day as weighted means, show that younger adolescent girls consume slightly more protein (61g/day) and fat (64g/day) when compared to older adolescent girls (57g/day of protein and 58g/day of fat). Regionally, Africa and South Asia report the lowest prevalence of protein and fat intake. Carbohydrate intake is similar among both age groups and across regions, averaging 248g/day. Energy intake is also similar for the two age groups, averaging 1,840 kcal/day; it is highest in Latin America and the Caribbean (2,000 kcal/day) and lowest in South Asia and Africa regions (1,500 kcal/day).

Macronutrient intake, stratified by residence, show that protein and carbohydrate intake is higher in urban compared to rural areas. When stratified by income level, protein, fat, and carbohydrate intake

<sup>7</sup> Throughout this document, younger adolescents refers to girls ages 10–14 years and older adolescents refers to girls 15–19 years.

increases with income level. Using a gender inequality index (GII) to disaggregate macronutrient data shows no consistent pattern for carbohydrate intake, but countries with more gender equality have higher protein intake.

### **Dietary practices**

Dietary intake was reported for each food group where data was abundant. Findings show that daily consumption in grains and pulses is high, but only 45 percent of adolescent girls ages 10–19 consume fruit, 35 percent consume vegetables, and 15 percent consume dairy on a daily basis. Inadequate intake of fruit (based on WHO recommendations to consume 400g/day) is highest in South Asia, and Latin America and the Caribbean, and lowest in the Middle East and North Africa. Inadequate vegetable intake is highest in South Asia and Africa and lowest in East Asia and the Pacific.

Consumption of fast and convenient foods, which includes meals purchased outside the home or foods that can be prepared quickly and easily (based on Food Monitoring Group’s food categorization system), reaches nearly 40 percent in Latin America and the Caribbean, 25 percent in South Asia, and 20 percent in Africa. Daily consumption of energy-dense salty, sweet, and fast foods—with definitions based on FANTA’s minimum dietary diversity guide for women of reproductive age—is much higher among younger adolescents; however, consumption of sugar sweetened beverages (SSB) is higher among older adolescents.

### **Meal patterns**

Only 15 studies reported data on the place where food was consumed. These data were synthesized to determine the percentage of adolescent girls who eat meals outside the home. Almost 60 percent of all girls sampled (10–19 years) consume lunch, and 30 percent consume breakfast, away from home. Younger adolescents are more likely to consume meals outside the home compared to older adolescents.

Among the 22 studies that report on the number of meals consumed, nearly 44 percent of all adolescent girls do not consume three meals a day. Across the 42 studies that report on breakfast skipping, 40 percent of adolescents skip breakfast, but this varies by region. Breakfast skipping is highest in Africa (47 percent), and lowest in Latin America and the Caribbean (17 percent).

Snacking, defined as consuming food between meals, was reported in 24 studies. Snacking was more common among older girls (59 percent) than among younger girls (33 percent). Snacking is also more common in the morning and afternoon when compared with the evening.

### **Study limitations**

The study team noted many study limitations, which the stakeholders discussed. These included—

- lack of information on social and economic factors (underlying determinants) influencing dietary patterns and food intake because of data gaps in the literature
- lack of nationally representative studies—many had a small sample size and limited geographic scope (mostly conducted in urban schools) and few were population based
- insufficient information on gender inequality or geography
- Institute of Medicine guideline assessing macronutrient adequacy is based on healthy adolescents and does not consider background prevalence of nutritional deficits and deficiencies
- quality of studies was low or medium, according to Cochrane tools for assessing risk of bias and the National Institutes of Health quality assessment tool



- methods used to collect data on consumption varied (24-hour recall, food frequency questionnaires, food records, etc.)
- categorization of foods as snack foods was not always straightforward, because they were based on type of food, rather than meal pattern, because of data limitations (it was unclear whether snack foods were consumed between meals or in place of meals)
- frequency of consumption not reported in most studies
- relevance of results on protein, fat, and energy intake to body size and activity levels could not be determined due to lack of individual level data
- studies reporting on BMI lacked consistency—study authors did not always disaggregate by age group or use the same age groupings.

### **Discussion and recommendations**

- **Value of evidence:** Despite the difficulty of generalizing the findings due to study quality and sample sizes, stakeholders noted the tremendous value in the systematic review, because it shows the lack of strong evidence and the need for larger, representative surveys on adolescent nutrition, diet, and eating practices using clearly defined, valid indicators.
- **Younger and older adolescents—robust, population-based survey needed:** Findings on the differences between younger and older adolescents seemed counterintuitive to many of the meeting participants. Study sampling, study type, and design can largely explain these differences. To truly understand the background risk factors and differences in outcomes between younger and older adolescents, a global consensus is needed to undertake a robust, standardized, representative worldwide population-based survey; it should include representative questionnaires to identify what adolescents and schoolchildren globally are consuming and why.
- **Current occupation:** Occupation may influence the place of consumption and amount of energy consumed (such as the school or work environment). If available, stakeholders proposed that the research team consider reporting information on current occupation when assessing place of consumption, especially because some countries, like India, have large school feeding programs for ages 5–14. The importance of looking both in and outside of the school was noted. This would help identify underlying drivers and opportunities for modifying the food environment.
- **Public and private schools:** Food environment and consumption patterns may differ between private and public schools. Consider comparing children in public versus private schools and looking at how food policies are applied and enforced in different settings.
- **Food categorization:** Consistent terminology, definitions, and valid indicators are needed for the systematic review and for pooling data in future studies. Consider renaming the snack foods as excessively sugary or fatty foods to avoid confusion with snacking as a meal pattern. Additionally, consider providing a clearer definition for convenience foods and explain how decisions were made when categorizing fast foods.
- **Reporting on snacks:** In some studies, it was unclear if snacks were consumed as meals or in addition to meals. Where possible, consider disaggregating reporting of snacks that are in addition to meals, not just snacks in lieu of meals.
- **Rising epidemic of obesity:** Higher rates of overweight and obesity in the younger age group may be the result of the rising obesity epidemic among children having more exposure to obesogenic environments compared to older adolescents. If possible, when interpreting the findings, consider duration of exposure to obesogenic environments.

