Improving nutrition for adolescent girls in Asia and the Middle East: Innovations are needed

This report is a joint collaboration between the Innovation Working Group Asia and One Goal
One Goal

www.onegoal.asia

In spite of the progress made by several global, regional and national campaigns, the double burden of under and overnutrition persists and, in some cases, has increased. In light of this, the Asian Football Confederation (AFC), Asian Football Development Programme (AFDP), Global Alliance for Improved Nutrition (GAIN), Royal DSM, and World Vision International (WVI) have joined together in a consortium committed to working towards a healthier future for children, football players and fans across Asia – powered by football. The One Goal campaign seeks to leverage the near-universal appeal of football to reach new audiences in Asia with its message of improved nutrition, and will use international and national sporting events to strengthen networks between government, industry, academia and civil society to facilitate a movement for change. The campaign aims to combine the elements of mass public engagement and grassroots community development to ignite civil society, the football industry, government and the private sector in support of improved nutrition for Asian children. One Goal leverages programme insights, technical approaches and geographic reach of core partners and aims to scale up the most effective models for engaging youth (particularly girls) through football to encourage positive behaviour change for better nutrition. The campaign’s value proposition arises from its use of football as a vehicle to spread and disseminate key messages to a vast target audience, consisting of the over 1.4 billion football fans in Asia. One Goal’s partners work to improve the nutrition and health status of both pregnant women and children under the age of 5 by working with local government, community-based organisations and the private sector to make nutritious foods more affordable and accessible, and creating public awareness about them. They also conduct advocacy with governments at all levels to strengthen primary health and nutrition services, nutrition literacy and water, sanitation and hygiene services.

The Innovation Working Group

www.everywomaneverychild.org/resources/innovation-working-group

The Innovation Working Group (IWG) was convened by the United Nations Secretary-General (UNSG) in 2010 to use cost-effective innovation to accelerate progress on the health Millennium Development Goals (MDGs). Supporting the Global Strategy for Women’s and Children’s Health, the IWG is the global hub for innovation in the UNSG’s Every Woman Every Child initiative. The IWG supports the initiation and scaling-up of innovations – whether they are technological, social, financial, policy or business-related. The IWG also supports and leads collaborative efforts among stakeholders in mHealth (mobile health, or health services supported by mobile communications technology). The IWG consists of a broad network of interested parties with a small secretariat, working through partner organisations. It comprises members of governmental, inter-governmental and non-governmental organisations, as well as the private sector (both for-profit and not-for-profit), with everyone on an equal footing. In 2013, IWG launched a regional hub in Asia, the Innovation Working Group Asia, to extend its global reach. The large numbers of women and children in Asia, together with dynamic financial, technological and social development, make a case for huge innovation impact potential.
Foreword

The adolescent period is characterised by critical changes in body composition, eating and activity behaviours, and in many settings in the region, increased responsibilities. Sadly, the nutrition of adolescent girls during this critical period is a generally neglected area and this increases the risk of many entering the childbearing years in less than optimal health. In the context of the current double burden of malnutrition, an increasing number of adolescent girls in Asia are overweight or obese with unhealthy amounts of body fat; while in contrast, others are undernourished.

Innovations in nutrition are critically needed; however, they are typically slow to gather the momentum needed to have a significant impact at the population or regional level. The One Goal movement aims to identify nutrition innovation while supporting a more rapid scale-up of evidence-based nutrition approaches, leveraging the popularity of football to amplify advocacy, mobilise grassroots support and extend access to nutrition for all, with particular emphasis on children, adolescents and women. This combined approach is particularly important for adolescent girls as participation in physical activity and sport, including at school (for those lucky enough to have appropriate schooling), decreases substantially during this period.

There is an urgent need to address the nutrition and activity challenges facing adolescent girls in Asia. A multi-sectoral and cross-disciplinary approach is needed in which partnerships are forged between the public and private sectors to identify innovative solutions. Such partnerships are key factors in achieving and sustaining interventions on a scale sufficient to meet the needs of the greatest number of individuals. Similarly, effective partnerships help to maximise the necessary public health outcomes and reduce the likelihood of market-based approaches compromising such important innovations.

Football is widely recognised and supported throughout the Asian region. As such, the power of football – and the rapid growth of women's football in particular – represents an innovative and important vehicle of change to facilitate improved nutrition for every child – the One Goal of this campaign.

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Executive summary

Adolescent girls are an important target group for nutrition interventions. Not only are their nutritional requirements increased due to rapid growth and development, but many girls in Asia give birth before they themselves have fully grown, increasing the importance of adequate nutrition. Many lifestyle habits are formed in adolescence, making this an important period in which to establish healthy habits. A sedentary lifestyle combined with unhealthy food choices will most likely lead to overweight and non-communicable diseases (NCDs). Addressing nutrition issues in adolescent girls has the potential to break the intergenerational cycle of malnutrition and poverty and prevent many health problems in the future, both for themselves and for future generations. Malnourished mothers tend to deliver babies that are small-for-gestational age, and these children not only suffer the consequences of undernutrition, such as stunting, but are also more prone to becoming overweight or obese and of developing NCDs in later life, including but not limited to cardiovascular disease and type 2 diabetes and obesity. Additionally, girls that were born small for gestational age are more likely to continue the vicious cycle of malnutrition by giving birth to babies that are small for gestational age.

However, the nutritional needs of adolescent girls have been largely neglected, especially in underdeveloped regions of the world where other demographic groups, most notably children under 5 or pregnant and lactating women, have been prioritised. This has largely been the case across Asia, the Western Pacific and the Middle East. The purpose of this document is to draw attention to the fact that adolescent girls need special attention as their nutritional requirements differ from boys, in particular with regard to menstruation. Not only do the changes that come with puberty pose nutritional challenges, but barriers related to insufficient hygiene and sanitation conditions at schools threaten girls’ education. Many Asian girls still get married very young and get pregnant when their own bodies are still growing, which leads to competition for nutrients between the young mother-to-be and her own foetus, threatening the health and survival of both. It is becoming increasingly clear how malnutrition and poverty form a vicious cycle that spreads over multiple generations. Targeting adolescent girls is a promising way to break this cycle, especially because it provides the opportunity to influence the formation and establishment of healthy lifestyle habits that will stay with them for the rest of their lives and will be taught to future generations.

While undernutrition and deficiencies in vitamins and minerals are still prevalent, many countries have seen large successes in decreasing rates of undernutrition. However, a combination of the long-term impact of suboptimal nutrition of previous generations, urbanisation and related changes in lifestyle, leads to a rapid increase in overweight and obesity rates among young people. This increases the risk of developing NCDs, particularly in individuals who were undernourished early in life.

This report describes some of the underlying causes and the impact of these problems on the long-term health and well-being of the individual adolescent girl and her future offspring. It provides a snapshot of some programmes and interventions in Asia that aim to address these issues. The report ends with a list of recommendations to the Asian public health and nutrition community on how to continue to move forward and expand programming for this important target group.

Why adolescent girls?

1. Girls face specific nutritional needs due to the onset of menstruation, which increases their iron requirements relative to boys.

2. When adolescent girls get pregnant, the nutritional needs of the foetus and those of its still developing young mother compete for nutrients in the mother’s body; adolescent pregnancies are still common in parts of Asia, contributing to the intergenerational cycle of malnutrition.

3. Adolescence is when many lifestyle habits (both healthy and unhealthy) are formed that will stay with the person for life.

4. Malnutrition and poverty act in synergy to perpetuate and reinforce such conditions across generations. Effective interventions targeting adolescent girls are needed to break this vicious cycle as they are the key to ensuring a strong nutritional foundation for mother and foetus during the critical first 1,000 days of life.
Glossary

**Anaemia:** Characterised by reduction in hemoglobin levels or red blood cells that impairs the ability to supply oxygen to the body’s tissues, anaemia is caused by inadequate intake and/or poor absorption of iron, folate, vitamin B12 and other nutrients. It is also caused by infectious diseases such as malaria, hookworm infestation and schistosomiasis; and genetic diseases. Women and children are high-risk populations, including adolescent girls. Clinical signs include fatigue, pallor (paleness), breathlessness and headaches.

**Body mass index (BMI):** Defined as an individual’s body mass (in kilograms) divided by height (in metres squared); BMI units = kg/m² is assessed using BMI. In Asia, a BMI of at least 18.5 is considered normal, while a lower BMI is indicative of undernutrition. A BMI of more than 25 indicates overweight and more than 30 indicates obesity. For adolescents, a BMI <15th percentile of what is normal for their age indicates undernutrition, >85th percentile indicates overweight and >95th percentile obesity.³

**Double burden of malnutrition:** The coexistence of undernutrition and overweight within a household.

**First 1,000 days:** From a life cycle perspective, the most crucial time to meet a child’s nutritional requirements is in the 1,000 days including the period of pregnancy and ending with the child’s second birthday. During this time, the child has increased nutritional needs to support rapid growth and development, is more susceptible to infections, has heightened sensitivity to biological programming, and is totally dependent on others for nutrition, care and social interactions.³

**Food fortification:** The addition of micronutrients to a food during or after processing to amounts greater than were present in the original food product. This is also known as enrichment.

**Goitre:** Swelling of the thyroid gland in the neck caused by iodine deficiency.

**Iodine deficiency disorders:** A range of abnormalities that result from iodine deficiency, including reduction of IQ (on average a 10 to 15 per cent reduction), goitre and cretinism.

**Low birth weight:** A birth weight of less than 2,500 grams.

**Macronutrients:** Fat, protein and carbohydrates that are needed for a wide range of body functions and processes.

**Malnutrition:** Malnutrition refers to both undernutrition and overnutrition. Undernutrition is indicated by stunting (shortness) and wasting ( thinness), which are due to inadequate nutrient intakes, in both macronutrients such as energy, protein, or micronutrients, and can also be combined with illnesses. Overweight and obesity are referred to as ‘overnutrition’ and are related to the intake of too much energy in the form of fats and carbohydrates, including sugar. Micronutrient deficiencies can also occur amongst people suffering from overweight or obesity. Traditionally, undernutrition has been prevalent in developing countries while obesity was an epidemic primarily in developed countries. However, overweight and obesity have been increasing in developing and emerging countries, leading to a double burden of malnutrition.⁴

**MET:** The Metabolic Equivalent of Task, or simply metabolic equivalent, is a physiological measure expressing the energy cost of physical activities and is defined by the WHO as ‘MET refers to metabolic equivalent and 1 MET is the rate of energy expenditure while sitting at rest. It is taken by convention to be an oxygen uptake of 3.5 millilitres per kilogram of body weight per minute’. Physical activities frequently are classified by their intensity, using the MET as a reference.⁵

**Micronutrients:** Essential vitamins and minerals required by the body in miniscule amounts throughout the life cycle.

**Non-communicable diseases:** NCDs, also known as chronic diseases, are not passed from person to person. They are of long duration and generally slow progression. The four main types of NCDs are cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma) and diabetes.⁶

**Overweight and obesity:** Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. A crude population measure of obesity is the BMI, a person's weight (in kilograms) divided by the square of his or her height (in metres). A person with a BMI of 30 or more is generally considered obese. A person with a BMI equal to or more than 25 is considered overweight.⁷

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¹ All definitions are from the UNICEF glossary unless otherwise stated. The glossary is available online at http://www.unicef.org/lac/Nutrition_Glossary_(3).pdf


Recommended daily allowance: The average daily dietary intake of nutrients that is sufficient to meet the nutrient requirements of nearly all (approximately 98 percent) healthy individuals in a given population. For calories, the recommended daily allowance is based on the mean for a given population.

Reference population: Also known as ‘growth standards’, based on surveys of healthy children, whose measurements represent an international reference for deriving an individual’s anthropometric status.

Rickets: Caused by vitamin D deficiency, rickets affects bone development; severe cases result in bowing of the leg.

School feeding: Provision of meals or snacks to school children to improve nutrition and promote school attendance.

Stunting and chronic malnutrition: Stunting, defined as low height for age, is caused by insufficient nutrition to support the rapid growth of a child during pregnancy and during the first two years after birth. Factors such as maternal anaemia, tobacco use during pregnancy and indoor air pollution can also contribute to poor fetal growth and subsequent stunting. Stunting is generally irreversible and is linked with delayed motor development, diminished intellectual functioning, reduced earnings and lower birth weights of children born to women who themselves were stunted in childhood.

Undernutrition: An insufficient intake and/or inadequate absorption of energy, protein or micronutrients that in turn leads to nutritional deficiency.

Underweight: Wasting or stunting or a combination of both, measured through the weight-for-age nutritional index.

