NUTRITION INTERNATIONAL
Nourish Life

Anthropometric screening to assess nutritional status among adolescents

What, when and where?

Authors: Dr. Natasha Lelijveld (ENN), Dr. Heather Ohly (ENN),
Dr. Marion Roche (Nutrition International), Shibani Sharma (Nutrition International)

November 2026

ENN

Acknowledgement

This technical brief was jointly developed by the Emergency Nutrition Network (ENN) and Nutrition International, with funding support from Nutrition International, made possible through a grant from Global Affairs Canada.

Suggested citation: Lelijveld, N., Sharma, S., Ohly, H., & Roche, M. (2026, November). Anthropometric screening to assess nutritional status among adolescents. What, when, and where? [Technical brief]. Nutrition International (NI) & Emergency Nutrition Network (ENN). https://nutritionintl.org/learning-resource/anthropometric-screening-assess-nutritional-status-among-adolescents/

Table of Contents

Introduction **3**

Overview of anthropometric indicators for adolescents, their implications, and limitations **4**

Screening vs assessment vs surveillance **6**

Existing global guidance on anthropometric screening for nutritional status among adolescents aged 10–19 ..... **7**

Appropriate use of anthropometry in 10–19-year-olds **9**

When and where should we conduct anthropometry screening? 9

Body positivity 10

Specific considerations for screening in different settings 11

Conclusion **13**

References **14**

Annex 1: Various anthropometric measurements[ii] **16**

Annex 2: Appropriate follow-up actions **17**

Introduction

Adolescence (10–19 years) is a time of rapid growth and development for physical, cognitive and emotional capacities. It is also an important time of risks and opportunities for healthy nutrition, which have lifelong and intergenerational consequences. Despite this, adolescents have been neglected in national and global nutrition plans and policies, and growth monitoring or nutritional assessment is uncommon in this age group.[i] Anthropometric measures are widely used to estimate nutritional status and subsequent health risks across a range of age groups within health and nutrition services, surveys and surveillance. However, anthropometric measurements of adolescents are rarely conducted, even when they seek clinical treatment for a health issue. This is true across both high- and low-income contexts, as well as stable and humanitarian contexts.[ii]

The low mortality risk associated with malnutrition in adolescents compared to infants and children under five years is likely to be one of the key reasons for the lack of focus and limited resources for anthropometric measurement in this age group.[iii] However, malnutrition in this age group has considerable morbidity implications, as well as life-long implications for optimal development, the health of any future offspring and national economic growth. Furthermore, malnutrition does impact survival for adolescent girls if they become pregnant as it increases the risk of life-threatening complications during pregnancy and childbirth such as preeclampsia and hemorrhage.[iv] Hence, knowing what, when and where to utilize anthropometric measurements for 10–19-year-olds, as well as where to refer for deficiencies, is vitally important.

While anthropometry can be used for quantifying the burden of malnutrition among adolescents or monitoring the impact of an intervention, this briefing note focuses on using anthropometry for individual and mass screening, since this is a current gap in global guidance.

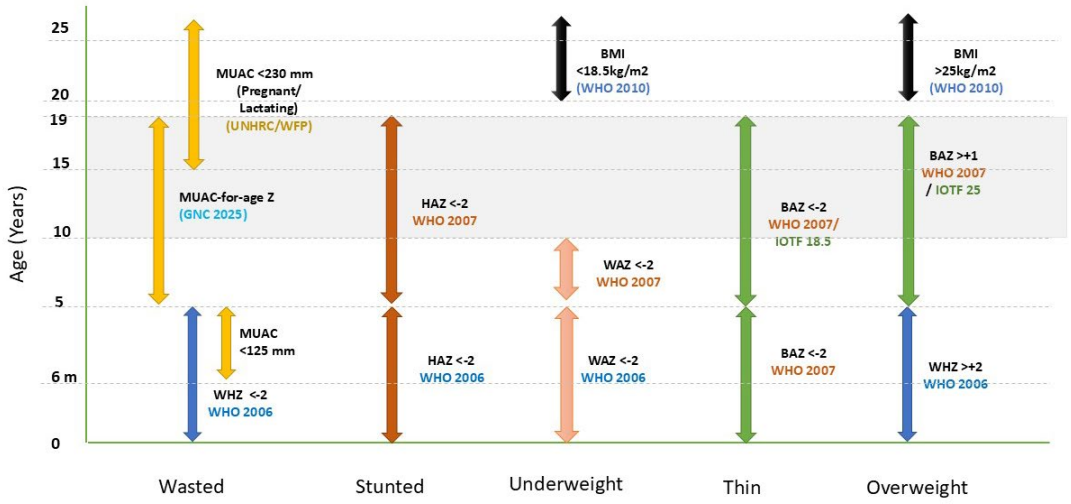
This briefing note outlines:

- Overview of anthropometric indicators for adolescents and broad considerations for their use
- Screening vs assessment versus surveillance
- Existing global guidance on anthropometric screening for nutritional status among adolescents
- Appropriate use of anthropometry in screening 10–19-year-olds
    - When should we conduct anthropometry screening?
    - Body positivity
    - Considerations for locations and context
    - Appropriate follow-up actions

Overview of anthropometric indicators for adolescents, their implications, and limitations

Anthropometric indicators, although a proxy measure and just one aspect of assessing nutritional status, are a cornerstone of nutrition surveillance, screening and assessment, used to quantify the prevalence of malnutrition and to target and assess the response to interventions. Different anthropometric indices are used to identify multiple nutrition conditions among adolescents aged 10–19 years, including underweight, thinness, stunting, wasting, overweight and obesity. However, not all indicators can be applied for all ages within the 10–19 years category, and anthropometric cut-offs that define conditions may also vary by age (see summary in **Figure 1**). Most indicators use an age-adjusted z-score based on weight, height or mid-upper arm circumference (MUAC). A more detailed table of definitions and cut-offs can be found in **Annex 1**.

Figure 1: Summary of the current indicators, references and cutoffs used to assess anthropometric status, by age group; recreated from Lelijveld et al., 2022.[v]



Note: The WHO 2006, WHO 2007, WHO 2010, WHO 2013, IOTF thinness, IOTF overweight, and UNHCR/WFP cutoffs are shown. The arrows that extend beyond 25 years are those that also apply to older adults. BAZ=BMI-for-age Z score. GNC= Global Nutrition Cluster. HAZ=height-for-age Z score. IOTF=International Obesity Task Force. MUAC=mid-upper-arm circumference. UNHCR=United Nations High Commissioner for Refugees. WAZ=weight-for-age Z score. WFP=World Food Programme. WHZ=weight-for-height Z score.

It is important to recognize that anthropometric indicators are a proxy for nutritional status; they are not a direct measure, and therefore their validity for capturing nutritional risk is not perfect. Anthropometric assessment of adolescents is also more complex than for younger children because their body composition is in transition and the timing of their growth spurts is variable. There is also a lack of standardization of terminology, reference data and cut-off points for adolescent anthropometric indicators, as well as less evidence on the validity of indicators for determining risk in the adolescent age group.

For example, stunting in children has a clear definition and evidenced associated risks for children under five, whereas stunting in adolescence is less well defined and its implications are not clear; it may reflect malnutrition in the past without representing a current problem that can be tackled. The clinical validity of BMI is also less well documented in adolescents than in younger children and adults, and more research is needed to better determine BMI cut-off points in adolescents that are sensitive and specific as indicators of morbidity and risk of death in adulthood. However, existing research does support the use of BMI-for-age as a measure of adiposity, and high BMI has been associated with blood pressure, adverse lipoprotein profiles, non-insulin-dependent diabetes and atherosclerosis in adulthood.[vi,vii,viii,ix]

Puberty and ethnic group variances also hamper the interpretation of anthropometric data in this age range.[x,xi,xii] Weight and height measures need to be adjusted to account for rapid changes that happen before and after the growth spurt. For simplicity, we usually use age-adjusted measurements such as BMI-for-age; however age is often a poor indicator of physiological maturity and nutritional requirements because of the wide variations in the timing of growth spurts for individuals as well as different ethnic groups.[xiii] Additionally, age-specific cutoffs may cause issues for adolescents who are unaware of their age.[xi,xiv,xv]

As well as accurately detecting nutritional risk, indicators used to estimate nutritional status must also be practical. Anthropometry is non-invasive, low cost and relatively portable, and is therefore a more practical tool than some other assessment options (such as biomarkers or body composition. Ideally, to more accurately classify an individual's nutritional status, anthropometry should be accompanied by other assessments including clinical and biochemical testing, growth patterns over time, dietary practices, food security status, health status and information on care practices.[iii] However, where this is not possible, and with the limitations outlined, it is still widely recommended by global and national policymakers as a very useful tool for assessing child and adolescent nutrition when applied appropriately.

Screening vs assessment vs surveillance

Anthropometry can be used for a number of different purposes:

1. **Surveillance**: This is an important use of anthropometry as it can be used to:
    - Identify the prevalence of different forms of malnutrition (underweight, healthy weight, overweight or obese) among adolescents in a school, community or country.
    - Make decisions on programming needs in a specific school, community or country.
    - Evaluate if a programming is working to improve adolescent nutritional status or not.

These data are typically anonymous and not intended to identify or support individuals with poor nutritional status. There is an important phrase that says, "What gets measured, gets done," and unfortunately the adolescent age group is often left out of nutrition surveillance, meaning that adolescents do not get prioritized for nutrition programming.

