



YOUTH LEADERS FOR NUTRITION

ADOLESCENT NUTRITION BRIEFS

YOUTH LEADERS
FOR NUTRITION

 Save the Children

 **gain**
Global Alliance for
Improved Nutrition



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Introduction

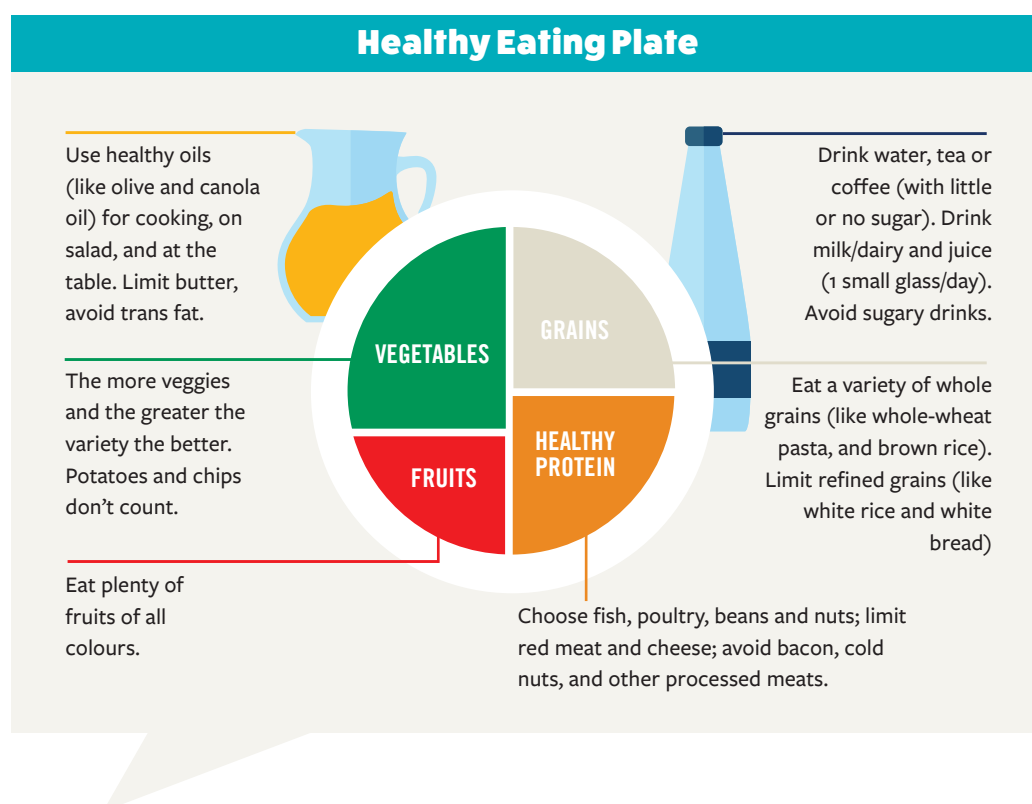
What Is Good Nutrition And Why Does It Matter For Adolescents?

This toolkit was created to help you bring about change around nutrition issues affecting adolescents in your country

What exactly is good nutrition?

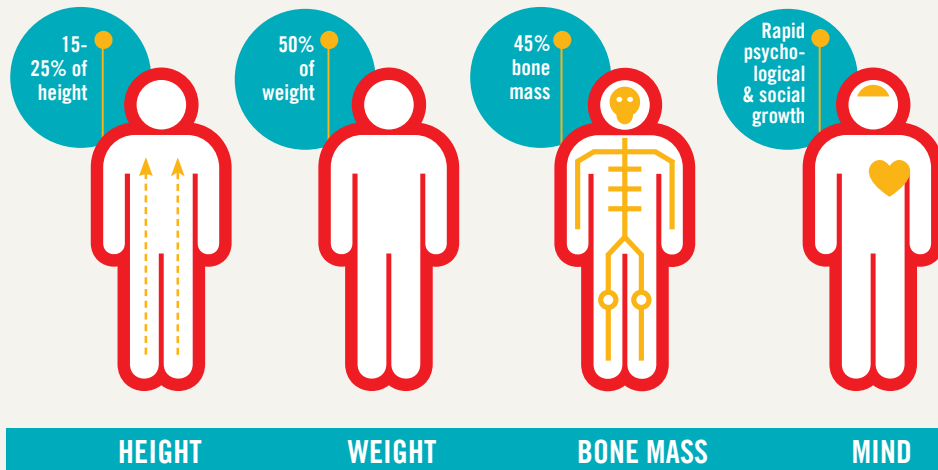
It's about eating the right amount of the right foods, including different vegetables and fruits, so that you get the vitamins, minerals and other nutrients you need to grow and stay healthy.

The graphics below show you what a healthy meal could look like, and you can find out more in the **Additional Resources**.



What exactly is good nutrition?

During adolescence (during the ages of 10-19), nutrition needs are high. Adolescents will gain:



Good nutrition will:

HELP YOU DO WELL
IN SCHOOL, AT WORK
& AT SPORT

MAKE YOU
LESS LIKELY
TO GET SICK

MAKE YOUR
BRAIN
WORK
BETTER

HELP YOUR
BODY GROW &
FEEL GOOD

MAKE IT MORE LIKELY
THAT YOU & YOUR BABY
WILL BE HEALTHY IF
YOU BECOME PREGNANT

Poor nutrition does the reverse. It makes you more likely to be sick and tired, to not grow properly, to do less well in school, and to have problems during and after pregnancy.



Nutrition is especially important during adolescence. Your bodies are growing quickly and you have increased needs for vitamins and minerals. As girls begin menstruation, they may have increased need for iron. If this isn't met, they may become anaemic. Anaemia is even more serious for pregnant girls.

Why doesn't everyone have good nutrition?

Two of the main reasons are:

- 1 They don't have **access** to the foods they need, because of poverty, food insecurity or other issues with their food supply (like shops stocking mainly crisps and sodas).
- 2 They don't **choose** the right foods, which can be because they don't know about good nutrition or they've been influenced by advertisements that promote less healthy choices.



In the briefs that follow, you'll find a lot more information about different nutrition issues, including their causes, some facts and figures, and why these issues important. An additional brief highlights some of the programmes and policies that have been used to improve nutrition for adolescents and others.

Undernutrition: Stunting, Wasting, Thinness, & Underweight

Both short and long-term lack of good nutrients can have serious health impacts!

Check in the **GLOSSARY** to learn more about each type of **UNDERNUTRITION**

STUNTING: means someone is very short for their age – usually from not getting enough of the right foods or from recurring infections as a young child or before birth.²

UNDERWEIGHT: in adults it means low weight for the adult's height,³ but in children it means low weight for their age and can refer to wasting, stunting, or both.²

WASTING (children)/THINNESS (adults): means someone is very low weight for their height - usually from a recent, big weight loss from illness or not getting enough food – but it can also be the result of a longer-term condition.^{2,3}

UNDER NUTRITION IS A SERIOUS PROBLEM THAT CAN LIMIT A PERSON'S POTENTIAL IN LIFE AND LEAD TO DISEASE AND EARLY DEATH

GROWTH during adolescence should add about a **FIFTH** of the **HEIGHT** & **HALF** the **WEIGHT** of an adult size

1 in 5

GIRLS AGE 5-19 ARE MODERATELY OR SEVERELY THIN/WASTED IN SOUTH ASIA

1 in 3

BOYS AGE 5-19 ARE MODERATELY OR SEVERELY THIN/WASTED IN SOUTH ASIA

CAUSES OF UNDER NUTRITION:



Adapted from UNICEF 2015⁷

Undernutrition: what is the problem?

Undernutrition is a general term used when a person's nutritional requirements are not met. It covers stunting, wasting, thinness, and being underweight, along with micronutrient deficiencies.⁸ Stunting can be hard to notice; children just may seem to be short for their ages. Young people are less likely to die from being stunted than from being wasted, but more people are affected by stunting.

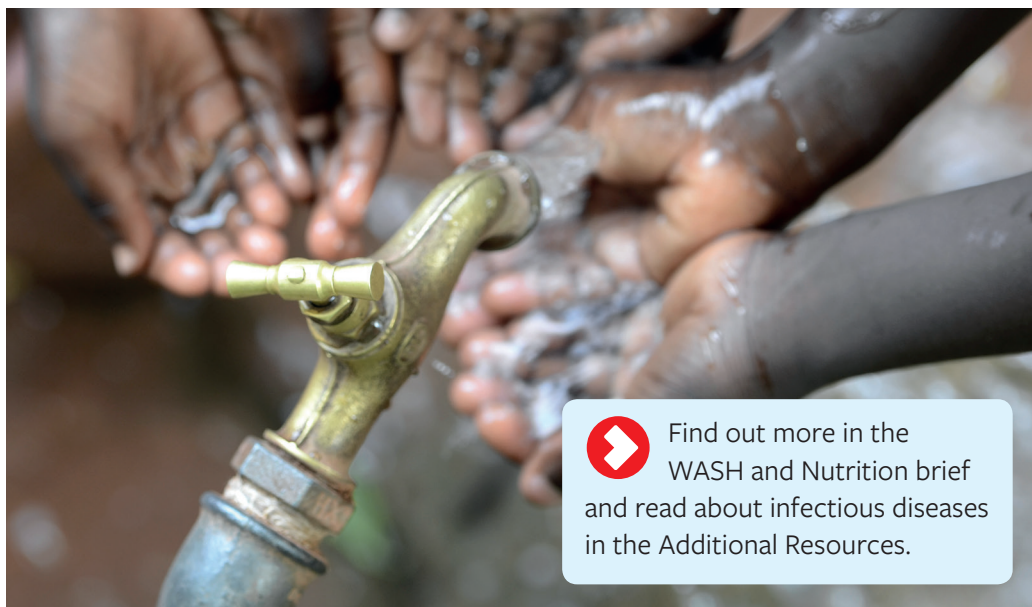


See the separate brief on Undernutrition: Micronutrient Deficiencies to learn more about this.