- **Determinants of diet and eating patterns within the household:** One study in Bangladesh shows no association with parental education and adolescent girls' dietary intake. Consider looking at other influencers of adolescent girls' dietary intake in the home.
- **Recommendations for systematic review publication:** (1) Temper the recommendations and conclusions and carefully frame the quality of studies; (2) suggest how limitations that were identified can be overcome in future work; (3) highlight some of the high-quality studies in boxes; (4) recommend what would improve the quality of the literature on diet and eating practices, other than the recommendation to conduct large studies; consider grouping recommendations by category, such as policy, research, implementation, etc. See Annex 4 for a complete list of the final accepted revisions.
- **Rural vs. urban:** Dietary and meal patterns will differ between urban and rural areas. Consider disaggregating by urban and rural area, when possible.
- **Meal patterns:** Two meals a day is typical in many places around the world. Skipping breakfast may be the result of the midday meal replacing a normal breakfast consumed at home. Consider checking the cultural norms of meal patterns and identifying where two or more meals a day were consumed.
- **No judgment on snacking:** Snacking doesn't mean that junk food is being consumed. Avoid judging whether snacking is good or bad.
- **Diet replacement:** In some contexts, convenience foods are replacing foods in the regular diets. If possible, consider identifying what extent these energy dense/snack/convenient foods are replacing normal healthy diets.
- **Present data by country, continent, and region:** Mixing data from different continents may over- or under-represent outcomes for certain countries and ignore country-specific contexts. Consider presenting data by country and continent, in addition to region—or even restricting to two major regions where robust sample sizes exist.
- **Influence of purposive sampling:** Non-random, purposive sampling may sway both the drivers of behavior and the outcomes. Consider looking at the primary data to assess how the populations were selected.

*\*Note: See Annex 3 for recommendations generated during the consultation that are currently being integrated in the systematic review. An updated version of the systematic review will be available by early 2018. A manuscript for publication is also being prepared.*

# Brazilian Dietary Guidelines: Health, Well-Being, and Sustainably In the Same Plate

*Professor Carlos A. Monteiro, Department of Nutrition, School of Public Health, University of Sao Paulo*

Professor Carlos A. Monteiro gave an overview of the Brazilian Dietary Guidelines (BDG). The BDG focuses on three dietary principles: (1) food integration (including their nutrients); (2) meals (food combinations), and (3) eating modes with the aim of improving physical health and wellbeing, as well as protecting natural resources and biodiversity. He went on to explain that the BDG recommends consuming “real foods and real meals” instead of “imitation foods and imitation meals.” Real foods and meals that contain natural compounds and unprocessed, or minimally processed, culinary ingredients; and imitation foods and meals as ultra-processed foods, based on formulations of food substances and cosmetic additives (flavors, colors, textures) that require minimal preparation and are designed to be durable, convenient, and hyper-palatable.

Brazil developed the NOVA food classification system that categorizes foods into four groups according to the extent and purpose of food processing, rather than in terms of nutrients. The four groups include (1) unprocessed or minimally processed foods, (2) processed culinary ingredients, (3) processed foods, and (4) ultra-processed food and drink products.

The BDG recommends reducing the consumption of ultra-processed foods for improved diet quality, disease prevention, and environmental sustainability. Improvements in diet quality include reductions in intake of saturated fat, trans fat, free sugars, total fat, and energy; and increases in intake in fiber, protein, vitamin A, vitamin C, iron, and zinc. For disease prevention, the BDG makes the case that eating fewer ultra-processed foods can lead to decreases in overweight and obesity among children, noncommunicable diseases, and potentially reduce cancer risks. Finally, according to the BDG, diets based on minimally processed food have a lower carbon and water footprint.

The BDG also recommends eating modes that improve the capacity to control energy balance and influence positive social wellbeing, such as family meals, and avoiding more harmful eating modes, such as consuming food while watching television.

The food industry, which has driven the rapid changes in traditional diets, is dominated by a small number of large multi-national companies that produce, market, and sell ultra-processed foods.

Professor Monteiro concluded that the “business as usual approach” is threatening traditional diets, physical health, and wellbeing, and environmental sustainability. He called for countries to develop dietary guidelines that are based on real food to provide accurate and informative front of package labeling and warnings on ultra-processed foods, to drive food marketing regulation, and implement health-oriented fiscal policies, such as taxing unhealthy foods.

## **Discussion and recommendations**

- **Animal source foods and environmental impact:** The BDG calls for reducing animal source foods, which have a larger carbon and water footprint than the ultra-processed foods.
- **Cooking:** The BDG encourages cooking and developing cooking skills. Cooking increases the consumption of “real food.”
- **Obstacles and opportunities for adopting recommendations:** Dietary guidelines don’t automatically lead to behavior change. Numerous factors, such as food access, availability, price, food environments, food marketing, and labeling influence what, when, and why people eat. For each obstacle identified, the BDG provides practical recommendations that are also linked to

empowering, educating, and motivating civil society to demand regulation, especially around food marketing.

- **Reaching adolescents:** In Brazil, the Ministry of Education and Ministry of Health work together to reach adolescents through the school meal program where “real foods and meals” are served and through the national curriculum that has incorporated aspects of the BDG. The BDG also reaches adolescents through community health agents who are trained in the guidelines.
- **Cost as an obstacle:** Eating “real food” is cheaper in Brazil compared with the United States and the United Kingdom. This obstacle will need to be addressed in other contexts.
- **Time as an obstacle:** Purchasing, cooking and consuming ultra-processed foods and ultra-processed meals is often faster than cooking real foods from scratch. The value of cooking and consuming real foods needs to outweigh the cost (in time and money) of preparing that food or the perceived savings associated with ultra-processed foods.
- **Diet quality/adequacy:** The next national health survey in Brazil will generate a new metric for understanding overall diet quality by combining questions about ultra-processed and minimally processed foods.
- **Ultra-processed food as a food category:** Collecting data on ultra-processed foods and using ultra-processed foods as a new food category/food group may be an opportunity to do away with (or modify) categories, such as snack foods and convenience foods—like those used in the systematic review.

# Food Systems, Diet, Nutrition, and the Double Burden: Influences and Opportunities for Action

*Dr. Jessica Fanzo, Bloomberg Distinguished Associate Professor at Johns Hopkins University*

Dr. Jessica Fanzo presented on the three interacting elements of the food system—food supply chain, food environments, and adolescent diets and adolescent consumer behavior—and how they influence dietary patterns and the multiple burdens of malnutrition. She focused mainly on adolescent behavior and food environments; she highlighted opportunities for action by improving the quality of the food environment and orienting adolescent behavior toward healthier diets.