2. **Screening:** Anthropometric screening is intended to provide individuals (either the adolescents themselves or their parents/caregivers) with information about their nutritional status and recommend further assessment if necessary. It is not intended for diagnosis in most settings This can be done for a select higher-risk group, such as adolescents presenting to health services, or for everyone (known as "mass screening"), such as every schoolchild or every adolescent in the community. This brief will discuss the available guidance and the pros and cons of screening on the following pages.
3. **Assessment**: Individuals already identified as "at risk" during screening undergo assessment. This type of anthropometry can be used to diagnose nutrition conditions such as underweight, thinness, wasting, stunting and overweight. The World Health Organization (WHO) and the US Centers for Disease Control and Prevention (CDC). recommend that adolescents identified as wasted, stunted, thin, overweight or obese be referred for further assessment, including confirmation of anthropometric status and appraisal of dietary intake.[x,xvi]

Nutrition screening and surveillance are both rapid processes to identify people with malnutrition in a large group of individuals who do not necessarily show any symptoms. Those identified during screening as potentially being malnourished should be referred to a health facility for more detailed assessment and care. Assessment involves more careful and thorough anthropometric measurements, combined with other information, to identify specific nutrition problems and create an appropriate action plan for treatment, prevention and management of other associated health conditions, such as HIV and tuberculosis (TB). [iii] In some instances, such as humanitarian contexts or contexts with very overstretched health systems, it may be appropriate to provide treatment directly following screening rather than requiring a further assessment process.[xxiii]

This brief is focused on anthropometric screening, rather than surveillance or assessment.

Existing global guidance on anthropometric screening for nutritional status among adolescents aged 10–19

Much of the existing guidance on anthropometry for adolescents focuses on its use as a population-level indicator of malnutrition, that is, surveillance. For example, the 2024 Global Health Indicators recommended by the Global Action for Measurement of Adolescents (GAMA) group recommends the inclusion of overweight/obesity and thinness (both based on BMI-for-age z-scores) as key health indicators that should be included in national surveys and regular data monitoring.[xvii]

For individual level screening, the WHO recommends that anthropometric measurements on adolescents be collected "at every opportunity," to prevent both undernutrition and overweight, and to help address adolescent nutrition challenges, including in primary health services. [x] However, more recent WHO 2018 guidelines summarizing the global, evidence-informed recommendations and principles to address malnutrition in all its forms in adolescents do not mention anthropometric screening or assessment of adolescents.[xviii] The guideline outlines eight action areas:

1. promoting healthy diets;
2. providing additional micronutrients through fortification of staple foods and targeted supplementation;
3. managing acute malnutrition;
4. preventing adolescent pregnancy and poor reproductive outcomes;
5. promoting preconception and antenatal nutrition;
6. providing access to safe environment and hygiene;
7. promoting physical activity; and
8. disease prevention and management.

Most of these do not require individual-level screening since they apply to all adolescents — for example, promoting healthy diets or promoting physical activity. The section on targeted supplementation focuses on blanket provision of iron supplements when populations levels of anaemia are higher than 20%. The section on managing acute malnutrition focuses on those with tuberculosis and states that, "all adolescents presenting with weight loss should be assessed for underlying causes and managed accordingly." The guideline does highlight that assessment, diagnosis, prevention and detailed management of all forms of malnutrition among adolescents — particularly on the prevention and management of overweight and obesity — is one of the current research gaps and further research is merited in this area.

Similarly, the UNICEF 2021 programming guidance for nutrition in middle childhood and adolescence focuses on five key areas of intervention[1] but does not mention any requirement for individual anthropometric screening.[xix] Anthropometry is mentioned in relation to surveys conducted as part of a situation analysis to calculate population-level estimates of malnutrition for guiding programming priorities.

New (2024) well-child guidance from the WHO focused on health among children and adolescents aged 0–19 years is relevant since it recommends including anthropometric screening during these scheduled visits.[xx] The guidance recommends two well-child visits at a health clinic between the ages of 10 and 19 years, during which height and weight should be assessed to calculate BMI-for-age and track changes over time.

[1] Footnote looks like this

A new briefing note from the Global Nutrition Cluster (GNC) on the identification and management of wasting in 5–19-year-olds does mention screening, stating that, "in high-risk contexts, such as besiegement or famine areas, screening should take place at least once per month in the community" in order to refer those with wasting to treatment programs.[xxi] It also highlights than screening activities should consider that adolescents and parents of older children are less likely to seek out healthcare and may not be aware of wasting programming for children beyond five years of age. It highlights the usefulness of community health workers (CHWs) for screening school-age children and adolescents for wasting, as well as the importance of engaging young people as program advisors and working in collaboration with the education cluster.

Appropriate use of anthropometry in 10–19-year-olds

As the above guidance documents demonstrate, there are many key nutrition interventions for adolescents that do not depend on anthropometric screening, hence it is important to understand when and how to use screening appropriately.

When and where should we conduct anthropometry screening?