Why does undernutrition happen?

The causes of undernutrition can be traced back to roots in bigger community problems, but the immediate causes are poor diet, infectious diseases or both.⁷

Many diseases impact nutrition. Measles is linked to increased wasting in children. HIV infection is linked with undernutrition. Malaria may cause anaemia. Diarrhoea, a part of many infectious diseases, means you can't absorb the nutrients in food. These diseases are more common in areas that don't have clean water or good sanitation.⁴



Find out more in the WASH and Nutrition brief and read about infectious diseases in the Additional Resources.

Why is undernutrition a big deal?

A poor diet can make your body weak, make you tired and less able to do day-to-day activities, and can make you more likely to become ill.⁵

Stunting can have long-term health effects. Stunted adults have a higher risk of obesity and non-communicable diseases^{9,10} (see *the brief on Overnutrition*). Stunted women are at greater risk of problems during pregnancy and can give birth to low birth weight babies.

“ It’s estimated that stunting can reduce a country’s GDP by as much as 3% ”



Stunting is associated with difficult births and poor outcomes. Children who are exposed to the conditions that cause stunting may also have poor child development and school performance, and make less money as an adult.



If undernutrition affects a big part of a country's population, then the country as a whole makes less money. It's estimated that stunting can reduce a country's GDP by as much as 3%!⁹

Undernutrition during pregnancy is very dangerous for adolescent girls. Their bodies are still growing, and the nutritional needs of the growing baby can compete with the needs of the young mother. Adolescent girls also have high rates of anaemia, which can increase during pregnancy.



Find out more in the Adolescent Pregnancy and Nutrition brief.

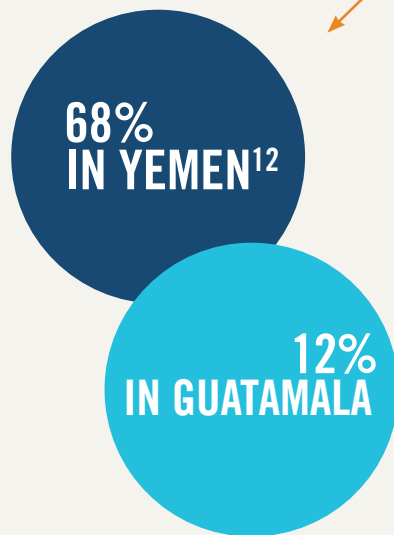
Undernutrition: Micronutrient Deficiencies

MICRONUTRIENTS ARE VITAMINS AND MINERALS

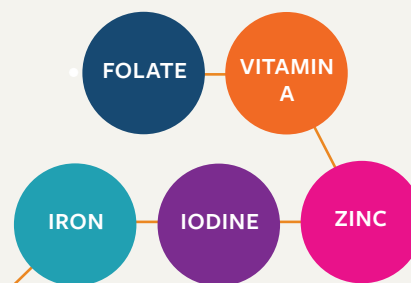
If someone does not have enough micronutrients in their diet this is **MICRONUTRIENT DEFICIENCY** and can lead to serious health problems^{2,11}

IRON DEFICIENCY is one of the main causes of **ANAEMIA**

This is a huge problem in low and middle income countries (**LMICs**) where many adolescents suffer from anaemia



COMMON MICRONUTRIENT DEFICIENCIES IN LMICS:



IRON DEFICIENCY ANAEMIA CONTRIBUTES TO PREMATURE DEATH AND DISABILITY:

#1
LEADING RISK FACTOR
FOR DEATH AND DISABILITY
FOR 10 TO 14 YEAR OLDS¹³

#3
LEADING RISK FACTOR
FOR DEATH AND DISABILITY
FOR 15 TO 19 YEAR OLDS¹³

Micronutrient deficiencies: what is the problem?

In low-income and middle-income countries, many adolescents are not getting enough micronutrients.¹⁵ In the past, this problem mainly occurred among people with limited access to food. However, micronutrient deficiencies are now becoming common among overweight/obese people whose diets provide too much energy (too many calories) but not enough micronutrients.^{2,11}



Take a look at the brief on Double/Triple Burden for more information.

Why do micronutrient deficiencies happen?



Eating a wide variety of different kinds of foods, including different coloured fruits and vegetables, is really important for getting all of the micronutrients you need. But most adolescents don't eat a varied diet.

“ In 2011, vitamin A deficiencies caused an estimated 157,000 child deaths worldwide, and zinc deficiencies led to 116,000 child deaths worldwide ”

More and more, young people are replacing whole and healthy foods with high-fat, processed, and sugary foods that lack micronutrients.^{4,10} A study of over 23,000 packaged food products found that most are low in nutrients, and more of the packaged foods sold in low and middle-income countries are low in nutrients than in high income countries.⁴

Why are micronutrient deficiencies a big deal?

Adolescence is a time of rapid growth with increased needs for vitamins and minerals.¹⁵ If you don't get enough of certain micronutrients during this time it can negatively impact your physical and mental development and can increase risks of disease and early death.^{5,16}

Micronutrient deficiencies have serious negative health effects. In 2011, vitamin A deficiencies caused an estimated 157,000 child

VITAMIN/MINERAL	IMPACT OF DEFICIENCY
VITAMIN A	Blindness/Night blindness
IRON	Anaemia (with tiredness/shortness of breath)
FOLATE	During pregnancy, poor brain and spinal cord development
IODINE	During pregnancy, poor brain development. In adults, enlarged thyroid/impaired mental function
ZINC	Impaired growth and immune function; loss of appetite; diarrhoea; skin and eye lesions



deaths worldwide, and zinc deficiencies led to 116,000 child deaths worldwide.¹⁷

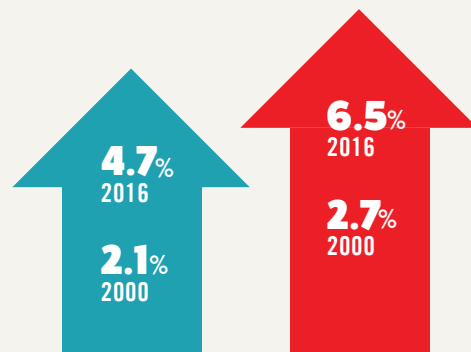
Globally, anaemia is considered the biggest nutritional problem in adolescents and one of the highest risk factors for early death and disability among children and adolescents⁴ It can lead to poor work performance and productivity and is also associated with pregnancy-related risks and maternal mortality.¹⁰

Anaemia is an important issue for adolescent girls, particularly if they become pregnant during adolescence. Anaemia is a major factor contributing to the high risks associated with adolescent pregnancies.^{10,16}



Check out the brief on Adolescent Pregnancy and Nutrition for more information.

Overnutrition: Overweight & Obesity



OBESITY and OVERWEIGHT are on the rise among adolescents⁵ with more obesity among boys than girls⁴

A study found that diets of adolescent girls in LMICs have too much high-fat and high-calorie food and not enough **FRUITS AND VEGETABLES**¹⁴

OBESITY AND OVERWEIGHT ARE HIGHER AMONG 10- TO 14-YEAR-OLDS THAN OLDER ADOLESCENTS¹⁴

FOR MOST REGIONS, A HIGHER PERCENTAGE OF PEOPLE ARE OBESE OR OVERWEIGHT THAN ARE UNDERWEIGHT!¹⁴

340 MILLION CHILDREN & ADOLESCENTS (5-19) WERE **OVERWEIGHT OR OBESE** IN 2016¹¹

4 MILLION DEATHS contributed to by overnutrition²⁰

40% of children and adolescents report drinking soda EVERYDAY⁴

MANY YOUNG PEOPLE NOW SPEND MORE TIME DOING THINGS THAT AREN'T ACTIVE - LIKE WATCHING TV AND BEING ON SOCIAL MEDIA!^{5,11,19}

“ Young people may have fewer safe outdoor spaces for sports and recreation, and many spend time doing things that aren’t active - like - watching TV ”

Overnutrition: what is the problem?

Overnutrition is a chronic (long-term) condition when individuals take in more food or energy than their bodies use, which causes them to build up fat stores. This leads to being overweight or, in more extreme conditions, obesity.



Check out the Glossary to learn more about the terms overweight, obesity and overnutrition.

Why does overnutrition happen?

Sugary drinks and cheaper processed foods (with more calories) are more easily accessible today than ever before. At the same time, many young people have less access to healthy food choices.¹⁶

Today, more people live in cities, and their lives don’t require much physical activity. Young people may have fewer safe outdoor spaces for sports and recreation, and many spend time doing things that aren’t active – like watching TV and being on social media!^{5,11,19}

Why is overnutrition a big deal?

Obesity in youth can lead to adult health problems¹¹ and also affects communities and the economy. The global cost of obesity and being overweight has been estimated to be **US \$500 billion** per year⁴

Obese youths have higher risks of broken bones, breathing problems, high blood pressure, early signs of heart disease, diabetes, and stress^{5,11}



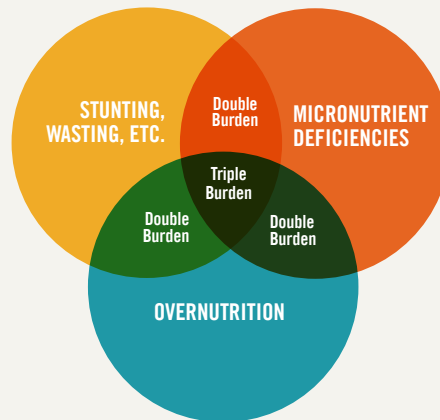
It may be hard to reverse adolescent obesity once it happens – research shows that obese adolescents often become obese adults.^{20,21} So prevention is key!