## Adolescent behavior

Professor Fanzo started by summarizing dietary patterns and adolescent behavior. Adolescents tend to spend less time eating with the family and more time with peers. They are more likely to eat outside the home, skip breakfast, consume sugar sweetened beverages and junk food, and have low or inconsistent meal frequency. This behavior, with increased unhealthy snacking, results in undernutrition and micronutrient deficiencies (iron, calcium, zinc, folate), overweight and obesity, and eating disorders. Much of this information echoes the findings from the systematic review on adolescent girls' diet and eating practices, summarized earlier in this report.

During adolescence, the physical, emotional, social, biological, and neurological changes are reflected in a greater demand for calories and nutrients, a drive for individualism, and the need to assert food choices, as well as changes in lifestyles and food habits and decision making.

Different ages of adolescence have different stages of development. During early childhood, the maximum brain grows as front circuits related to organization in planning; during adolescence, the myelination of the cortex and the rear portion of the brain develops more so with language learning and spatial understanding and rationality. This is a dynamic time of growth and change—with sophisticated plasticity and sculpting of the brain. This development interacts with emotional and social factors that influence the decision making of adolescents.

Eating-related behaviors during adolescence fluctuate and are commonly influenced by their peers, parental modeling, food availability/access, food preferences, cost and convenience, personal and cultural beliefs, mass media, and body image.

Adolescents are deeply influenced by their food environment, which presents both barriers and opportunities for healthy and unhealthy food choices. Prominent factors influencing food choice include access, affordability, promotion and marketing, and food labeling.

*“Adolescents have different inspirations, aspirations and motivations.”*

*-Dr. Luz María De-Regil, Director for Global Technical Services and Chief Technical Advisor for Nutrition International*

## Food environment

Professor Fanzo presented options for improving the food environment for adolescents by addressing physical access to food, economic access to food, food advertising to teenagers, and food promotion information. Bringing food to low-income, underserved areas—such as the “Tarakwo Dairies” in the

urban slums of Kenya or the “Arrabers” in the African American neighborhoods of Baltimore—was cited as one example of how physical access to healthy foods can be improved.

To improve economic access to food, food subsidies and nutrient-focused food and beverage taxes can make healthier food more affordable and unhealthy food less desirable. To counteract aggressive marketing of unhealthy foods to teenagers, one option is to mandate front of package labeling in combination with restricting advertising and regulating locations where unhealthy foods are sold, as exemplified by Chile’s black STOP sign “front of packaging” labeling laws. In Chile, all foods high in fat, salt, and sugar must have a warning label, cannot be advertised to children under 14, and cannot include toys in the packaging. Also, they may not be sold in or near schools.

To address issues of food promotion and information targeting adolescents, “nudge” interventions that provide positive reinforcement and indirect suggestions can lead to healthier consumption choices. Nudge interventions are subtle, such as positioning fruit at eye level in a store or providing small trays in a cafeteria; which may be especially appealing to adolescents’ drive for individualism and autonomy. Mass media campaigns supporting healthy food consumption, such as New York City’s “pouring on the pounds” campaign—which urges viewers to consider water, seltzer, or low-fat milk instead of high-calorie beverages—is another option to shift demand for healthier foods.

### **Opportunities for action**

It is important that public health interventions address each of the interacting elements of the food system and, in particular, harness the motivational power of adolescents’ strongly held values. One example of this can be seen in a study among eighth graders in the United States where healthy eating was suggested as a way to take a stand against the practices of the food industry.

### **Discussion and recommendations**

- **Making food issues resonate with adolescent girls:** Choosing what and when to eat is an example of exerting autonomy and independence, but it can also be one of rebellion. One option to get adolescents more interested in food and food systems is to enter through issues that resonate more closely with adolescents’ interests, such as social justice within the food system.
- **Explore income-generation opportunities to improve food value chains:** Income generation activities provide an appealing entry point to improve the food value chain. To involve them in food value chains, consider building adolescents’ business skills in non-school settings.
- **Formative research:** Country- and context-specific qualitative data is needed on what motivates adolescents to eat, including meal/snack timing, food content, and social/peer influences.
- **Food insecurity and adolescents:** Household food insecurity may impact the mental and physical development of adolescents and their relationship with food. More information is needed on this subject from low- and middle-income countries.
- **Food industry and adolescents:** The food industry has enormous amounts of proprietary data on how the adolescent brain works, how to shape their behavior and influence their food choice. While there is need to incentivize industry to share this information, while staying independent, it is important to recognize that food industry data has been collected with marketing opportunities in mind and uses market-based sampling frames rather than population-based ones. The nutrition field needs to develop something better than what the industry currently has.
- **Addressing the multiple burdens of malnutrition:** Addressing the multiple burdens of malnutrition requires improving access to healthy foods and the quality of dietary intake. At the policy level,

supply chains need to improve by investing in infrastructure, technology, and knowledge to make healthier foods more affordable.

- **Platforms for behavior change:** Evidence around women’s groups, community support groups, and cooking groups show that their impact is often greater than the net number of participants, because they generate indirect benefits, such as greater community dialogue. Similarly, school groups, community groups, and sports groups aiming to build life skills and empower adolescents can also provide platforms and entry points for improving nutrition.
- **Food environment mapping:** What exists for mapping the urban and rural food environments, especially for high-risk populations, is currently unknown. While there has been a lot of geo physical mapping of high income, urban settings for food environments, not much has been done for rural areas. The informal nature of food environments, where road markets and vendors move, can make mapping a challenge. At the International Union of Nutritional Sciences 21st International Congress of Nutrition many presentations described the food environments—for example, Dr. Shauna Down’s talk on food environment transformations in Myanmar. More information is needed on how to map urban and rural food environments.
- **Lessons from industry:** The adolescent population is not uniform, as younger and older adolescents experience different physical and neurological changes. We need to identify lessons from marketing, advocacy, or communication experiments to identify if certain age windows are more critical than others for influencing dietary behavior and targeting of interventions.





## The Double Burden and Double Duty Actions for Adolescents

Dr. Corinna Hawkes, Director of the Centre for Food Policy at City University in London

Dr. Corinna Hawkes presented remotely on double-duty actions to address the double burden of malnutrition among adolescents.

Professor Hawkes explained that double-duty actions include interventions, programs, and policies that have the potential to simultaneously reduce the risk or burden of both undernutrition and overweight, obesity, or diet-related NCDs. Currently, separate processes, financing, policies, and interventions address issues related to undernutrition, obesity, and diet-related NCDs. Double-duty actions may reduce the risk of multiple nutrition-related problems, simultaneously, while also enabling more efficient allocation of limited financial resources.