Anthropometric screening allows for detection of thinness, overweight/obesity, wasting and stunting persistence, all of which can be detrimental to adolescent health. Screening most commonly takes place in health clinics or schools but can also be considered at community centres and youth groups to support out-of-school adolescents. According to the WHO (2024) well-child schedule, anthropometric screening (among other health assessments) should take place at health clinic on two occasions for all adolescents between ages of 10 and 19 years.[xvii] Many high-income countries already recommend routine health checks during adolescence. For example, in the United States, healthcare providers are encouraged to conduct BMI screening for all children and adolescents aged 2–18 years at least once a year. However, in many other countries, routine health checks are limited to younger ages. For example, in the United Kingdom, there is only one mandated health check at age 10 years, and the National Child Measurement Programme in schools is between the ages of 4 and 11 years (primary school).

While some countries do recommend anthropometric screening during school health days and routine contacts with adolescent health services, most countries do not have general recommendations for mass, routine screenings in school. For example, both Kenya and India recommend screening of adolescents during adolescent health service delivery and during school health days, but they do not mention routine anthropometric screening beyond these touchpoints.[xxx,xxxi]

The reason for this is likely that the necessary referral pathways are not in place, the costs are prohibitive and not justified by the public health benefits. If anthropometric screening is to take place in any contexts, it should only be implemented if:

- There is a clear referral or response pathway (for example, to nutrition counselling, supplementation, social protection, clinical referral) (see **Annex 2** for suggested appropriate follow-up actions based on different anthropometric criteria).
- Staff are trained in accurate anthropometric assessment and use of the adolescent growth standards (WHO 2007 reference for 5–19 years[xxii]).
- Appropriate equipment is available.
- Privacy and consent are addressed, particularly for older adolescents (this includes the need for same-sex assessors where culturally appropriate).
- Cost-benefit analysis has been considered.
- Mitigation of potential negative consequences such as impacts on mental health or weight-associated bullying from other students has been mitigated.

Due to the new (2024) WHO recommendation for a minimum schedule of 17 well-child health visits between birth and 19 years, some low- and middle-income countries (LMICs) are testing or piloting routine adolescent check-ups.[xvii] For example, Zimbabwe, Tanzania and Ghana are part of the WHO-coordinated Y-Check research program, which implements routine adolescent check-ups at recommended time points (for example, early and mid/late adolescence) and is studying their feasibility and effectiveness.[xxiii] New data effectiveness on nutrition and health is highly welcomed since this is a point of disagreement across different national health institutes.

Body positivity

Safeguards are an essential part of anthropometric screening programs for 5–19-year-olds. They help to ensure respect for student privacy and confidentiality, protect students from potential harm, and increase the likelihood that the program will have good uptake and a positive impact on promoting healthy weight. The CDC makes the following safeguarding recommendations for anthropometric screening programs for adolescents:[xvi]

9. Parents/guardians should be informed about any screening programs, especially those in schools. Parents must be given the option of declining permission to measure their child's BMI. Some programs use passive parental consent; that is, all students have their BMI measured unless parents send a written refusal.
10. Ensure that staff members who measure height and weight have the appropriate expertise and training, not only for accurate measurement, but also to do so in a sensitive and caring manner. This training should include procedures to maintain student privacy during measurement; increase awareness of groups at increased risk of stigmatization; provide information about body size acceptance (see Box 1 for body positive affirmations) and the dangers of unhealthy weight control practices; help staff identify signs of student problems related to weight or body image (for example, eating disorders); prepare to respond to questions or comments by students.
11. Ensure that the setting for height and weight measurements is private and, if in school, these should not take place in front of other students, nor should measurements be announced out loud.
12. Anthropometric status of students should not be used as a basis for evaluating student or teacher performance (for example, in physical education or health education class). Using BMI results to evaluate performance might heighten attention to weight and increase stigmatization and harmful weight-related behaviours. Knowledge, skills and changes in dietary, physical activity and sedentary behaviours are more appropriate as performance measures.
13. Feedback on screening programs should be collected, such as concerns about the program, such as stigmatization, cost, parental responses and displacement of other health–related initiatives. This can be used to improve the screening program.
14. Parents or guardians should be provided with a clear and respectful explanation of the screening results and a list of appropriate follow-up actions. It is often not appropriate for a student to carry their own results home as this may risk breaching confidentiality with other students. All parents/ guardians should be provided with practical tips designed to promote health-enhancing physical activity and dietary behaviours — even if their child is classified as well-nourished. The CDC recommends that results of anthropometric screening not be shared with children themselves if they are below the age of 10 years. After that, they may be shared directly with the adolescent, but communication should be careful to avoid stigmatizing, blame or labelling.

BOX 1: EXAMPLES OF BODY POSITIVE AFFIRMATIONS TO TEACH CHILDREN AND ADOLESCENTS

"Children's bodies come in lots of different sizes and shapes."

"I am grateful for all the amazing things my body allows me to do."

"My strength and resilience make me proud."

"I appreciate my body for keeping me healthy and active."

"I honour my body for carrying me through each day."

"I trust my body to support me in all my activities."