Obese women have an increased risk of health problems during pregnancy, including diabetes and pregnancy-related high blood pressure. Children of obese mothers are more likely to be obese themselves, and to have diabetes and other diseases as they get older.¹⁰

Double & Triple Burdens Of Malnutrition

DOUBLE & TRIPLE BURDEN

are the terms used when the same population has undernutrition **PLUS** overnutrition at the same time



MALNUTRITION AFFECTS ALL REGIONS WORLDWIDE

1.9 BILLION adults, 18 and older, are overweight

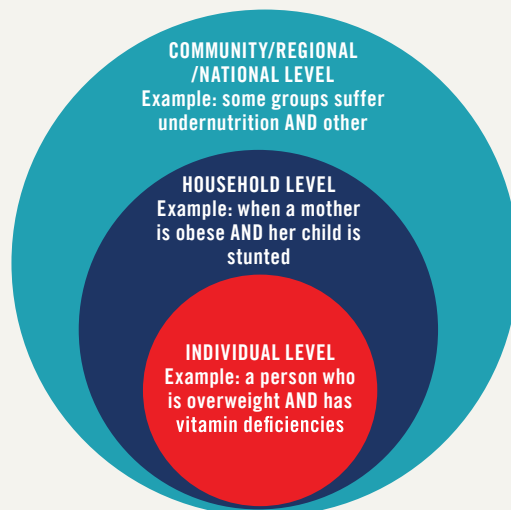
462 MILLION adults are underweight

A 2018 STUDY OF 141 COUNTRIES FOUND:⁴

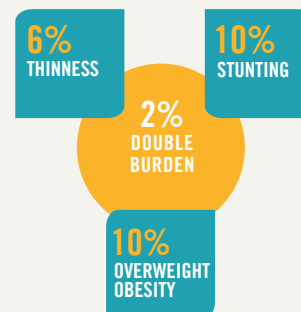
124 COUNTRIES had at least double burden

41 COUNTRIES had triple burden

AND IT IS FOUND AT MANY LEVELS:



ADOLESCENTS ARE VERY AFFECTED:



Double/triple burden: what is the problem?

The **double burden** is the term you'll hear most often, but we're seeing the **triple burden** more and more in low- and middle-income countries, as communities are affected by two or three forms of malnutrition (overweight/obesity and diet-related non-communicable diseases (NCDs) PLUS undernutrition, including micronutrient deficiencies).

Why does double/triple burden happen?

Diet patterns and activity levels are rapidly changing because of globalisation (increased interaction between countries) and urbanisation (increased concentration of people in cities). This change is called the nutrition transition.

Where you live and the food you can access are important factors.

- 1** In many areas of the world, people have greater access to cheaper processed foods and sugary drinks with more calories and fewer nutrients.
- 2** Peoples' changing lifestyles and movement towards cities can cause them to be less active and less able to make healthy food choices. This can lead to both overweight/obesity and micronutrient deficiencies.
- 3** People who experience food insecurity may also be affected by the double or triple burden of malnutrition. People living in conflict zones or refugee camps are often provided with food by relief agencies. These food baskets usually provide food that is high in starches and sugar, but don't often include fruits and vegetables.^{24,25}

Why is double/triple burden a big deal?

When an adolescent has the double or triple burden of malnutrition, they're at risk of double or triple the health problems.



To find out more about these risks, check out the briefs on Overnutrition; Undernutrition: Micronutrient Deficiencies; and Undernutrition: Stunting, Wasting and Underweight.

The double burden has serious economic effects on individuals and populations: it raises health care costs, reduces productivity and slows economic growth.

When a pregnant adolescent is obese, stunted, and/or has micronutrient deficiencies, her health and her baby's health are at risk.



You can see more about this in the brief on Adolescent Pregnancy and Nutrition.

What Can We Do About Malnutrition?

All of the forms of malnutrition are connected and are best addressed through healthy living and eating - so this needs to be the primary aim for all potential solutions.

This fact sheet highlights some of the approaches that are currently being used – but these are only a starting place!

Micronutrient supplements:

In areas with micronutrient deficiencies, vitamin and mineral supplements can be effective. Iron, or Iron-Folic Acid (IFA) supplements, can reduce anaemia rates and support healthy pregnancies²⁶ Calcium supplements may help adolescents build bones²⁷ and can reduce blood pressure in pregnant women.²⁸ Vitamin A supplements can prevent night blindness in pregnant women and are recommended in areas where Vitamin A deficiency is a ‘*severe public health problem*’.²⁹ Other supplements, including ‘*multiple micronutrient*’ supplements, may help address other vitamin and mineral deficiencies.³⁰



In response to a dramatic increase in maternal anemia, the White Ribbon Alliance in Pakistan set up a campaign to end maternal malnutrition, especially anemia. They collected **100,000** signatures for a letter asking the government to: a) *improve the availability of IFA supplements* and b) *increase provision of information about anaemia and IFA among women of reproductive age and specifically adolescent girls*.

As a result of White Ribbon’s efforts, the government of Sindh is launching a **\$62MM USD** project that addresses all the objectives of White Ribbon’s maternal anaemia campaign.³¹

Food fortification: Common foods such as oil, sugar, salt and flour can have vitamins and minerals added to them. In Guatemala, for example, sugar is fortified with Vitamin A. In many other countries, cooking oil is fortified with Vitamin A. Flour can be fortified with a variety of micronutrients, including iron, folic acid, vitamin B12 and Vitamin A. Worldwide, salt is fortified with iodine³²



Food supplementation: Additional foods or food supplements can take a variety of forms:³⁰

- 1** Pregnant adolescents may benefit from supplements that provide a specified amount of energy and protein. These programmes are not widespread and have so far been targeted primarily at pregnant women.
- 2** In-school adolescents may benefit from school feeding programmes. Although there's not a lot of data about the impact of these programmes, there is evidence that they may lead to weight gain in some adolescents³⁰ They also encourage school enrolment and attendance.³²

3

In conflict zones, refugee camps and other emergency situations, organisations like the World Food Programme (WFP) may provide baskets of food or, if there is a local market with food available, they may provide cash transfers so people can buy their own food.



Case study: *In Japan, the government introduced the 'kyushoku' school meal programme in the 1950's to make sure that children had sufficient healthy food in the aftermath of the war. The locally-sourced meals, which are still served today, provide iron, calcium and fibre levels in accordance with government standards, with fresh vegetables and healthy protein as their centre. Low levels of child and adult obesity and increased life expectancy in Japan have been attributed to this programme.³³*



Case study: *In 2019, the WFP expected to provide 12 million people affected by the humanitarian crisis in Yemen with monthly food assistance in the form of vouchers or foods; each family of 6 receives oil, pulses, flour, sugar and salt.³⁴*

Improved food security and access to healthy foods:

These solutions can range from school and community gardens to government and NGO programmes that help and encourage farmers to grow healthy foods for local use. As well as subsidising the farmers and helping them acquire information, seeds and equipment, the programmes may build roads, rail lines and storage facilities for the crops. ^{35,36}

Changing behaviour: Campaigns to inform people and encourage and motivate them to change their behaviours have been successfully used to combat smoking, drug use, teen pregnancy and other health issues affecting adolescents.

Improved infant feeding practices:

It is estimated that 823,000 child deaths would be prevented each year in low- and middle- income countries if breastfeeding were adopted nearly everywhere. But only 40% of children under six months are exclusively breastfed. The World Health Organisation recommends mothers worldwide to exclusively breastfeed infants for the child's first six months to achieve optimal growth, development and health. Thereafter, they should be given nutritious complementary foods and continue breastfeeding up to the age of two years or beyond. Optimal infant feeding practices also requires breastfeeding to start within an hour after birth. But there are often barriers to breastfeeding such as community and cultural pressure which give bad advice or pressurise mothers into harmful alternative infant feeding practices, a shortage of health workers to support mothers and communities to breastfeed, a lack of maternity regulation and pressure from companies which manufacture and distribute breastmilk substitutes to use their products rather than breastmilk. **UNICEF** and **WHO** have come together with civil society partners through the Global Breastfeeding Collective to call upon implementers, governments and donors to act on the seven points below (*ref <https://www.who.int/nutrition/topics/global-breastfeeding-collective/en/>*).

These are important advocacy issues, many of which may be relevant to your context:

- 1** Increase funding to raise breastfeeding rates from birth through two years
- 2** Fully implement the International Code of Marketing of Breastmilk Substitutes and relevant World Health Assembly resolutions through strong legal measures that are enforced and independently monitored by organizations free from conflicts of interest.

- 3** Enact paid family leave and workplace breastfeeding policies, building on the International Labour Organization's maternity protection guidelines as a minimum requirement, including provisions for the informal sector.
- 4** Implement the Ten Steps to Successful Breastfeeding in maternity facilities, including providing breastmilk for sick and vulnerable newborns.
- 5** Improve access to skilled breastfeeding counselling as part of comprehensive breastfeeding policies and programmes in health facilities.
- 6** Strengthen links between health facilities and communities, and encourage community networks that protect, promote, and support breastfeeding.
- 7** Strengthen monitoring systems that track the progress of policies, programmes, and funding towards achieving both national and global breastfeeding targets.





Case study: The United States-based ‘Truth’ anti-tobacco campaign aimed to discourage teen smoking with TV spots and other ads that were specifically designed to appeal to young people. They tapped into teens’ ‘**rebellious**’ side and showed the tobacco industry as trying to sell them on an addictive habit. The campaign used humour and youth-friendly language to communicate its messages. This campaign was very successful at changing behaviour – smoking among middle school students in Florida declined by 20% afterwards.³⁷

There is a wide range of programmes targeted to changing adolescent behaviour in relation to nutrition, including:

1

Media campaigns using famous people as champions for nutrition – for example, talking about the importance of exercise and a healthy diet.³⁸

2

Targeted communications programmes designed to support adolescents to change nutrition-related behaviours.