Given the biological links between nutrition, early growth, and development, and the onset of NCDs, actions that promote healthy growth are, in fact, double-duty actions. However, most current guidance designed to enhance early growth does not adequately address the risk of obesity. Professor Hawkes emphasized that healthy diets will be beneficial regardless of the nature of nutritional risk and, therefore, actions that promote healthy diets are, in fact, double-duty actions.

Double-duty actions can be delivered and synthesized through the same delivery platforms for adolescents: such as schools, health systems, agriculture, and social safety nets. However, more research and evidence are needed on what double-duty actions for adolescents might actually look like in practice.

### Discussion and reflection

- **Triple or quadruple duty:** Actions that address multiple forms of malnutrition may have the effect of doing more than just double duty, because they may also benefit mental health, education, social capital, and empowerment and, also, have intergenerational impacts. Supporting lactating mothers is one example of actions with multiple benefits. While the term “double duty” is partially a communication tool, double-duty actions have multiple positive benefits and the benefits go beyond nutrition.
- **Double duty in adolescents—too late?:** Although healthy diets during adolescents can shape lifelong eating habits that are carried into adulthood, there is some concern that double-duty actions during adolescence might be too late to affect stunting.
- **Nutrient-based approaches:** Nutrient-based approaches, such as the fortified biscuits, go against the double-duty approach, when micronutrients are used to fortify products that should be consumed in moderation to avoid obesity.
- **Do no harm:** An important aspect of double-duty actions is that they do no harm—ensure that efforts to address one problem do not inadvertently cause others.
- **Tweaking current interventions:** Double-duty actions are not meant to replace or substitute current interventions addressing undernutrition, overweight, or obesity; but, rather, they ask how current interventions can be gently adjusted or programs slightly redesigned to ensure that all the issues are addressed.

*“The behaviors, no matter how specific we get, are not the messages. We used to say the medium is the message, and I can’t think of a group where that’s more true [than it is for] adolescents. How it is packaged, who conveys it, how it is conveyed, is more important than the behavior.”*

*-Marcia Griffiths, (President of The Manoff Group)*



## Program Implementation, Gaps, Opportunities, and Future Directions

Marcia Griffiths, Dr. Luz María De-Regil, and Dr. Alison Tumilowicz facilitated the session and each gave a brief presentation prior to the discussion.

### Delivering weekly iron and folic acid supplements for adolescent girls

*Dr. Luz María De-Regil, Director for Global Technical Services and Chief Technical Advisor for Nutrition International*

Dr. De-Regil presented an overview of Nutrition International's (NI) work with adolescent girls. NI is committed to reach 17 million adolescent girls with weekly iron and folic acid supplements (WIFAS) in 10 countries in Africa and Asia by 2020. Their approach is to conduct formative research to guide scale up.

To-date, lessons learned from NI's experience delivering WIFAS to in-school adolescent girls include (1) WIFAS adherence is closely linked to school attendance; (2) peer adolescent girl leaders can be mobilized to support iron-folate acid (IFA) programming in schools; (3) it is essential to engage teachers; (4) coordination with ministries of health and education at every level is critical for supply, delivery, training, and monitoring; and (5) lack of water at schools makes IFA consumption more challenging.

The lack of access to health services—for preventive services and information—is a challenge for the distribution and uptake of IFA supplements among out-of-school adolescent girls. Issues affecting access include parents' concern that health services access will lead to contraceptive intake and stigma around girls accessing the health system or health workers' perception that IFA is for pregnant women. (In many countries, India is one exception; the same supplement formulation is used for pregnant women and adolescents in most contexts.)

In working with and for adolescent girls, NI has also faced challenges in generating demand at the national level, because some countries do not have national policies for adolescent nutrition—and challenges with supply, particularly due to procurement from the limited number of global manufacturers of WIFAS.

Through NI's formative research work, they have identified several factors that motivate or discourage girls from consuming WIFAS. Factors include perception of anemia risk, understanding of WIFAS benefits, and discomfort with the potential side effects from WIFAS intake.

Dr. De-Regil emphasized that while addressing the nutrient needs of girls, we must not lose sight of the needs of boys, who also face nutritional deficiencies.

### Program implementation gaps, challenges and opportunities, and directions for the future

*Dr. Alison Tumilowicz, Senior Technical Specialist for Research and Evaluation with the Global Alliance for Improved Nutrition (GAIN)*

Dr. Tumilowicz highlighted GAIN's adolescent work and the challenges of designing and implementing interventions for adolescents. One main challenge of program implementation lies in filling the gap between conceptual frameworks and program impact pathways. Dr. Tumilowicz emphasized the need for context-specific program impact pathways that enable an understanding of the causal relationships between determinants to provide insight into which interventions are most appropriate for improving adolescent diets and nutritional status.

GAIN is beginning a three-year project, which is funded by the Ministry of Foreign Affairs of the Netherlands, to learn what interventions improve the dietary quality of adolescents and how to implement them. The project will use implementation research to design feasible and effective program models that could be implemented at larger scale by the government, private sector, or others in Pakistan, Mozambique, Bangladesh, and Indonesia. In addition to this project, GAIN is planning a technical consultation for 2018 to explore what motivates food choices among adolescents and key influencers, including parents and caregivers, as well as the food industry and market research companies.

### **Behavior-centered adolescent nutrition programming**

*Marcia Griffiths, President of The Manoff Group, Washington, DC*

Ms. Griffiths discussed the importance of aligning program activities to contextualized priority behaviors and tracking behavior outcomes to monitor program progress. She proposed key steps in developing behavior-centered adolescent nutrition programming.

- Recognize that all program activities will affect behavior. Therefore, determine the impact of on-going interventions, such as beverage taxes, advertising campaigns, or school food policies on adolescent behavior.
- Collect data on adolescent behavior in different contexts, including data from the food industry.
- Identify behavioral priorities and sub-behaviors within broad behavioral priorities, such as eating more fruits and consuming fewer sugary foods.
- Engage adolescents in behavioral research, including trials of proposed practices to determine the feasibility of improved behaviors within each adolescent population segment.
- Develop psycho-social behavioral profiles that describe the actors and factors influencing behavioral uptake and/or continued practice.
- Consider adolescents' agency, which differs depending on the context. For example, married out-of-school girls living in rural areas will likely have a different level of agency compared to unmarried adolescent girls living in urban areas and engaged in employment.
- Develop a program strategy considering the structural, social, and emotional contexts that will affect locally specific and feasible interventions.
- The strategy should build on existing platforms, such as those in the school and in the community, and should generate the support of gatekeepers and influencers of adolescents.