Wasting and acute malnutrition: Wasting, measured by low weight for height, is usually a result of very low food intake and/or disease. Children who are suffering from moderate and severe acute malnutrition require urgent treatment in order to prevent death. When compared with well-nourished children, severely malnourished children are five to 20 times more likely to die. Wasting is often used to assess the severity of emergencies because it is strongly related to mortality.a

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### List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ABC</td>
<td>Activity-based Curriculum</td>
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<td>ADB</td>
<td>Asian Development Bank</td>
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<td>AFHS</td>
<td>Adolescent-friendly Health Services</td>
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<td>AFC</td>
<td>Asian Football Confederation</td>
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<td>AFDP</td>
<td>Asian Football Development Programme</td>
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<td>aIWG</td>
<td>Asian Innovative Working Group</td>
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<td>BCC</td>
<td>Behaviour Change Communication</td>
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<td>BMI</td>
<td>Body Mass Index</td>
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<td>CDC</td>
<td>Centres for Disease Control</td>
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<td>DALY</td>
<td>Disability Adjusted Life Years</td>
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<td>DHS</td>
<td>Demographic Health Survey</td>
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<td>EMR</td>
<td>Eastern Mediterranean Region</td>
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<td>FGD</td>
<td>Focus Group Discussion</td>
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<td>GAIN</td>
<td>Global Alliance for Improved Nutrition</td>
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<td>GSSHS</td>
<td>Global School-based Student Health Survey</td>
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<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<td>HPA</td>
<td>Health Promotion Administration</td>
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<tr>
<td>IFA</td>
<td>Iron folic acid</td>
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<tr>
<td>IPC</td>
<td>Interpersonal communication</td>
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<tr>
<td>IPPF</td>
<td>International Planned Parenthood Federation</td>
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<tr>
<td>IWG</td>
<td>Innovation Working Group</td>
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<tr>
<td>JHU•CCP</td>
<td>Johns Hopkins Bloomberg School of Public Health</td>
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<td>MDG</td>
<td>Millennium Development Goal</td>
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<td>MET</td>
<td>Metabolic Equivalent of Task</td>
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<td>MNP</td>
<td>Micronutrient Powder</td>
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<td>MOH</td>
<td>Ministry of Health</td>
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<td>MOR</td>
<td>Ministry of Religion</td>
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<td>NCD</td>
<td>Non-communicable disease</td>
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<td>NCM</td>
<td>National Nutrition Monitoring Bureau (of India)</td>
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<td>NGO</td>
<td>Non-governmental organisation</td>
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<tr>
<td>Racha</td>
<td>Reproductive and Child Health Alliance</td>
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<td>RDA</td>
<td>Recommended Daily Allowance</td>
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<td>SEAR</td>
<td>Southeast Asia Region</td>
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<td>SGA</td>
<td>Small for Gestational Age</td>
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<td>SUN</td>
<td>Scaling Up Nutrition</td>
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<tr>
<td>UN</td>
<td>United Nations</td>
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<tr>
<td>UNSG</td>
<td>United Nations’-Secretary-General</td>
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<tr>
<td>WASH</td>
<td>Water, Sanitation and Hygiene</td>
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<tr>
<td>WHO</td>
<td>World Health Organisation</td>
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<td>WPR</td>
<td>Western Pacific Region</td>
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<tr>
<td>YLD</td>
<td>Years Lost Due to Disability</td>
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1. Introduction

‘In the 21st century, no institution can solve global challenges on its own. There is no monopoly on good ideas. That is why I believe so deeply in partnerships – strategic partnerships. Our Every Woman Every Child initiative is a pioneering example of this new way of tackling common global challenges.’

– United Nations Secretary-General Ban Ki-moon

One Goal’s role in calling attention to the nutritional needs of children in Asia exemplifies the type of innovation and ‘good ideas’ needed to help solve the major problem of malnutrition in the region. The collaboration between the Innovation Working Group Asia (IWG) and One Goal in the production of this report is integral to the IWG’s task of tapping into the potential for innovation at every level to accelerate progress toward the health-focused Millennium Development Goals (MDGs). The IWG will leverage its network of partners to work jointly to scale up effective and innovative interventions in areas identified in this report towards achieving nutrition security for all in the coming years.

The following report is about an often-neglected target group, especially in the field of nutrition – adolescent girls. Adolescent girls require special attention for a number of reasons. Firstly, girls face specific nutritional needs due to the physical changes that take place during this period of rapid growth and sexual maturation, in particular the onset of menstruation with its ensuing blood loss that increases their iron requirements relative to their male peers. Secondly, in Asia many adolescent girls get married and give birth while their own bodies are still growing. This leads to increased nutritional demands and competition between the needs of the foetus and the needs of its still developing young mother. This results in high-risk pregnancies and childbirth and a high prevalence of low birth weight babies. Thirdly, in adolescence, young people adopt many lifestyle habits that could play an important role in their future health. In fact, unhealthy habits like smoking, drinking, unhealthy eating patterns and a lack of physical activity often begin in youth, and it is these unhealthy eating patterns and lack of physical activity that contribute to the growing burden of non-communicable diseases (NCDs) in the region. Finally, nutrition and health problems, whether under- or overnutrition, stunting, micronutrient deficiencies or NCDs, tend to span multiple generations, perpetuating poverty. Increasing evidence relates to the long-term, cross-generational impact of behaviours rooted in adolescence, such as teenage pregnancy or eating poor-quality diets. In order to break this vicious inter-generational cycle of malnutrition and poverty, it is essential to implement effective interventions targeting adolescent girls. This report first describes the extent of malnutrition – both under and over – among adolescent girls in Asia. The recent Lancet nutrition series (2013) has underlined the need to focus on adolescent girls, in addition to the more traditional target groups of pregnant and lactating mothers and young children to achieve an effective reduction in under-5 malnutrition.

However, one should not forget that adolescents are also individuals who have the right to good nutrition for themselves, and not just for their (future) reproductive role.

This report provides a snapshot of current interventions and activities in the region that specifically target adolescent girls to optimise their growth and development, and that break the intergenerational cycle of malnutrition. While not comprehensive, the report attempts to highlight some traditional approaches and especially more innovative attempts to reach this target group.

**INCREASED NUTRITIONAL NEEDS OF ADOLESCENTS**

Due to the rapid growth and developmental changes occurring in teenagers, adolescence is also a period of increased nutritional needs. In particular, requirements for calcium (50 per cent of adult bone mass is accumulated in adolescence) and iron (to support the expanding mass of red blood cells and muscle, and menstrual blood losses in girls) are high during adolescence. Additionally, when a teenage girl, still growing herself, becomes pregnant, her developing foetus will compete with her own needs for these and other nutrients, putting both of them at risk.
2. Definitions

When discussing adolescent girls in Asia, it is important to first define these terms. Adolescence, defined as the state or process of growing and reaching sexual maturation, is a period of rapid change in growth, body composition, mental and emotional functioning, and sexual development. There are various definitions, but it is typically defined as the period beginning with the onset of biological puberty and ending with adulthood and is generally divided into two stages: early (10–14 years) and late (15–19 years) adolescence. The United Nations (UN) defines ‘adolescents’ as those between the ages of 10–19 and ‘youth’ as 15–24 year olds. However, many countries have their own definitions for adolescents and youth, which can complicate data comparisons and analysis. This report cites data from different sources, using differing cut-offs and therefore the age range referred to is described each time data provided, while the terms ‘adolescents’, ‘youth’ and ‘young people’ are used somewhat interchangeably in this report.

The Asian Football Confederation (AFC) has a membership of 47 countries, including the Middle East. Hence, in One Goal reports such as this one, the definition of Asia includes the Middle East. It is important to keep in mind that this is a vast and highly heterogeneous continent from the Middle East to the Pacific Island States. For the purposes of this report, the widest array of countries has been included, including countries that other international sources sometimes classify differently. Please see Annex 1 for a complete list of countries. It is also important to acknowledge the great diversity within countries, due to the large geographical, language, cultural and socio-economic differences that exist.

The accelerated economic growth and development that has taken place in the last few decades throughout the region has made some of these differences more striking. Data included in the report should be understood in light of these internal differences.

### ADOLESCENTS IN ASIA

Half of the world’s 1.2 billion adolescents (10–19 year olds) reside in Asia, not including the Middle East or Central Asia. India and China alone contribute to 243 million and 201 million adolescents respectively – such high numbers underline the importance of targeting adolescents in this region.

![Figure 1: Population of adolescents 10–19 years old by region (2010)](image)

Extensive evidence shows that optimal nutrition is essential during the first 1000 days of a child’s life (from conception to the child’s second birthday) in order to provide the best start in life. Whenever this is not naturally the case, interventions in this phase of the life cycle are necessary. On top of this, girls and women face specific nutrition challenges throughout the life cycle. Inadequate food intake and care, combined with the increased nutritional needs related to menstruation (blood loss increases iron requirements), pregnancy and lactation put girls and women at a particularly high risk for malnutrition. Figure 2 depicts the vicious cycle of malnutrition throughout the life cycle. Babies born small for gestational age (SGA) run the risk of impaired mental development and inadequate growth, especially when they are not well cared for. Frequent infections due to poor hygiene and inappropriate complementary feeding practices leave the child stunted, both physically and mentally. These children become stunted adolescents, and often get pregnant while they are still young and growing themselves. When they become pregnant, they tend to gain less weight, cannot provide their foetus with adequate nutrition and therefore give birth to SGA infants with low birth weight and suboptimal brain development. Two-thirds of all infants who are SGA are born in Asia (17.4 million in South Asia, in particular India, Pakistan and Bangladesh). These children are more at risk of developing NCDs in later life.

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15 Ibid.
Poverty and undernutrition are perpetuated through the life cycle as babies born with low birth weight grow up to be stunted adolescents and adults. During pregnancy, malnourished women gain less weight, which increases their risk of delivering small infants. Moreover, recent evidence shows that this phenomenon spans more than two generations, through changes in DNA.

3. Nutrition and health status of adolescent girls in Asia

The period of adolescent growth and development is particularly difficult in the developing world, where youths are often expected to take on adult responsibilities, without the physical, social or psychological tools and experience required to adequately cope. In many Asian countries, childhood is therefore cut off early. Youth are pulled out of school prematurely and required to contribute to the household economic well-being, by working both inside and outside the home, sometimes in dangerous, physically demanding or exploitative industries. Young women are especially at high risk of being removed from school and pushed into early marriages or sexual relationships they are not ready for. The effect on their own health and nutritional status and that of their children can be devastating and cause long-lasting consequences.

3.1 OVERALL HEALTH

Mortality and morbidity among this group has largely been overlooked, as it is considered low compared to higher priority groups such as children under 5 years of age. However, mortality among 10–24 year olds is as high as 267 per 100,000 population and represents over 1.2 million deaths in Asia alone.19

This accounts for nearly half (47 per cent) of all global adolescent deaths (estimated at 2.6 million). Table 1 provides a breakdown of the mortality rate for the WHO’s Southeast Asia Region (SEAR), Eastern Mediterranean Region (EMR) and Western Pacific Region (WPR) by age and gender. For both males and females, mortality rises with age. The relative risk of death among youth in these regions is far higher than that of wealthy countries – 1.8 times higher in WPR, 3.7 times higher in EMR and 4.1 times higher in SEAR.21

In Southeast Asia, the predominant cause of death was injuries (43 per cent), but many deaths were also due to maternal, perinatal, infectious and nutritional causes (36 per cent) and NCDs (21 per cent). In low-to-middle income Western Pacific countries, 62 per cent of male deaths and 42 per cent of all deaths were due to injuries. In the EMR, maternal causes are a major cause of death for young women.22

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21 Ibid.

22 Ibid.
The major cause of death for youths aged 15–25 of both sexes in Southeast Asia, Western Pacific and Eastern Mediterranean countries is injuries. The top five causes of these injuries - traffic accidents, fires, violence, self-inflicted and drowning – have been linked to increased risk-taking behaviour and poor self-regulation that are so common in young people. Recent research in the field of developmental neuroscience sheds light on how changes during puberty in the brain’s organisational circuitry and socio-emotional system can affect cognitive functioning and risk-taking behaviour.\textsuperscript{23,24,25}

In certain emotional situations, the prospect of rewards and emotions will win over rational decision making in adolescents’ minds.\textsuperscript{26} While this neurobiologically determined behaviour may seem disheartening, it also opens opportunities for prevention programmes to create learning experiences that take place in a positive emotional context and that are intentionally designed to train emotional regulation by increasing social rewards offered by non-risky behaviour or triggering positive emotions associated with positive behaviour and role models.\textsuperscript{27}

### Table 1: Total Mortality Rate (per 100,000) using adjusted death registration data from 2004\textsuperscript{28}

<table>
<thead>
<tr>
<th>GENDER</th>
<th>AGE GROUP</th>
<th>SEAR</th>
<th>EMR</th>
<th>WPR</th>
<th>TOTAL ASIA</th>
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<tr>
<td>MALE</td>
<td>10–14</td>
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<td>20–24</td>
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<td>OVERALL MALE</td>
<td>181</td>
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<td>FEMALE</td>
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<td></td>
<td>20–24</td>
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<tr>
<td>OVERALL FEMALE</td>
<td>192</td>
<td>139</td>
<td>52</td>
<td>383</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>10–14</td>
<td>122</td>
<td>113</td>
<td>44</td>
<td>279</td>
</tr>
<tr>
<td></td>
<td>15–19</td>
<td>184</td>
<td>146</td>
<td>85</td>
<td>415</td>
</tr>
<tr>
<td></td>
<td>20–24</td>
<td>264</td>
<td>264</td>
<td>117</td>
<td>645</td>
</tr>
<tr>
<td>TOTAL</td>
<td>570</td>
<td>523</td>
<td>246</td>
<td>1339</td>
<td></td>
</tr>
</tbody>
</table>

SEAR = Southeast Asian Region; EMR = East Mediterranean Region; WPR = Western Pacific Region

A follow-up study of the underlying conditions and behaviours that lead to premature mortality and future disability was conducted by calculating the global burden of disease in terms of disability adjusted life years (DALY) and years lost due to disability (YLD).\textsuperscript{29} Throughout Asia, a higher number of DALY were lost due to disability than to mortality. In SEAR, the burden of disease was higher for females than for males in the 15–24 year old range due to maternal mortality and morbidity. In the EMR, maternal causes were also a significant contributor to the burden of disease among the same female age group.


