ADOLESCENT NUTRITION

Policy and programming in SUN+ countries

Save the Children

Front cover: Safie, 17, from Kroo Bay, a large slum area of Sierra Leone's capital, Freetown. (Photo: Anne-Sofie Helms/Save the Children)

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+44 (0)20 7012 6400
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ABBREVIATIONS AND ACRONYMS

ACF	Action Against Hunger
BCC	behaviour change communication
BMI	body mass index
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
DEVCO	European Commission Directorate-General for International Cooperation and Development
DFID	Department for International Development (UK)
DFTAD	Foreign Affairs, Trade and Development Canada
DRC	Democratic Republic of Congo
EC	European Commission
ECHO	European Commission Directorate-General for Humanitarian Aid and Civil Protection
EU	European Union
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agriculture Organization of the United Nations
GDP	gross domestic product
GSHS	global school-based student health survey
HAZ	height-for-age z-score
HIV	human immunodeficiency virus
HPV	human papilloma virus
ICN-2	International Conference on Nutrition 2
ICRC	International Committee of the Red Cross
IDA	iron deficiency anaemia
IDP	internally displaced person
IFA	iron and folic acid
IFRC	International Federation of Red Cross and Red Crescent Societies
ILO	International Labour Organization
IYCF	infant and young child feeding
MDG	Millennium Development Goal
MMN	multiple micronutrients
MUAC	mid upper arm circumference
OFDA	Office of US Foreign Disaster Assistance (USA)
OWG	Open Working Group
SABLA	Rajiv Gandhi Scheme for Empowerment of Adolescent Girls
SDG	Sustainable Development Goal
SGA	small for gestational age
SUN	Scaling up Nutrition Movement
SMS	Scaling Up Nutrition Movement Secretariat
UN	United Nations
UNCRC	United Nations Convention on the Rights of the Child
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNU	United Nations University
USAID	United States Agency for International Development
WASH	water, sanitation and hygiene
WB	World Bank
WFP	World Food Programme
WHA	World Health Assembly
WHO	World Health Organization

EXECUTIVE SUMMARY

ADOLESCENTS – A NEGLECTED GROUP

> *"Adolescents are in many contexts a marginalised and disempowered group. They lack a voice on the social stage, have constrained access to resources, are likely to drop out of education and are vulnerable to exploitation and violence."*
>
> (Burman and McKay, 2007)

In 2012, there were 1.2 billion adolescents in the world – defined as young people between the ages of 10 and 19 years. The vast majority of adolescents (90%) live in low- or middle-income countries. In some countries, as many as half of all adolescents are stunted (Black et al, 2013), which means their physical and cognitive development has been restricted because of inadequate nutrition.

The first 1,000 days of life – from the start of the mother's pregnancy to the child's second birthday – are critical for healthy development, and so the nutrition community (eg governments, donors and non-governmental organisations) has, over recent years, focused its efforts on this window of opportunity. But with 16 million adolescent girls giving birth each year, targeting women and girls only when they are pregnant is often too late to break the intergenerational cycle of malnutrition.

During the past decade, birth rates have declined globally while child survival has increased. Hence, there are more adolescents and young people today than ever before (Blum et al, 2012). As more children survive into the second decade of their lives, it is paramount that their specific nutrition needs are addressed. Furthermore, if a child's nutritional status is to be optimised, it is vitally important to target adolescent girls in particular. The millions of adolescent girls who give birth each year are more likely to die during childbirth than older women, or to be left nutritionally depleted. Their babies are also more likely to die or be born with nutritional deficits. The infants who survive have a greater risk of growing up to be stunted mothers or fathers themselves. In order to prevent malnutrition being passed to the next generation, adolescent girls, their families and communities must be supported not only to improve adolescents' access to nutrition, but to delay marriage and pregnancy. The economic benefits of doing so could amount to 30% of a country's gross domestic product (GDP) (Chaaban and Cunningham, 2011).

WHAT IS BEING DONE?

Programmes to support adolescent nutrition are lagging behind the international call for focus on this area and the general increase in attention on nutrition nationally and internationally. The promising interventions for adolescent nutrition identified by *The Lancet* 2013 Series are not yet being widely implemented and are reflected in only a minority of the country plans written by those countries that have signed up to the Scaling Up Nutrition (SUN) Movement.[1] In the SUN countries where plans were available (22), fewer than half (10) included any detail on adolescent nutrition. Only seven (Bangladesh, Benin, Ethiopia, Guatemala, Madagascar, Mozambique and Nepal) included support for adolescent nutrition, or improving adolescents' nutrition status as part of a strategic objective or result. Just two of these countries (Mozambique and Nepal) reported assessing the status of adolescent nutrition, and none had plans to include adolescents in their monitoring and evaluation. It was noted that Nepal is the only country conducting a national assessment of the situation of adolescents as part of its plans. India – the only country not part of the SUN Movement that is included in this review, and where 55% of adolescents are anaemic – provides the largest-scale example of direct nutrition interventions being targeted to adolescents.

Therefore, in the majority of countries, adequate assessment of adolescent nutrition is lacking. Progress on direct interventions has been more substantial but, even so, the extent to which

adolescents are really being covered and the effectiveness of interventions in addressing nutrition outcomes is mostly unknown. Adolescents' participation in the design and implementation of programmes – despite being a strong recommendation from those working with adolescents – does not seem to have been adopted by nutrition programmers.

It is clear that a range of programmes across health and other sectors such as education, family planning, social protection, and water, sanitation and hygiene (WASH) may have important impacts on adolescent nutrition. Multi-sectoral approaches, as well as those taking account of the particular experiences and social position of adolescents, are therefore urgently required. Ethiopia, Mozambique and Nepal stand out for having started making inroads into integrated approaches for adolescent nutrition across sectors. There could well be value in future investigations in these countries into the effectiveness of this approach, to inform the wider international community.

The nature of adolescent nutrition means that responsibilities for supporting it need to span a wide range of ministries and actors at country level. Good coordination at ministry level and during implementation is therefore vital, but this is proving to be a key challenge. The SUN Movement could play an important role in promoting such inter-sectoral collaboration for nutrition, particularly in bringing adolescent nutrition issues to the fore and encouraging all actors to adopt the sort of holistic approach required to tackle them.

WHAT ARE THE CHALLENGES?

This review has identified a number of challenges, research gaps and missed opportunities.

First, lack of progress has been linked to insufficient policy attention on adolescent nutrition, perhaps as a result of the successful focus within the nutrition community on the first 1,000 days. While the first 1,000 days remains a critical window, it is also vital to reach young girls and women before conception if the intergenerational cycle of malnutrition is to be broken.

Second, the lack of empirical evidence and documented practical experience on what should be done to support adolescent nutrition and how (particularly across sectors), represents a fundamental challenge, and one that is reflected in the many research gaps related to operational issues. Such gaps include the lack of clear data on adolescents in general and on adolescent nutrition in particular. This is partly due to the limited clarity around methods of assessment of adolescents, and it is encouraging that some initiatives to address this are already underway. As a result, evidence of programme effectiveness on adolescents is hard to come by and evidence of cost effectiveness even more so. Furthermore, there is a particular gap in terms of assessments of how health and nutrition interventions that are targeted more generally (at households or women) affect adolescents.

Third, finding ways to reach adolescents – both within existing services and specific targeted interventions/promotion – is another key challenge. Current missed opportunities include via schools, mass media and other sectoral interventions such as health services that may already be targeting adolescents but could be more adolescent-friendly or responsive.[2] There is a common but flawed assumption that adolescents will automatically be included in any maternal health programmes.

Finally, adolescents are not being consulted about the extent to which nutrition services are currently serving them, or how those services could be better designed to meet adolescents' needs. Given the numerous challenges and gaps identified, capitalising on the resource of adolescents themselves is evidently a prerequisite for moving forward.

WHAT ACTIONS NEED TO BE TAKEN?

- **The international community needs to give greater attention to meeting adolescents' nutritional needs.** To do this, there needs to be more research (including age- and sex-disaggregated data) to generate **empirical evidence** about what works in reaching adolescents with nutrition interventions. As such, there is an urgent need for **clarity on UN mandates and leadership** in addressing adolescent nutrition so that the issue gets the leverage it needs. In the meantime, a multi-agency group should be established to find a way forward for policy and programming. This group should prioritise a research agenda and review strategies to scale up promising interventions.

- **SUN country governments should consider the long-term economic and health benefits that can be gained from strengthening adolescent nutrition, and prioritise adolescents in their policies and practices.** Interventions should find ways to reach adolescents and include them in the programme design phase. Adolescents should be acknowledged as a distinct category, with their own needs and capacities, rather than be subsumed within broader mother and child care programmes. Systems and structures must be put in place to monitor and evaluate outcomes for adolescents.
- **A multi-sectoral approach in policy and practice** is critical. Links with policies and programmes aiming to delay marriage and first pregnancy are a priority alongside other reproductive health programmes (such as promotion of contraception and HPV vaccination). There is also a need for more research to assess the extent to which health, education, WASH, social protection and agriculture interventions could be made more nutrition-sensitive for adolescents. **Strategies need to consider the context-specific burdens of malnutrition**, including undernutrition, obesity and eating disorders. **Coordination must be undertaken at the ministerial level, with guidance from the relevant UN organisations, particularly the World Health Organization (WHO), UNICEF and the United Nations Population Fund (UNFPA).**
- Given the challenges involved in reaching this neglected demographic group, it is necessary to **capitalise on the mechanisms that the multi-sectoral programmes use to reach adolescents**. Nutrition and health practitioners need to use **social media** to provide innovative opportunities for engaging adolescents, including particularly hard-to-reach adolescents who are not receptive to the more traditional health and nutrition education approaches or platforms.
- Finally, while the inclusion of adolescents in the proposed **post-2015 Sustainable Development Goals** (SDGs) is welcome, it is critical that this focus on adolescents is translated into practice. A first step is to scale up the existing 'promising interventions' highlighted by *The Lancet* 2013 Series and ensure that these interventions reach adolescents. If so, they should provide essential stepping stones to achieve the SDGs by 2030. In the same vein, the role that adolescents themselves can play in reaching the **World Health Assembly (WHA) nutrition targets** (WHO, 2015) by 2025 must be kept forefront in the minds of those aiming to achieve them. Future Global Nutrition Reports should include an analysis of adolescent nutrition intervention coverage and impacts.