Specific considerations for screening in different settings

1. SCHOOL-BASED SCREENING

Evidence to date suggests that simply conducting anthropometric screening in schools and reporting nutritional status to parents does not help to improve child or adolescent nutrition.[xxiv] However, there is some evidence from high-income settings that screening accompanied by school-based health interventions can moderately reduce levels of overweight and obesity.[xxv] There is very little research into the effects of school screening and referral to health services for reducing risk of thinness in school-age children and adolescents. However, a recent study of the Y-Check program in Zimbabwe found a positive reduction in rates of thinness following the introduction of regular school health and anthropometry checks (and referrals).[xxiii] Evidence of cost-effectiveness of this strategy versus other nutrition interventions in schools is not yet available. Careful consideration must be given when considering who to refer for further care, given that this places an additional burden on families who may already have considerable financial and time constraints. Safeguarding and body positivity issues (discussed above) are also especially important when screening in school settings since it is more difficult to maintain confidentially, and it can negatively draw attention to body size.

Since access and use of stadiometers for measuring height in schools can be difficult, tools such as the MEIRU chart, which is painted on the wall, can make measurement more practical.[xxvi] That said, it is important that school staff still receive the necessary training if they are to make accurate measurements. Strengthening school health and nutrition programming is an important part of improving global health for 5–19-year-olds. Anthropometric measurements in schools can therefore be used to identify potentially at-risk students, especially in places with a very high burden of underweight or wasting among adolescents, if all the above conditions are in place. While there is no specific recommendation from the WHO to use anthropometric screening in schools, their Health Promoting Schools initiative does recommend that anthropometry should be used in school as a surveillance tool for monitoring the potential impacts of school health and nutrition interventions.[xxvii]

2. COMMUNITY-BASED SCREENING (TO REACH OUT-OF-SCHOOL ADOLESCENTS)

In contexts with low school attendance, which is especially common for girls over the age of 11 years in LMICs, it may be appropriate to conduct anthropometric screening in community settings, such as:

- During community outreach days
- Youth clubs / safe spaces
- At home by community health workers
- At social protection enrolment or recertification

Many vulnerable adolescents (married girls, working youth, those with disabilities) are missed by school platforms, such as those who are already married or from very low-income families. Combining screening with other services for out-of-school adolescents — such as weekly iron and folic acid supplementation (WIFAS) distribution, deworming campaigns, HPV vaccination campaigns or cash transfer enrolment/collection — would likely increase uptake of screening and reduce delivery costs. The cost-effectiveness of screening in community settings every 1–2 years for out-of-school adolescents should be considered on a context-by-context basis if all the appropriate quality and referral mechanisms are in place. It is also important to consider that the logistics for referral will vary depending on the community setting, hence making some settings more appropriate for screening than others. For example, a referral at home by a community health worker may be more easily taken up than referral at a youth club where parents/caregivers are not present.

3. HEALTH SERVICE-BASED SCREENING

Anthropometric screening or assessment at health clinics when adolescents present for care is good practice. BMI-for-age measurements can detect cases of undernutrition or thinness, as well as overweight or obesity, all of which should be addressed through effective nutrition counselling and referral for further care. Persistent low BMI-for-age or growth faltering may be a sign of other chronic conditions such as TB, HIV, anaemia, eating disorders or psychosocial stress. Anthropometric screening and nutrition service referral should be integrated into health services commonly frequented by school-age children and adolescents, such as sexual and reproductive health (SRH) services.

Anthropometric assessment at SRH services is especially important for girls since pre-pregnancy BMI and height are strong predictors of birth outcomes. Early identification allows for counselling, supplementation and closer follow-up. Anthropometry should be conducted at first contact for contraception or SRH services, at preconception counselling visits, at first antenatal visit (if adolescent pregnancy occurs) and even at marriage registration, if possible. For example, Sri Lanka has a preconception health program where newlyweds are encouraged to schedule a healthcare visit to discuss nutrition and reproductive health.

4. HUMANITARIAN OR EMERGENCY CONTEXTS

In emergencies or humanitarian contexts (conflict, climate shocks, displacement, high food insecurity), adolescents are at increased risk of wasting, thinness, micronutrient deficiencies and unhealthy diets.[ii] In many low-income contexts, adolescent girls eat last and eat least.[xxviii] However this demographic is often excluded from malnutrition screening during crises, which is often focused on children under five years and pregnant women.

Adolescents should be included in anthropometric screening at initial rapid assessments, during nutrition screening campaigns and integrated into mass health campaigns, given that there is an increased risk of some adolescents facing severe underweight, wasting or micronutrient deficiencies. The GNC guidance brief recommends screening for low MUAC in 5–19-year-olds in the community every month in very food insecure situations, such as besiegement or famine.[xxi] It is recognized that assessing BMI might be too time consuming and the equipment too cumbersome for use in humanitarian situations, hence MUAC is appropriate for identifying high-risk individuals. This guidance also recommends provision of treatment (such as therapeutic foods where possible) to those identified as severely wasted during screening, rather than referral for further assessment, if there are no other medical complications.