\textsuperscript{26} Ibid.

\textsuperscript{27} Ibid.


EARLY MARRIAGE
Throughout Asia, 13 per cent of girls aged 15–19 versus only 3 per cent of boys in the same age group are married, with the highest rates of adolescent marriage in Nepal (28.8 per cent) and Bangladesh (44.7 per cent) for girls.30 The highest adolescent birth rates (number of children born per 1,000 adolescents) are found in Afghanistan (90), the Marshall Islands (104.8) and Bangladesh (128). In Bangladesh, 40 per cent of girls give birth before they reach their 18th birthday.31

‘TRACKING’ OF DIET AND EXERCISE BEHAVIOURS FROM ADOLESCENCE TO ADULTHOOD
The concept of ‘tracking’ refers to the continuity of a certain behavioural or risk factor over time, from earlier in life to later in life – which can also be thought of as a habit. Tracking is being widely studied by those trying to prevent chronic diseases in adulthood by influencing fundamental eating and exercising habits formed during childhood and adolescence. A meta-analysis of 39 papers found evidence of tracking for both these behaviours.34 The related and influencing sub-behaviours, for example, the kind of food one eats, meal frequency35 and even how and with whom meals are consumed36 during childhood and adolescence have been found to predict these factors into older adult life. Because many of these factors vary by socio-economic status, the cumulative influence of adverse diet and exercise related habits may have a serious effect on the long-term prospects of young people born into poverty to live healthy adult lives.

Health and nutrition behaviours acquired during adolescence play an important role in the risk factors for mortality and morbidity among adolescents and well beyond into adulthood. Globally, in youths aged 15–24, the main risk factors associated with lost DALY were alcohol use (8 per cent of DALY), unsafe sex (5 per cent), iron deficiency (2 per cent), lack of contraception (2 per cent), and illicit drug use (2 per cent).32 The study also highlighted the fact that the most important contributors to the burden of disease among adults later in life, for example high blood pressure, cholesterol and diabetes, tobacco use, physical inactivity, and overweight and obesity, are often rooted in habits and behaviours adopted during adolescence. The WHO estimates that roughly 70 per cent of premature deaths among adults can be linked to behaviour that was initiated during adolescence.33

Ibid.

30 http://www.unicef.org/statistics/index_24183.html
31 Ibid.
The following sections provide data on what is known about the current nutritional status of adolescents in the region and explore how that status impacts their own long-term health and the health of future generations.

### 3.2 UNDERNUTRITION IN ASIAN ADOLESCENT GIRLS

#### 3.2.1 UNDERWEIGHT

Underweight (thinness) occurs when nutrient intake is not sufficient to support the body’s needs. While many Asian countries have had problems with very high underweight rates in the past, the past decade or so has seen a steady decrease in the percentage of people who are too thin (see Figures 3 and 4). This is an important achievement for the international public health community which, combined with, overall improvement of incomes and living conditions, has saved many lives. Unfortunately, the prevalence of underweight among adolescent girls is not collected routinely for every country. Some countries with Demographic Health Survey (DHS) surveys that included a module on maternal BMI have a subset of their sample fall in the 15–24 year old age range versus older age groups.

![Figure 3: Estimated prevalence of children under 5 years of age affected by underweight (moderate and severe) and overweight (including obesity): 1990, 2010, 2011](image)

![Figure 4: Decrease in percentage of underweight (BMI <18.5) among women in Bangladesh and Nepal who gave birth within three years prior to the survey (data from DHS, compiled with statcompiler.com)](image)

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### Table 2: Anaemia prevalence among adolescent girls in selected Asian countries

<table>
<thead>
<tr>
<th>Country</th>
<th>OVERALL ANAEMIA (Hb&lt;120 g/L)</th>
<th>MODERATE ANAEMIA (Hb&lt;100g/L)</th>
<th>SEVERE ANAEMIA (Hb&lt;70g/L)</th>
<th>AGE (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bhutan</td>
<td>59.2</td>
<td>4.7</td>
<td></td>
<td>16.00-20.99</td>
</tr>
<tr>
<td>China, Zhenjiang And Xuzhou</td>
<td>23.4</td>
<td></td>
<td></td>
<td>12.00-14.99</td>
</tr>
<tr>
<td>China, Taoyuan</td>
<td></td>
<td></td>
<td></td>
<td>14.00-16.99</td>
</tr>
<tr>
<td>China, Urban</td>
<td>19.4</td>
<td></td>
<td></td>
<td>14.00-16.99</td>
</tr>
<tr>
<td>China, Rural</td>
<td>20.4</td>
<td></td>
<td></td>
<td>14.00-16.99</td>
</tr>
<tr>
<td>India</td>
<td>83.2</td>
<td></td>
<td></td>
<td>13.00-15.99</td>
</tr>
<tr>
<td>Indonesia, Cikupa District</td>
<td>54</td>
<td></td>
<td></td>
<td>11.80-16.50</td>
</tr>
<tr>
<td>Indonesia, Tangerang District</td>
<td>9</td>
<td></td>
<td></td>
<td>11.30-17.10</td>
</tr>
<tr>
<td>Indonesia, Jakarta</td>
<td>57</td>
<td></td>
<td></td>
<td>11.30-17.10</td>
</tr>
<tr>
<td>Iran (Islamic Republic Of)</td>
<td>18.4</td>
<td></td>
<td></td>
<td>14.00-20.99</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>43.3</td>
<td></td>
<td></td>
<td>13.00-15.99</td>
</tr>
<tr>
<td>Kiribati</td>
<td>29.6</td>
<td>0.7</td>
<td></td>
<td>14.00-23.99</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td></td>
<td></td>
<td></td>
<td>13.00-15.99</td>
</tr>
<tr>
<td>Mongolia</td>
<td>20</td>
<td></td>
<td></td>
<td>14.00-23.99</td>
</tr>
<tr>
<td>Myanmar</td>
<td>45.2</td>
<td></td>
<td></td>
<td>15.00-19.99</td>
</tr>
<tr>
<td>Nepal</td>
<td></td>
<td></td>
<td></td>
<td>15.00-19.99</td>
</tr>
<tr>
<td>New Zealand</td>
<td>11.5</td>
<td></td>
<td></td>
<td>14.00-21.99</td>
</tr>
<tr>
<td>Oman</td>
<td></td>
<td></td>
<td></td>
<td>12.00-19.99</td>
</tr>
<tr>
<td>Oman</td>
<td>40.9</td>
<td></td>
<td></td>
<td>12.00-19.99</td>
</tr>
<tr>
<td>Philippines</td>
<td>33.2</td>
<td></td>
<td></td>
<td>13.00-19.99</td>
</tr>
<tr>
<td>Republic Of Korea</td>
<td>8.3</td>
<td></td>
<td></td>
<td>15.00-19.99</td>
</tr>
<tr>
<td>Saudi Arabia (Riyadh)</td>
<td>50.7</td>
<td></td>
<td></td>
<td>12.00-12.99</td>
</tr>
<tr>
<td>Saudi Arabia (Riyadh)</td>
<td>48.4</td>
<td></td>
<td></td>
<td>13.00-13.99</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>11.6</td>
<td></td>
<td></td>
<td>9.00-15.00</td>
</tr>
<tr>
<td>Timor-Leste</td>
<td>25.9</td>
<td></td>
<td></td>
<td>15.00-19.00</td>
</tr>
<tr>
<td>Turkey</td>
<td>20.1</td>
<td></td>
<td></td>
<td>13.00-13.99</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td></td>
<td></td>
<td></td>
<td>15.00-19.99</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td></td>
<td></td>
<td></td>
<td>15.00-19.99</td>
</tr>
</tbody>
</table>

*Cut-offs in table as per the data in the source documents; WHO cut-offs for anaemia of non-pregnant girls and women aged ≥10 years are as follows: normal Hb≥120, mild anaemia Hb 110-119, moderate anaemia 80-109, severe anaemia Hb<80)*

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38 [http://www.who.int/nutrition/nlis/en/](http://www.who.int/nutrition/nlis/en/)
39 [http://www.who.int/vmnis/indicators/haemoglobin.pdf](http://www.who.int/vmnis/indicators/haemoglobin.pdf)
40 Htet. Personal communication (April 2014).
48 [http://www.who.int/nutrition/nlis/en/](http://www.who.int/nutrition/nlis/en/)
In Myanmar, people consume tea leaves as salad, and this is particularly liked by adolescent girls. Although seen as vegetables, the tannin in tea leaves is a strong inhibitor of iron absorption and this habit might be an important contributor to the high anaemia levels in this group.40

3.2.2 ANAEMIA AND OTHER MICRONUTRIENT DEFICIENCIES

Micronutrients are vitamins and minerals that serve essential functions in the body and are required in small quantities. For example:

- vitamins: A, B1, B2, B3, B6, B12, folic acid, C, D, E, K
- minerals: Iron, calcium, iodine, zinc, selenium, copper, magnesium, potassium, etc.

Requirements for micronutrients increase during periods of rapid growth and development, such as for infants and young children, adolescents and pregnant and lactating women. These groups are therefore more at risk from the harmful consequences of deficiencies. The direct causes of micronutrient deficiencies are inadequate consumption of these vitamins and minerals in the diet and increased requirements due to losses (loss of body iron through menstrual blood loss) and growth. But consuming food containing these nutrients does not necessarily mean that the body can efficiently absorb and integrate them. For example, iron obtained from plant-based sources is less available for use in the human body. It needs to be converted to a different chemical form, a process highly influenced by the presence of ‘inhibitors’ (such as phytates naturally present in cereals such as rice, and tannin in tea) and ‘enhancers’ (such as vitamin C and A). Other factors such as parasites and other infections can also negatively affect absorption and retention of micronutrients. The high growth velocity during adolescence increases requirements for most nutrients. For instance, adolescents have high iron needs to support the increase in muscles, blood volume and red cell mass.41 In boys, iron requirements increase by about 5 mg/day but these decrease after the completion of the growth spurt and subsequent sexual development.42 Therefore, boys have an opportunity to recover from any deficiencies that occurred during peak growth, which explains why older adolescent boys have lower anaemia rates than younger boys, and compared to girls.43 Girls, on the other hand, generally start menstruating one to two years after their peak growth, which leads to iron losses. Girls have an increased need for iron intake to replace losses and their requirements are about 13–15 mg of iron per day. Low bioavailability of iron in cereal-based diets (which are high in phytates, which inhibits iron absorption from food), as well as infections and parasites interfere with iron absorption, which may exacerbate iron deficiency44,45, often leading to anaemia.

However, adolescents are not routinely screened for anaemia unless they happen to be pregnant. Nevertheless, data from smaller studies is available for a number of countries (Table 3). Although severe anaemia is rarely found, haemoglobin concentrations of <120 g/L indicating moderate anaemia, are extremely common. The highest rates were found in India (50–90 per cent), Fiji (83 per cent), Bangladesh (59 per cent), Indonesia (9–57 per cent), Saudi Arabia (48–51 per cent), Myanmar (45–60 per cent), Kenya (43 per cent) and Oman (41 per cent).46,47,48,49

Studies among adolescents in India and Bangladesh revealed deficiencies in the intake of all nutrients, particularly iron, calcium, vitamin A and vitamin C. The Indian study in 1996 by the National Nutrition Monitoring Bureau (NNMB)50 that assessed the current diet and nutritional status of 124 adolescent boys and girls aged 10–17 years in villages of 10 states of India, found that more than 80% of adolescents boys and girls consumed less than 50% of their recommended daily allowances (RDA) of vitamin A, more than 70% consumed less than 50% of their iron needs and more than 50% got less than half of required calcium from their daily diet.51

The Bangladesh study revealed much the same pattern among adolescent52, also less pronounced. No other studies of adolescent intake were found. The investigators report that the main reasons for the inadequate micronutrient intake are the low educational level of parents and low family income.53 Consumption of iodised salt is low, for instance in India 50 per cent of households are not consuming adequately iodised salt, exposing adolescents living in those households to iodine deficiency.54

Recent studies have demonstrated that micronutrient deficiencies may be linked to obesity. A study in the Middle East showed that iron deficiency was more common in overweight and obese children and adolescents (58.3 per cent) than in those with normal weight (6.7 per cent). This may have been due to an unbalanced diet, or to repeated so-called ‘crash diets’ that highly restrict intake, and thus lead to insufficient dietary intake of iron.55

53 Ibid.
VITAMIN D

Vitamin D is a group of fat-soluble vitamins that increase the absorption of calcium and phosphate and zinc in the gut. Vitamin D can be obtained through the consumption of fatty fish, fish oil and, to a lesser extent, egg yolk, or foods fortified with vitamin D. The main source of vitamin D, however, is sunlight, abundantly and freely available in large parts of Asia. However, sun exposure is often limited due to cultural preferences for fair skin and religious taboos for women on skin exposure. In countries in North Asia, long cold winters limit skin exposure to sunlight, while in the tropical regions, the availability of air conditioned buildings, including shopping malls, may draw people indoors at mid-day.