1 INTRODUCTION

Globally, child mortality has more than halved from 12.7 million under-five deaths in 1990 to 6.3 million in 2013 (UN-IGME, 2014). Alongside the achievements of saving young children's lives comes the responsibility to ensure ongoing support as children grow and develop.

In 2012, there were 1.2 billion adolescents in the world – defined as those between the ages of 10 and 19 years. Adolescence is a time of rapid physical growth, second only to the first year after birth; during adolescence, children gain up to 50% of their adult weight and skeletal mass and more than 20% of their adult height.[3] Optimal nutrition during this period of life is therefore crucial. Poor nutrition during adolescence will not only affect adult body size, resulting in shortness or thinness (WHO, 2006), but may also affect the nutritional status of any children born to mothers who were malnourished during adolescence.

The majority of nutrition policies and interventions target women during pregnancy and lactation and children up to the age of two. While these periods of time are critical, it is imperative that adolescent girls are also targeted in order to break the intergenerational cycle of malnutrition. This is particularly important for the estimated 10 million girls under the age of 18 who get married each year (Partnership for Maternal, Newborn & Child Health, 2012) and the 16 million adolescent girls who give birth each year (WHO, 2014a).

While adolescents have typically been considered a low-risk group for poor health,[4] they go on to become adults with individual health profiles and are part of future generations. The issue of nutrition is becoming increasingly important as the evidence base grows, illustrating the links between early nutrition (including during adolescence) and the risks of chronic disease in adulthood (WHO, 2005). There is also greater evidence on the critical role of adolescent mothers' nutritional status in determining foetal health and development, reinforcing the 'intergenerational cycle of undernutrition' (ibid).

There are 1.2 billion adolescents (aged 10–19 years) in the world (Cappa et al, 2012).

90% live in low- and middle-income countries (LMICs), where they comprise 19% of the population (Black et al, 2013).

Sub-Saharan Africa is expected to have more adolescents than any other region by 2050 (UNICEF, 2011).

Save the Children commissioned this review in order to collate the experience of existing approaches for supporting adolescent nutrition in different contexts, with a focus on Scaling Up Nutrition (SUN) countries and India. It aims to assess the extent to which adolescent nutrition is currently being addressed. It does not claim to provide an exhaustive literature review of research on adolescent nutrition, but does aim to share experience of different types of approaches and challenges to inform countries so that they can strengthen relevant policies and programmes to address the needs of this neglected demographic group.

This report is targeted at ministers in SUN countries who hold responsibility for the welfare of adolescent girls, at senior officials in the United Nations (UN) and international agencies, at programme implementers and policy-makers in SUN+ countries, and at officials in the UK Department for International Development (DFID) and other bilateral and multilateral donors. Although not included in the SUN Movement at present, India is included in this review due to its importance in terms of burden of undernutrition and the availability of documented experiences with supporting adolescent nutrition. The review explores policies and programmes **directly** aimed at adolescent nutrition as well as those designed to improve adolescent nutrition **indirectly** (as long as support for adolescent nutrition is one of the intended impacts).

2 BACKGROUND

The World Health Organization (WHO) defines adolescents as:

> *"those people between 10 and 19 years of age"*[5]

The great majority of adolescents are, therefore, included in the age-based definition of 'child', which was adopted by the United Nations Convention on the Rights of the Child (UNCRC) as a "person under the age of 18 years". There may, however, be some differences in definition at country level.

The Lancet 2012 Series on adolescent health[6] included an editorial highlighting the increased momentum for putting adolescents at the centre of global health policies. This was reported to be driven by the lack of progress in adolescent indicators, and concern that this may be a major factor in impending failure to achieve key Millennium Development Goals (MDGs). *The Lancet* 2012 Series explored how adolescents are poorly reflected in global data collection efforts (Patton et al, 2012) and emphasised their critical role as a foundation for future health (Viner et al, 2012; Sawyer et al, 2012). It called for the young person rather than the specific health issue to take centre stage, and for adolescents to be involved in the design of services that aim to reach them (ibid).

The Lancet Series on adolescent health (Tylee et al, 2007; Viner et al, 2012) also highlighted the need to use a life course framework and to look more broadly across sectors when discussing issues related to adolescent health, given that the determinants of health for adolescents (social entitlements, family and school support structures) lie largely outside the health service system (Viner et al, 2012). Since 2012, it is encouraging that this momentum on adolescent nutrition has continued to accelerate (Patton et al, 2014; Black et al, 2013; Bhutta et al, 2013; UNFPA, 2013b).

> *"The reason is simple: adolescents are central to every major current challenge in global health"*
>
> (ibid)

The Lancet 2013 Series on maternal and child nutrition highlighted the importance of adolescents and identified them as a key neglected group in current research and programming. As part of *The Lancet* commission on adolescent health and well-being (which includes adolescent representatives), we also saw a continuation of this increased focus, with "promoting a healthy start to life for the next generation by addressing nutritional risks in adolescents before pregnancy and parenthood" highlighted as a priority (Patton et al, 2014).

In this review we aim to identify where there has been progress at policy and programme levels in addressing adolescent nutrition internationally and particularly in SUN countries. It is worth noting that SUN country plans aim to indicate where nutrition cuts across the different sectors. However, this report focuses primarily on nutrition and cannot claim to do justice to other sectors, including health, agriculture and education. We also explore the particular challenges and gaps involved in reaching adolescents. **Section 3** describes the methods used in the review, while **Section 4** reflects on current literature around why we should focus on adolescents. **Section 5** presents what SUN countries are currently doing to address adolescent nutrition through policy and practice, and looks at roles and responsibilities for adolescent nutrition at the ministerial and agency levels. **Section 6** deals with 'how' – referring to the 'promising interventions' listed in *The Lancet*; it discusses policy and programme experience within the wider nutrition community and literature as well as highlighting ongoing research and gaps. Finally, **Section 7** presents the conclusions and recommendations.

3 METHODS

Various methods were used to collect material for this review, which are described below.

A literature search – using PubMed to search for published studies and reviews using key words: adolescent, adolescence, nutrition, undernutrition, malnutrition, anaemia, deficiency, preconception, pregnancy. Additionally, various agencies and individuals were asked to share relevant policies, publications and relevant grey literature. In total, more than 200 papers, documents and reports were collected and reviewed. For the review of policy documents (Section 5), a key word search for 'adolescent', 'adolescence' and 'youth' was conducted on each document, with information relating to context and other specific information recorded (where relevant). For the full list of policy documents reviewed, see Appendix 3.

Questionnaire/interview with agencies, academics and donors – to gather information on the extent to which adolescent nutrition is included in policies and programmes, evaluations or research being carried out and to identify research gaps and opportunities missed (see Appendix 1 for questions). These questionnaires were sent to 30 international agencies (including UN bodies, donors, international non-government organisations (NGOs) and technical bodies) and 12 individuals involved in research or technical support in the field of nutrition. Written responses were obtained from 22 questionnaires, and 10 interviews were conducted – ***a response rate of 76%***. For those agencies that did not respond (after being sent reminders), efforts were made to locate policy and programme documents online.

Collection and review of SUN national nutrition plans – this was done in collaboration with the SUN Movement Secretariat to ensure that the maximum number of plans were obtained. There are currently 54 countries signed up to SUN;[7] 18 country plans were available on the SUN website and another four were obtained via the secretariat (giving a total of 22 – which is all the plans currently available as far as we were aware). A basic review for mention of adolescents/adolescence was carried out on all 22 plans. For those identified as containing specific actions related to adolescent nutrition (10), a more in-depth review of the contents was conducted. Seven countries[8] were selected (those with strategic objectives and/or results linked to adolescent nutrition) for follow-up questions with the SUN focal points at country level.

Follow-up questionnaire to SUN focal points in seven countries – to gather more specific information on the extent to which adolescent nutrition was fully covered in their plans, as well as any progress measured and/or challenges they were encountering with assisting adolescents. The follow-up questionnaire also aimed to explore roles and responsibilities at country level and any research gaps identified (see Appendix 2 for questions). Responses were received from six of the seven SUN focal points approached – ***a response rate of 86%***.

Questionnaire/interview with SUN network facilitators – in addition to the SUN focal points, a short questionnaire was sent to facilitators of the SUN civil society, UN, and donor and business networks, asking whether the issue of adolescent nutrition had been discussed within their network, as well as programme progress, operational challenges or research gaps. Written or interview responses were obtained from civil society and donor network facilitators – ***a response rate of 50%***.

LIMITATIONS

- There may be some SUN country plans that have been finalised or were near finalisation at country level but which were not yet available through the SUN website or via the secretariat. This review can therefore only provide a picture based on the plans that were received.
- We were not able to get written or interview responses from two key UN agencies (the World Food Programme (WFP) and UNHCR) despite follow-up. We were therefore only able to use the material we found online to refer to these agencies.

4 WHY IS ADOLESCENT NUTRITION IMPORTANT?

THE IMPORTANCE OF ADOLESCENT NUTRITION THROUGH THE LIFE CYCLE

The life cycle approach has provided an analytical framework for assessing the needs of different age groups for many years (see Figure 1). However, the majority of nutrition policies and current interventions continue to target women and children from the time of pregnancy to the child's second birthday (the first 1,000 days).