UNICEF (2024) recommends that all pregnant or breastfeeding adolescent girls (defined as <19 years of age) in humanitarian contexts should be included in contextually-appropriate interventions, such as provision of balanced-energy protein supplements (BEP), regardless of their MUAC measurement.[xxix]

Conclusion

Anthropometric measurements are useful, non-invasive, quantitative, proxy measurements of nutritional status and associated health risks. BMI-for-age, weight-for-age, MUAC-for-age, and height-for-age are the most commonly used indicators for 10–19-year-olds.

Given the limited evidence of impact and global guidance for mass screening of adolescents (10–19 years), screening should only be implemented for high-risk adolescent populations where the cost-benefit ratio is likely to be positive. Instances where screening is likely to be justified include:

- at health service contact points, if quality equipment, training and appropriate referrals are in place for those at severe ends of the spectrum;
- at antenatal visits for pregnant adolescents, coupled with additional and appropriate nutrition services; and
- in community and school settings in humanitarian contexts with very high food insecurity, since the risk of severe underweight or wasting in the adolescent age group is likely to be high.

Anthropometric screening of adolescents requires greater safeguarding measures than for younger children, and careful consideration should be given to promoting positive body image and confidentiality. These screening activities must also be accompanied by referral pathways (**Annex 2**), which are currently lacking in most contexts. It is unethical to conduct anthropometric screening without safe and effective follow-up actions. Community health services should therefore be equipped to provide nutrition support, such as counselling, supplementation and/or referral to a social protection program. Schools and community groups can also play a role in supporting better nutrition for adolescents through nutrition education (including with wider family members), access to healthy meals, provision of micronutrient supplements and provision of fun physical activities.

Many of the best-evidenced interventions for adolescent nutrition do not require screening, especially double-duty actions such as promoting healthy diets, which can support all individuals at either end of the malnutrition spectrum, as well as those with hidden hunger (that is, micronutrient deficiencies). Understanding the nutrition problems adolescents face in a specific context is important for designing additional nutrition interventions that meet the needs of the population; however, this requires surveillance rather than screening. Surveillance of adolescent nutrition is severely lacking in all contexts and must be given greater priority, since "what gets measured, gets done."

Until there is greater evidence and guidance on the cost-effectiveness of mass anthropometric screening of adolescents in schools and community contexts, as opposed to simply providing good nutrition services to all without the need for screening, screening in most contexts is not routinely recommended.

References

i. Patton, G. C., Neufeld, L. M., Dogra, S., Frongillo, E. A., Hargreaves, D., He, S., ... & Norris, S. A. (2022). Nourishing our future: The Lancet series on adolescent nutrition. *The Lancet*, *399*(10320), 123-125.

ii. Lelijveld, N., Samnani, A., & James, P. (2025). *Towards a practical guide: A scoping review of nutrition programming, policy, and evidence for school-age children and adolescents in humanitarian contexts*. Emergency Nutrition Network. https://doi.org/10.71744/6bcw-s147

iii. Cashin, K., & Oot, L. (2018). *Guide to anthropometry: A practical tool for program planners, managers, and implementers*. Food and Nutrition Technical Assistance III Project (FANTA)/FHI 360.

iv. United Nations Children's Fund. (2023). *Undernourished and overlooked: A global nutrition crisis in adolescent girls and women*. UNICEF Child Nutrition Report Series.

v. Lelijveld, N., Benedict, R. K., Wrottesley, S. V., Bhutta, Z. A., Borghi, E., Cole, T. J., Croft, T., Frongillo, E. A., Hayashi, C., Namaste, S., Sharma, D., Tumilowicz, A., Wells, J. C., Ezzati, M., Patton, G. C., & Mates, E. (2022). Towards standardised and valid anthropometric indicators of nutritional status in middle childhood and adolescence. The Lancet. Child & adolescent health, 6(10), 738–746.

vi. Pietrobelli, A., Faith, M. S., Allison, D. B., Gallagher, D., Chiumello, G., & Heymsfield, S. B. (1998). Body mass index as a measure of adiposity among children and adolescents: A validation study. *The Journal of Pediatrics, 132*(2), 204-210.

vii. Sangi, H., & Mueller, W. H. (1991). Which measure of body fat distribution is best for epidemiologic research among adolescents? *American Journal of Epidemiology, 133*(9), 870-883.

viii. Must, A., Jacques, P. F., Dallal, G. E., Bajema, C. J., & Dietz, W. H. (1992). Long-term morbidity and mortality of overweight adolescents: A follow-up of the Harvard Growth Study of 1922 to 1935. *New England Journal of Medicine, 327*(19), 1350-1355.

ix. Pinhas-Hamiel, O., Singer, S., Pilpel, N., Fradkin, A., Modan, D., & Reichman, B. (2006). Health-related quality of life among children and adolescents: Associations with obesity. *International Journal of Obesity, 30*(2), 267-272.

x. World Health Organization. (2005). *Nutrition in adolescence: Issues and challenges for the health sector*.