Vitamin D deficiency is an underappreciated albeit prevalent public health problem around the world, mostly due to a lack of awareness that sunlight exposure is essential. There are no risks related to increasing vitamin D intake, as sunlight will also destroy excess vitamin D.

Vitamin D deficiency causes sub-optimal mineralisation of the bones, leading to rickets in children and osteomalacia or osteoporosis in adults. The brittle bones in these conditions are more prone to fractures. Because so much bone mass and bone mineral content is built up during adolescence, vitamin D requirements are very high during the adolescent growth spurt. Vitamin D deficiency in this phase will increase the risk of osteoporosis later in life. In addition, there is increasing and consistent epidemiological evidence of the relationship between low vitamin D status and higher rates of both infectious and non-infectious diseases, such as many types of cancer, cardiovascular disease, type 2 diabetes mellitus, neurocognitive disorders and autoimmune disorders, and mortality. Moreover, vitamin D seems to have a role in gene expression, which means that the vitamin D status of pregnant women may influence the risk of their offspring’s susceptibility to chronic disease in adult life.

Table 3: Prevalence of low vitamin D status in some Asian countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Coverage</th>
<th>Age</th>
<th>Vitamin D deficient (&lt;50mmol/L)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thailand (2009)</td>
<td>Countrywide, 21 provinces</td>
<td>15–98 years</td>
<td>5.70%</td>
<td>Large geographic variation: Bangkok 14.3% &lt;50mmol/l and 75.5% women in Bangkok &lt;75)</td>
</tr>
<tr>
<td>Mongolia</td>
<td>21 provinces in 4 regions and capital</td>
<td>Children 6–59 months</td>
<td>21.8%</td>
<td>Rickets common</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-pregnant</td>
<td>30.0%</td>
<td></td>
</tr>
<tr>
<td>Vietnam</td>
<td>Pregnant and non-pregnant women</td>
<td></td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Vietnam</td>
<td>Nationally representative, children</td>
<td></td>
<td>57%</td>
<td></td>
</tr>
<tr>
<td>Vietnam</td>
<td>Nationally representative, children</td>
<td></td>
<td>58%</td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>University employees</td>
<td>mean 48 years</td>
<td>67.9%</td>
<td></td>
</tr>
<tr>
<td>Indonesia and Malaysia</td>
<td>Non-pregnant urban women</td>
<td>18–40 years</td>
<td>61%</td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>Children</td>
<td>Primary school age</td>
<td>72.4%</td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td></td>
<td>0.5–11.9 years</td>
<td>44.2%</td>
<td>66.9% in urban girls 7–12 years</td>
</tr>
<tr>
<td>Malaysia</td>
<td></td>
<td>0.5–11.9 years</td>
<td>47.5%</td>
<td>66.7% in urban girls 7–12 years</td>
</tr>
<tr>
<td>Thailand</td>
<td></td>
<td>0.5–11.9 years</td>
<td>277 (rural) to 45.6% (urban)</td>
<td>277 (rural) to 45.6% (urban)</td>
</tr>
<tr>
<td>Vietnam</td>
<td></td>
<td>6–11.9 years</td>
<td>48.1%</td>
<td></td>
</tr>
</tbody>
</table>
Data on vitamin D status in Asia is scarce. Nationally representative data is only available for Mongolia, Thailand and Vietnam, with some smaller studies in other countries, including the SEANUTS (South East Asia Nutrition Study) study of children aged 6 months to 12 years in Indonesia, Malaysia, Thailand and Vietnam. It should be noted that large geographical variations within countries were found, with highest prevalence located in urban areas. Although none of these surveys assessed adolescents, the high prevalence of vitamin D deficiency in both children and women suggests it is likely to be high in adolescents as well.

3.2.3 UNDERLYING CAUSES OF UNDERNUTRITION

According to the UNICEF conceptual framework of undernutrition (see Figure 5), the direct causes of undernutrition are inadequate food intake (both in terms of quantity and quality) and increased needs due to infectious diseases. This framework was developed for child undernutrition but is applicable to other groups as well. The underlying causes include inadequate care practices, food insecurity as well as a lack of access to water, sanitation and health services. For adolescent girls this can be explained as inadequate food intake due to food insecurity (a combination of poor availability, accessibility and affordability of nutritious foods), inappropriate dieting, a lack of knowledge and awareness about healthy foods; and increased nutritional needs due to their growth and development, in particular the onset of menstruation, and pregnancy. In addition, living under unhygienic circumstances and not having access to health services that are sensitive to their specific needs, adds to their risk of becoming undernourished.

60 Moukayed, Nutrients 2013, 5, pp. 3993–4021.
64 Published as several papers in Br J Nutr 2013;110:S2–564.

EDUCATION

The education of adolescent girls is especially important, as it promotes gender equality and empowers girls and women through increased knowledge and awareness, and higher income-generating potential (finishing secondary education increases a girl’s income by 18 per cent compared to 14 per cent for boys). The education of girls also delays the age of marriage, and, through better child-care practices, it will reduce stunting in the next generation. A strong positive relationship has been shown between a mother’s years of formal education and the nutritional status of her children, based on analysis of large data sets from Indonesia and Bangladesh. The Indonesian study found that each year of a mother’s additional education decreased the risk of her child being stunted by 4.4–5 per cent (compared to 3 per cent for each year of the father’s education), while in Bangladesh these reductions were 4.6 per cent for mothers and 2.9–5.4 per cent for fathers. Education is a basic human right, but according to UNICEF’s 2007 data, almost 20 per cent of children in South Asia did not attend primary school, amounting to 35 million out-of-school children in South Asia and 47 million in East Asia and the Pacific. The highest number of out-of-school adolescents in the world is found in South and West Asia where 42 per cent of adolescents do not attend school. Barriers to girls’ school attendance include financial barriers, cultural bias and traditions that do not support girls’ education, lack of female teachers, lack of sanitary facilities (no sanitary napkins or separate toilets), sexual harassment and child marriage.

72 http://www.unicef.org/rosa/education_6077.htm
73 Ibid.
74 http://www.womendeliver.org/knowledge-center/facts-figures/girls-education/
MARRIAGE AND CHILDBEARING – A MAJOR THREAT TO THE HEALTH AND NUTRITION OF ADOLESCENT GIRLS

While adolescence should be a period of growth and maturation, many Asian girls are placed at risk of early marriage and early pregnancy. This adds additional physiological and nutritional demands on their (often already undernourished) bodies, leading to competition between the needs of their foetuses and themselves, and ultimately increasing the risk of exacerbating their own malnutrition and giving birth to a low birth weight or otherwise undernourished baby, as well as the risk of maternal and infant mortality. Undernourished adolescent mothers are more likely to deliver undernourished offspring, thus perpetuating the cycle of malnutrition and poverty. For these reasons it is highly important to delay the age of first pregnancy beyond the adolescent years.

In Indonesia, a national survey in 2013 found that 23.9 per cent of girls get married between the ages of 15–19 years, and 2.6 per cent even when they are younger than 15. In some provinces, up to 9 per cent of girls are married before their 15th birthday and more than 50 per cent between 15–19 years old, including even the more developed island of Java. Therefore it is not surprising that a considerable proportion of women give birth before they turn 18 years old. About one in 10 women aged 20–24 (in Asian countries that have these data), gave birth before age 18, ranging from 7 per cent in Eastern Mediterranean/Central Asian Republics, 11 per cent in the WPR, 16 per cent in SEAR, with Bangladesh as the world leader at 40 per cent.


Figure 6: Nearly one third of adolescent girls in South Asia are married or in union

Note: Estimates based on a subset of 104 countries, covering 92% of the 15–19-year-old female population of the developing world (excluding China, for which comparable data is not available). Regional estimates represent data from countries that cover at least 50% of the regional population. Data coverage was insufficient to calculate an average for industrialised countries.

Source: UNICEF global databases, 2011, based on Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS) and other national surveys, 2000-2010.

Figure 7: Percentage of women aged 20–24 who gave birth before age 18 (UNICEF 2008-2012)

76 Ibid.
77 Riskesdas 2013 Basic Health Survey. (http://depkes.go.id/downloads/riskesdas2013/Hasil%20Riskesdas%202013.pdf)
78 Analysis of available country data on http://www.unicef.org/statistics/index_24183.html, which seems to come from DHS surveys from 2002-2012.
79 Ibid.
ADOLESCENTS AND FAMILY PLANNING

There are an estimated 2.7 million infants born from unintended pregnancies each year among adolescents in Asia and the WHO estimated that in 2008 there are four times as many unsafe teen abortions on the continent. Data from 11 countries with DHS data in the Asia Pacific region disaggregated by age show that contraceptive use was consistently lower, and unmet need for family planning was higher for married 15–19 year olds compared to women aged 20 and over (see Figures below).

Unmet need represents a potential market for family planning, where demand exists but supply of products or services might be limited or inaccessible to women. Married adolescents reported an unmet need for ‘birth spacing’, a wish to delay their next pregnancy by two years or more. As shown in the Figure below, married women aged 15–19 have the highest unmet need of any age group in Cambodia, Samoa, Tuvalu, Indonesia, Solomon Islands and Vietnam, ranging from approximately 8 to 22 per cent.

Figure 8: Current contraceptive use among married women in 11 Asian countries; by age range (Kennedy, et al. 2011 analysis of DHS data)

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Little is known about fertility and contraceptive use or unmet need for it among unmarried adolescent girls in this region, as data on this is not systematically collected.

Figure 9: Percentage of currently married women aged 15–49 who report an unmet need for birth spacing by age range in 11 Asian countries (Kennedy, et al. 2011 analysis of DHS data)

SUMMARY

In summary, adolescent girls are at risk of undernutrition both in terms of quantity (leading to thinness) and quality (leading to micronutrient deficiencies). Despite some improvement in other countries, South Asia, and particularly India, still face high undernutrition rates and micronutrient deficiencies are common throughout the continent, although comprehensive data is lacking. The direct factors that lead to undernutrition among adolescent girls are inadequate food intake, inappropriate dieting, lack of knowledge and awareness about healthy foods, and increased nutritional needs. Low levels of education and early marriage and pregnancy are major underlying causes.
3.3 OVERWEIGHT AND OBESITY

Different definitions of overweight and obesity are used by different sources. In general, overweight and obesity are both ‘labels for ranges of weight that are greater than what is generally considered healthy for a given height,’ as formulated by the United States Centres for Disease Control (CDC). This weight-for-height in adults and adolescents is expressed as BMI (Body Mass Index: weight (kg) / height (cm)². The BMI ranges identified by these terms are correlated with an increased risk of certain diseases. WHO defines overweight (BMI>25) as ‘having excess body weight for a particular height from fat, muscle, bone, water, or a combination of these factors.’ Obesity (BMI>30) is defined as ‘having excess body fat.’

NUTRITIONAL STATUS OF ADOLESCENTS: HOW TO IDENTIFY THOSE AT RISK?

Interpreting the BMI of adolescents is rather complicated; it is defined by both gender and age, as their growth and development influences body composition and not all adolescents grow and mature at the same pace. The recommended cut-off value in adolescence for being at risk for underweight is <15th percentile of the reference data, for severe underweight < 5th percentile, while for overweight it is >85th percentile and for obesity >95th percentile. (See Table 4). Studies have shown that (South) Asians tend to have an increased risk of chronic diseases and mortality related to being overweight compared with other populations and may require lower BMI cut offs. An effort was made to define appropriate cut-offs for Asian populations but this turned out to be too complicated due to differences between sub-populations and it was agreed to retain the existing global cut-off points. Therefore, appropriate BMI cut-offs for Asian children and adolescents have not yet been developed.

Table 4: Cut-offs for undernutrition (15th percentile) and overnutrition (85th percentile) for female adolescents

<table>
<thead>
<tr>
<th>AGE</th>
<th>15th percentile / underweight</th>
<th>18th percentile / overweight</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>15.1</td>
<td>20.2</td>
</tr>
<tr>
<td>11</td>
<td>15.5</td>
<td>21.2</td>
</tr>
<tr>
<td>12</td>
<td>16.0</td>
<td>22.2</td>
</tr>
<tr>
<td>13</td>
<td>16.4</td>
<td>23.1</td>
</tr>
<tr>
<td>14</td>
<td>16.8</td>
<td>23.9</td>
</tr>
<tr>
<td>15</td>
<td>17.2</td>
<td>24.3</td>
</tr>
<tr>
<td>16</td>
<td>17.5</td>
<td>24.7</td>
</tr>
<tr>
<td>17</td>
<td>17.8</td>
<td>25.2</td>
</tr>
<tr>
<td>18</td>
<td>18.0</td>
<td>25.6</td>
</tr>
<tr>
<td>19</td>
<td>18.2</td>
<td>25.9</td>
</tr>
<tr>
<td>20-24</td>
<td>18.6</td>
<td>26.1</td>
</tr>
</tbody>
</table>
The cause of overweight and obesity is a ‘caloric imbalance’ (more calories are consumed than are used), influenced by numerous genetic, behavioural and environmental factors.

Carrying around too much weight has both short- and long-term health effects. Obese youth are more likely to be at risk for cardiovascular disease, diabetes, bone and joint problems, sleep apnea, as well as social and psychological problems. In addition, obese adolescents tend to become obese as adults which increases their risk for NCDs such as heart disease, type 2 diabetes, stroke, several types of cancer, and osteoarthritis.