It is notable that adolescent boys in particular were barely mentioned in the literature reviewed, especially in relation to nutrition, although any reference to them has been included in the relevant sections below.

There are a number of compelling reasons for the international community to focus on adolescent nutrition, outlined below.

Adolescents, as a population group, are increasing in numbers. From 2010 to 2030, the global population of adolescents will increase from 1.2 billion to 1.3 billion in spite of forecast declines in fertility. The concentration of adolescent girls will also change significantly, with the largest increase occurring in sub-Saharan Africa, where adolescent pregnancy is most common and the rate of contraceptive use is the lowest in the world (UNFPA, 2013a).

Adolescent nutrition is a reflection of early childhood nutrition or malnutrition. Many children in low- and middle-income countries enter adolescence with a legacy of malnutrition from early childhood, which means they are thin, stunted and/or anaemic, and often display other micronutrient deficiencies (Thurnham, 2013).

In some countries, as many as half of all adolescents are stunted (height-for-age Z score [HAZ] <–2) (Black et al, 2013)

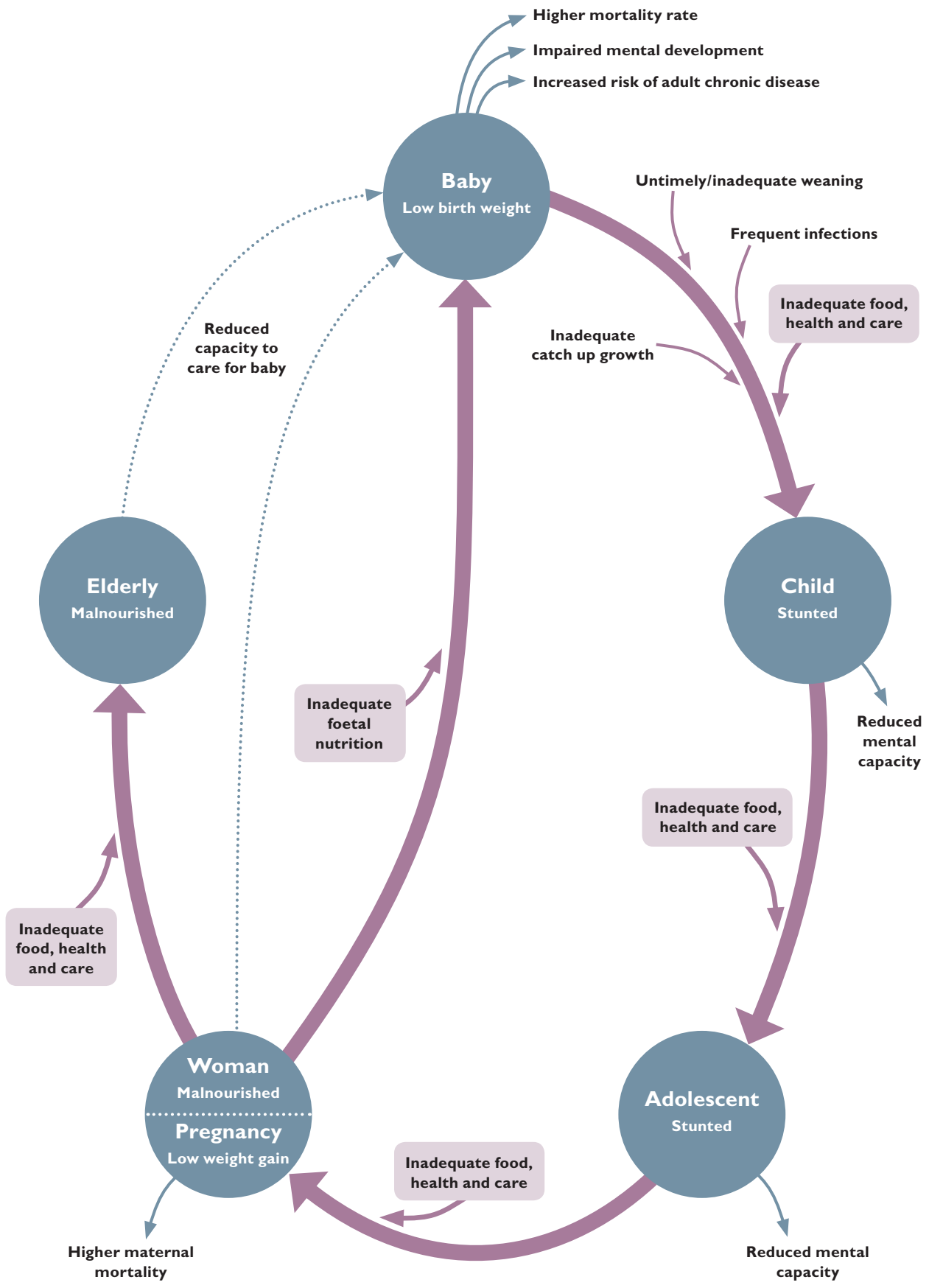
UNICEF has produced statistics based on an analysis of 64 countries with available data, indicating that nearly 50% of adolescent girls aged 15–19 in India are underweight[9] and that more than 25% of adolescent girls in ten other countries were underweight (UNICEF, 2012).[10] However, obesity is also on the increase – including in adolescent age groups in the developing world – due to the rapid transition to lipid-rich diets and decreases in physical activity, especially for urban adolescents (Schneider, 2000). This increases the risk of chronic health issues both during adolescence and in later life. It has been estimated that 20%–30% of adolescents and young adults are living with a chronic illness, especially diabetes (Bhutta et al pers comm, 2014). Adolescence is a critical time during which health-related behaviours around food, physical activity and alcohol use are formed (Sawyer et al, 2012); it is therefore a key period for efforts to address obesity (UNICEF, 2011), especially with regard to prevention activities.

Up to one in three adolescents is obese in some countries and numbers are increasing in both low- and high-income countries (WHO, 2014b)

Adolescence is a time of increased nutritional requirements. Growth during adolescence is faster than at any other time in an individual's life except for the first year (FAO et al, 2001; Brasel, 1982). Adolescence has been reported to be a time of opportunity for catch-up growth (Golden, 1994; Thurnham, 2013; Prentice et al, 2013; Dewey and Begum, 2011), supported also by some historical data (Zong and Li, 2014).[11] However, the degree to which this is possible is debated (Martorell et al, 1994 Prentice et al, 2013).

Due to the high velocity of growth, adolescents have some of the highest energy and protein requirements of any age group (Woodruff and Duffield, 2000; Stang and Story, 2005). Similarly, micronutrient

FIGURE 1: NUTRITION THROUGH THE LIFE CYCLE



Source: ACC/SCN 2000.

requirements are increased (particularly for iron, calcium, zinc and vitamin D) (WHO and FAO, 2004), which leaves adolescents vulnerable to deficiencies (Arimond et al, 2011; UNFPA, 2013a). In 21 countries assessed by UNICEF, more than one-third of girls are anaemic (UNICEF, 2012).

Adolescents aged 15–19 have the greatest total energy requirement compared to any age group (~2,420 kcal/day) (Woodruff and Duffield, 2000)

In a study of schoolchildren in eight countries in Africa and Asia, anaemia was found to be a severe public health problem (defined as >40% anaemic) in five African countries[12] for children aged 7–11 years, and in four[13] of those five countries for children aged 12–14 years. In general, due to increased requirements of iron and other vitamins for growth, iron deficiency anaemia (IDA) prevalence is high in adolescence. IDA has negative consequences for a young person's growth and educational performance, and can reduce immune function, increasing the risk of disease and infection (Dallman, 1989). Iron requirements for adolescents are particularly high in developing countries due to higher prevalence of parasitic infections and disease and low bio-availability of dietary iron. The risk of an infant being born with low birthweight[14] is significantly greater with moderate preconception anaemia (Bhutta et al, 2013) on the part of the mother. Using the healthy eating index for Egyptian teenagers, one abstract reports that just 3% of teenagers had healthy diets and 48% had poor diets (Fouad et al, in press). Evidence from refugee situations also suggests that adolescents have been among those most affected by micronutrient deficiency – for example, riboflavin deficiency in Bhutanese refugees living in Nepal (Blanck et al, 2002); and anaemia, iron and vitamin A deficiency in refugee camps in Kenya and Nepal (Woodruff et al, 2006).

Iron deficiency anaemia is the third most important cause of lost disability adjusted life years (DALYs) in adolescents worldwide at 3%, behind alcohol and unsafe sex (Sawyer et al, 2012)

In India 55.8% of adolescents aged 15–19 years are reported to be anaemic (UNICEF 2012)

Adolescents are, in many contexts, a marginalised and disempowered group. One study in Sierra Leone noted that adolescents lack a voice on the social and political stage, have constrained access to resources, are more likely to drop out of education, and are vulnerable to exploitation and violence (Burman and McKay, 2007). Adolescents have limited access to antenatal care services and are more likely to give birth without a skilled attendant (WHO, 2007). The health and nutritional risks, to themselves and any children they have, will therefore be elevated. There is also evidence of unequal gender power and socioeconomic status of adolescents playing a role in the occurrence of unplanned and unwanted pregnancies (Christofedes et al, 2014).

Almost one-third of adolescents of secondary school age in sub-Saharan Africa, South Asia and West Asia do not attend school (UNFPA, 2013b)

Various examples exist of socially sanctioned forms of gender-based violence (GBV) towards girls, such as cultural practices reported from Malawi related to 'sexual cleansing'.[15] These practices violate girls' human rights and leave them at risk of unwanted pregnancies, with subsequent consequences for nutrition, as outlined below.