xi. Woodruff, B. A., & Duffield, A. (2000). *Adolescents: Assessment of nutritional status in emergency-affected populations*. United Nations Administrative Committee on Coordination/Subcommittee on Nutrition (ACC/SCN).

xii. Gong, E. J., & Spear, B. (1986). Adolescent growth and development: Implications for nutritional needs. *Journal of Nutrition Education, 20*(6), 273-279.

xiii. Spear, B. A. (2002). Adolescent growth and development. *Journal of the American Dietetic Association, 102*(3, Suppl.), S23-S29.

xiv. World Health Organization. (1995). *Physical status: The use and interpretation of anthropometry—A report of WHO expert committee*.

xv. Cogill, B. (2003). *Anthropometric indicators measurement guide*. FHI 360/FANTA.

xvi. Nihiser, A. J., Lee, S. M., Wechsler, H., McKenna, M., Odom, E., Reinold, C., Thompson, D., & Grummer-Strawn, L. (2007). Body mass index measurement in schools. *Journal of School Health, 77*, 651-671. https://doi.org/10.1111/j.1746-1561.2007.00249.x

xvii. World Health Organization. (2024). *The adolescent health indicators recommended by the Global Action for Measurement of Adolescent Health: Guidance for monitoring adolescent health at country, regional and global levels*.

xviii. World Health Organization. (2018). *Guideline: Implementing effective actions for improving adolescent nutrition*.

xix. United Nations Children's Fund. (2021). *Programming guidance: Nutrition in middle childhood and adolescence*. https://www.unicef.org/nutrition/middle-childhood-andadolescence Programme Guidance on Nutrition in Middle Childhood and Adolescence | Knowledge

xx. World Health Organization. (2024). *Improving the health and wellbeing of children and adolescents: Guidance on scheduled child and adolescent well-care visits*.

xxi. Global Nutrition Cluster. (2025). Management of Severe Wasting in Children and Adolescents 5 to 19 Years *I*. https://www.nutritioncluster.net/resources/management-severe-wasting-children-and-adolescents-5-19-years

xxii. de Onis, M., Onyango, A. W., Borghi, E., Siyam, A., Nishida, C., & Siekmann, J. (2007). Development of a WHO growth reference for school-aged children and adolescents. *Bulletin of the World Health Organization, 85*(9), 660-667.

xxiii. Doyle, A. M., Nzvere, F., Manyau, S., Simms, V., Li Lin, I., Kandiye, F. R., Nyamayaro, C. A., Takawira, M., Chingono, R. M., Tembo, M., & Manhibi, R. (2026). Implementation and evaluation of the Y-Check comprehensive adolescent health check-up intervention in Zimbabwe: A pre– post mixed-methods study. *Nature Medicine, 32*, 494–504. https://doi.org/10.1038/s41591-025-04156-x

xxiv. Sigurðardóttir, B., Gribsholt, S. B., Bjerregaard, L. G., & Bruun, J. M. (2024). Review of impacts of using body mass index as a screening tool in school children: A scoping review. *Clinical Obesity*, *14*(3), e12639. https://doi.org/10.1111/cob.12639

xxv. Jacob, C. M., Hardy-Johnson, P. L., Inskip, H. M., Morris, T., Parsons, C. M., Barrett, M., Hanson, M., Woods-Townsend, K., & Baird, J. (2021). A systematic review and meta-analysis of school-based interventions with health education to reduce body mass index in adolescents aged 10 to 19 years. The international journal of behavioral nutrition and physical activity, 18(1), 1. https://doi.org/10.1186/s12966-020-01065-9

xxvi. Chanyarungrojn, P. A., Lelijveld, N., Crampin, A., Nkhwazi, L., Geis, S., Nyirenda, M., & Kerac, M. (2023). Tools for assessing child and adolescent stunting: Lookup tables, growth charts and a novel appropriate-technology "MEIRU" wallchart—a diagnostic accuracy study. *PLOS Global Public Health, 3*(7), e0001592.

xxvii. World Health Organization. (n.d.). *Health-promoting schools*. Retrieved March 2026, from https://www.who.int/health-topics/health-promoting-schools#tab=tab_1

xxviii. Mohapatra, S., & Deshmukh, D. (2025). *Together at the table: Breaking the "last and least" rule for women and girls*. UNICEF India. https://www.unicef.org/india/stories/together-table-breaking-last-and-least-rule-women-and-girls

xxix. United Nations Children's Fund. (2024). *Programme guidance to protect the nutrition of women and adolescent girls in humanitarian settings*.

xxx. Kenya Ministry of Health. (2014). *Adolescent's package of care in Kenya: A health care provider guide to adolescent care*.

xxxi. Ministry of Health and Family Welfare, Government of India. (2006). *Adolescent friendly health clinics (AFHCs): Manual/formats for AFHCs*. https://nhm.gov.in/index1.php?lang=1&level=4&sublinkid=1253&lid=387

Annex 1: Various anthropometric measurements[ii]