Case study: Nutrition International’s ‘**Healthy, Beautiful and Smart without Anaemia**’ communications campaign in Indonesia aims to raise awareness among adolescent girls about anaemia. It focuses on the impact of anaemia on girls’ health, encourages them to take weekly IFA supplements, and hopes to turn them into nutrition champions.

As of 2018, girls in the programme area said that the behaviour change communications materials had helped them understand the symptoms of anaemia and how to take their supplements on schedule.

Demand creation: This approach recognises that most people buy food from markets and so aims to increase their demand for good quality diets. It does so by a) helping consumers value the benefits of improved diets, and b) making better diets affordable and available through financial incentives that encourage the purchase and production of healthy foods.

The consumer-oriented aspect of demand creation looks at overall diet and its impact on every aspect of a person's life. Instead of trying to change one choice (to reduce sugar consumption) it tries to shift the way people think about food.⁴⁰



Case study: *The Bangladesh 'Nourishing Dreams'*

programme aims to motivate adolescents to value the benefits of a better-quality diet and to collectively use their pocket money to eat better quality foods.

With that collective demand, adolescents will then have the power to challenge the food industry to manufacture and sell better quality foods. They can also lobby policy makers to improve their food environment, e.g. by introducing taxes on lower quality foods and regulations on foods sold near schools.⁴⁰



Policy initiatives: These may include laws to limit the availability of processed foods and sugary drinks, laws to restrict advertising unhealthy products, and taxes on foods with added sugar – especially sugary drinks.



Case study: Through a UK-based programme called ‘Food Power’, the town of Darwen has helped young people speak out about their experiences with hunger. In 2018, they launched their own twitter campaign: *#DarwengetsHangry!* ‘Food Power’, run by Church Action on Poverty, aims to tackle food poverty through people-powered change. Campaign representatives have given their testimonies to a Children’s Future Food Enquiry and the End Hunger UK conference.⁴¹

WASH programmes: WASH (Water, Sanitation and Hygiene) programmes help to address some of the causes of diseases that impact nutrition. For example, diarrhoeal diseases may be caused by poor sanitation and unclean water; diarrhoea in turn interferes with nutrient absorption and causes malnutrition.

WASH programmes address the causes of these diseases.




Treatment and prevention of infectious diseases:

Diseases like malaria, measles and HIV/AIDS impact nutrition. Prevention, through vaccination or protective measures (such as bed nets for malaria), and proper treatment can help reduce their impact.

What you can do (and encourage other adolescents to do):

Here are just a few ideas of the things you and other young people can do:

- 1** Demand accountability from companies that are selling junk foods.
- 2** Work to improve nutrition at your school – whether through healthier school meals, or nutrition-related programmes.

 **Case study:** *A famous UK chef, Jamie Oliver, has combined a number of different approaches to fighting malnutrition. He worked with schools to set up ‘sugar smart’ projects – making healthier school meals. He also started a petition to the UK government to introduce a tax on sugary drinks to improve children’s health. He created the Children’s Health Fund, asking restaurants to put a voluntary 10p tax on sugary drinks and using the money raised to support children’s health and food education.⁴²*

- 1** **Learn to cook!** Experiment with making your own healthy meals and helping your friends and family appreciate nutritious choices.
- 2** Share your activities on social media or start a blog with healthy recipes, videos and photos of what you’re eating. Tell others how good nutrition fits into your life and helps you accomplish your life goals!

Links Between Nutrition & Adolescent Health & Development Issues: **Why They're Important**



Malnutrition has many root causes that are not directly related to food and diet. Because of this, the best approaches to nutrition issues are often multi-sectoral, meaning that they involve areas beyond nutrition and health, such as education, gender equality, child marriage and early pregnancy, and water, sanitation and hygiene (WASH). Here are some briefs that explain these issues and the links between them.

Understanding the links between nutrition and other issues can also help you influence advocacy targets who aren't working specifically on nutrition issues but can help your campaign.

“ School nutrition lessons can empower young people to make healthy food choices and to become agents of change for their families & communities ”

Look out for the map in this toolkit that shows some of the ways that nutrition, WASH, child marriage, adolescent pregnancy, education and gender inequality are connected, and how they affect adolescent health and nutrition.



Telling your government how this affects your country is important, particularly when you're asking for funding! So, information on the economic costs of some of the issues can be useful to point out how issues affect GDP and economic outcomes in the country, and how they are linked to nutrition.

Education & Adolescent Nutrition

EDUCATION and **NUTRITION** affect each other

GOOD NUTRITION can help you have a **HEALTHY BRAIN & BODY** so you can learn and get a **GOOD EDUCATION** and have more **OPPORTUNITIES & INCOME** and that can put you in a position where you have more access to **NUTRITIOUS FOODS!**^{44 49}

4
MILLION
MORE **GIRLS**
THAN **BOYS**
OUT OF SCHOOL
WORLDWIDE⁵²

AGES
15-17
4X MORE
LIKELY
TO BE OUT OF
SCHOOL THAN
AGES **6-11**⁵¹



ABOUT 368 MILLION CHILDREN GET SCHOOL MEALS EVERY DAY FROM THEIR GOVERNMENTS WITH SUPPORT FROM ORGANISATIONS LIKE THE WORLD FOOD PROGRAMME.

**SCHOOL
MEAL
PROGRAMMES**

**HELP STUDENTS
PERFORM
BETTER⁵⁴**

**CAN INCREASE
THE NUMBER
OF GIRLS IN
SCHOOL**

**REDUCE
SHORT TERM
HUNGER**

**1 IN 5 YOUNG PEOPLE
WORLDWIDE are OUT OF
SCHOOL, with GIRLS and
OLDER YOUTHS more likely
to be out of school⁵¹**



**Students with healthy diets
often do better in school.⁴⁹
have fewer sick days &
are less likely to drop out⁴⁴**

^{45 56 57}



**School nutrition lessons can
empower young people to
make healthy food choices
and to become agents of
change for their families &
communities⁵⁸**

What are the links between adolescent nutrition and education?

Your body and brain grow a lot during adolescence. Malnutrition during this time can stop you growing properly and can have long-term effects on learning and other brain activities.^{47 49}



Good nutrition is important for your brain to work properly so you do well in school.^{45-47,60}

Many schools have nutrition-related programmes like school meals and nutrition education.⁵⁸

Young people who leave school to work outside their homes may miss meals. If their work uses lots of energy, such as tending crops or animals, it can make undernutrition worse.⁵⁹

Why does early dropout/non-enrollment happen?

Poverty is a big factor. Young people may leave school to contribute to their households, by taking on paid work or working within their homes or on the family's land. They may also leave because they can't afford school fees or because they can't afford uniforms, shoes, and supplies like pens and notebooks.⁶⁰

For girls, early marriage, early pregnancy, and worries about their safety in school can lead to dropout or non-enrolment.⁶⁰

About 1 in 10 school-age African girls do not attend school during menstruation. In many parts of the world, girls' education is given much less value than boys'.



For more information check out the briefs on a) Adolescent Pregnancy and Adolescent Nutrition; and b) Child Marriage and Adolescent Nutrition.

Why is education a big deal?

Girls' education can prevent early marriage and pregnancy.

This can affect a girl's health and nutrition and the health and nutrition of her children.

From 1970 to 2010, 30% of the reduction in adult deaths and 14% of the reduction in infant deaths was related to increases in girls' education.⁶¹

Education can help stop the intergenerational cycle of poverty.

Better education for parents (especially mothers) can improve child survival, nutrition, education, and overall health. Well-nourished and educated adolescents are more likely to raise well-nourished, educated, productive children.⁶²

A healthy and educated population can greatly improve a country's overall economic development.⁶³ Each additional year of school raises a country's GDP growth by 0.37%. That may not sound like a big increase, but it will impress policymakers! Even a 1% increase in the number of women with secondary education can result in a 0.3% increase in a country's income growth.⁶³

Child Marriage & Adolescent Nutrition

**MILLION
GIRLS GET
MARRIED
BEFORE AGE 18
THAT IS ABOUT
1 IN 5 GIRLS⁶⁴**

12



How child marriage relates to nutrition:



Indirect Effects:

Child marriage has both direct impacts on nutrition, with married adolescents experiencing higher rates of malnutrition and early pregnancy, and indirect impacts, such as increased barriers to reaching their potential, lack of access to resources and limited life choices.⁶⁹

**1 IN 3
GIRLS married
BEFORE AGE
18 in LMICs⁶⁵**
(Low and middle income countries)

**1 IN 9
GIRLS married
BEFORE AGE
15 in LMICs⁶⁵**

**650
MILLION
WOMEN**

**150
MILLION
MEN**
affected now⁶⁶

Education can make a BIG difference:



Girls with secondary education are 6 times less likely to be married before 18.²¹



'If all girls had a secondary education, there would be two-thirds fewer child marriages'.⁶³



(Check out the Adolescent Pregnancy and Adolescent Nutrition brief and the Education and Adolescent Nutrition brief for more information).

What are the links between adolescent nutrition and child marriage?

Hunger and food insecurity often lead to child marriage. In some countries, when a girl gets married, her family has one less mouth to feed and the ‘*bride price*’ paid by the groom’s family to the bride’s family can help feed other family members.⁶⁸

“**Child marriage can lead to undernutrition and food insecurity, and food insecurity can lead to child marriage. It can be a repeating cycle.**”

Young married girls may not get enough nutritious foods because of their lower position in the household and often eat ‘*least and last*,’ especially in times of food shortages.⁷⁰

Child marriage can lead to undernutrition and food insecurity, and food insecurity can lead to child marriage. It can be a repeating cycle.⁶⁵

Why does child marriage happen?