Smoking, drugs and alcohol use are also a significant health concern among adolescents. Alcohol use alone accounts for 7% of the disability adjusted life years (DALYs) in 10–24-year-olds. Most regular smokers start smoking before the age of 20, often creating a lifetime addiction (Bhutta et al pers comm, 2014). Adolescents may be particularly vulnerable to exploitation and violence in emergency and conflict situations, which may affect their access to food and nutrition services. In addition, the incidence of early marriage and pregnancy can increase during these challenging situations (UNICEF, 2011).

Early marriage, pregnancy and implications for future generations. Early marriage is a common occurrence in many low- and middle-income countries, but particularly in Bangladesh and sub-Saharan Africa. Over one-third of women aged 20–24 in developing countries were married or in a union before the age of 18 (Cappa et al, 2012) – an estimated 10 million adolescent

One in three girls in developing countries are married before the age of 18 and a startling one in nine before the age of 15 (UNFPA, 2012)

About 16 million adolescent girls give birth each year, roughly 11% of all births worldwide, with almost 95% of these births occurring in low- and middle-income countries (WHO, 2014a)

marriages each year (Partnership for Maternal, Newborn & Child Health, 2012).

Although birth rates have declined in developing countries, adolescent birth rates have not (ibid); 11% of all births are to adolescent girls (15–19 years old). Pregnancy during adolescence is associated with a 50% increased risk of stillbirths and neonatal deaths, and greater risk of preterm birth, low birthweight and small for gestational age (SGA) compared to older mothers (Bhutta et al, 2013; Kozuki et al, 2013; Gibbs et al, 2012). Infants that are born SGA are also more likely to suffer from stunting in childhood, to become stunted adults, and to have lower educational achievements (Black et al, 2013). Girls that are born SGA are more likely to grow into women who will give birth to smaller infants themselves – "the intergenerational cycle of undernutrition" (Victora et al, 2008; Bosch et al, 2008). Infants born with a low birthweight are also at higher risk of developing non-communicable diseases such as Type 2 diabetes and heart conditions in adulthood (Barker, 1997; van Abeelen et al, 2012).

Both the infant and the adolescent mother are at greater risk of dying in the neonatal period (first month after birth) (Kozuki et al, 2013). Adolescent pregnancy often occurs at a time when the girl is still growing; therefore, nutrient requirements multiply and there is some evidence of competition between the foetus and the mother for nutrients (WHO, 2007), leading to further stunting of the girl's growth (Rah et al, 2008; Gigante et al, 2005; Gibbs et al, 2012). Early pregnancy has also been associated with increase in body mass index (BMI) as a result of weight gain (ibid) and has therefore been raised as a potential contributing factor in the growing epidemic of obesity in low- and middle-income countries. Evidence from the developed world indicates that adolescents are substantially (33%) less likely to breastfeed; moreover, their breastfeeding experience is heavily influenced by negative socioeconomic factors (such as poverty and lack of social/family support) (Apostolakis-Kyrus et al, 2013). At present, however, there is a dearth of literature on the risks and benefits of very young adolescents breastfeeding while they are still growing and, therefore, having significant nutritional needs themselves, regardless of lactation (WHO, 2007).

Infants born small for gestational age (SGA) are three times more likely to die during the neonatal period than those with appropriate weight (Black et al, 2013)

Low birthweight infants are estimated to be approximately twice as likely to die (from all causes) than those weighing more than 2.5kg (Black et al, 2008)

Economic implications. When an adolescent girl gets pregnant, if she is in school her education will suffer. Recent data from South Africa (which has high rates of adolescent pregnancy, and very high rates of coerced sex and violence against women and girls) showed that 75% of school-aged girls leave because they are pregnant, and less than 50% return to complete their education (Lawn, 2013). Food insecurity among adolescents has also been linked to school absenteeism and low educational attainment (Belachew et al, 2011).

The lifetime opportunity cost of adolescent pregnancy in Uganda, for example, amounts to an estimated 30% of the countries annual GDP (Chaaban and Cunningham, 2011)

Missing out on education will, in turn, have negative consequences for the girl's earning potential and range of life choices. If the pregnancy results in a live birth, her future potential earning capacity and choices may, of course, be restricted. This has been related to general economic implications for a country. Estimated lifetime opportunity costs related to adolescent pregnancy, measured by the young mother's foregone annual income over her lifetime, range from 1% to 30% of annual GDP (Chaaban and Cunningham, 2011).[16]

IMPLICATIONS FOR GLOBAL TARGETS

Given the above evidence, it is clear that support (or lack of support) for adolescent nutrition may have important implications for the ability of countries to achieve international health targets. These include the World Health Assembly (WHA) global nutrition targets for 2025[17] and the proposed Post-2015 Sustainable Development Goals (SDGs).[18] The potential contribution that supporting adolescent nutrition may make to achieving (or not achieving) the WHA targets is detailed in Table 1.

In addition, adolescent nutrition – and especially improvements in girls' nutritional health – will contribute to any of the proposed SDGs for which stunting or nutritional status of girls or mothers have been identified as a contributing factor (see draft Global Nutrition Report 2014).

TABLE 1: POTENTIAL CONTRIBUTION OF ADOLESCENT NUTRITION TO WHA TARGETS FOR 2025

WHA target	**Contribution of adolescent nutrition to target**
40% reduction in the global number of children under five who are stunted	• Adolescent pregnancies, particularly where girls are themselves stunted, are more likely to result in low birthweight, preterm birth and SGA babies, which are in turn more likely to be stunted during childhood
50% reduction in anaemia in women of reproductive age	• Adolescence has the joint highest prevalence of anaemia of any age group • Young maternal age increases the risk of maternal anaemia during pregnancy • Adolescents are less likely than older women to be covered by existing nutrition supplementation services
30% reduction in babies born with low birthweight	• Adolescent pregnancies, particularly where girls are themselves stunted, have heightened risk of resulting in babies with low birthweight
No increase in childhood overweight	• Obesity levels in adolescents are increasing
Increase the rate of exclusive breastfeeding in the first six months up to at least 50%	• Adolescents are less likely than older mothers to breastfeed or to receive support for breastfeeding
Reduce and maintain childhood wasting to less than 5%	• Adolescent pregnancies, particularly where girls are themselves underweight and/or stunted, are more likely to result in SGA, low birthweight or preterm babies who, some evidence suggests, may then be at increased risk of wasting during childhood

5 WHAT ARE SUN COUNTRIES DOING?

In relation to SUN countries, it is important to point out that there is no specific guidance from the secretariat on the inclusion of adolescent nutrition, either in country plans or monitoring and evaluation (M&E) frameworks, although adolescent nutrition is recognised as crucial for addressing undernutrition. Additionally, neither the civil society nor donor networks reported having had any discussions on how to operationalise support for adolescent nutrition.

Documents produced centrally by the SUN Movement, with the objective of sharing experience, show that some countries do include adolescents as a specific group – for example, there is mention of adolescent nutrition in the Mozambique, Nepal and Bangladesh country plans, as represented in the SUN updated compendium of country fiches available online.[19]

A recent SUN publication on effectively engaging stakeholders (SUN, 2014) describes the use of *integrated cross-sectoral bodies* in Benin (the National Council of Food and Nutrition, or CAN[20]) and Maharashtra state (the Maharashtra Alliance Against Malnutrition, or MAAM) to review and develop policy, ensure implementation of multi-sectoral plans and coordinate actions, including interventions for adolescent nutrition. Assessing the effectiveness of these bodies, specifically in dealing with adolescent nutrition (given the identified need for cross-sectoral work), could be an important future exercise to inform other countries.

INTERVENTIONS IN SUN COUNTRY PLANS

Of the SUN countries for which plans were available (22), just fewer than half (10) included any detail on adolescent nutrition. The level of inclusion ranged from:

- support for adolescent nutrition, or improvement of adolescents' nutritional status as part of a strategic objective or result (Bangladesh, Benin, Ethiopia, Guatemala, Mozambique, Nepal)
- adolescents as the target for a specific priority intervention (Madagascar, Sierra Leone)
- adolescents as one of the named target groups for a particular intervention (Indonesia, Kenya).

Nutrition and health counselling/behaviour change communication (BCC) was the most common direct intervention in national plans targeted at adolescent girls, followed by iron folic acid (IFA) supplementation, or ensuring access to IFA supplementation (*see* Table 2). Provision of nutrient-rich food for adolescent girls was noted in the plans of six countries and included via school feeding or school gardens in selected areas. Indirect interventions for adolescents linked to a nutrition objective in plans were limited (*see* Table 2). The most common references were to the provision of adolescent-friendly reproductive health services for boys and girls (including via schools), promotion of girls' education, and promotion of economic empowerment and income generation for various groups of adolescents.[21]

In all ten cases, adolescent girls were specified as the target of direct interventions as a means to address birth complications and the intergenerational cycle of malnutrition. Adolescent boys were only mentioned in Mozambique for inclusion in deworming in schools. Schools and school-related activities were commonly stated as the means of reaching this group (Ethiopia, Kenya, Madagascar, Mozambique, Nepal and Sierra Leone) as well as community-based activities (Benin, Ethiopia, Madagascar and Mozambique), health

TABLE 2: INTERVENTIONS TARGETED TO ADOLESCENT GIRLS IN SUN PLANS

	Intervention	Bangladesh	Benin	Ethiopia	Guatemala	Indonesia	Kenya	Madagascar	Mozambique	Nepal	Sierra Leone
DIRECT	IFA supplementation	✕		✕			✕	✕	✕	✕	
	Nutrition and health counselling	✕	✕	✕	✕	✕		✕	✕	✕	
	Provision of nutrient-rich food		✕	✕			✕	✕	✕	✕	
	Deworming			✕					✕	✕	
	Iodised salt access			✕						✕	
	Education for obesity prevention		✕								
INDIRECT	Adolescent-friendly reproductive health services	✕		✕	✕				✕		✕
	Promotion of hygiene practices to households with adolescents								✕	✕	
	Promotion of girls' education			✕						✕	✕
	Nutrition education in schools			✕	✕		✕	✕	✕	✕	
	Promotion of economic empowerment and income generation			✕							
	Cash transfers for households with adolescents								✕		

facilities (Ethiopia, Madagascar and Mozambique), via mass campaigns or social marketing (Mozambique and Nepal), the agricultural sector (Nepal), and via administrative/cultural bodies (for targeting newlyweds) (Bangladesh and Ethiopia). Only Benin stated that adolescents had been involved in the design of the national plan.