### **Discussion and recommendations**

- **Formative research, behavioral profiles, user-centered design:** Conducting formative research is an essential step in developing effective behavior change interventions. Developing behavioral profiles for user-centered programs must consider the barriers, opportunities, platforms, and mechanisms for engagement.
- **Modeling behaviors and food demonstrations:** Building positive role models and modeling provides social proof to communities that behaviors can change. As an example, food demonstrations model how one should cook healthy meals. However, for food demonstrations to have impact, they need to be tailored to the specific skills, foods, tastes, and other factors, such as the need for convenience identified in behavioral profiles. They also need to be conducted repeatedly in various locations.
- **Lessons from reproductive health:** Evidence on how to work with, reach, and influence adolescents exists in field of reproductive health. For nutrition programming, consider and adapt lessons learned

from adolescent reproductive health on how to effect behavior change, such as the role of peers, parents, and trusted adults as influencers.

- **Partnering with sexual and reproductive health (SRH):** The topic of SRH is sensitive and difficult to address in many contexts, while by comparison, the topic of nutrition is benign. Nutrition can be an entry point for discussing sensitive SRH topics and vice versa.
- **Integrating nutrition into positive youth development:** Positive Youth Development (PYD) is both a philosophy and an approach to adolescent development. PYD engages youth with their families, communities, and/or governments so that youth are empowered to reach their full potential. PYD approaches aim to build skills, assets, and competencies; foster healthy relationships; strengthen the environment; and transform systems. Opportunities for integrating nutrition into PYD programs should be identified.
- **Advocacy:** Identify small areas where evidence for improving adolescent nutrition has been shown to work and develop an advocacy package.
- **Emerging technologies:** Mobile phones and other emerging technologies associated with social media are important and powerful platforms for reaching adolescents. Understanding how adolescents receive information and communicate with their peers is critical for promoting improved nutrition behaviors and it must be considered.



## Research and Evidence Gaps, Actions, and Future Directions

*Dr. Rafael Pérez-Escamilla, Professor of Nutrition, Epidemiology and Public Health and Director of the Office of Public Health Practice at Yale University’s School of Public Health and Dr. Zulfiqar Bhutta, founding director of the Center of Excellence in Women and Child Health at Aga Khan University*

Dr. Pérez-Escamilla and Dr. Bhutta each provided key insights and co-facilitated the discussion on research gaps and directions for the future. They began by reiterating the clear need for standardized, valid indicators; data; and data collection instruments on adolescents’ health, nutrition, diet, and dietary patterns across all age groups. This will provide information on how adolescents interact and engage with the food environment in varying contexts, and provide an overall understanding of the underlying drivers of adolescents’ dietary behaviors and patterns. Filling these and other evidence gaps can help inform policies and programs targeting adolescents. Table 3 presents an overview of the evidence gaps, research actions, and future directions identified during this and other discussions during the consultation.

**Table 3: Evidence Gaps, Research Actions, and Future Directions**

Evidence Gaps and Research Actions	Future Directions
<ul style="list-style-type: none"> <li>• <b>Collect more quality nutrition data:</b> Collect contextual, nationally representative data on adolescent health and nutrition across the full age range and by country, including distribution on micronutrient deficiencies and body composition information.</li> <li>• <b>Develop indicators and gain consensus on measurement:</b> Develop standardized indicators and data collection instruments for measuring, assessing and monitoring diet, diet quality, and dietary patterns. Gain consensus on indicators and data collection instruments. This is relevant for ongoing surveys and national surveys using increasingly standardized tools.</li> <li>• <b>Conduct implementation research:</b> Conduct implementation research to assess factors (barriers and enablers) that affect implementation quality and impact in nutrition programs for adolescents.</li> <li>• <b>Identify efficacious interventions:</b> Identify and conduct research on efficacious interventions (as well as appropriate delivery platforms) aimed to improve the diets of adolescents, and use this information to influence the development and implementation of future interventions.</li> <li>• <b>Identify dietary patterns:</b> Identify current dietary patterns and factors that shape dietary behaviors and preferences among adolescents in different contexts. When assessing dietary patterns, the surrounding micro-food environments (urban slum, rural, school, conflict zones), information technology and marketing, and the adolescents’ psycho-social context must be considered.</li> <li>• <b>Look at behavior and age:</b> Understand how younger adolescents differ from older adolescents in</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Conduct a global survey:</b> Conduct a representative high-quality global survey on adolescent health and nutrition, including nutrition environment and risk factor mapping.</li> <li>• <b>Conduct social network analysis:</b> Conduct social network analysis to understand how best to reach and disseminate programs among adolescents.</li> <li>• <b>Monitor dietary patterns:</b> Monitor dietary patterns. Include the total diet (not simply nutrient or individual food intakes) and household food insecurity among adolescents.</li> <li>• <b>Differentiate between age groups:</b> Differentiate between younger and older adolescents in all research and evaluations with potential links to school –age children.</li> <li>• <b>Include all adolescents:</b> Include both girls/women and boys/men in the adolescent agenda. The behaviors and nutrition of adolescent boys are important in themselves and as they relate to the nutrition of adolescent girls. Include adolescents in the dialogue throughout the entire program and policy development process and give them meaningful opportunities to contribute and shape actions to meet their needs.</li> <li>• <b>Disseminate and operationalize WHO recommendations for adolescent nutrition:</b> Support the dissemination,</li> </ul>

Evidence Gaps and Research Actions	Future Directions
<p>neurological development and behavior and how this may influence program design.</p> <ul style="list-style-type: none"> <li>• <b>Learn how to engage adolescents:</b> Understand how to effectively engage and partner with adolescents in policy decisions, program design, and intervention delivery. Look at lessons from SRH programming.</li> <li>• <b>Consider household food insecurity:</b> Understand the impact of household food insecurity on dietary behaviors and psychosocial wellbeing of adolescents</li> <li>• <b>Look at food industry influences:</b> Understand how low-income countries are being exposed to the food industry and how they are being affected. Learn from the tactics used by the food industry to market their products among adolescents (including social media). Look at middle-income countries for guidance on how to deal with food industry encroaching on diets and dietary patterns in low-income countries</li> <li>• <b>Assess impact of taxes:</b> Look at how excise taxes on sugar sweetened beverages and junk foods, front of package food labeling, marketing regulation, and food product reformulation affect adolescents' dietary choices and practices.</li> <li>• <b>Physical activity:</b> Gain a deeper understanding of adolescents' physical activity behavior and how it can be improved. Assess the impact of open space physical activity programs (e.g., Ciclovías Recreativas) on adolescents' physical activity behaviors.</li> </ul>	<p>country adaptation, and implementation process for the WHO adolescent nutrition guidance.</p> <ul style="list-style-type: none"> <li>• <b>Design integrated programs employing best practices:</b> Develop behavioral profiles of adolescents in relation to their diet and eating patterns, and design food and nutrition programs through effective behavior change interventions that take into account known dietary behaviors (e.g., breakfast skipping, high consumption of SSBs and junk food, etc.) in the context of the key brain development milestones during adolescence. Conduct and use Program Impact Pathways (PIP) analyses to guide the development, implementation, and evaluation of food and nutrition programs targeting adolescents.</li> <li>• <b>Evaluate at-scale interventions:</b> Conduct rigorous evaluations of large-scale interventions to improve adolescent dietary patterns and eating practices and nutrition status.</li> <li>• <b>Work multi-sectorally:</b> Generate new and strengthen existing partnerships for effectively engaging in multi-sectorally action.</li> </ul>