International agreements outlaw child marriage, but some countries still allow it to happen if a parent gives permission. In other countries, laws against child marriage are not well enforced.⁶⁷

In many countries, child marriage has existed for a long time. Families face pressure to follow traditions, and in many communities, child marriage is a ‘social norm’.^{68 71}

Child marriage is often seen as a way to protect girls from sexual promiscuity, abuse, and harassment⁶⁵ Sexual activity and pregnancy outside marriage may be viewed as shameful.⁷¹

Child marriage is often driven by poverty and is most common in poor communities. Families may see child marriage as a way to save resources for the rest of the family and secure the future of their daughter. In areas where women are unable to own or inherit land, marriage may be seen as the best way for girls to have access to property.⁶⁵



Why is child marriage a big deal?

Child marriage is a human rights violation. It can be considered a form of slavery if a child is forced to do housework or have sexual relations and is controlled with abuse and threats⁷²

Child marriage contributes to poverty and food insecurity by taking children, especially girls, out of school. This also limits their chance to get a good job, which can mean lower earnings over their lifetime, and increases the chance of longer-term poverty and food insecurity. This can impact their health and the health of their children – an *‘intergenerational cycle’*.⁶⁵

The negative health impacts of child marriage on both adolescents and their children can increase a country's spending on health and social services. Child marriage often leads to early and more frequent pregnancies with higher rates of maternal and infant illness and death.⁶⁷

Child marriage has also been linked to a range of important economic development and poverty reduction issues. Adolescents who get married do not complete their education and have less well-paid jobs. This affects livelihoods and longer-term development prospects.⁶⁷



Learn about approaches to stopping child marriage in Additional Resources

“ In many countries, child marriage has existed for a long time. Families face pressure to follow traditions, and in many communities, child marriage is a social norm. ”

Adolescent Pregnancy & Adolescent Nutrition

#1
CAUSE OF DEATH
WORLDWIDE FOR
GIRLS AGES 15-19:
COMPLICATIONS
IN PREGNANCY &
LABOUR⁷⁶



Adolescent girls are 2 to 5 times more likely to DIE from a pregnancy-related cause than women ages 20-29⁷⁵

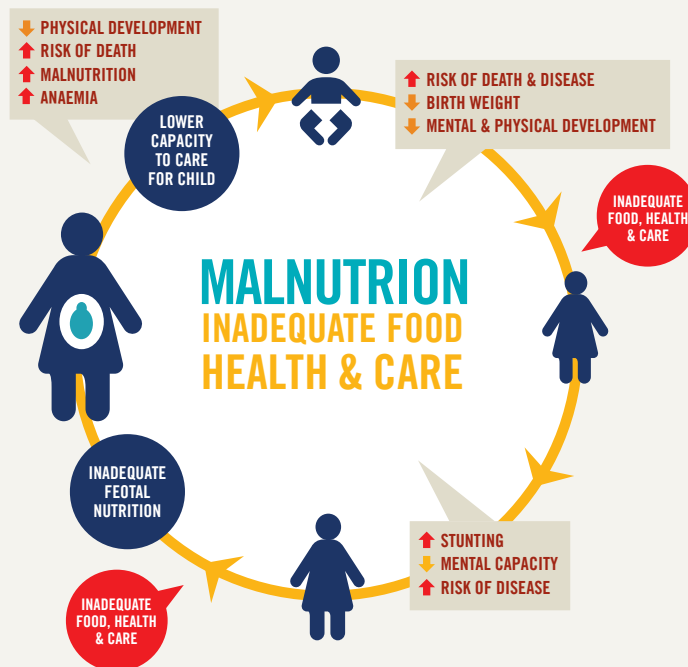


Adolescent pregnancy is linked to early marriage: 90% of early pregnancies are among married girls⁶⁷

1 IN 5
GIRLS ARE
PREGNANT
BEFORE AGE 18
IN LMICS^{73 74}

16 MILLION
GIRLS AGES 15-
19 GIVE BIRTH
EACH YEAR IN
LMICS⁷⁴

2.5 MILLION
GIRLS UNDER 16
GIVE BIRTH
EACH YEAR IN
LMICS⁷⁴



Adapted from Nutrition Throughout the Life Cycle.
Source: ACC/SCN 2000⁷⁷

What are the links between adolescent nutrition and child marriage?

Nutritional needs are higher during both pregnancy and adolescence. When an adolescent girl is pregnant, she and the growing baby compete for whatever nutrients are available. When food or nutrients are limited, this can hurt the growth of both the girl and the baby.⁷³

“ Adolescent girls are 2 to 5 times more likely to DIE from a pregnancy-related cause than women ages 20-29⁷⁵ ”

In low and middle income countries (LMICs), adolescents are already at high risk of anaemia. Pregnancy increases an adolescent girl's need for iron and puts her at even greater risk of iron deficiency and iron-deficiency anaemia.⁷⁸

Breastfeeding, which is very important to an infant's health, also increases the nutritional needs of the mother and if she is cannot meet them, she is at increased risk of malnutrition.⁷⁹

Babies of adolescent mothers are more likely be born with low birthweight and/or to become stunted, both of which can have lasting effects on the child's health and well-being.^{73,80-83}



You can read more about stunting in the Undernutrition brief.

Why does adolescent pregnancy happen?

Gender inequality contributes to adolescent pregnancy. In many situations, girls have less power to ask a partner to use contraception. Inequality also can lead to higher rates of sexual assault against girls and gender-based violence that may result in pregnancy.⁸⁴



Learn more in the Gender Inequality and Adolescent Nutrition brief.

Poverty and lack of education can lead to more adolescent pregnancies. When girls have few opportunities and no access to education, they may not be able to avoid or delay having children.^{76,85-84}



In many places, adolescents don't have access to contraception. Social norms or family pressure can make them feel ashamed about having sexual relations and using contraception. These issues may contribute to adolescent pregnancy.⁸⁴

Why is adolescent pregnancy a big deal?

Delaying pregnancy saves the lives of adolescent girls and their babies.

Between 5% and 33% of girls aged 15 to 24 in some LMICs leave school due to early pregnancy or marriage.⁷⁶ You can read more about why this is important in the Education and Adolescent Nutrition brief. Delaying pregnancy and improving nutrition for adolescents can lead to economic benefits and improve a country's GDP by as much as 30%.^{80 81 88}

“Number 1 cause of death worldwide for girls ages 15-19: complications in pregnancy & labour”⁷⁶ ”

Early pregnancies can also cost families, communities and countries a lot of money for health care and social services. This is because adolescent pregnancy harms the short- and long-term health of both the mother and her child.⁶⁷



Learn more about how to prevent adolescent pregnancy in the Additional Resources

Gender Inequality & Adolescent Nutrition

GENDER INEQUALITY When this happens **BECAUSE** of a person's gender.

INEQUALITY: when people in similar situations are treated differently.

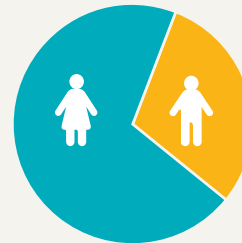
While it can refer to both men & women, it is usually women who suffer from.

GENDER INEQUALITY is a basic human right! It has been recognised as a human right since the Universal Declaration of Human Rights in 1948.



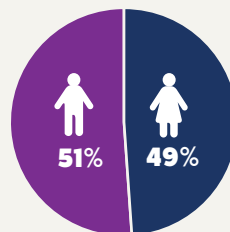
1 in 3
women will be a victim
of gender-based
violence⁸⁹

TWO THIRDS OF THE PEOPLE IN THE WORLD WHO CAN'T READ OR WRITE ARE WOMEN, YET THE DIFFERENCES IN GIRLS' AND BOYS' ROLES IN MANY COUNTRIES POSE MANY OBSTACLES TO GIRLS' EDUCATION!⁹⁰

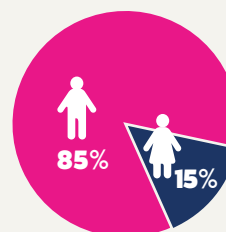


Women make up
HALF the population
but only **24%** of
lawmakers globally!⁹³

In many countries, **WOMEN** do nearly half of the work on farms, but few own farmland⁹³



Farmers



Land owners

Sub-Saharan Africa

WOMEN EARN ONLY \$0.50
FOR EVERY \$1.00 MEN EARN GLOBALLY⁹¹ &
WOMEN SPEND 90% OF WHAT THEY EARN ON
THEIR FAMILIES, WHILE MEN SPEND 30-40%⁹²

What are the links between adolescent nutrition and gender inequality?

In many cultures women eat last and only get whatever is left over after the men and boys in the household have eaten all they want. This can mean girls and young women receive less protein and micronutrient-rich foods.⁹⁵

If women farmers had access to the same resources as men, the additional food they would produce could reduce the number of hungry people in the world by 12% to 17%⁹⁶

Why does gender inequality happen?

Gender inequality can be caused by laws and policies, such as only men being allowed to own and inherit land. Gender inequality can also result from social customs and practices, such as girls being taken out of school (or never enrolled) far more often than boys.

Laws and policies that disadvantage women are a big cause of gender inequality. Some important examples include:

- 1** Restrictions on women voting or holding political office (so they can't influence law and policy)
- 2** Restrictions on owning property, land and businesses (which could provide food or income for the family)
- 3** Laws permitting child marriage (take a look at the brief on Child Marriage and Nutrition)


Customs and traditions that advantage men over women are also an important cause of gender inequality. A few issues that directly affect nutrition include:

- 1** Restrictions on women's freedom, including their freedom of movement, which can impact their ability to access healthy and nutritious food
- 2** Customs and traditions around food choice and sharing of food within the family.
- 3** Customs allowing or encouraging early marriage and pregnancy, which impact an adolescent's nutritional status.