Overweight and obesity are increasingly common among adolescents. The Global School-based Student Health Survey (GSHS) collects data on adolescent health in countries around the world, including 34 Asian and West Pacific countries (see Table 5).

81 http://www.cdc.gov/obesity/adult/defining.html
96 http://www.cdc.gov/healthyyouth/obesity/facts.htm
97 http://www.who.int/childhood/obesity/facts.htm
Table 5. Overweight, obesity and related lifestyle among adolescents (data from Global School-based Student Health Survey (GSSHS))

<table>
<thead>
<tr>
<th>Country</th>
<th>% of students who are overweight</th>
<th>% of students who are obese</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Cambodia</td>
<td>3.7</td>
<td>3.7</td>
</tr>
<tr>
<td>China</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China, Beijing</td>
<td>24.2</td>
<td>13</td>
</tr>
<tr>
<td>China, Hangzhou</td>
<td>10.1</td>
<td>5.6</td>
</tr>
<tr>
<td>China, Wuhan</td>
<td>25</td>
<td>12.8</td>
</tr>
<tr>
<td>China, Wurupmi</td>
<td>13.6</td>
<td>4.4</td>
</tr>
<tr>
<td>Cook Islands</td>
<td>58.2</td>
<td>58.9</td>
</tr>
<tr>
<td>Fiji</td>
<td>17.9</td>
<td>20.4</td>
</tr>
<tr>
<td>India</td>
<td>11.6</td>
<td>9.7</td>
</tr>
<tr>
<td>Indonesia</td>
<td>14</td>
<td>6.2</td>
</tr>
<tr>
<td>Iraq</td>
<td>24.3</td>
<td>26.6</td>
</tr>
<tr>
<td>Jordan</td>
<td>27.9</td>
<td>14.3</td>
</tr>
<tr>
<td>Kiribati</td>
<td>31.9</td>
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<tr>
<td>Kuwait</td>
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<td>46.8</td>
</tr>
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<td>Mongolia</td>
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<td>10.5</td>
</tr>
<tr>
<td>Myanmar</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Nauru</td>
<td>40</td>
<td>48.9</td>
</tr>
<tr>
<td>Niue</td>
<td>60.3</td>
<td>39.9</td>
</tr>
<tr>
<td>Pakistan</td>
<td>5.1</td>
<td>8.7</td>
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<tr>
<td>Gaza</td>
<td>17.2</td>
<td>27.8</td>
</tr>
<tr>
<td>West Bank</td>
<td>20.7</td>
<td>24.1</td>
</tr>
<tr>
<td>UNRWA Gaza</td>
<td>18.1</td>
<td>22.6</td>
</tr>
<tr>
<td>UNRWA Jordan</td>
<td>27.5</td>
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</tr>
<tr>
<td>UNRWA West Bank</td>
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</tr>
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<td>28.6</td>
<td>27.6</td>
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<td>Philippines</td>
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<td>9.3</td>
</tr>
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<td>Samoa</td>
<td>43.4</td>
<td>59.1</td>
</tr>
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<td>Solomon Islands</td>
<td>17.6</td>
<td>22.4</td>
</tr>
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<td>4.8</td>
<td>4.2</td>
</tr>
<tr>
<td>Syrian Arab Republic</td>
<td>25.6</td>
<td>17.5</td>
</tr>
<tr>
<td>Thailand</td>
<td>19.8</td>
<td>13.2</td>
</tr>
<tr>
<td>Tonga</td>
<td>61.2</td>
<td>58</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>42</td>
<td>35.9</td>
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<tr>
<td>Vanuatu</td>
<td>8.9</td>
<td>13.6</td>
</tr>
<tr>
<td>Vietnam</td>
<td>9.3</td>
<td>3.9</td>
</tr>
<tr>
<td>Yemen</td>
<td>12</td>
<td>11.4</td>
</tr>
</tbody>
</table>
While the data set on obesity among adolescents lacks data on the vast majority of countries, known rates are shockingly high in some of the Pacific Island nations such as the Cook Islands, Fiji and Tonga, and also in some Middle Eastern countries such as Jordan, Syria, Lebanon, the UAE, and especially Kuwait. Obesity rates are also moderately high and increasing quickly in some Asian countries more traditionally associated with undernutrition such as India, Indonesia and the Philippines. This ‘double burden’ of malnutrition is especially alarming when these countries must choose between these competing priorities under limited national nutrition budgets. The contributing factors related to overweight and obesity largely involve diet and exercise – too much of the former and too little of the latter. Underlying factors for overnutrition among adolescents include environmental factors, such as the intense marketing of and easy access to fast food, poor education and nutritional knowledge of adolescents and their parents, skipping breakfast (causing hypoglycaemia and often leading to unhealthy snacking), westernisation and urbanisation, leading to a diminishing role of traditional eating patterns and decreased physical activity. In addition, babies who are small for their gestational age are at a higher risk of becoming stunted as well as obese as adults. Thus, obesity is determined both by the programming of gene expression in early life – related to nutrient intakes of previous generations – and by unhealthy lifestyles consisting of increased consumption of energy-dense foods, which are rich in fat, sugar and salt and low in many important micronutrients, and decreased physical activity.

The rate of increase in obesity prevalence is staggering, even in countries that have traditionally struggled with underweight for a long time such as Bangladesh, India and Nepal (data for Bangladesh is shown in Figure 10). Overweight and obesity rates among women in India increased from 5.7 per cent to 7.9 per cent in only seven years (1998–99 to 2005–2006). In Bangladesh the increase was almost five-fold from 2.7 per cent in 1996–97 to 12.2 per cent in 2011, and in Nepal more than six times from 1.7 to 10.5 per cent (1996 to 2011). It is suspected that this increase may be affecting adolescents even more, especially in urban areas. For example, a study of primary and middle school students in Jakarta, Indonesia found an overweight/obesity rate of 11 per cent among 6–14 year-olds and an alarmingly high rate of 24 per cent for those aged 15 and above.

Figure 10: Trend in changing body posture of Bangladeshi women who gave birth within three years prior to the survey (data from DHS, compiled with statcompiler.com)

Ibid.
3.3.1 UNDERLYING CAUSES OF OVERNUTRITION IN ASIA

URBANISATION

The rate of urbanisation in Asia is staggering – according to the Asian Development Bank (ADB), Asia and the Pacific Region added 1 billion people to their cities between 1980 and 2010 – more than all the other regions of the world combined. By 2010, Asia included over half the world’s 23 largest ‘mega cities’\(^{101}\) and the trends are continuing. Countries like India, Bangladesh but especially China, have seen massive internal migrations of people from rural mostly agricultural communities to sprawling, extremely densely populated urban areas. This change has had a dramatic impact on the diet, lifestyles and physical activity levels of tens of millions of Asian adolescents. Where they used to eat mostly what was grown locally, they now rely heavily on the cheap and ubiquitously available ‘fast food’ that includes traditional urban Asian street vendors as well as the rapidly expanding multinational fast food chains. While not all processed foods are bad, many of these kinds of food outlets sell unhealthy foods and snacks, fried in cheap saturated oils, and high in calories, sugar and salt. Moreover, Asian cities, especially those with uncontrolled growth and limited parks or open green spaces conducive to exercise or similar facilities at community centres, have also dramatically decreased opportunities for physical exercise. Where rural youth often contributed physical labour to family farms or other physical projects, in addition to having plenty of space for walks and play, their urban counterparts have extremely limited opportunities. They also have far more passive means of transportation involving public buses, trains or cars versus walking or biking that were more common in rural areas. Ever-rising temperatures caused by global climate change, have led to a reduction in outdoor activities. Last but not least, urban air pollution in Asian cities is a serious problem, making it unsafe for people to be outside, further limiting opportunities for exercise. Indeed, an overwhelming 67 per cent of Asian cities failed to meet European Union standards for air quality.\(^{102}\)

THE BUILT ENVIRONMENT

The ‘built environment’ is a term used to describe human-made surroundings, the places and spaces made or modified by people, which include buildings, parks and transportation systems that influence how people live and move in that environment. In recent years, public health research has expanded the definition of ‘built environment’ to include healthy food access, community gardens, ‘walkability’, and ‘bikability’.\(^{103}\)

4. Efforts to address nutritional problems of adolescent girls

The 2013 Lancet series has provided a useful framework when discussing nutrition interventions, even though this series was primarily concerned with child undernutrition. A distinction was made between nutrition-specific and nutrition-sensitive interventions and programmes.\(^{104}\) Interventions or programmes can be said to be nutrition-specific when they address the immediate determinants of nutrition and development. In the case of adolescents, this includes adequate food and nutrient intake, and parenting practices, and low burden of infectious diseases. Examples are adolescent health and nutrition, dietary supplementation, dietary diversification, micronutrient supplementation, food fortification and disease prevention and management.\(^{105}\) Nutrition-sensitive interventions or programmes not only address the underlying determinants of nutrition and development (food security, adequate care giving and access to adequate health and hygiene facilities) but they also have specific nutrition goals and actions.\(^{106}\) Examples include programmes related to agriculture and food security, social safety nets, schooling, women’s empowerment, water, sanitation and hygiene (WASH) and adolescent-friendly health and family-planning services.

The following sections aim to provide a snapshot of some of the activities undertaken in Asia, while not assuming or pretending to be exhaustive. Many interventions and programmes, both nutrition-specific and nutrition sensitive, address mother and child health and child survival, but this report explores activities that are specifically focused on adolescent girls. The Lancet series was very clear in stressing the importance of including adolescent nutrition in interventions to improve maternal and child health – yet this emphasis still needs to be taken up in most countries.

URBANISATION

Increasingly high urbanisation rates in Asia force life-style changes on billions of people, such as a shift in consumption patterns to more processed foods and a more sedentary lifestyle. In certain countries, environmental hazards may also reduce physical activity outdoors, further contributing to the growing overnutrition problem.
4.1 BEHAVIOUR CHANGE COMMUNICATION (BCC)

Nearly all strategies to address under- and overnutrition among adolescents, with the possible exception of mandatory food fortification, which is implemented without the conscious effort of the beneficiary, involve at least some behaviour change communication. Supplementation, changing diets, stimulating physical activity or use of family planning all require adolescents to take independent action. This can be somewhat more challenging than developing BCC campaigns for older audiences. Some common principles of BCC theory – assuming that a target group rationally processes information about their susceptibility to a health problem and how they might avoid risk – may be less important when dealing with youth compared to more mature adults. Adolescents’ limited ability to assess risk and their desire for more independence from authority, combined with an aversion for prescriptive or inauthentic messaging, means that BCC messaging must be perceived as ‘cool’ to resonate with this audience. BCC must stimulate youth socially, emotionally and psychologically in order for them to take action.

Therefore, rather sophisticated social marketing and behaviour change communication programmes are required to create these conditions. The WHO recommends the use of a comprehensive theoretical model to understand current behaviour and develop the right messages and materials, and to include family-based approaches these efforts.

Rapid economic development, the spread of the Internet and general globalisation has meant that the current generation of Asian adolescents has been much more exposed to mass media and social media than any previous generation. They have also been influenced by commercial marketing in its many forms, much more than their parents, and have higher expectations when it comes to how a message is conveyed.

UNDERSTANDING YOUR TARGET AUDIENCE

A series of focus group discussions (FGDs) with Indonesian adolescents reported by the WHO found a number of interesting issues related to food habits. Overall, the participants associate ‘nutrition’ with ‘quantity of food’. Adolescents have little access to information on health and nutrition, in particular on food supplementation and fortification. They would like to know more – from teachers (younger children), media and doctors (adolescents). Information through mass media should be simple with easily understandable terms, appealing, interesting, with cartoon characters. Any message, including that relating to the consumption of healthy food, accompanied with parental pressure is not accepted. However, some adolescents picked up food habits from their parents, including myths. Home-made food was considered boring, and they preferred junk food, which was considered better tasting and cool, due to peer pressure and media influence. Consumption of milk (products) was low. Generally, the adolescents felt that studies and/or household chores made it impossible for them to be physically active. However, they did recognise this as contributing to more obesity among adolescents.

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4.2 INTERVENTIONS TO ADDRESS UNDERNUTRITION

4.2.1 NUTRITION-SPECIFIC INTERVENTIONS FOR UNDERNUTRITION

WEEKLY SUPPLEMENTATION WITH IRON AND OTHER MICRONUTRIENTS

In addition to the often-cited reasons behind improvements in reproductive health, targeting adolescent girls with interventions to reduce micronutrient deficiencies, in particular iron deficiency anaemia, is important for the girls themselves. The efficacy of weekly supplementation of adolescent girls with iron-folate supplements has been well documented in small research studies in several countries, including Indonesia, Sri Lanka and Nepal. A large-scale project in India demonstrated the effectiveness of a combination of weekly iron-folate supplementation, monthly sessions of family life education and bi-annual deworming among over 150,000 adolescent girls both in and out of school. The intervention resulted in an overall reduction of anaemia prevalence from 73.3 per cent to 25.4 per cent, at a cost of US$0.36 per girl per year. Counselling on the positive effect of taking the iron-folate tablets, but not supervision, was crucial for high (85 per cent) compliance rate and anaemia reduction.\(^\text{16}\)

Finding the right channel for these weekly supplements is a challenge. Schools and health facilities are a place to start, but with low female high school completion rates in some countries and poor access to health services by this population, many young women may fall through the cracks. Using schools also places a financial and management burden on the already overburdened and under-funded education system. Promoting the purchase of iron or multivitamin supplements by adolescents through the private sector has been found to be a sustainable approach,\(^\text{17}\)\(^\text{18}\) and is currently being applied in some areas of Indonesia. However, this would require more education of young women about the problems of micronutrient deficiencies and the benefits of buying a supplement and potentially interventions to deal with cost and availability barriers. Subsidies or vouchers might be a solution to the affordability issue, while exploring youth-friendly outlets can increase access.