## Conclusions

Investing in health and nutrition policies and programs to support the 1.8 billion adolescents of today will reap benefits that continue to accrue into adulthood and across generations, well beyond the first 1,000 days. To develop critical guidance and effective, context-specific actions based on adolescents' needs and wants, and to reach them where they are, we must fill the evidence gaps through representative information gathering, knowledge synthesis, and research. Currently, there is a fundamental lack of age-specific data on adolescent diets and eating patterns, on the drivers underlying dietary behavior and food choice in relation to micro-food environments, and their impact on the nutritional status of adolescents. During this consultation, stakeholders expressed the need for standardized, geographically representative, local, and contextually relevant data on these topics to develop appropriate evidenced-based guidance and effective programs to address adolescent health and nutrition and the risk of non-communicable diseases, priorities within the Sustainable Development Goals (SDGs).

Dr. Zulfi Bhutta recommended that the consultation participants consider developing a Call to Action to governments, the United Nations, donor agencies, implementing partners, and research and academic institutions to fill these evidence gaps and to work multi-sectorally toward improved nutrition for adolescent girls. He further suggested that a Call to Action should directly engage with adolescents and build on the evidence gaps, research actions, and future directions identified during this stakeholder consultation summarized in Table 3.

By the end of the consultation, many stakeholders strongly agreed that these elements will be critical to the emerging global agenda for information and accountability for adolescent health and nutrition.



## Closing Remarks

*“Our best investment is when we help our staff understand how we effectively partner with young people in all of our interventions, whether it’s in democracy and governance, global health, or economic growth.”*

*-Michael McCabe, Agency Youth Coordinator at USAID*

Michael McCabe, Agency Youth Coordinator at USAID; Dr. Adriano Blanco, Unit Chief for Risk Factors and Nutrition at PAHO; and Dr. Sonja Caffè, Regional Adolescent Health Advisor at PAHO, gave the closing remarks.

Michael McCabe identified the need for multi-sectoral action to “bring in the other voices to fill in the ‘missing middle’” of adolescence. He also highlighted the need to engage adolescents in every stage of programming and across sectors, to apply the philosophy of positive youth development to the field of nutrition, and to contextualize guidance around adolescent nutrition at the country level.

Dr. Sonja Caffè emphasized the urgency of investing in adolescents now and using a positive youth development approach to support adolescents toward becoming the healthiest and most productive members of society that they can be.

Dr. Adriana Blanco briefly remarked on the importance of including all adolescents (girls and boys) in research and programming, on looking at the entire age range, and on moving forward with the Call to Action.



## Annex 1: Consultation Agenda

### DAY 1: Monday 30 October 2017

Time	Session	Facilitator
08:30-09:00	<b>Coffee and registration</b>	
09:00-09:10	<b>Welcome</b>	Francisco Becerra (PAHO) Anne Peniston (USAID)
09:10-09:20	<b>Framing the consultation: Why is this important now? Present overview of plan for DAY 1</b>	Carolyn Hart (Chair day 1)
09:20-09:30	<b>Objectives and expected outcomes</b>	Peggy Koniz-Booher
09:30-09:45	<b>Introductions</b>	Participants
09:45-10:25	<b>Comparative Analyses of Adolescent Nutrition Indicators</b>	Rukundo Benedict
10:25-10:45	<b>Reflections, Q&amp;A and facilitated discussion</b>	Laura Itzkowitz
10:45-11:15	<b>Break</b>	
11:15-11:45	<b>WHO nutrition-related recommendations targeting adolescents</b>	Pura Maria Solon
11:45-12:15	<b>Reflections, Q&amp;A and facilitated discussion</b>	Abigail Kaplan Ramage
12:15-01:15	<b>Lunch</b>	
01:15-01:45	<b>Presentation: Diet and Eating Practices among Adolescent Girls in Low- and Middle-Income Countries: A Systematic Review (study framework)</b>	Zulfiqar Bhutta and Emily Keats
01:45-02:00	<b>Clarifying Questions</b>	Participants
02:00-02:45	<b>Presentation: Diet and Eating Practices among Adolescent Girls in Low- and Middle-Income Countries: A Systematic Review (findings)</b>	Zulfiqar Bhutta and Emily Keats
02:45-03:00	<b>Clarifying questions</b>	Participants
03:00-03:30	<b>Break</b>	
03:30-04:10	<b>Reflections, Q&amp;A and facilitated discussion</b>	Participants
04:10-04:55	<b>Brazil's food-based dietary guidelines and future directions</b>	Carlos Monteiro
04:55-05:20	<b>Reflections, Q&amp;A and facilitated discussion</b>	Ruben Grajeda
05:20-05:30	<b>Reflections on Day 1</b>	Carolyn Hart
06:00-07:45	<b>Reception at TONIC AT QUIGLEY'S: 2036 G St NW, Washington, DC 20036</b>	

**DAY 2: Tuesday 31 October 2017**

<b>Time</b>	<b>Session</b>	<b>Facilitator</b>
08:30-09:00	<b>Coffee &amp; Registration</b>	
09:00-09:15	<b>Welcome back and recap of day 1</b>	Chessa Lutter (Chair Day 2)
09:15-09:55	<b>Food systems, diet, nutrition and the double burden: Influences and opportunities for action</b>	Jessica Fanzo
9:55-10:15	<b>Reflections, Q&amp;A and facilitated discussion</b>	Sascha Lamstein
10:15-10:45	<b>Panel discussion on program implementation, gaps, challenges and opportunities, and directions for the future</b>	Panel discussants: Marcia Griffith Luz María De-Regil Alison Tumilowicz
10:45-11:00	<b>Open discussion</b>	Participants
11:00-11:30	<b>Break</b>	
11:30-12:00	<b>The Double Burden and Double Duty Actions for Adolescents</b>	Corinna Hawkes (remotely)
12:00-12:30	<b>Reflections, Q&amp;A and facilitated discussion</b>	Abigail Kaplan Ramage
12:30-01:30	<b>Lunch</b>	
01:30-02:00	<b>Facilitated discussion on research gaps, and directions for the future</b>	Zulfiqar Bhutta Rafael Pérez-Escamilla
02:00-02:15	<b>Reflections on Day 2 and facilitated discussion about the way forward</b>	Chessa Lutter/ Participants
02:15-02:30	<b>Closing remarks</b>	Michael McCabe (USAID) Adriana Blanco (PAHO)
02:30-03:00	<b>Concluding Break</b>	