Why is gender inequality a big deal?

In many countries, gender inequality affects almost every part of a woman's life. It can impact her nutrition, her education, her family life and the life of her children (see the other briefs on these subjects). It can also affect her personal safety and security, her livelihood, her mental and physical health, and more.



 Learn more about ways to stop gender inequality in the Additional Resources.

WASH & Adolescent Nutrition

➤ Washing your hands? ➤ Clean water? ➤ Get rid of waste safely?

Issues around access to clean **WATER**, **SANITATION** (e.g. basic toilets) & **HYGIENE** (e.g. handwashing) are usually grouped together under the name **‘WASH’** because they are connected and depend on each other.

WASH-RELATED ISSUES are one of the top causes of **DEATH** worldwide⁹⁷



ACCESS TO WASH IS AN ISSUE IN MANY LMICS

5 IN 10 PEOPLE HAVE NO HANDWASHING FACILITIES AT HOME IN LMICS¹⁰⁰

3 IN 10 PEOPLE HAVE NO ACCESS TO SAFE DRINKING WATER IN LMICS¹⁰⁰


4 BILLION PEOPLE
HAVE NO ACCESS TO BASIC (UNSHARED) SANITATION SERVICES, LIKE A TOILET OR AN IMPROVISED LATRINE¹⁰⁰

IT'S A DANGEROUS CYCLE!



What are the links between adolescent nutrition and wash?

WASH issues are a key cause of diarrhoeal diseases. Diarrhoea can prevent nutrients from being absorbed, make you want to eat less, and make your body burn energy faster.¹⁰¹

Many of the parasite infections that are transmitted through soil – like hookworm, roundworm and whipworm – are caused by poor sanitation. These infections can prevent absorption of nutrients. Hookworm-related anaemia may affect up to one-third of pregnant women in Africa.¹⁰¹

Undernourished young people without access to nearby water and sanitation may have to use valuable energy to find them. Girls and women are responsible

for fetching water in 80% of households without a home water supply,⁹⁹ and it has been estimated that 30% or more of a woman's daily energy intake is spent just fetching water.¹⁰³

“ Almost 1000 children die every day from diarrhoeal diseases⁹⁹ ”

Why does poor wash happen?

Inadequate water, sanitation and hygiene can be caused by a variety of factors.

There is a lack of investment in important WASH facilities like water treatment plants, pumps, toilet/latrine facilities and dams.

People in poorer countries, and the poorest people in societies, often have the least access to water and sanitation.¹⁰²

People in countries facing war and other crises are more likely to lack access to clean drinking water and WASH facilities. The water supply is often used as a ‘weapon’ during conflict: water pumps may be destroyed, and water may be contaminated.¹⁰⁴



Why is wash a big deal?

Ending open defecation can save lives by reducing disease, stunting and undernutrition.¹⁰⁵

Poor sanitation can cost countries billions of dollars. This includes the cost of early deaths, health care costs, lost productivity when seeking medical care for illness, and lost time spent finding water or accessing WASH facilities.¹⁰⁵

Poor sanitation can cause pollution, affecting water resources and local ecosystems.¹⁰⁵

WASH affects women's safety and security. Finding water for the family is often a woman's job. If there isn't water nearby, they often have to walk long distances to find it, which can be dangerous. When women have to use shared toilets or practice open defecation, they may be harassed or face violence.¹⁰²

Without adequate sanitation facilities in schools, girls are more likely to drop out or are at risk of violence while looking for privacy.¹⁰⁵ One in 10 adolescent girls in Sub-Saharan Africa miss school because they are menstruating.⁹²

References

1. Instituto Mexicano del Seguro Social. Guía para el Cuidado de la Salud. http://www.imss.gob.mx/sites/all/statics/salud/guias_salud/2018/guia-salud-adolescente-2018.pdf.
2. World Health Organization. 2018. Malnutrition Fact Sheet. <https://www.who.int/en/news-room/fact-sheets/detail/malnutrition>
3. World Health Organization. 2010. Nutrition Landscape Information System (NLIS) country profile indicators: interpretation guide. https://www.who.int/nutrition/nlis_interpretation_guide.pdf
4. Fanzo, J., C. Hawkes, E. Udomkesmalee, et al. 2018. 2018 Global Nutrition Report: Shining a light to spur action on nutrition.
5. Das, J. K., Z. S. Lassi, Z. Hoodbhoy, et al. 2018. 'Nutrition for the Next Generation: Older Children and Adolescents'. *Annals of Nutrition and Metabolism*, 72(3), 47-55
6. Christian, P. & E. Smith. 2018. 'Adolescent Undernutrition: Global Burden, Physiology and Nutritional Risks'. *Annals of Nutrition & Metabolism* 72: 316-328. doi: 10.1159/000488865.
7. United Nations Children's Fund. 2015. UNICEF's approach to scaling up nutrition for mothers and their children. Discussion paper.
8. World Health Organization. 'Malnutrition.' World Health Organization website. <https://www.who.int/topics/malnutrition/en/>
9. Sawaya, A. L., & S. Roberts. 2003. 'Stunting and future risk of obesity: principal physiological mechanisms'. *Cadernos de saúde pública*, 19: S21-S28.
10. Branca, F., E. Piwoz, W. Schultink, et al. 2015. 'Nutrition and health in women, children, and adolescent girls'. *BMJ*, 351, h4173.
11. World Health Organization. 2018. Obesity and Overweight Fact Sheet. <https://www.who.int/en/news-room/fact-sheets/detail/obesity-and-overweight>
12. USAID. 'StatCompiler'. <https://www.statcompiler.com/en/> Accessed February 7, 2019
13. Global Burden of Disease. 2016. The state of young people's health, 1990-2013 <http://www.healthdata.org/infographic/state-young-people%E2%80%99s-health-1990-2013>
14. Keats, E., B. Carducci, M. Gaffey, et al. 2017. 'Diet and eating practices among adolescent girls in low and middle income countries: a systematic review.' *Annals of Nutrition and Metabolism* 71, 690-690.
15. Rah, J. H., S. Chalasani, V. Oddo & V. Sethi. 2017. 'Adolescent Health and Nutrition'. In *Nutrition and Health in a Developing World*, 559-577. New York: Humana Press.
16. World Health Organization. 2018. Guideline: implementing effective actions for improving adolescent nutrition. Geneva: WHO
17. Black, R. E., C. G. Victora, S. P. Walker, et al. 2013. 'Maternal and child undernutrition and overweight in low-income and middle-income countries.' *The lancet*, 382, no 9890: 427-451.
18. Brogan, C. 2017. 'Tenfold increase in childhood and adolescent obesity in four decades.' Imperial College London.
19. World Food Programme and Anthrologica Ltd. 2018. 'Bridging the Gap: Engaging Adolescents for Nutrition, Health and Sustainable Development.' <https://www.wfp.org/publications/2018-bridging-gap-engaging-adolescents-nutrition-health-and-sustainable-development>.
20. Jacob, C., J. Baird, M. Barker, et al. 2015. 'The importance of a life course approach to health: chronic disease risk from preconception through adolescence and adulthood.' Southampton: University of Southampton.
21. Salam, R. A., M. Hooda, J. K. Das, et al. 2016. 'Interventions to improve adolescent nutrition: A systematic review and meta-analysis.' *Journal of Adolescent Health* 59, no 4: S29-S39.
22. World Health Organization. The double burden of malnutrition: Policy Brief. <https://www.who.int/nutrition/double-burden-malnutrition/en/> Data as of 2014.
23. Caleyachetty, R., G. N. Thomas, A. P. Kengne, et al. 2018. 'The double burden of malnutrition among adolescents: analysis of data from the Global School-Based Student Health and Health Behavior in School-Aged Children surveys in 57 low-and middle-income countries.' *The American journal of clinical nutrition* 108, no 2: 414-424.
24. FAO, IFAD, UNICEF, WFP and WHO. 2018. The State of Food Security and Nutrition in the World 2018: Building climate resilience for food security and nutrition. Rome: FAO, p. 28.
25. Grijalva-Eternod, Carlos S., et al. 2012. 'The double burden of obesity and malnutrition in a protracted emergency setting: a cross-sectional study of Western Sahara refugees'. *PLoS medicine* 9(10): e1001320.