\(^{16}\) Vir, S.C., Singh, N., Nigam, A.K., Jain, R. ‘Weekly iron and folic acid supplementation with counseling reduces anaemia in adolescent girls: A large-scale effectiveness study in Uttar Pradesh, India’. Food Nut Bull 2008;29(3); pp.186-194


MICRONUTRIENT POWDERS FOR ADOLESCENTS

Although developed and widely used for children under 5 years of age, there are no programmes using micronutrient powders (MNP) among adolescents or adults that we are aware of. The reason for this is that the dosage of the micronutrients needed to fulfill the nutritional needs in this age group are so high that this would cause insurmountable organoleptic issues. Using more sachets spread over the day could potentially overcome this problem. In addition, in contrast to young children, adolescents (like adults) are able to make choices and swallow tablets, including micronutrient supplements. One of the reasons MNP were developed for young children was that other formats are more difficult for them to swallow. Research on the use of MNP for pregnant women is ongoing.\(^\text{19}\)\(^\text{20}\) A recent study in Indonesia found that twice-weekly MNP mixed with food or drink for 16 weeks given to 150 anaemic adolescent girls (aged 14–18 years) in religious schools in Indonesia were effective in increasing hemoglobin concentrations and iron stores.\(^\text{21}\) However, the largest impact was found with the lowest dose of iron (20 mg iron as ferrous fumarate), implying compliance issues with the higher-dose MNP (25 and 3 mg iron, respectively).

FOOD-BASED STRATEGIES

Food-based strategies are sustainable and effective in combating multiple nutrition problems, both under- and overnutrition. These include changes in dietary patterns (such as increased consumption of highly nutritious foods such as vegetables, fruit, animal foods and dairy) and food preparation methods (e.g., washing vegetables before they are cut, decreased cooking times); improving bioavailability of certain micronutrients from vegetable-source foods (iron absorption is inhibited from a cereal-based diet, especially when tea is drunk with the meal, and the consumption of vitamin C-rich foods, avoiding rice and tea, and the fermentation of cereals and legumes will increase iron absorption from the diet); fortification of staple foods such as wheat, rice and oil; and condiments such as salt, soy sauce and fish sauce. In certain settings, improving food security and intra-household food distribution is also important.\(^\text{22}\) Promoting the consumption of micronutrient-rich foods through home gardening\(^\text{23}\) or poultry farming has been used successfully in addressing micronutrient deficiencies among adolescents.


http://hftag.gainhealth.org/tag#766n262


EXAMPLES OF FOOD FORTIFICATION IN SELECTED ASIAN COUNTRIES

To overcome specific micronutrient deficiencies, fortification has been adopted by several countries in Asia, on both a voluntary and mandatory basis. Indonesia has recently adopted mandatory fortification of unbranded vegetable oil with vitamin A, which will come into force in 2015. This will provide 70 per cent of the population with vitamin A-fortified cooking oil, which has been shown to be effective in improving the vitamin A status in a pilot study implemented by a local NGO (KFI: Indonesian Nutrition Foundation for Food Fortification) with support from GAIN (unpublished data). Cambodian industries have voluntarily fortified fish and soy sauces since 2011 with the support of RACHA (Reproductive and Child Health Alliance), and funded by GAIN, based on published voluntary standards. Compliance needs to be improved, but with mandatory fortification, Cambodian women will increase their daily iron take by 13.3 per cent of their daily needs.

FORTIFIED FOODS

Fortified staple foods will increase micronutrient intake at the population level – including for adolescents. However, as large-scale food fortification is not specifically targeted at adolescents, it is not extensively covered in this report. Specific fortified products for adolescents are a potential solution to micronutrient deficiencies. However, these products are very scarce, and often with low fortification levels, while they contain sugar, salt and unhealthy fats.

Fortified powdered milk, a common component in the diet of young children, is being sold with targeting of youths (15–24 years old), as are some other products. However, this is not yet a fully explored market. Commonly fortified staple foods are salt, wheat flour, rice and cooking oil. Iodisation of table salt is mandatory in most countries in the region. Where this is the case, there is relatively high coverage (73 per cent of households in East Asia and Pacific consume iodised salt). However, in countries that do not require mandatory fortification, coverage rates of iodised salt are much lower. Even when iodisation is mandatory, it is often very difficult to enforce these regulations. In Indonesia, for instance, there are tens of thousands of small salt producers that either do not iodise at all or do not iodise adequately. Availability of potassium iodate – which is used to add iodine to the salt – is currently an issue following the disaster in the nuclear plant in Fukushima (which was a major supplier). Fortification of wheat flour is mandatory in fewer countries: Indonesia, Fiji and the Philippines in East Asia, and Kazakhstan and the Kyrgyz Republic in Central Asia, while it is being considered in other countries such as Malaysia, Mongolia and Vietnam. Rice fortification is a new technique that involves mixing rice with fortified rice kernels. It is currently mandatory in the Philippines, while Bangladesh, Cambodia, China, Myanmar, Sri Lanka and Indonesia have plans to introduce rice fortification.
Table 6: Fortification of salt and wheat in Asian countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Salt iodisation is mandatory</th>
<th>% of households consuming iodised salt (2003-2008)&lt;sup&gt;f&lt;/sup&gt;</th>
<th>Flour fortification is mandatory</th>
<th>% of flour that is fortified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>Yes</td>
<td>260 million</td>
<td>No</td>
<td>-</td>
</tr>
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<td>15</td>
</tr>
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<td>2</td>
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<td>-</td>
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<td>9</td>
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<td>63</td>
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<td>92</td>
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<td>50</td>
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<tr>
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<td>Viet Nam</td>
<td>No</td>
<td>93</td>
<td>No</td>
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</table>

Table from [http://www.unicef.org/eapro/Nutrition_knowledge_product_100417(1).pdf](http://www.unicef.org/eapro/Nutrition_knowledge_product_100417(1).pdf)

Note: the percentages are FFI estimates and sources vary, often industry reports.

<sup>f</sup> Percentage of households consuming adequately iodised salt (15 parts per million or more).

<sup>†</sup> UNICEF: UNICEF’s partnership with Sansiri for salt iodisation in Thailand. www.unicef.org/ partners/Partnership_profile_2012_Sansiri_Thailand_V2_approved.pdf

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<sup>98</sup> http://www.cdc.gov/mmwr/preview/mmwrhtml/00042446.htm


<sup>113</sup> http://www.womendeliver.org/knowledge-center/facts-figures/girls-education/

COMMERCIAL FORTIFIED PRODUCTS FOR ADOLESCENTS

Theoretically, commercially available fortified foods and beverages could play a role in improving nutrient intake of adolescents. These products should have a high content of micronutrients and essential fatty acids, but be low in sugar, salt and saturated fat. However, to our knowledge, very few products are currently available that are specifically marketed towards adolescents. Most products are targeted either at younger children or at adults. Moreover, many of the available fortified products are essentially unhealthy snacks, high in salt, sugar and/or saturated fats, to which a small amount of micronutrients is added. This is a missed opportunity that deserves to be further explored.

SCHOOL-FEEDING PROGRAMMES

The majority of school-feeding programmes aim to increase educational participation rather than provide highly nutritious foods. However, there is no reason why both of these objectives cannot be met, providing high-quality, nutritious foods that motivate adolescents, particularly girls to stay in school, while also helping to improve their nutritional status. CDC provides guidelines for complete, integrated and effective school-based programmes to promote healthy eating. These include having a school policy on nutrition and a sequential, coordinated curriculum on healthy eating with appropriate instruction for students. It is equally important to ‘walk the talk’ and integrate the education with the foods provided in or around the school by ensuring that nutritious and healthy foods are served. Obviously, staff should be trained to implement the policies. Families and communities should be involved in the programme, for example through community events and cooking meals. Essential, although often forgotten, is adequate programme evaluation and adjustment where needed.

A study in Indonesia found that providing iron-rich meals once a day, six days per week for six months to adolescent girls (12–15 years) improved both their iron and vitamin A status. Among those who were anaemic at baseline, 48 per cent of those in the iron-rich group became non-anaemic, while 22.2 per cent in the iron-poor group became non-anaemic (p<0.05). Serum retinol and β-carotene were significantly increased within subjects after six months of intervention both in the iron-rich and iron-poor groups, and the changes were larger in the iron-rich group (p<0.05). The meals were affordable and made from local ingredients, showing that it is possible to improve the nutritional status of adolescent girls through intensive school feeding. The girls attended boarding schools, which made it more feasible to provide the meals from a logistical point of view.

4.2.2 NUTRITION-SENSITIVE INTERVENTIONS FOR UNDERNUTRITION

EDUCATION AND SCHOOL ATTENDANCE

As discussed above, keeping girls in school as long as possible is one of the most important nutrition-sensitive interventions. Not only does it decrease the gender gap and empower girls, it also exposes them to knowledge. If girls are pulled out from school prematurely, they miss out on all education programmes provided through the schools. Keeping them in school will delay marriage and childbearing, reduce the risk of delivering a malnourished child, and provide opportunities for nutrition education and programmes to prevent and treat under and overnutrition in today’s adolescents, as well as generations to come.

Programmes and interventions that aim to increase girls’ school attendance should address the main barriers faced by girls: financial barriers, cultural bias and traditions that do not support girls’ education, lack of female teachers, lack of sanitary facilities (no sanitary napkins or separate toilets), sexual harassment and child marriage.

Therefore, governments have an important role to play in providing accessible, mandatory and low cost education, and making schools more girl-friendly. Sexual and reproductive health, as well as nutrition, education should be mandatory in schools. Many girls know nothing about menstruation until they experience it.
**WASH (WATER, SANITATION AND HYGIENE)**

Although hygiene and sanitation issues for adolescent girls are not so much related to infectious diseases as they are for younger children (probably also related to developed immunity against parasites encountered earlier in life), but they are still important. Intestinal parasites causing blood loss and malnutrition do occur in adolescents who live in unhygienic circumstances, so in these cases regular deworming should be considered, especially when anaemia is common. In addition, menstruation poses a threat to adolescent girls’ education. Reports from Africa (none found on Asia) mention that 51–95 per cent of adolescent girls miss school days due to menstruation. They have a need for adequate toilet facilities at school, both in numbers and in quality and cleanliness. It is also important to have access to sanitary napkins for them to feel safe and comfortable about attending school during their menstruation.

Interventions aimed at changing adolescents’ diets by encouraging increased consumption of locally available nutritious foods like green leafy vegetables, legumes and other fibrous foods, may also have an impact on requirements for water and sanitation. For example, when girls are given large amounts of dark-green leafy vegetables, which not only contain much-needed micronutrients but also have high fibre content, it may change their frequency of defecation. In this case it is important to ensure that sufficient toilet facilities are available in the schools. It may even be necessary to build extra toilets, as was the case in a dietary intervention in Indonesia.

**GIRL-FRIENDLY SCHOOLS**

An example of a girl-friendly school project in Ethiopia that could be suitable for replication in Asia is Save the Children’s ‘School Health and Nutrition’ and ‘Menstrual Health Management’ project. Lack of information about the physical changes of puberty or feminine hygiene products, infrastructure in schools that is not supportive of their needs and taboos on discussing sexual and reproductive health issues with parents were the underlying causes of high absenteeism among menstruating girls. The programme consisted of four elements. Community dialogues and spaces were created to discuss issues related to puberty and menstruation. This led to increased understanding of the challenges and concerted efforts to overcome these by building better latrines, separate from those for boys, with lockable doors, and a place to dispose of used sanitary pads, and providing better materials for sanitary pads. School-based sexual education was linked to other topics such as the risks of early marriage, taught by teachers and selected girls as extracurricular learning opportunities. In addition, girls were given free sanitary napkins. The key to success for this type of programme lies in strong partnerships with all stakeholders, and the mobilisation and education of parents and community leaders.

**NUTRITION-SENSITIVE POLICIES IN INDONESIA**

The official minimum age that girls are permitted to marry is 16 years, but there are efforts to raise it to 18 years, and even 21 years, but the latter was not effective (Jakarta Globe, 17 June 2012). In some rural areas, 9 per cent of girls get married between the ages of 15–19 years, in particular in remote rural areas. During the ‘Orde Baru’ regime of Soeharto, in the 1980s a policy was piloted by MOH and UNICEF in cooperation between the MOH and MOR. If adolescent girls wanted to get married, they needed a certificate from the Health Centre regarding their age, health and nutrition status. Revitalising this policy and expanding its reach is currently being discussed as part of Indonesia’s Nutrition-sensitive approach.

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138 Soekirman, personal communication (March 2014).
REGULATION OF FOOD MARKETING

A major challenge for the public health community as it attempts to use BCC to combat obesity is that it must compete directly with very sophisticated and well-funded commercial marketers promoting alternative behaviours, including unhealthy food and beverages. Government regulation of marketing unhealthy products, especially when directed at children, is increasingly common.