## Annex 2: Stakeholder Consultation Participant List

(\*) Indicates systematic review TAG member or TAG observer

**Jeniece Alvey\***  
Nutrition Advisor  
USAID/GHFP-II  
[jalvey@usaid.gov](mailto:jalvey@usaid.gov)

**Meghan Anson** (remote)  
Nutrition Advisor  
USAID/GHFP-II  
[manson@usaid.gov](mailto:manson@usaid.gov)

**Francisco Becerra**  
Assistant Director  
Pan American Health Organization

**Rukundo Benedict**  
Nutrition Specialist  
ICFI  
[Rukundo.Benedict@icf.com](mailto:Rukundo.Benedict@icf.com)

**Gilles Bergeron\***  
Executive Director  
The Sackler Institute for Nutrition Science  
[gbergeron@nyas.org](mailto:gbergeron@nyas.org)

**Zulfiqar Bhutta**  
Founding Director COE Women & Child  
Health  
Aga Khan University  
[zulfiqar.bhutta@aku.edu](mailto:zulfiqar.bhutta@aku.edu)

**Adriana Blanco**  
Unit Chief Risk Factors and Nutrition – NMH  
Pan American Health Organization  
[blancoad@paho.org](mailto:blancoad@paho.org)

**Sonja Caffè**  
Regional Adolescent Health Adviser  
Pan American Health Organization  
[caffes@paho.org](mailto:caffes@paho.org)

**Laura Caulfield**  
Professor, Department of International  
Health  
School of Public Health, Johns Hopkins  
University

[lcaulfi1@jhu.edu](mailto:lcaulfi1@jhu.edu)

**Gwyneth Cotes\***  
Director, Global Initiatives  
SPRING  
[gwyneth\\_cotes@jsi.com](mailto:gwyneth_cotes@jsi.com)

**Omar Dary**  
Health Science (Nutrition) Specialist  
USAID  
[odary@usaid.gov](mailto:odary@usaid.gov)

**Megan Deitchler**  
Director  
Intake - Center for Dietary Assessment, FHI  
360  
[mdeitchler@fhi360.org](mailto:mdeitchler@fhi360.org)

**Luz María De-Regil\***  
Director Global Technical Services & Chief  
Technical Advisor  
Nutrition International  
[lderegil@nutritionintl.org](mailto:lderegil@nutritionintl.org)

**Jessica Fanzo**  
Professor  
Johns Hopkins University  
[jfanzo1@jhu.edu](mailto:jfanzo1@jhu.edu)

**Lindy Fenlason**  
Senior Nutrition Advisor  
USAID/GHFP-II  
[lfenlason@usaid.gov](mailto:lfenlason@usaid.gov)

**Fabio Gomes**  
Advisor, Nutrition and Physical Activity  
Pan American Health Organization  
[gomesfabio@paho.org](mailto:gomesfabio@paho.org)

**Ruben Grajeda**  
Advisor, Nutrition and Social Determinants  
Pan American Health Organization  
[grajedar@paho.org](mailto:grajedar@paho.org)

**Elaine Gray** (remote)  
Nutrition Advisor  
USAID/GHFP-II  
[elgray@usaid.gov](mailto:elgray@usaid.gov)

**Marcia Griffiths\***  
President  
The Manoff Group  
[mgriffiths@manoffgroup.com](mailto:mgriffiths@manoffgroup.com)

**Carolyn Hart**  
Project Director  
SPRING (JSI)  
[carolyn\\_hart@jsi.com](mailto:carolyn_hart@jsi.com)

**Corinna Hawkes** (remote)  
Professor  
City, University of London  
[Corinna.Hawkes@city.ac.uk](mailto:Corinna.Hawkes@city.ac.uk)

**Paul C. Hewett, Ph.D.**  
Senior Associate; Technical Director  
Breakthrough Research  
Population Council  
[phewett@popcouncil.org](mailto:phewett@popcouncil.org)

**Laura Itzkowitz\***  
Nutrition SBC Advisor  
USAID/GHFP-II  
[litzkowitz@usaid.gov](mailto:litzkowitz@usaid.gov)

**Joan Jennings**  
Senior Nutrition Advisor  
Save the Children  
[jjennings@savechildren.org](mailto:jjennings@savechildren.org)

**Abigail Kaplan Ramage\***  
Adolescent Nutrition Consultant  
SPRING/Independent Consultant  
[abbyramage@gmail.com](mailto:abbyramage@gmail.com)

**Emily Keats**  
Research Associate  
Centre for Global Child Health, Hospital for  
Sick Children  
[emily.keats@sickkids.ca](mailto:emily.keats@sickkids.ca)

**Rolf Klemm**  
Vice President for Nutrition  
Hellen Keller International

[rklemm@hki.org](mailto:rklemm@hki.org)

**Kid Kohl**  
Technical Officer, Adolescent Health  
World Health Organization  
[kohlk@who.int](mailto:kohlk@who.int)

**Peggy Koniz-Booher\***  
Senior Advisor, SBCC Team Lead  
SPRING  
[peggy\\_koniz-booher@jsi.com](mailto:peggy_koniz-booher@jsi.com)

**Roland Kupka\*** (remote)  
Senior Advisor, Nutrition Section  
UNICEF  
[rkupka@unicef.org](mailto:rkupka@unicef.org)

**Kathleen Kurz**  
Nutrition Consultant  
Independent  
[kurzkathleen@gmail.com](mailto:kurzkathleen@gmail.com)

**Sascha Lamstein\***  
Technical Advisor, Systems Team Lead  
SPRING  
[sascha\\_lamstein@jsi.com](mailto:sascha_lamstein@jsi.com)

**Habtamu Fekadu Lashtew**  
Sr. Nutrition Director  
Save the Children US  
[hfekadu@savechildren.org](mailto:hfekadu@savechildren.org)