Of the six SUN countries that included adolescents in their plans as part of strategic objectives or results (i.e. the most comprehensively dealt with) and which responded to more in-depth questions, two of the respective SUN focal points (Ethiopia and Madagascar) felt that adolescent nutrition was adequately covered in their plans, while four (Bangladesh, Benin, Mozambique and Nepal) identified areas that they felt could be improved.

In general, it was felt that direct interventions in the health sector for adolescent nutrition (in particular, IFA supplementation and deworming) were better covered in the plans than indirect interventions. The major gaps identified tended to be indirect actions to support adolescent nutrition in social protection, agriculture, WASH and education sectors (Mozambique, Nepal and Bangladesh). Agricultural extension activities – those focused on junior farmers, for example – still have very small coverage in Mozambique and in Nepal; although nutrition-sensitive activities are costed in agriculture, education and water and sanitation sectors, these interventions do not necessarily target adolescents. The focal points noted a particular gap in terms of lack of action to link reproductive health and social protection interventions that focus on prevention of early marriage and teenage pregnancy with nutrition plans, bearing in mind the close links to adolescent and infant nutritional status.

Only two SUN countries (Mozambique and Nepal) reported assessing the status of adolescent nutrition in-country, and in both cases this referred only to anaemia status. Insufficient M&E of adolescent uptake of services across the sectors, in particular by girls, was also highlighted in Bangladesh. This lack of assessment and data on service uptake greatly limits the ability to evaluate progress of programmes designed to improve adolescent nutrition. SUN focal points in the six countries all reported that there were currently no plans to look specifically at adolescents in their M&E activities. Benin and Nepal believed it was too early to provide any evaluation of impact of the planned activities for adolescent nutrition, although Nepal did suggest that it could be a future priority.

NATIONAL-LEVEL POLICIES FOCUSED ON ADOLESCENTS

BANGLADESH

At policy level, adolescent nutrition is reflected in four different country strategies or plans in Bangladesh[22] and is therefore reaching across the sectors. However, there is a need for more support from civil society organisations and development partners to strengthen actions for adolescent nutrition. A lack of balance between interventions and policies was also identified. Although some indirect programming is being implemented through sectors such as education, social protection and WASH, interventions in these sectors need to better reflect adolescent needs. One particular gap that has been identified is interventions to prevent early marriage and pregnancy, which could, in turn, improve adolescent nutrition.

Country SUN focal points considered that areas including IFA supplementation and dietary counselling (direct interventions) were well covered in the Bangladesh plan. Gaps related to adequate nutrition of girl children within families, and strengthening of M&E of adolescent access to services.

A DFID-funded programme implemented in Bangladesh since 2012 (*see* Box 1) has included adolescents (along with children, and pregnant and lactating women) as a specific target for interventions (deworming, micronutrient supplementation, and infant and young child feeding (IYCF) counselling). These are linked to a wider component aimed at improving the variety of foods eaten by the household. As yet, no documentation of impact is available for this programme.

BENIN

In Benin, policy has focused on the 1,000-day period and, as a result, policies and activities targeting adolescents remain weak. However, the country's Strategic Plan for Food and Nutrition Development (PSDAN) consists of several sub-programmes, one of which is the 'food of teenage girls, pregnant women and nursing mothers'. This sub-programme focuses on addressing micronutrient deficiencies and the double burden of malnutrition, especially obesity among adolescent girls. As part of the implementation of this sub-programme, Benin has initiated two projects, one of which specifically targets adolescents through a study on 'gender, diet, health and nutrition'. This study is a precursor to the implementation of activities.

BOX 1: THE BANGLADESH INTEGRATED NUTRITION PROJECT 1994–2004

In Bangladesh, a third of all childbearing begins in adolescence. The Bangladesh Integrated Nutrition Project was implemented in response to high rates of low birthweight babies and malnutrition among children and women of childbearing age. It aimed to improve the nutritional status in the project area, with particular emphasis on children and pregnant and lactating women. The project included supplementary feeding of malnourished pregnant and lactating women (including adolescent girls), nutrition education for pregnant women, mothers of children under two, and adolescent girls. IFA supplementation was specifically provided for unmarried adolescent girls through the area-based adolescent girls' fora.

A project evaluation concluded that food supplementation after menarche did not appear to generate catch-up growth in height, although it did generate increases in weight. The evaluation was not able to assess the impact of these weight increases on the foetus (levels of obesity in the target group were found to be low at 0.3%). The use of iron supplements was 21% in nutrition-intervention areas compared to 8% in non-intervention areas, but dietary knowledge remained poor. The evaluation concluded that adolescent girls had proven to be a particularly difficult group to reach, and recommended expansion of the adolescent girls' fora, to provide greater engagement in, and uptake of, the project.

Sources: (Alam et al, 2010; The World Bank, 2005)

ETHIOPIA

A School Health and Nutrition Strategy was launched in August 2014, where adolescence was broken down into three categories: early, middle and late. The Ministry of Women, Children and Youth is prioritising youth and starting to consider nutritional issues. There is also legislation in place that prohibits marriage before the age of 18, but differences in enforcement are seen across the regions. Additional relevant policies include the National School Health and Nutrition Strategy and the Reproductive Health Strategy.

Actions related to adolescent nutrition in the Ethiopia National Nutrition Programme (2013–2015) focus on preventing low birthweight and micronutrient deficiencies. Ethiopia has some experience with the implementation of multi-sectoral programmes relevant to adolescents.

The Leave No Woman Behind programme (2009–2012), a WFP/UNFPA multi-sectoral programme, was implemented in two regions of Ethiopia and aimed to support community empowerment, reproductive health access, life skills, literacy and livelihoods. It included a target of improved nutrition security and identified adolescents for specific inputs linked to school attendance. Although the evaluation indicated improved school attendance by girls and reduced child marriage, outcomes for adolescent nutrition were not reported (Kabuchu, 2013).

Another current example is a DFID-supported multi-sectoral programme, which aims to adjust and revise existing plans over a range of sectors to improve nutrition of adolescent girls, women and children. The programme supports the increased availability and consumption of nutrient-dense foods (agricultural sector) and prevention of early marriage and pregnancy (health, reproductive health and education sectors). However, there is as yet no evaluation evidence available for this programme.

MADAGASCAR

Adolescent nutrition is poorly represented in youth and family planning policy documents, but multi-sectoral efforts are fairly well developed in relation to adolescents (albeit not necessarily with respect to nutrition). The private sector, for example, has contributed to establishing 'Free Zones', which provide teenage girls with employment opportunities.

The Madagascar National Strategic Nutrition Plan (PNAN II) contains six sections that specifically mention or target adolescent girls – for example, sections on the intergenerational cycle of undernutrition, promoting nutrition for adolescent girls, and strengthening nutrition education in schools in order to maintain and encourage girls to stay in school. However, the focal point reported that the major gap lay in effective implementation

of these activities and that the focus on the 1,000-day window meant that prevention of the intergenerational cycle of malnutrition outside of this window (by targeting adolescents during pre-pregnancy) was missing.

MOZAMBIQUE

Adolescent nutrition is reported to be well represented in health and reproductive health policies and programming, though there is limited mention of it in other sectoral documents. There is a new strategy regarding 'Early and Forced Marriage', which has a high political profile. It is expected that this will contribute to a reduction in teenage pregnancies, low birthweight and stunting. Funding was highlighted as a constraint for nutrition in general, and adolescents in particular.

Mozambique's Multi-sectoral Action Plan for the Reduction of Chronic Undernutrition 2011–2015 (2020) has, as one of its strategic objectives, the strengthening of activities with impact on adolescent nutrition. As Table 3 on page 16 shows, this includes a broad range of activities across a number of sectors.

Gaps that were identified included nutrition in schools and weaknesses in linking reproductive health and social protection interventions for prevention of early marriage and teenage pregnancy with nutrition plans and agricultural programmes. These are considered to be poor both in terms of gender- and age-sensitivity, and in most community-based programmes 'girls' are not considered separately from 'women'.

Unlike most other countries, however, Mozambique has carried out assessments of adolescent girls' nutritional status. So far these have only been undertaken in one province, but with a view to repeat aspects of the assessment[23] in other provinces, to provide a more representative picture of the situation in the country. It has also been established that, of the total number of women accessing antenatal care, 50% are adolescents; this could be a basis for tracking improvements in the sensitivity of the service.

NEPAL

The main focus of the Multi-Sector Nutrition Plan (MSNP) for Accelerating the Reduction of Maternal and Child Under-nutrition in Nepal 2013–2017 (2023) is on children under five and mothers. There are limited explicit references to adolescents, despite the fact that Nepal's plan contains relatively more on adolescents than many others (*see* Table 3). Areas where adolescent needs were better addressed were reported to include the risks associated with adolescent pregnancy, general maternal nutrition and safe motherhood strategies. However, it was also reported that maternal nutrition (ie, targeting adolescent girls once they are pregnant) rather than pre-pregnancy was better covered both for direct and indirect interventions.

The focal point for Nepal felt there was a need for an adolescent nutrition strategy to complement the multi-sectoral nutrition plan. Nepal was the only country that is conducting a national assessment of the situation of adolescents in-country,[24] although results are not yet available.