While this trend began in Europe, it is expanding around the world, including Asia, where six countries have adopted restrictions on advertising (Australia, New Zealand, India, Singapore, South Korea and Thailand). These countries in addition to China have also adopted school-focused guidelines or restrictions on the marketing of unhealthy foods inside schools. This includes ensuring that only healthy (low-fat, low-sodium) foods are sold in school, and that the canteen only serves healthy meals.

4.3 INTERVENTIONS TO ADDRESS OVER NUTRITION

In 2009, the WHO also implemented a thorough review of the literature on interventions around the globe to change diet and physical activity patterns among populations of all ages to determine what works. The comprehensive review of 395 studies on diet and physical exercise published between 1993 and 2006 in peer-reviewed journals looked at the following interventions:

- policy and environment
- mass media
- school settings
- the workplace
- the community
- primary health care
- older adults
- religious settings

Each intervention was assessed for effectiveness in terms of:

i) psychosocial changes, including knowledge and attitudes related to diet and physical activity, self-efficacy, and stage of change

ii) behavioural changes, including behaviour towards diet, physical activity, and sedentary lifestyles

iii) physical and clinical changes, including blood pressure, body mass index, cholesterol and weight.

Some of the interventions considered ‘effective’ or ‘moderately effective’ on the above outcomes can be found in Table 7.

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140 Ibid.

141 http://www.cdc.gov/mmwr/preview/mmwrhtml/00042446.htm

Table 7: Effective and moderately effective interventions to change diet and physical activities (adjusted from WHO\textsuperscript{143}; references to original studies detailed in original document)

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Effective</th>
<th>Moderately Effective</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy and environment</strong></td>
<td>• Government regulatory policies to support a healthier composition of staple foods (replacing palm with soy oil reduces the saturated fatty acid content of the oil)</td>
<td>• Pricing strategies (fiscal policies) and point-of-purchase prompts in grocery stores, vending machines, cafeterias and restaurants to support healthier choices</td>
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<tr>
<td></td>
<td>• Environmental interventions targeting the built environment, policies that reduce barriers to physical activity, transport policies and policies to increase space for recreational activity</td>
<td>• Multi-targeted approaches to encourage walking and cycling to school, healthier commuting and leisure activities</td>
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<td>• Point-of-decision prompts to encourage using the stairs (e.g. information on the benefits of physical activity beside elevators and stairs)</td>
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<tr>
<td><strong>Mass Media</strong></td>
<td>• Mass media campaigns promoting physical activity:</td>
<td>• Intensive mass media campaigns using one simple message, e.g. increasing consumption of low-fat milk, or fruit and vegetables</td>
</tr>
<tr>
<td></td>
<td>• with community-based, supportive activities such as programmes in schools and local communities; or</td>
<td>• National “health brand” or logos to assist consumers to make healthy food choices</td>
</tr>
<tr>
<td></td>
<td>• associated with policies to address local environment barriers to participation</td>
<td>• Long-term, intensive mass media campaigns promoting healthy diets</td>
</tr>
<tr>
<td><strong>School settings</strong></td>
<td>• High-intensity school-based interventions that focus on diet and/or physical activity, are comprehensive, multi-component and include:</td>
<td>• A focussed approach, for example programmes aimed at reducing sedentary behaviour and increasing participation in physical activity, accompanied by supportive activities within the curriculum</td>
</tr>
<tr>
<td></td>
<td>• curriculum on diet and/or physical activity taught by trained teachers</td>
<td>• A formative assessment that addresses the needs of the school and cultural contexts</td>
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<td></td>
<td>• supportive school environment/policies</td>
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<tr>
<td></td>
<td>• a physical activity programme</td>
<td></td>
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<tr>
<td></td>
<td>• a parental/family component</td>
<td></td>
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<tr>
<td></td>
<td>• healthy food options available through school food services: cafeteria, vending machines, etc.</td>
<td></td>
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<tr>
<td><strong>The workplace</strong></td>
<td>Multi-component programmes promoting healthy dietary habits and/or physical activity, that:</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>• provide space for fitness or signs to encourage the use of stairs</td>
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<tr>
<td></td>
<td>• involve workers in programme planning and implementation</td>
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<td></td>
<td>• involve the family in interventions through self-learn programmes, newsletters, festivals, etc</td>
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<tr>
<td></td>
<td>• provide individual behaviour change strategies and self-monitoring</td>
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<tr>
<td></td>
<td>• provide healthy food and beverages at the workplace facilities, e.g. in the cafeteria or vending machines</td>
<td></td>
</tr>
<tr>
<td>Interventions</td>
<td>Effective</td>
<td>Moderately Effective</td>
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<tr>
<td><strong>The community</strong></td>
<td>• Diet education programmes that include multiple components:</td>
<td>• Interventions that use an existing phone-in-service to provide dietary advice</td>
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<td></td>
<td>• community development campaigns with intersectoral cooperation and/or focused on a common goal</td>
<td>• Community-wide interventions conducted as part of a national or global campaign (e.g. healthy lifestyles or “Healthy Village”) in a homogeneous community</td>
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<td></td>
<td>• group based physical activity programmes or classes for homogenous group of individuals</td>
<td>• Programmes that target low-income/low-literacy populations and include diet education as a standard component</td>
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<tr>
<td><strong>Primary Health Care</strong></td>
<td>• Interventions targeting chronic NCD risk groups that:</td>
<td>• Computer/web-based interventions with interactive personalised feedback, targeting high-risk groups</td>
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<tr>
<td></td>
<td>• include persons who are inactive, consume less than five servings of fruits and vegetables daily, consume a lot of dietary fat, are overweight, or have a family history of obesity, heart disease, cancer and/or type 2 diabetes</td>
<td>• Supermarket tours and on-site educational programmes to support the purchase of healthier foods</td>
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<td></td>
<td>• include at least one session (health risk appraisal) with a health-care professional, with brief negotiation or discussion to decide on reasonable attainable goals, and a follow-up consultation with trained personnel</td>
<td>• Walking to school</td>
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<td></td>
<td>• are supported by targeted information</td>
<td>• Cholesterol screening programmes that provide clients with their results and follow-up education, ideally in person</td>
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<tr>
<td></td>
<td>• are linked and/or coordinated with other stakeholders such as community sports organisations or ongoing mass media physical activity campaigns</td>
<td>• Weight loss programmes using health professionals with:</td>
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<tr>
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<td></td>
<td>• personal or telephone/internet consultation over a period of at least four weeks, and a self-help programme that includes self-monitoring.</td>
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Ibid.
4.3.1 INCREASING PHYSICAL ACTIVITY AMONG ASIAN ADOLESCENTS

Many studies from around the world have assessed factors associated with increased physical activity among adolescents. Some studies have looked at demographic factors that correlate with higher activity levels (for example, age, ethnicity or gender). Other research has looked into the role of social factors such as family or peer pressure on levels of physical activity. The focus has recently shifted to what is called ‘the built environment’ or the availability of physical infrastructure, measured as the objectivity part of a social-ecologic model of health behaviour.\textsuperscript{144}

SCHOOL PLAY FACILITIES AND PHYSICAL ACTIVITY IN VIETNAM

One school-based study of 2,684 junior high school students in Ho Chi Minh City found that schools having one to two sports meetings per year and the availability of a play yard decreased the odds of inactivity, while being distracted by more sedentary activities such as video games and TV for boys and studies for girls increased the odds of inactivity.\textsuperscript{148}

In the WHO’s 2010 Global Recommendations on Physical Activity for Health\textsuperscript{145} the following is recommended for children 5–17 years old:

1. Children and young people aged 5–17 years old should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity daily.
2. Physical activity of amounts greater than 60 minutes daily will provide additional health benefits.
3. Most of daily physical activity should be aerobic. Vigorous-intensity activities should be incorporated, including those that strengthen muscle and bone, at least three times per week.\textsuperscript{145}

Adolescents older than 18 are grouped together with adults up to the age of 64 and recommendations for them include the following:

1. Adults aged 18–64 years should do at least 150 minutes of moderate intensity aerobic physical activity throughout the week, or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.
2. Aerobic activity should be performed in bouts of at least 10 minutes duration.
3. For additional health benefits, adults should increase their moderate-intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination of moderate- and vigorous-intensity activity.
4. Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.\textsuperscript{147}


\textsuperscript{146} Ibid.

\textsuperscript{147} Ibid.
GRASSROOTS FOOTBALL

Over the last 10–15 years many organisations have used football as an effective teaching tool and platform for HIV-related behaviour-change prevention programmes. These programmes have taken place with both in-school and out-of-school youth and have used various curricula and interpersonal communication techniques. Some of the success factors that would be applicable to risky nutrition behaviour and unhealthy lifestyles include:

- Football is flexible and allows one to reach a variety of audiences, of all genders, inside and outside institutions.
- It draws on communication techniques and communication styles of the unique coach-player relationship.
- It draws on the power of inspired and committed individuals who are often role models and community resources.
- It is an excellent platform for transmitting messages through media.
- Celebrity players and local coaches can be advocates with transformative influence.
- Football is particularly successful at creating partnerships.

ONE GOAL

A new campaign called One Goal aims to use this approach by leveraging the power of football to raise awareness on malnutrition and improve nutrition among children, young people, parents and football lovers throughout Asia. By using its links to professional football and a platform of 1.4 billion football fans in Asia, One Goal will have a sustainable campaign-financing mechanism. It will partner and learn from existing programmes that use grassroots sports to convey health messages and model positive behaviours. For example, an Indian NGO called Magic Bus uses an Activity- Based Curriculum (ABC) to promote hygiene, gender equity, school attendance, sexual and reproductive health and nutrition messages to disadvantaged children through a 40-session programme. Each session has a development goal, which is reinforced with sports and activities in order to make it more fun. Trained mentors and volunteers administer the sessions, meet one-on-one with parents and organise tournaments.

SCHOOL-BASED PHYSICAL EDUCATION IN TAIWAN

Taiwan is among the Asian countries with the highest overweight rates and 80 per cent of mortality among its population is related to obesity. The government has taken the task of reducing these statistics seriously and has set an annual national weight-loss target of 600,000 kilograms. The whole nation has been mobilised to reach that target together, including school children. Children are weighed regularly and those kids diagnosed as overweight are assigned extra physical education classes to increase their activity levels. Interestingly, many parents of these overweight children don’t fully appreciate the benefits of these extra classes and object to taking time away from their children’s academic study to devote to physical activity.

PHYSICAL EDUCATION IN SCHOOL

Singapore is another country that has invested in a multi-faceted healthy lifestyle programme targeting severely overweight secondary school students. The EMPower Programme by the Health Promotion Board aims to help students manage their weight by improving nutrition knowledge and increasing physical activity. Students receive a medical assessment, three half-hour counselling sessions over six months and interactive games that help them make healthier diet choices and keep fit through regular exercise. Students are encouraged to set realistic goals and make gradual changes to their lifestyles. The programme includes a parental counselling component that advises them how to support their children’s weight management goals.

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147 Ibid.
150 onegoal.asia
151 http://magicbus.org/about-us
153 http://www.youtube.com/watch?v=M-IGBX8eQmw
154 http://www.hpb.gov.sg/HOPPortal/health-article/636
Another youth-friendly, though not explicitly youth-targeted programme, is a new smart-phone application called ‘Sugar Alert!\textsuperscript{155}’ that allows users to find out the amount of activity required, according to one’s weight, to expend the calories in a particular beverage. Users can identify a beverage by either scanning the barcode or typing in the name of the beverage and find out how much sugar (in corresponding numbers of teaspoons) that beverage contains and how much of a particular physical activity (e.g. jogging), selected from a list of over 100 different activities, they need to engage in to use up the calories in that beverage. The application was developed by researchers at the NUS (National University of Singapore) Saw Swee Hock School of Public Health based on data from the sugar content data bank.\textsuperscript{156} But the strategy does not end with the adolescent and his or her parents. Singapore has also done considerable work to change environmental factors to make it easier for adolescents to act in their best interests. For example, they also implemented a ‘Healthier Hawker Programme’,\textsuperscript{157} which engages both ingredient suppliers and hawkers to increase the availability of healthier food choices at hawker-centres popular with all Singaporeans, especially adolescents. Some changes include using lower-saturated oils and reduced-sodium salt to cook foods, increasing the number of dishes that use whole-grain ingredients and introducing calorie postings/healthier choice symbol markings for healthier dishes on menu boards. The Health Promotion Board will scale up the programme to include food courts, chain restaurants and volume caterers. Researchers at the NUS Saw Swee Hock School of Public Health, are collaborating with colleagues from the Health Promotion Board to evaluate the Healthier Hawker Programme. And finally, the government has invested significantly in increasing usable outdoor space on the crowded island with the development of parks and the 2012 launch of the Green Corridor. The Corridor involves trails for joggers, bikers, nature photographers and dog walkers and a 6.5-mile Green Corridor Run. Built on an old colonial railway line, historical walking tours have also begun for students.\textsuperscript{158}
4.3.2 BLUE OCEAN INTERVENTIONS

‘Blue Ocean’ is a term taken from the book ‘Blue Ocean Strategy’ and used here in the sense of ‘interesting ideas floating but not yet applied’. Some of the ideas here were provided by third parties and these are acknowledged; others are the authors’ ideas and are indicated as such as well. The most innovative interventions are those that seem to integrate various vertical initiatives and build comprehensive adolescent health and well-being programmes that include information, products and services delivered through both schools and community. A number of NGOs in India have begun to pilot these kinds of initiatives (See Box Below).