26. USAID/SPRING. 'Iron-Folic Acid Supplementation in Women of Reproductive Age'. <https://www.spring-nutrition.org/publications/series/understanding-anemia/options/iron-folic-acid-supplementation-women-reproductive>. Accessed March 17, 2019.
27. Das, J., Z Lassi, Z. Hoodbhoy & R. Salam. 2018. 'Nutrition for the Next Generation: Older Children and Adolescents'. *Ann Nutr Metab* 72, suppl. 3: 56-54.
28. WHO. E-Library of Evidence for Nutrition Actions (eLENA). 'Calcium supplementation during pregnancy to reduce the risk of pre-eclampsia'. https://www.who.int/elena/titles/calcium_pregnancy/en/. Accessed March 17, 2019.
29. WHO. E-Library of Evidence for Nutrition Actions (eLENA). 'Vitamin A supplementation'. https://www.who.int/elena/titles/full_recommendations/vitamina_supp/en/. Accessed March 17, 2019.
30. Lassi, Z., A. Moin, J. Das et al. 2017. 'Systematic Review on evidence-based adolescent nutrition interventions'. *Ann. N.Y. Acad. Sci.* 1393: 34-50.
31. White Ribbon Alliance. 'Pakistan.' White Ribbon Alliance website. <https://www.whiteribbonalliance.org/pakistan/>. Accessed March 17, 2019.
32. Drake, L., M. Fernandes, E. Aurino, et al. 2017. 'School feeding programs in middle childhood and adolescence'. In *Disease Control Priorities, (Volume 8): Child and Adolescent Health and Development*: 1917.
33. McCurry, J. 'Baked cod, miso and bok choy: unpacking Japan's healthy school lunches'. *The Guardian*, U.S. Edition, March 1, 2019. <https://www.theguardian.com/world/2019/mar/01/baked-cod-miso-and-bok-choy-worlds-healthiest-school-lunches-japan-kyushoku>
34. World Food Programme. 'Yemen emergency'. WFP website. <https://www.wfp.org/emergencies/yemen-emergency>. Accessed March 17, 2019.
35. Haseen, F., H. Homans, J. Hussein, et al. 2012. 'Current and Planned Research on Agriculture for Improved Nutrition: A Mapping and a Gap Analysis.'
36. Ruel, M., A. Quisumbing, and M. Balagamwala. 2018. 'Nutrition-sensitive agriculture: What have we learned so far?'. *Global Food Security* 17: 128-153.
37. Zucker, D., R. Hopkins, D. Sly, et al. 2000. 'Florida's 'truth' campaign: a counter-marketing, anti-tobacco media campaign'. *Journal of public health management and practice: JPHMP* 6, no. 3: 1-6.
38. E.g., the 'Let's Move' campaign championed by Michelle Obama. <https://letsmove.obamawhitehouse.archives.gov/>.
39. Roche, M., L.Bury, I.Yusadiredjai, et al. 2018. Adolescent girls' nutrition and prevention of anaemia: a school based multisectoral collaboration in Indonesia'. *Bmj* 363: k4541.
40. GAIN. 2019. 'Adolescence: an age of change and growth: Executive Brief - February 2019'. <http://www.gainhealth.org/wp-content/uploads/2019/02/Brief-adolescent-nutrition-feb-2019.pdf> Accessed March 17, 2019.
41. Sustain website. https://www.sustainweb.org/news/oct18_darwen_gets_hangry/. Accessed March 17, 2019.
42. Sugar Smart website. <https://www.sugarsmartuk.org>. Accessed March 17, 2019.
43. Sight and Life. Nutrition is at the Heart of the SDGs. Sight and Life website. https://sightandlife.org/blog/library_item/nutrition-is-at-the-center-of-the-sdgs/sightlife_infographic_nutrition-at-the-heart-of-the-sdgs/. Accessed 17 March 2019.
44. Office of the Prime Minister. 2017. Malnutrition in Uganda: We've already paid too high a price. Education and Nutrition Fact Sheet. <https://nutrition.opm.go.ug/wp-content/uploads/2018/03/Uganda-Education-Nutrition-FactSheet-Dec2017.pdf>
45. Glewwe, P., & E.A. Miguel. 2007. 'The impact of child health and nutrition on education in less developed countries'. *Handbook of development economics* 4: 3561-3606.
46. Tate, C. 2016. Examining the Effect of a High Quality Dietary Intervention on Cognitive Function in Early Adolescence (Doctoral dissertation, Teachers College). <https://academiccommons.columbia.edu/doi/10.7916/D8TQ61T5>
47. Henriksson, P., M. Cuenca-García, I. Labayen, et al. 2017. 'Diet quality and attention capacity in European adolescents: the Healthy Lifestyle in Europe by Nutrition in Adolescence (HELENA) study'. *British Journal of Nutrition* 117, no.11: 1587-1595.
48. Frensham, L. J., J. Bryan, & N. Parletta. 2012. 'Influences of micronutrient and omega-3 fatty acid supplementation on cognition, learning, and behavior: Methodological considerations and implications for children and adolescents in developed societies'. *Nutrition reviews* 70, no. 10: 594-610.
49. Correa-Burrows, P., R. Burrows, E. Blanco, et al. 2016. 'Nutritional quality of diet and academic performance in Chilean students'. *Bulletin of the World Health Organization* 94, no. 3: 185.
50. WHO and UNICEF. 2013. Progress on sanitation and drinking-water 2013 update. Geneva: WHO
51. UNESCO Institute for Statistics. 2018. One in Five Children, Adolescents and Youth is Out of School. Fact Sheet no. 48, February 2018. <http://uis.unesco.org/sites/default/files/documents/fs48-one-five-children-adolescents-youth-out-school-2018-en.pdf>

52. UNESCO. 2013. Girls' Education. <https://en.unesco.org/gem-report/sites/gem-report/files/girls-factsheet-en.pdf>
53. Jamison, D. and M. Schäferhoff. 2016. Estimating the Economic Returns of Education from a Health Perspective. Background Paper for the Education Commission. SEEK Development.
54. World Bank. 2012. Scaling up School Feeding: Keeping Children in School While Improving Their Learning and Health. <http://siteresources.worldbank.org/EDUCATION/Resources/278200-1334777272566/Results2012-SB-HDN-Update-SchoolFeeding.pdf>
55. UNESCO Institute for Statistics. 2018. One in Five Children, Adolescents and Youth is Out of School. Fact Sheet no. 48, February 2018. <http://uis.unesco.org/sites/default/files/documents/fs48-one-five-children-adolescents-youth-out-school-2018-en.pdf>
56. Sorhaingo, A., & Feinstein, L. 2006. What is the relationship between child nutrition and school outcomes? [Wider Benefits of Learning Research Report No. 18]. Centre for Research on the Wider Benefits of Learning, Institute of Education, University of London.
57. Ruel, M. T., H. Alderman, & Maternal and Child Nutrition Study Group. 2013. 'Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition?'. *The lancet*, 382 (9891): 536-551.
58. FAO. 'School Food and Nutrition'. FAO Website. <http://www.fao.org/school-food/en/>. Accessed 21 January 2019.
59. Madjdian, D., F. Azupogo, S. Osendarp, et al. 2018. 'Socio cultural and economic determinants and consequences of adolescent undernutrition and micronutrient deficiencies in LLMICs: a systematic narrative review.' *Annals of the New York Academy of Sciences* 1416, no. 1: 117-139.
60. Sabates, R., K. Akyeampong, J. Westbrook and F. Hunt. 2010. School Drop out: Patterns, Causes, Changes and Policies. Paper commissioned for the EFA Global Monitoring Report 2011, The hidden crisis: Armed conflict and education. <https://unesdoc.unesco.org/ark:/48223/pf0000190771>
61. Patrinos, A. H., & G. Psacharopoulos. 2002. 'Returns to investment in education: a further update'. World Bank.
62. Grantham-McGregor, S., Y.B. Cheung, S. Cueto, et al. 2007. 'Developmental potential in the first 5 years for children in developing countries'. *The lancet*, 369(9555), 60-70.
63. World Bank Group. 2018. Global Partnership for Education, Education Data. <https://www.globalpartnership.org/data-and-results/education-data>
64. International Center for Research on Women. 'Child Marriage.' <https://www.icrw.org/issues/child-marriage/>. Accessed 17 March 2019.
65. Girls Not Brides. Taking Action to Address Child Marriage: the role of different sectors. Food security and nutrition. <https://www.girlsnotbrides.org/wp-content/uploads/2016/03/6.-Addressing-child-marriage-Food-Security-and-Nutrition.pdf>
66. Girls Not Brides. 'What is Child Marriage'. Girls Not Brides website. <https://www.girlsnotbrides.org/about-child-marriage/>. Accessed 10 February 2019.
67. Glinski, A. M., M. Sexton & L. Meyers. 2015. The child, early, and forced marriage resource guide task order. Washington DC: Banyan Global.
68. Girls Not Brides. 'Why Does Child Marriage Happen'. Girls Not Brides website. <https://www.girlsnotbrides.org/why-does-it-happen/>. Accessed 28 January 2019.
69. Goli, S., A. Rammohan, & D. Singh. 2015. 'The effect of early marriages and early childbearing on women's nutritional status in India'. *Maternal and child health journal*, 19(8), 1864-1880.
70. Brown, C., R. Calvi & J. Penglase. 2018. 'Sharing the Pie: Undernutrition, Intra-Household Allocation, and Poverty'. *SSRN Electronic Journal*. doi: 10.2139/ssrn.3199129.
71. Food Security and Nutrition Network. 2010. Child Marriage Factsheet. https://www.fsnnetwork.org/sites/default/files/Child%20Marriage%20Fact%20Sheet_o.pdf
72. Girls Not Brides. 'Human Rights and Justice.' Girls Not Brides Website. <https://www.girlsnotbrides.org/themes/human-rights-and-justice/>. Accessed 28 January 2019.