INDIA

With 55% of adolescents in India classed as anaemic, the country provides the largest-scale example of direct nutrition intervention being targeted to adolescents. The Adolescent Girls Anaemia Control Programme reported high adherence rates and a statistically significant reduction in the prevalence of anaemia from baseline to endline (Aguayo et al, 2013), and is being expanded and developed under the Rajiv Gandhi Scheme for Empowerment of Adolescent Girls (SABLA). The nature of these programmes and the challenges being faced are detailed below (*see* Box 2).

India has also highlighted the importance of adolescent nutrition at policy level, linking it to pregnancy and childbirth outcomes and subsequently to child survival in the country's Strategic Approach to Reproductive, Maternal, Newborn Child and Adolescent Health (RMNCH +A), which was launched in 2013 (MoHFW-India, 2013).

The Better Life Option Programme in India (Delhi, Madhya Pradesh and Gujarat) also provides a good example of a holistic approach to services for pregnant adolescents. This programme provides integrated IFA supplementation with education, livelihoods, life skills, literacy training, vocational training and reproductive health. Additionally, it promotes social change through the education of parents, family and community decision-makers, resulting in improved adherence to IFA supplementation regimes (UNFPA, 2013b).

BOX 2: THE RAJIV GANDHI SCHEME FOR EMPOWERMENT OF ADOLESCENT GIRLS (SABLA), INDIA

In 2011, this scheme was set up to deliver a package of health and nutrition services through Anganwadi centres* and schools in 200 districts in India. This package built on previous health and nutrition programmes, targeting adolescent girls aged 11–18 through the Integrated Child Development Service infrastructure (a scheme in place since the 1970s to provide a package of services to support the health and nutrition of India's children).

SABLA leads on from the Adolescent Girls Anaemia Control Programme, delivering IFA supplements. By the end of 2011, it had been rolled out in 13 states, reaching 27.6 million adolescent girls (16.3 million school-going, 11.3 million out of school). This programme reported good results in terms of adherence (>85%) and reduction in the prevalence of anaemia (Aguayo et al, 2012). SABLA builds on this by adding deworming, nutrition education, nutritional monitoring, and nutritional energy/protein supplementation (600 kcal and 18–20g of protein per person) for 300 days, aiming to increase access to services.

Despite policy and guidance being in place, initial barriers to implementation included shortage of resources at many levels (buildings, personnel, equipment, supplies and training). This was linked to insufficient prioritisation by programme implementers who had poor awareness of the magnitude and long-term, intergenerational consequences of maternal undernutrition (Ramakrishnan et al, 2012).

* In India, the Anganwadi centre is staffed by Anganwadi workers who are roughly equivalent to the community health or nutrition worker, although they are under the Department of Women and Child Development sector (not the health sector), and receive some wages.

ROLES AND RESPONSIBILITIES FOR ADOLESCENT SERVICES

The need for nutrition programming to take a multi-sectoral and integrated approach is important for all age groups, but is especially critical for adolescents. They occupy a particular position in society and there are multiple risk factors that determine their nutritional status, which span various sectors. The need for adolescent programming to target multiple risk factors in order to be effective has consistently been highlighted in the literature for a number of sectors (Delisle et al, 2000; The World Bank, 2003; WHO, 2005, 2007; Patton et al, 2014; WHO, 2006). This is accompanied by a general recognition that key approaches to improve nutrition (fortification, reproductive health, school-based interventions) fall outside of the health sector (Mason et al, 2012) and, as adolescents are generally healthy, the health system is often not the best way to reach them (Delisle et al, 2000).

This need for an integrated approach presents particular challenges for design, planning and coordination and implementation. It also requires that clear links are made at policy level, and that roles and responsibilities are well delineated.

MINISTERIAL LEVEL

All six SUN focal points mentioned multiple ministries (including health, social welfare, education, women and child/youth affairs, population, water and hygiene, youth and sports), particularly in relation to nutrition-sensitive interventions (see Box 3 for an example from Bangladesh).

Three of the six focal points (Bangladesh, Mozambique and Nepal) mentioned that coordination with the key ministries across sectors was a key challenge. Nepal, in particular, was trying to address this challenge by preparing a National Plan of Action for Adolescents, which aims to integrate/link different services across sectors (including social welfare, health and

BOX 3: RESPONSIBILITIES FOR ADOLESCENT NUTRITION IN BANGLADESH

In Bangladesh, two ministries – Health and Family Welfare (and various directorates within these) – are responsible for setting National Guiding Principles/Strategies for nutrition interventions for adolescents. Community Based Health Care and Essential Service Delivery also provide services for adolescents at community and sub-district levels. The ministries of Education, Social Welfare, and Women and Child Affairs also have their own indirect nutrition interventions aimed at adolescents. Finally, in urban areas, there is (in addition to the City Corporations) the Urban Primary Health Care Sector Development Programme, and the Ministry of Local Government, Rural Development and Cooperatives.

Source: SUN focal point Bangladesh

education). Ethiopia noted that the wide membership of the National Nutrition Coordination body, including the Ministry of Women, Child and Youth, contributes to good coordination.

IMPLEMENTATION LEVEL

A wide range of actors are responsible for implementing services around adolescent nutrition, alongside actors from within the health system itself at country level. These actors include international agencies (ILO, UNICEF, WFP, UNFPA), international and local NGOs, grassroots associations (youth associations), and volunteer groups (eg, Women's Development Army). Madagascar mentioned a private sector contribution through 'Free Zones', which provide female teenagers with employment.

These same three focal points (Bangladesh, Mozambique and Nepal) mentioned that coordination of agencies was a key challenge, with the multitude of partners both within and across sectors. Below (Box 4) is an example of the difficulties encountered when trying to coordinate responsibilities for adolescents at country level, even in a country that has made notable progress in this area.

This example reflects the need for an appropriate institutional home at global and country levels for adolescents – a need that has also been identified by the literature (Brady, 2011; Catalano et al, 2012; Patton et al, 2014). The differing mandates of the various agencies (particularly UN agencies) can result in adolescents and adolescent nutrition failing to be included in relevant international and national policies. Furthermore, the cross-cutting nature of adolescent nutrition can result in issues failing to get leverage, as they 'fall between' the various agency mandates.

BOX 4: IMPLEMENTATION OF IFA SUPPLEMENTATION IN NEPAL

The EU/UNICEF Partnership on Nutrition in Asia is a four-year programme (€28.4 million) that aims to contribute to reducing undernutrition (stunting and anaemia) in five countries, including Nepal. It funded the introduction of the Nepal Multi-Sector Nutrition Programme (MSNP), which included a component on IFA supplementation for adolescents. A mid-term external evaluation carried out in 2013 noted that: "one… output (adolescents IFA supplementation) has been temporarily put on hold as there was until recently a lack of clarity on the institutional ownership".

Source: Hoogendoorm et al, 2013, p 28

6 HOW TO SUPPORT ADOLESCENT NUTRITION

INTERNATIONAL POLICY

A review of 58 international-level policies across a wide range of stakeholders (including donors, UN agencies and international NGOs) was undertaken (see Appendix 3 for the full list of documents) to identify the extent to which policies focused on adolescent nutrition.[25] The results of the search are outlined in Table 3 below.

The literature review showed an even spread between no focus, minimal focus (1–2), medium focus (3–5), and considerable focus (>5), at approximately one quarter for each.

Of the documents that considered adolescents, the major focus was on three areas:

- a general mention of adolescents, in the context of (for example) "targeting and reaching more women, adolescents and children"
- the importance of adolescent nutrition with regards to the life cycle approach, particularly with reference to preventing the intergenerational cycle of malnutrition and reducing stunting
- four[26] documents mentioned school feeding as a way to reach adolescents, while only three[27] mentioned the growing problem of overweight and obesity among adolescents.

An important draft document, the post-2015 Sustainable Development Goals, includes adolescents in indicator 2.2, under Goal 2, entitled 'End hunger, achieve food security and improved nutrition, and promote sustainable agriculture' (OWG/SDG 2014). This reflects current interest in the area and it is encouraging to see adolescents mentioned as a specific group for targeting. While the International Conference on Nutrition (ICN-2) Framework for Action (International Conference on Nutrition (ICN-2), 2014b) does focus on adolescents (including halting obesity, improving health, preventing adolescent pregnancy and encouraging birth spacing), the ICN-2 Draft Political Outcomes document (International Conference on Nutrition (ICN-2), 2014a) makes no mention of adolescents. It is worth noting that of the 104 responses to request for comments (from individuals or organisations) on the ICN-2 Political Outcomes document, only ten respondents (10%) suggested that adolescents should be included in the narrative, given their importance in reducing undernutrition. This was surprisingly low, given the proportion of agencies reflecting adolescents in their nutrition policies (*see* Table 3 below).

Most respondents reported some reference to adolescents in their organisational policies, even if that reference was implicit during policy discussions around maternal nutrition (based on the assumption that, as some adolescents are young mothers, they will be included under the maternal section). Considering the discussion so far in this review about

TABLE 3: REVIEW OF POLICIES AND OTHER RELEVANT DOCUMENTS FOR ADOLESCENT NUTRITION

Number of times adolescent nutrition was mentioned	**Policy documents (n=58)**	**Percentage**
None	15	25.8%
1–2	13	22.4%
3–5	17	29.3%
More than 5	13	22.4%

the particular difficulties in adolescents accessing services, this assumption is flawed.