INTEGRATED HEALTH AND LIFE SKILL PROGRAMMES TARGETING ADOLESCENT GIRLS IN INDIA - EXAMPLES

One innovative way to draw attention to the needs of adolescent girls and encourage innovation is to create a competition that awards NGOs for innovative ways of targeting this audience. In 2014, Dasra, an Indian philanthropic foundation created the Girl Power Awards to recognise impactful interventions in the areas of health, education and life skills. The awards aim to highlight the needs of a vulnerable and ‘largely invisible’ population. One finalist, the Ashish Gram Rachna Trust in the State of Maharashtra, works with married adolescent girls and their spouses on a combined package of health and life skills training. In partnership with local healthcare workers they develop plans for provision of adolescent-friendly reproductive services, counselling and BCC.

Another NGO called Bella Health Care Charitable Trust in Uttarakhand provides group classes to poor adolescent girls on various health and well-being issues while also providing youth-friendly reproductive health care via a mobile and out-patient clinic.

Another organisation in Delhi called INDCARE Trust has conducted a training of trainers for 100 adolescent girls with selection based on their vulnerability (poverty, school drop outs, etc.) in the areas of health, hygiene, nutrition, sexual health and livelihoods, using various creative methodologies such as workshops, posters, flash cards, songs, etc. They intend to go on to train other groups of girls in the future, which is, in and of itself, highly empowering.

Yet another innovative programme is implemented by Lok Swasthya Sewa Trust (LSST) in Gujarat, part of the SEWA national trade union, with nearly 2 million members. It is working with members’ teenage daughters on a multi-faceted programme that includes comprehensive health education, leadership and life skills training and facilitating access to health services, livelihood options and financial services for youth. This is delivered through monthly meetings and home visits and large-scale events and health fairs.

PRIDE FOR PLAY

An award-winning innovative programme in Singapore called PRIDE for PLAY provided universal access to 20–40 minutes of unstructured, adult-supervised play time in a safe environment for all pupils in participating primary school. Time for this program was created by extracting 3 minutes off each of the other time-tabled subjects. Evaluation of this 2-year project showed increased daily physical activity, improved teacher-pupil understanding, improved school ethos, increased concentration and less disruptive behaviour in class, no increase in injuries, and no decline in academic performance. Stakeholders praised the programme for its innovativeness, authenticity, simplicity, feasibility, efficacy, scalability and low cost. The most important factor leading to its success was school-wide buy-in from management, teachers and community outreach including parents. Although designed for primary schools, it is highly suitable for replication in secondary schools across Asia.

151 https://itunes.apple.com/sg/sugar-alert/id60077995?mt=8
156 Chia M. ‘PRIDE for PLAY: Personal responsibility in daily effort for adolescent girls on various health and well-being issues while also providing youth-friendly reproductive health care via a mobile and out-patient clinic.’
158 https://www.dasraphilanthropyweek.org/dasra-girl-power-awards.html
4.3.3 ADOLESCENT-FRIENDLY HEALTH SERVICES (AFHS)

Adolescent-friendly health services are health services that are suitable for adolescents. They are easily accessed and open at times when adolescents can use them, and provide services at affordable prices (or for free if needed). Equally important is that they appeal to young clients and are delivered using a style that is acceptable to them, as health care workers are often judgmental and not specifically trained to deal with young people. They should cater for the most vulnerable youths and provide a one-stop shopping experience for integrated and comprehensive services. According to the WHO, ‘the gold standard for AFHS is that they are effective and meet the individual needs of young people who return when they need to and recommend these services to friends.’ Rather than setting up specific facilities, AFHS should be integrated in existing services, through clinics, schools or in the community. Communities and adolescents should be well informed about, and actively participate in the design of suitable services.

A classic example of a nutrition-sensitive AFHS programme, should have linkages with other sectors (education, social welfare) and provide nutrition-related services such as growth monitoring, nutrition education, nutritional supplements, counselling and referral services.

India, Indonesia, Nepal and Thailand, among others, have established AFHS in many different settings – not only from schools and health centres or clinics but also at shopping malls and in the community.

Taiwan’s Health Promotion Administration (HPA) has established so-called ‘No. 9 Outpatient Services for Teens’ Happiness.’ These clinics provide adolescents with preventive care and reproductive health services, as well as assistance in communicating with parents about their unexpected pregnancies and have played a role in the drop in adolescent pregnancy rates in the country.

An innovative alternative channel to reach adolescents, especially those at particularly high risk for early pregnancy, may be when they register for marriage. At this time they are highly open to fulfill any requirements, and for pregnancy. Offering these young women a voucher or coupon for supplements or youth-friendly family-planning services at this time could increase compliance with these interventions.

Accessing information about family planning and contraceptives can be challenging for young women in Asia. There are basic cost and availability barriers. Legally, many methods require a prescription, meaning adolescents must seek reproductive health services that they find intimidating, costly or stigmatising, especially if she is – or is suspected to be – unmarried. Talking to young people about family planning means talking to them about sex, which is something that many cultures find difficult and taboo-laden. Many countries, including Thailand and the Philippines, have a school-based sexual or reproductive health education programme.

4.3.4 FAMILY PLANNING/REPRODUCTIVE HEALTH

Dealing with some of the underlying causes for undernutrition among adolescent girls can be complicated as these issues are often structurally-related to poverty, long-standing gender discrepancies, and overall disempowerment that leads to common phenomena such as child marriage, early pregnancy and overall lack of independent reproductive decision-making for young women. International Planned Parenthood Federation (IPPF) launched the global ‘Girl Decide’ Program in 2011 to address these issues through advocacy and IEC (Information, Education and Communication) as well as emphasising its ongoing efforts to support adolescent-friendly service delivery (IPPF reports that one in every three clients is a young person below the age of 25.)

Sharda Mahila Vikas Society (SMVS), also working in Gujarat, implements a school-based programme targeting adolescent girls with messages on health, nutrition, education and social issues, while also providing community-based BCC and services including conducting blood tests for anaemia, distributing iron and folic acid tablets, providing absorbent cotton cloth for menstruation and counselling victims of sexual abuse. The organisation trains peer educators to implement most of its activities and also mobilises support from parents and village leaders for adolescent girls’ issues.


WHO. Adolescent Nutrition: A review of the situation in selected Southeast Asian Countries. WHO Regional Office for South East Asia, New Delhi 2006.


Ibid.

IPPF reports that one in every three clients is a young person below the age of 25.

An interesting project in a country thought to have relatively conservative views on sex is the ‘Talking Frankly’ Project implemented in 40 schools in Jordan that seeks to raise awareness about health issues that arise with puberty. The public-private partnership between the Johns Hopkins Bloomberg School of Public Health (JHU•CCP) led project, the Ministries of Education and Health, Fine Hygienic Paper Company and Fine Sancella Hygiene Jordan is innovative on a number of fronts. First is its ability to leverage private-sector support and funding. Second is its construction of 18 health rooms in girls’ schools where the girls receive general information about health issues and can acquire feminine hygiene products. The project is also an integrated one in terms of the topics included in educational materials. The range of topics, includes changes that come with puberty, nutrition for adolescents, the importance of physical activity and proper hygiene.

With the spread of technology, young women around the world have many new avenues for learning about sexual and reproductive health (see box above), including family planning. Websites, social media and smart phones allow youth to access information privately and confidentially. However, the young women’s ability to act on that knowledge is still restricted by access barriers described above – cost, availability and stigma.

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4.3.5 TECHNOLOGY

Technology has exploded throughout Asia over the last 10–20 years and no population is more aware and experienced with these communication tools than are adolescents, many of whom have been using computers for most of their lives. Some of the kinds of tools that are being used by other health programmes (for example, HIV prevention among high-risk groups in Thailand) in the region can be used to deliver behaviour change messages related to improved nutrition, micronutrient supplement compliance, promotion of physical exercise and reproductive health and other teen-related topics. These include:

- geo-social networks – dating sites or foursquare
- online media – website, blogs and YouTube
- chatting portals
- social media (Facebook/Twitter/Instagram/etc.)
- text messaging (SMS) campaigns
- tablet-based interpersonal communication (IPC) approaches.

5. The way forward

1. While the WHO began to recommend a shift towards adolescent programming almost a decade ago, few large national programmes have taken this on. Where these do exist, they tend to be somewhat vertical in nature, for example weekly iron and folic acid (IFA) supplementation or reproductive health service provision. Few large-scale integrated programmes exist from which to learn lessons. Asian countries and their international partners need to begin to develop new large-scale models to address malnutrition in this target group as they have done so well for children under 5 years of age or pregnant women.

2. Having said that, many smaller, non-traditional projects have been successful at reaching adolescents through innovative, youth-appropriate strategies, helping teens overcome barriers to bring them the knowledge, products and services they need in a comfortable and emotionally and intellectually engaging manner. Members of the international community must adjust their traditional view of how to implement programmes when thinking about this unique group, learning from these smaller programmes about what works and what does not. They must also evolve new monitoring and evaluation tools and techniques that fully capture programme impact.

3. What seems to be clear from smaller programmes is that youth prefer programmes in a holistic package. They do not perceive the distinctions that health or nutrition professionals make. They are eager to learn and curious about so many changes happening to them. Programmes must be flexible and address all their needs in order to be credible. Young people also seek out emotional experiences or the formation of strong relationships. Effective programmes often involve repeated peer-group meetings and the establishment of a positive group identity.

4. What is also clear from successful youth-directed programmes is that interventions that seek to engage youth must also be fun, entertaining and have a social, emotional and psychological development component. Programmes that use sports or games like One Goal or Magic Bus are seeking to make their programmes fundamentally fun, to motivate consistent participation and ensure that the messages are credible and appealing to youth. They also tend to inspire passion, a powerful accompaniment to core BCC messaging.

5. As much as collaboration between sectors is always important for health and nutrition programming, it is an absolute imperative when it comes to targeting adolescents. The nutritional status of adolescents is not the sole responsibility of the health sector. Involvement of other sectors is critical, such as education and schools, sports, youth, social welfare, technology, employment and industry, agriculture and community development. Establishing country-level mechanisms (or adapting existing ones such as the Scaling Up Nutrition [SUN] movement) for this collaboration will be important to move forward.
6. Obesity, typically thought of as an industrialised world problem, has sneaked up on many Asian countries. Governments have to accept that they face a double burden of malnutrition requiring a double dose of investment and resources. They are still largely in the process of ramping up programming to deal with undernutrition, and must now quickly do the same for overnutrition. This is not just the case for government ministries, but for multilaterals, international, national and local NGOs and donors, who need to redirect their attention toward combating rapidly increasing rates of overweight and obesity.

7. In trying to find a balance between these two problems – undernutrition and overnutrition – no one is more vulnerable than those born with low birth weights to undernourished or young mothers, as these children are more prone to becoming obese. Targeting youth is the first step in breaking this intergenerational cycle. It is an opportunity that should not be squandered.

8. Given the long-term benefits for targeting adolescents and developing high-quality, holistic programming, donors may need to reconsider ideas around cost-effectiveness and sustainability. In taking a long-term view of these benefits, a shift from a (short-term) donor mindset to that of a (long-term) investor is needed. More innovative and self-sustaining approaches to effectively reach adolescents and youth, particularly girls, and a shared knowledge and evidence base on this, are critically needed to constructively grow a range of options for investing in the health and wellness of adolescents today and for generations to come.

Annex 1: Countries grouped by WHO region and income per head as used in this report, 2004

**HIGH-INCOME COUNTRIES**
MEDITERRANEAN REGION
Bahrain, Kuwait, Qatar, Saudi Arabia, United Arab Emirates

WESTERN PACIFIC REGION
Australia, Brunei Darussalam, Japan, New Zealand, South Korea, Singapore

**LOW-INCOME AND MIDDLE-INCOME COUNTRIES**
EASTERN MEDITERRANEAN REGION
Afghanistan, Djibouti, Egypt, Iran, Iraq, Jordan, Lebanon, Libya, Morocco, Oman, Pakistan, Somalia, Sudan, Syria, Tunisia, Yemen

CLASSIFIED AS EUROPEAN REGION BUT GEOGRAPHICALLY LOCATED IN CENTRAL ASIA
Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Turkmenistan, Uzbekistan, Ukraine

SOUTHEAST ASIA REGION
Bangladesh, Bhutan, North Korea, India, Indonesia, Maldives, Burma, Nepal, Sri Lanka, Thailand, Timor Leste

WESTERN PACIFIC REGION
Cambodia, China, Cook Islands, Fiji, Kiribati, Laos, Malaysia, Marshall Islands, Micronesia, Mongolia, Nauru, Niue, Palau, Papua New Guinea, Philippines, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu, Vietnam

*WHO member states were classified as high income when their 2004 gross national income per head was US$10,066 or higher as estimated by the World Development Report 2004.*

*Low-income and middle-income countries include those with a 2004 gross national income per head lower than US$10,066.

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**Notes:**

179 Personal correspondence with David Valentine, Acting Country Representative, PSI/Thailand.

180 http://magicbus.org/about-us