73. Rah, J. H., S. Chalasani, V. Oddo & V. Sethi. 2017. 'Adolescent Health and Nutrition'. In *Nutrition and Health in a Developing World*, 559-577. New York: Humana Press..
74. Fanzo, J., C. Hawkes, E. Udomkesmalee, et al. 2018. 2018 Global Nutrition Report.
75. Keats, E. C., A. Rappaport, R. Jain, et al. 2018. Diet and Eating Practices among Adolescent Girls in Low- and Middle-Income Countries: A Systemic Review. Arlington, VA: Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project.
76. World Health Organization. 2018. Adolescent Pregnancy Fact Sheet. <https://www.who.int/news-room/fact-sheets/detail/adolescent-pregnancy>
77. ACC/SCN. 2000. Fourth Report on the world nutrition situation – Nutrition throughout the life cycle. Geneva: ACC/SCN in collaboration with IFPRI. <http://www.unisystem.org/scn/Publications/4RWNS/4rwns.pdf>. Accessed 26 January 2019.
78. World Health Organization. 2011. Prevention of Iron-Deficiency Anaemia in Adolescents. India: WHO.
79. Taren, D. and C.K. Lutter. 2017. 'The Role of Breastfeeding Protection, Promotion and Support in a Developing World'. In *Nutrition and Health in a Developing World*, 3rd Ed., edited by S. De Pee, D. Taren and M. W. Bloem. New York: Humana Press.
80. Kraemer, K., J. Cordaro, J. Fanzo et al. 2016. 'Nutrition-Specific and Nutrition-Sensitive Interventions'. In *Good Nutrition: Perspectives for the 21st Century*, 276-288. Basel: Karger Publishers.
81. Chaaban, J. & W. Cunningham. 2011. Measuring the economic gain of investing in girls: the girl effect dividend. The World Bank.
82. Flood, D., A. Chary, A. Colom & P. Rohloff. 2018. 'Adolescent Rights and the 'First 1,000 days' Global Nutrition Movement: A View from Guatemala'. *Health and human rights* 20, no. 1: 295.
83. Nguyen, P. H., T. Sanghvi, L.M.Tran et al. 2017. 'The nutrition and health risks faced by pregnant adolescents: Insights from a cross-sectional study in Bangladesh.' *PloS one*, 12 (6): e0178878.
84. World Food Programme and Anthrologica Ltd. 2018. Bridging the Gap: Engaging Adolescents for Nutrition, Health and Sustainable Development. <https://www1.wfp.org/publications/2018-bridging-gap-engaging-adolescents-nutrition-health-and-sustainable-development>
85. World Health Organization. 2004. WHO Discussion Papers on Adolescence: Adolescent Pregnancy Issues in Adolescent Health and Development. Geneva: WHO
86. Furstenberg Jr, F. F. 1998. 'When will teenage childbearing become a problem? The implications of Western experience for developing countries'. *Studies in family planning* 29, no. 2: 246-253.
87. Mawer, C. 1999. 'Preventing teenage pregnancies, supporting teenage mothers: Target is ambitious but probably achievable'. *Bmj* 318:1713.
88. Malala Fund. 2018. Full Force: Why the world gets better when girls go to school. https://indd.adobe.com/view/dd1081b1-39b6-4637-9c61-ac0cbb275b45?target=_blank
89. UN Women. 'Facts and figures: Ending violence against women.' <http://www.unwomen.org/en/what-we-do/ending-violence-against-women/facts-and-figures>. Accessed 17 March 2019.
90. UNESCO. 'Women ED Facts and Figures'. UNESCO website. <http://www.unesco.org/new/en/unesco/events/prizes-and-celebrations/celebrations/international-days/international-womens-day-2014/women-ed-facts-and-figure/>. Accessed 17 March 2019.
91. Iverson, K. '7 charts that show gender inequality around the world.' World Economic Forum, 31 August 2017. <https://www.weforum.org/agenda/2017/08/charts-gender-inequality-women-deliver>
92. Women Deliver. Invest in Girls' Equality Infographic. Women Deliver website. <https://womendeliver.org/infographics/>. Accessed 17 March 2019.
93. USAID. 2016. Fact Sheet: Land Tenure and Women's Empowerment. <https://www.land-links.org/issue-brief/fact-sheet-land-tenure-womens-empowerment/>
94. United Nations Association in Canada. UN's international day of the girl. <http://unac.org/wp-content/uploads/2012/10/International-Day-of-the-Girl-Eng-Final.pdf>
95. Webb, P. 2002. Intrahousehold dimensions of micronutrient deficiencies: a review of the evidence. Boston: Friedman School of Nutrition Science and Policy.
96. FAO. 2011. Women in Agriculture: closing the gender gap for development. <http://www.fao.org/docrep/013/i2050e/i2082e00.pdf>
97. US Government Global Water Strategy. 2017. <https://www.state.gov/documents/organization/275842.pdf> (Citing WHO fact sheet on top ten causes of death).
98. United Nations. Clean water and sanitation: Why it matters. <https://www.un.org/sustainabledevelopment/wp-content/uploads/2018/09/Goal-6.pdf>. Accessed 17 March 2019.
99. United Nations. 'Sustainable Development Goals. Goal 6:

Ensuring access to water and sanitation for all'. UN website.
<https://www.un.org/sustainabledevelopment/water-and-sanitation/>

100. World Health Organization, & UNICEF. 2017. Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines. Geneva: WHO and UNICEF.

101. WHO. 2015. Improving nutrition outcomes with better water, sanitation and hygiene: practical solutions for policies and programmes. Geneva: WHO.

102. Water Aid. 2015. Post-2015 Toolkit. <https://washmatters.wateraid.org/publications/post-2015-toolkit>

103. Ray, I. 2007. 'Women, water, and development'. Annual Review of Environment and Resources 32: 421-29.

104. United Nations. Sustainable Development Goals blog. 'Children's access to safe water and sanitation is a right, not a privilege – UNICEF'. 29 August 2017. <https://www.un.org/sustainabledevelopment/blog/2017/08/childrens-access-to-safe-water-and-sanitation-is-a-right-not-a-privilege-unicef/>

105. World Bank. 'Understanding Poverty: Sanitation'. World Bank Website. <http://www.worldbank.org/en/topic/sanitation>. Accessed 17 March 2019.

Glossary

Acute Acute conditions or illnesses that are severe and come on suddenly. Wasting and thinness are usually acute nutrition-related conditions.

Anaemia a condition where you don't have enough healthy red blood cells to carry oxygen through your body. The main cause of anaemia is not eating enough foods that contain iron. Anaemia is an issue for adolescent girls in particular.

Body Mass Index (BMI) A measure of nutritional status. It is calculated by dividing the person's weight (in kilograms) by their height (in meters), squared: $BMI = \text{kg}/\text{m}^2$. To assess nutritional status in adolescents, their BMI is compared to a 'reference' BMI for people of their age – the WHO Growth Reference. There is more information below about the cutoffs for overweight, obesity, thinness and underweight conditions.

Chronic A chronic condition or illness develops over a period of time and tends to be longer-lasting. Examples of chronic diseases that can be related to diet are high blood pressure and diabetes.

Communicable disease A disease that can be spread from person to person, like HIV/AIDS, measles, hepatitis, and influenza.

Demographic and Health Survey (DHS) Nationally-representative surveys, usually conducted every five years by a Ministry of Health, on topics related to population, health and nutrition.

Diabetes A diet-related Non-Communicable Disease (NCD) where your blood sugar is too high. It is closely linked with obesity.

Energy In nutrition, energy is the term used to refer to what many people call kilocalories or just calories. So, when nutrition experts talk about the energy in food, they're talking about how many calories or kilocalories that food contains.

Globalisation This refers to increased interaction between countries, including the movement of people and trade across international borders. One result of globalisation is that products that were once unavailable in less developed countries – including many processed foods and beverages – are now available almost everywhere.

Gross Domestic Product (GDP) This is a common measure of a country's economy, and it's often used in discussing development issues. It refers to the total value of the goods and services a country produces over the course of a set time period (usually a year) and is usually measured in US Dollars (USD). For example, the GDP for Rwanda in 2017 was \$9.1 billion USD.

High blood pressure/hypertension When the pressure of your blood against blood vessel walls is too high, it can cause damage to those blood vessels and lead to heart attack or stroke. It is closely linked to obesity. High blood pressure is especially dangerous during pregnancy.

Low- and Middle-Income Countries (LMICs) A classification used by WHO, incorporating World Bank groupings based on per capita income estimates.

Micronutrients All vitamins and minerals found in food.

Micronutrient deficiency A lack of sufficient amounts of any given vitamin or mineral in a person's diet.

Malnutrition Malnutrition is when something is wrong ('mal') with a person's nutrition. It is a term that covers both overnutrition (overweight/obesity) and undernutrition (underweight, stunting, wasting, thinness conditions, along with micronutrient deficiencies).

Non-Communicable disease (NCD) A disease that is not spread from person to person. Many nutrition-related diseases are non-communicable. They include diabetes, high blood pressure, and heart disease.

Obesity The more extreme and dangerous form of being overweight. An adolescent is obese if their BMI-for-age z-score is more than 2 standard deviations above the WHO Growth Reference.

Overnutrition Overnutrition is a chronic condition when individuals take in more food or energy than their bodies use, and they build up fat stores.

Overweight A person is overweight if they weigh too much for their height and have too much fat on their bodies (which can affect their health). An adolescent is considered overweight if their BMI-for-age z-score is from 1 to 2 standard deviations above the WHO Growth Reference.

Standard deviation A calculation used in statistics to express how spread apart numbers are.

Stunting A measure of impaired (low) height. An adolescent is considered stunted if their height-for-age z-score is more than 2 standard deviations below the WHO Growth Reference.

Thinness A measure of low BMI. An adolescent is considered thin if their BMI-for-age z-score is more than 2 standard deviations below the WHO Growth Reference. In children, wasting is the more commonly used measure of low weight for height.

Undernutrition The lack of nutrition needed for health and growth. It can be caused by not having enough to eat, or not having enough food with the necessary vitamins, minerals, proteins, etc. Undernutrition can also be linked to other factors like illness.

Underweight A measure of low BMI. An adolescent is considered underweight if their BMI-for-age z-score is between one and two standard deviations below the WHO Growth Reference.

Urbanisation The movement of people from rural areas to live in cities and the growth (or sprawl) of cities into previously rural areas.

Wasting An acute form of undernutrition in children, usually a result of severe food shortages and/or infectious diseases like diarrhoea. A child is wasted if his weight-for-height z-score is more than 2 standard deviations below the WHO Child Growth Standards median.

WHO Growth Reference These are the growth statistics used by the WHO to measure stunting, wasting, overweight and underweight in children and adolescents between 5 and 19 years old. The Growth Reference varies according to age and sex.

Women of reproductive age All women aged 15-49 years.

Z-score In the context of malnutrition measures, a z-score tells us how far someone's BMI, weight-for-height, height-for-age, etc. differs from the reference score. A larger z-score means a larger difference from the reference measure.

Notes