**Cintia Lombardi**  
Specialist, Prevention of Childhood and  
Adolescent Obesity  
Pan American Health Organization  
[Lombardic@paho.org](mailto:Lombardic@paho.org)

**Chessa Lutter\***  
Senior Nutrition Advisor, Visiting Research  
Professor  
RTI International, University of Maryland  
[cklutter@umd.edu](mailto:cklutter@umd.edu)

**Michael McCabe**  
Agency Youth Coordinator  
USAID  
[mimccabe@usaid.gov](mailto:mimccabe@usaid.gov)



**Carlos Monteiro**  
Professor  
University of São Paulo  
[carlosam@usp.br](mailto:carlosam@usp.br)

**Themba Nduna**  
Nutrition Advisor  
USAID  
[tnduna@usaid.gov](mailto:tnduna@usaid.gov)

**Albertha Nyaku**  
Senior Nutrition Advisor  
PATH  
[anyaku@path.org](mailto:anyaku@path.org)

**Anne Peniston**  
Division Chief, Nutrition  
USAID  
[apeniston@usaid.gov](mailto:apeniston@usaid.gov)

**Rafael Pérez-Escamilla\***  
Professor of Nutrition, Epidemiology and  
Public Health, Director of the Office of Public  
Health Practice  
Yale University, School of Public Health  
[rafael.perez-escamilla@yale.edu](mailto:rafael.perez-escamilla@yale.edu)

**Abigail Perry**  
Senior Nutrition Adviser  
DFID  
[A-Perry@dfid.gov.uk](mailto:A-Perry@dfid.gov.uk)

**Usha Ramakrishnan** (remote)  
Program Director, Doctoral Program                      in  
Nutrition and Health Sciences  
Emory University  
[uramkr@emory.edu](mailto:uramkr@emory.edu)

**Pura Rayco-Solon\***  
Epidemiologist  
World Health Organization  
[raycosolonp@who.int](mailto:raycosolonp@who.int)

**Marie Ruel**  
Director, Poverty, Health and Nutrition  
Division  
IFPRI  
[m.ruel@cgiar.org](mailto:m.ruel@cgiar.org)

**Julie Ruel-Bergeron**  
Nutrition Specialist  
The World Bank  
[jruelbergeron@worldbank.org](mailto:jruelbergeron@worldbank.org)

**Deepika Sharma**  
Micronutrients Specialist  
UNICEF  
[desharma@unicef.org](mailto:desharma@unicef.org)

**Callie Simon**  
Adolescent Sexual and Reproductive Health  
Advisor and Team Lead  
Save the Children  
[csimon@savechildren.org](mailto:csimon@savechildren.org)

**James Tielsch**  
Professor and Chair  
George Washington University  
[jtielsch@gwu.edu](mailto:jtielsch@gwu.edu)

**Alison Tumilowicz**  
Senior Technical Specialist Research and  
Evaluation  
Global Alliance for Improved Nutrition  
[atumilowicz@gainhealth.org](mailto:atumilowicz@gainhealth.org)

**Florencia Vasta\***  
Program Officer  
Bill & Melinda Gates Foundation  
[Florencia.Vasta@gatesfoundation.org](mailto:Florencia.Vasta@gatesfoundation.org)

**Teshome Woldemedhin**  
Senior Youth & SRH Advisor  
USAID  
[Twoldemedhin@usaid.gov](mailto:Twoldemedhin@usaid.gov)

**Fartun Yussuf**  
Program Analyst  
USAID/GHFP-II  
[fyussuf@usaid.gov](mailto:fyussuf@usaid.gov)

**Secretariat:**

**Ian Gorecki**  
Project Coordinator  
SPRING  
[ian\\_gorecki@jsi.com](mailto:ian_gorecki@jsi.com)

**Robin Mowson**

Consultant, Nutrition and Risk Factors Unit  
Pan American Health Organization  
[mowsonrob@paho.org](mailto:mowsonrob@paho.org)

**Patricia Welch**

Consultant, Nutrition and Risk Factors Unit  
Pan American Health Organization  
[welchpat@paho.org](mailto:welchpat@paho.org)

**Nadia Rosas**

Consultant, Nutrition and Risk Factors Unit  
Pan American Health Organization  
[rosasnad@paho.org](mailto:rosasnad@paho.org)

## Annex 3: Summary of Accepted Revisions for Systematic Review

### *Revisions to Systematic Review (based on feedback from consultation)*

- Keep data about 10-19 year olds in main document; age stratified data in appendix (i.e., disaggregated tables put in appendix, but comments on differences will remain in the main report)
- Sub-analysis of intake:
  - Propose to take several high(er) quality study examples where there is complete 10-19 data (and data disaggregated by younger and older adolescents) and highlight results for dietary intake separately in boxes
- Stratify energy intake by urban/rural status (will check to see if energy intake can be disaggregated by proportion consumed inside and outside of school, but this is unlikely)
- Meal pattern data (place of consumption, snacking, breakfast skipping etc.): check primary studies for details and context (e.g. were girls in school and if so, what type of school (boarding, public, private); was a school feeding programme available at the time of study; was purposeful sampling following implemented programmes, etc.)
- Specifically check if snacks are being consumed in place of meals (anticipate that we won't be able to answer this question); further define 'snacks' versus 'meals'
- Remove outcome of "eating <3 full meals per day"; change to "eating <2 full meals per day" or present this information descriptively
- Move underlying determinants analyses to appendix
- Change map to reflect cities & rural areas (where this data is available)
- Change "snack foods" categories to "sweet items" and "salty/fried items", so as not to confuse with snacking as a meal pattern
- Tone down recommendations/conclusions and carefully frame quality of studies and the places from which they came (i.e., most of the girls, especially the young ones, were in school)
- Expand text on food categorization system that was used, including a clear definition for convenience and fast foods
- Abby's edits (typos & formatting)

**Create a list of proposed recommendations/research priorities for which both TAG members and members of the stakeholder meeting can provide input.**

E.g., Make the case about a global exercise that can help overcome some of the limitations that we have seen in this work (standardized methods, sampling, definitions, age ranges, etc.)

## **SPRING**

JSI Research & Training Institute, Inc.  
1616 Fort Myer Drive, 16th Floor  
Arlington, VA 22209 USA

Tel: 703-528-7474  
Fax: 703-528-7480

Email: [info@spring-nutrition.org](mailto:info@spring-nutrition.org)  
Web: [www.spring-nutrition.org](http://www.spring-nutrition.org)