Donors contributing to the SUN Movement have recently conducted a "financial tracking exercise" for nutrition-specific and nutrition-sensitive investments, with one of the criteria of inclusion being that the programme targets at least one of the following groups: "under-5 children, adolescents and pregnant women" (SUN Donor Network, 2013). DFID appears to have clearly identified the specific needs of adolescents in its 2011 'SUN position paper' (DFID, 2011). This focus has continued, with its support for the Nutrition for Growth summit in 2013 (which concluded that delaying first pregnancy from 14 to 16, or better still to after 18 or 20 years, would reduce newborn deaths and give babies a healthier start); the Girl Summit held in London in 2014,[28] which also focused on delaying early marriage; and the recent call for bids for a consortium on a Global Girls Research Initiative.

It is notable that WHO's online compilation of recommendations on 'Maternal, new-born, child and adolescent health approved by the WHO guidelines review committee' has the section for adolescents missing at the time of writing this review (WHO, 2013). WHO does, however, have a documented recommendation for 'Intermittent iron and folic acid (IFA) supplementation' as a public health intervention for all menstruating women and adolescent girls living in settings where anaemia is prevalent.[29]

PROMISING INTERVENTIONS FOR ADOLESCENT NUTRITION

Given that there does appear to be broad agreement on the need to focus on adolescent nutrition at the policy level (even if this is not happening comprehensively), putting this into practice at the programme level is not without its challenges, as noted in *The Lancet* 2013 Series.

> *"A clear need exists to introduce promising evidence-based interventions in the preconception period and in adolescents in countries with a high burden of undernutrition and young age at first pregnancies; however, targeting and reaching a sufficient number of those in need will be challenging."*
>
> (Bhutta et al, 2013, p 453)

The Lancet 2013 Series on maternal and child nutrition identified adolescent health and preconception nutrition as one of the main nutrition-specific interventions, and outlined a number of promising interventions (see Box 5).[30] The box clearly shows that multiple sectors will need to collaborate, in order to drive action forward in these promising areas.

In general, the availability of evaluations tracking progress on adolescent nutrition – either in terms of the impact of nutrition programmes on adolescents, or how supporting adolescents can affect infant nutrition – is very limited, both in the published literature and in agency M&E documents.

BOX 5: 'PROMISING' INTERVENTIONS FOR ADOLESCENT NUTRITION (BHUTTA ET AL, 2013)

Maternal nutrition interventions targeted to pregnant adolescents – including multiple micronutrient (MMN) supplementation, calcium supplementation, balanced energy protein supplementation, malaria prevention, maternal deworming, obesity prevention

Preconception care via reproductive health and family planning interventions for adolescents aimed at reducing unwanted pregnancies and optimising age at first pregnancy and birth intervals

Antenatal care – ensuring access, given that adolescents are particularly at risk of complications

Nutrition promotion – via schools

Combined behavioural and lifestyle interventions – for overweight and obese adolescents

Implementation strategies – use community and school-based education platforms to address micronutrient deficiencies and emerging issues of overweight and obesity

The most common **direct interventions** targeting adolescents that were mentioned as being implemented or supported by agencies (either as individual interventions or part of a package) included the following:

- micronutrient supplementation (most commonly intermittent IFA supplementation)
- school feeding
- nutrition education within schools
- nutrition support for adolescents living with HIV/AIDS
- fortification of aid commodities targeted at adolescents (eg, in Zambia) (Seal et al, 2008).

In recent years, a large number of programmes have been launched to increase the uptake of different vaccines[31] among adolescent populations. A recent review (Bhutta et al pers comm 2014) found that the provision of free vaccinations, and policies requiring vaccination before entry into school, can effectively improve immunisation coverage among adolescents and reduce HPV and measles morbidity.

Mexico's Progresa programme (*see* Box 6) provides a good example of a multi-sectoral programme that targets adolescents, but where direct nutrition interventions aimed at adolescents are part of a wider portfolio of projects in education, health and other sectors.

A number of donors reported that they did not fund programmes specifically aimed at adolescent nutrition, including Irish Aid, ECHO, the European Commission's Directorate-General for International Cooperation and Development (DG DEVCO), the Office of US Foreign Disaster Assistance (OFDA), and Canada's Department of Foreign Affairs, Trade and Development (DFATD). A significant number of agencies also stated that adolescents were simply included de facto, as part of their direct nutrition interventions including fortification programmes, health and nutrition support packages for pregnant and lactating women, infant and young child feeding (IYCF) counselling, and food security programmes. None of these projects included specific strategies to access adolescents; given their generally low social status in society and within the household, it would be highly optimistic to assume that these interventions had good coverage of adolescents.

Only one documented example was found of adolescents themselves being involved with the implementation of a programme aimed at improving adolescent nutrition: the Girl Guides anaemia prevention badge project in East and Southern Africa, where Girl Guides (7–18 years) can earn a badge in anaemia prevention through educational programmes and community involvement in anaemia control (WAGGGS, 2007).

BOX 6: PROGRESA/OPORTUNIDADES, MEXICO – A STEP TOWARDS RESULTS FOR ADOLESCENT NUTRITION

The large-scale Progresa/Oportunidades programme in Mexico aims to improve child nutrition through cash and nutritional supplements that are conditional on children and adolescents attending school, and on pregnant and lactating women attending clinics. In addition, community-level health and lifestyle training was provided for targeted households.

Although research indicated that the poorest and youngest infants grew more as a result of the programme, it was not possible to ascertain the role that inclusion of adolescents in the programme played in this nutritional outcome. However, the proportion of women with a secondary education increased dramatically in programme areas, which, in turn, was found to be associated with adolescent contraceptive use, leading to the conclusion that "through its effect on education, Oportunidades indirectly influences fertility among adolescents".

Source: Darney et al, 2013

Indirect interventions mentioned included the WASH sector, with a focus on making school facilities accessible to young women and menstrual hygiene management, and cash transfer programmes for vulnerable women (India and Ethiopia) (Mason et al, 2012) as well as a number of future plans targeting adolescents in programmes with nutrition objectives.[32] However, there was little evidence provided of any effects on nutrition. There is also a large number of programmes documenting positive results in the sectors of reproductive health, girls' education and women's empowerment targeting adolescents, with the objective of improving general well-being and reducing levels of early marriage and pregnancy. Some of these included limited nutrition education with adolescent groups, such as adolescent-friendly reproductive health programmes.[33]

There is strong evidence from the literature about the effectiveness of reproductive health and family planning interventions for adolescents, particularly in reducing unwanted pregnancies and optimising age at first pregnancy (Bhutta et al, 2013). This appears to be particularly evident when interventions are comprehensive and involve multiple entry points (community centres, sexual and reproductive health services, contraceptive provision, school-based education and youth development programmes) (Lassi et al, 2013). However, any associated impacts on the nutritional status of the foetus have generally been unexplored. Only one documented example was found: among Bhutanese refugees in Nepal between 1994 and 2001, a reduction in the number of teenage pregnancies along with nutritional inputs (provision of food and micronutrient supplements) was found to have contributed to a reduction in incidence of babies born with low birthweight (Shrimpton et al, 2009).

School feeding has also been studied more than other areas in relation to adolescents, and offers the opportunity to reach adolescents in the pre-pregnancy phase. Systematic reviews of the evidence, though not singling out the adolescent age groups, suggest that school feeding can improve weight and body mass index (BMI) to a small degree and – where iron-rich school meals were provided – iron status (Kristjansson et al, 2007; Adelman et al, 2008). However, effect on height has not been found. Though most studies have been carried out in primary schools, many adolescents were included (ibid). Some recent evidence from Uganda also contributes to knowledge on potential effects of large-scale school feeding (*see* Box 7).

BOX 7: IMPACT OF SCHOOL FEEDING ON ANAEMIA IN ADOLESCENT GIRLS IN UGANDA

A recent randomised intervention trial of school feeding with a fortified product was conducted in 31 camps for internally displaced people (IDPs) in northern Uganda. The trial found that anaemia prevalence for treated adolescent girls (age 10–13) fell 20 percentage points relative to the control group. This effect was seen both for in-school feeding and take-home rations, dependent on attendance.

Source: Adelman et al, in press

Given the small effects noted on weight and BMI, caution is needed to ensure that such programmes do not lead to adolescent obesity. This should only be of concern where underweight is not prevalent (Kurz, 1996).

Given this ongoing collection of promising evidence, schools still offer a great opportunity to improve adolescent nutrition and could play an important role in the future (Ruel et al, 2013). However, it is worth noting that, depending on the context, the costs may be substantial (eg, in Zambia, the cost of school feeding is 50% of the annual per capita costs for primary education); therefore, collecting additional evidence of effectiveness in different contexts should be paramount (Bundy et al, 2009).

Most of the literature and agency programme evaluations do not consider the role of adolescent nutrition. However, in a recent example detailing progress in reducing stunting in India's Maharashtra state, there is some evidence of interest to review these aspects (*see* Box 8).

BOX 8: WHAT LIES BEHIND MAHARASHTRA'S SUCCESS IN REDUCING CHILD STUNTING?

A comparison of stunting rates for children under the age of two years, using the data from the 2005–2006 National Family Health Survey and the 2012 Maharashtra Comprehensive Nutrition Survey, shows a decline from 39% to 24% – three percentage points per year. This is faster than any recent country-level trend. In order to investigate the driving force behind this success, a study was conducted, which found that the most dramatic absolute and relative declines in stunting of children under two years of age were among those born to young mothers:

- Though mothers aged 13–19 had more stunted children in 2006, the decline in stunting rates for this group is an enormous 33.4%, compared to a 12%–19% decline for mothers aged between 20 and 30.
- Though mothers who had their first birth between the ages of 10 and 19 showed higher levels of stunting than mothers who gave birth later, they showed a bigger decline in stunting of 19.8%, compared to a decline of 8.5% for women who had their first birth at 20–24 years.

On additional analysis of potential double contributions to the decline in number of stunted under-twos caused by changes in the determinants – ie, decrease in maternal underweight and/or decline in number of young mothers – one of the two variables for which the nature of the relationship with stunting does seem to change is age at first birth (the other is wealth). The team concluded that stunting in 2012 is still vulnerable to low age at first birth and low wealth, but not as vulnerable as in 2006.