Anthropometric measurement	Related nutrition condition and cut-off	Description
Height-for-age	Stunting <-2 z-scores	Height-for-age considers a child/adolescent's height relative to his/her age and sex and is used to identify stunting. While stunting or short stature represents a current nutritional deficits in young children, its implications for school-age children and adolescents is far less clear.
Weight-for-age	Underweight <-2 z-scores	Weight-for-age considers a child's weight relative to his/her age and sex and identifies underweight. It cannot be used for children over the age of 10 years since it can be distorted by the adolescent growth spurt.
BMI-for-age	Thin <-2 z-scores Overweight >+1 z-scores Obese >+2 z-scores	BMI-for-age is used to indicate both thinness and overweight/obesity in children and non-pregnant adolescents 5–19 years of age. It is a ratio of weight relative to height — calculated using the formula (weight in kilograms)/(height in metres) — and is interpreted according to age and sex. This age- and sex-specific interpretation is necessary because this age group is still growing and the relationship among weight, height and fat depends on their stage of development and sex. BMI is not a direct measurement of body fat and does not distinguish between muscle weight and body fat weight.
MUAC-for-age	Wasting <-2 z-scores	MUAC is used to identify wasting by measuring the circumference of the mid-upper arm and comparing it to an age-adjusted z-score or age-specific cut-off. Commonly used to assess the nutritional status of children under five and adults, MUAC is increasingly being used with children over five and adolescents, especially those living with HIV, to determine eligibility for support programs.[xix] MUAC is a highly practical measure that is easy to use in community settings, and therefore very useful for emergency and very low resource contexts, where measuring weight and height may not be possible.

Annex 2: Appropriate follow-up actions

Conducting anthropometry screening for adolescents should be **linked to an action pathway** (for example, counselling, supplementation, referral). It is unethical to conduct anthropometric screening without safe and effective follow-up actions. Even if referral pathways are in place in theory, the reality can be quite different. For example, the Y-Check program in schools in Ghana and Zimbabwe reported challenges with referrals for anthropometric issues either not being taken up by families or not being meaningfully actioned by health clinics if families did present with a referral. Assessing and potentially strengthening nutrition support services prior to implementing screening is essential.

Here are some suggested actions based on various anthropometric nutrition diagnoses:

- **Thinness or underweight:** The CDC recommends that school-age children diagnosed as thin or underweight be provided with weight management counselling by a healthcare provider. The WHO Integrated Management of Adolescent and Adult Illness (IMAI) guidelines recommend that moderately thin (BMI-for-age <–2 to –3 z-scores) adolescents require an additional 20–30% caloric intake, in addition to their normal intake, which should be provided in the form of frequent smaller amounts of locally available, nutrient-rich food. If available, the person can be enrolled in a program in which nutritional assessment, counselling and supplementary feeding are available. For severe thinness or underweight (BMI-for-age or weight-for-age <-3), the wasting guidance below can be followed, that is, provision of therapeutic food and auxiliary medical care.
- **Overweight and obesity:** The CDC recommends that school-age children diagnosed as overweight or obese be provided with weight management counselling by a healthcare provider. WHO AA-HA! (Global Accelerated Action for the Health of Adolescents) recommends family-based, multicomponent, lifestyle weight management, including nutrition, physical activity and psychosocial support for overweight or obese adolescents.
- **Wasting:** The GNC recommends that 5–19 year-olds who are severely wasted with MUAC-for-age less than <-3 z-scores be provided with therapeutic food as well as auxiliary medical care such as antibiotics, deworming medication and a measles vaccination if they are not up-to-date. For moderate wasting (MUAC between –2 and –3 z-scores), general food distribution, supplementary feeding, micronutrient supplementation, cash transfer or other social protection program and/or nutrition counselling are recommended.[xxi] If such programs are not available, the current WHO recommendation for low-risk (that is, without co-morbidities) moderate wasting is to provide nutritional counselling. Pregnant adolescent girls in humanitarian contexts should be provided with supplementation regardless of MUAC.
- **Stunting / short stature:** The WHO mentions that girls with short stature should be identified as they are potentially at risk of maternal morbidity or mortality during pregnancy, and increased risk of having a small or vulnerable newborn. They also mention that those who fail to have a growth spurt during adolescence may have an undiagnosed chronic health condition requiring further exploration. However, it is important to note that the associations between stunting and immediate health risks are not well evidenced, and that stunting often reflects early life nutritional deficiencies (during the first 1,000 days) rather current nutritional deficiencies. It is not common to refer a school-age child or adolescent for support based on a diagnosis of stunting without accompanying issues (such as poor diet, a co-morbidity or pregnancy). All cases of malnutrition can be supported with other widely recommended nutrition interventions for this age group including access to health school meals, promotion of healthy foods at home, intermittent iron and folic acid supplementation, regular deworming, access to nutrition education and physical activity, and cash or voucher assistance programs.



Nourish Life

www.NutritionIntl.org