Source: (Haddad et al, 2014)

RESEARCH

Research gaps identified by agencies, individuals and in the recent literature are listed in Appendix 5 (we have used stars to represent the number of people/agencies or reports mentioning each gap, to give an indication of priority level). It is important to note that the list and prioritisation of research gaps is not fully comprehensive and would perhaps benefit from triangulation with the findings of the Sackler Institute initiative and a wider research prioritisation exercise, in order to develop it into a clear research agenda. There are clearly many gaps and a lot of work to be done to fill them. However, some areas of current research relevant to adolescent nutrition include the identification/monitoring of undernutrition in adolescents through the establishment of standardised mid upper arm circumference (MUAC) cut-offs for malnutrition among adolescents and adults, which could help expand the reach of community and/or treatment programmes and identify adolescents and adults who are at increased risk of death or poor treatment outcomes;[34] nutrition-sensitive agriculture in Asia,[35] which aims to generate high-quality evidence on which agricultural policy and investment strategies have the greatest impact on nutrition outcomes, especially for adolescent girls; intervention packages – for example, in Kenya, DFID is supporting research into the effectiveness of packages of interventions for girls in early adolescence (ages 10–14) compared to individual interventions, while Benin is planning for future documentation of research on its school nutrition initiative. Future research initiatives include reviewing the effect of empowerment of young adolescents (10–14 years) on reproductive health and nutrition outcomes in Ethiopia (funded by Bill & Melinda Gates Foundation), and assessing the impact on nutritional status of adding a nutrition counselling model to the adolescent girls programme in Zambia (funded by DFID).

7 CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Adolescence is a time when individuals grow faster than at any other time of life except for their first year, creating energy, protein and micronutrient demands on the body to enable this rate of growth. In some countries, as many as half of all young people are stunted by the time they reach adolescence (Black et al, 2013). Globally, around 16 million adolescent girls give birth each year, which puts further demands on their own bodies, and puts themselves and their infants at greater risk. Adolescent girls that bear children are more likely than older mothers to die during childbirth, or to be left nutritionally depleted. Babies born to adolescent girls are also more likely to die or have nutritional deficits. These infants are at a greater risk of suffering from continued nutritional deficits during childhood and are more likely to grow up to be stunted mothers or fathers themselves. In order to break this intergenerational cycle of malnutrition, adolescent girls, their families and communities must receive support, both for improved nutrition and to delay marriage and pregnancy. There are many challenges involved in providing services that adolescents can access, because as a group they tend to be disempowered and have low social status. They are, for example, less likely to take up health services than older women. However, there are strong cost benefits of reaching adolescents (eg, the economic costs related to adolescent pregnancy could amount to 30% of a country's GDP). For these reasons, it is imperative that the needs of adolescent girls are addressed.

Programmes to support adolescent nutrition are lagging behind the international call for a greater focus on this issue. Only seven of the 22 SUN country plans reviewed for this report included support for adolescent nutrition or improvement of adolescent nutrition status as part of a strategic objective or result. Only two of these seven reported assessing the status of adolescent nutrition in-country, and only one stated that adolescents were involved in designing the national plan. Three countries (Ethiopia, Mozambique and Nepal) stand out for starting to make inroads into integrated approaches for adolescent nutrition across various sectors, as recommended in the literature.

There are, however, some promising interventions. These have been presented in *The Lancet* 2013 Series on maternal and child nutrition, and a number of these programmes have been implemented by governments and agencies. In India, the largest of these – the Scheme for Empowerment of Adolescent Girls – reaches 27.6 million adolescent girls.

Although indirect nutrition interventions across sectors are critically important for adolescent nutrition, practice remains very patchy and the evidence is not clear enough to elicit firm recommendations about what should be done, beyond *The Lancet*'s promising interventions. More evidence and associated guidance is needed, both on what to do and how to do it.

This review has highlighted a number of challenges, as follows.

1. The lack of political traction, policy focus and funding. The failure to focus on adolescent nutrition in general, and the nutritional status of adolescent girls in particular, represents a missed opportunity to break the intergenerational cycle of malnutrition, given that improving adolescent nutrition could affect experience of chronic disease during adulthood, as well as infant health and nutrition. While multi-sectoral events and policy development are gaining traction at the national and international levels, nutrition experts are rarely 'at the table', which means that opportunities to integrate nutrition objectives and outcomes are missed. There is also insufficient communication and perhaps insufficiently compelling data to build arguments that would convince national policy-makers and finance ministers of the importance of targeting adolescents as a group; financial resources are therefore scarce. Evidence of programme effectiveness is hard to come by and evidence of cost effectiveness even more so.

Although there are now a number of initiatives investigating the nutritional outcomes of indirect nutrition interventions and multi-sectoral integrated programmes, very few refer to impact or outcomes in relation to adolescents.

The nature of adolescent nutrition means that responsibilities for supporting it need to span a wide range of ministries and actors at country level. Good coordination at ministry and implementation levels is therefore vital, but is proving to be a major challenge. Efforts to expand national coordination bodies for nutrition across the sectors, in particular including ministries responsible for women and youth, are positive. The role of the SUN Movement in promoting such inter-sectoral collaboration for nutrition could have great benefits, particularly for bringing adolescent nutrition issues to the fore and encouraging relevant stakeholders to put in place the sort of holistic approach required to tackle them.

A greater focus on the life cycle approach at policy level would strengthen the case for investing in adolescents (rather than just the current 1,000-day window, critical though this is). Maternal health and nutrition policies generally fail to differentiate between older mothers and adolescent mothers, whose needs are often very different. Issues around the double burden of malnutrition and how to prevent both undernutrition and obesity (particularly in urban contexts) are also emerging as an underexplored area.

Finally, unclear agency mandates (particularly among UN agencies) regarding leadership on adolescent nutrition has been identified as a source of difficulties in various fora (Catalano et al, 2012; Patton et al, 2014) and by SUN country focal points.

2. *The lack of empirical evidence and practical experience on what should be done and how.* This is illustrated by the long list of research gaps presented in Appendix 5. The key issues are as follows.

- *The lack of disaggregated data* results in scant coverage of adolescents in national and global statistics, with particularly poor data on adolescent undernutrition (and, to some extent, obesity[36]) (Delisle et al, 2000; Mehra and Agrawal, 2004; WHO, 2006; Victora et al, 2008; Cappa et al, 2012; Thurnham, 2013; Patton et al, 2012).[37] This gap is of particular concern as there is continued uncertainty as to how to assess undernutrition in adolescents.[38] This represents a missed opportunity to highlight the scale of the problem of adolescent undernutrition, including in emergency contexts, and therefore the magnitude of its implications (not only for adolescents but for other groups such as infants and adults).
- *Tailoring of interventions according to age (and gender):* the characteristics of adolescents – in terms of how they spend their time, their status in society and their responsibilities and behaviours – vary greatly between narrow age bands. Very young vulnerable adolescents (particularly those aged 14 or younger) face the greatest risk of complications and death from pregnancy and childbirth. This group is typically overlooked by, or beyond the reach of, national health, education and development institutions – often because girls of this age are in forced marriages and prevented from attending school or accessing sexual and reproductive health services. In this way, adolescent pregnancy is very closely intertwined with human rights issues (UNFPA, 2013b). Additionally, the question of how to reach adolescent boys with nutrition interventions remains largely unanswered. Services need to take into account many different characteristics, including life stage, timing and duration of interventions, and how to ensure maximum impact, both for adolescents and any children they may have.
- *Addressing adolescent needs within existing mother and child interventions:* in various settings (including during humanitarian crisis), adolescent girls are eligible for assistance through interventions targeted at "pregnant and lactating women". These interventions may be implemented at large scale.[39] However, this review indicates that maternal nutrition interventions (including IFA or multiple micronutrient supplementation, supplementary feeding, and IYCF counselling) are not assessing the extent to which they reach pregnant adolescent girls – which is maybe not surprising, as strategies for reaching adolescents are not built into their design. Especially in relation to support for infant feeding, we found no examples of programmes specifically trying to reach lactating adolescents for breastfeeding support, or taking into account the needs of this group during the programme design stage. It is noted that for any gap in relation to maternal nutrition (Khara and Mates, 2013), the particularities for adolescent girls should be further investigated, given their specific needs and circumstances.

3. Difficulties in reaching adolescents: the challenges of reaching adolescents are also linked to the weak voice that adolescents generally have in making demands for services at the local level. Ensuring good coverage of adolescents in maternal nutrition services is a particular challenge (ie, how to ensure rather than assume that adolescent girls are accessing existing services for maternal nutrition). In general, pregnant adolescents are rarely identified for nutritional support and even more rarely is there any link made before girls become pregnant, missing an opportunity to have a positive impact on nutritional status pre-pregnancy.

Adolescents are often the first to adopt new technologies, particularly through the internet. Social media may present a more effective delivery platform than traditional health education services and could be a source of innovative opportunities to engage young people, particularly those who are hard to reach (Bhutta et al pers comm, 2014).

While schools are identified in the literature and by stakeholders as a key delivery mechanism for reaching adolescents (particularly girls), this mechanism is not being fully exploited for nutrition interventions. Poor enrolment is a major limitation (only a fifth of adolescent girls in sub-Saharan Africa and two-fifths in South Asia are enrolled in secondary education).[40] However, primary and secondary schools undeniably offer opportunities to reach some adolescents. Programmes that link nutrition activities with efforts to increase enrolment offer opportunities for greater impact. Another barrier is the lack of appropriate education materials targeted at different age groups. Few reviews of school feeding programmes have looked specifically at impact on adolescents, though some examples were found of schools being used for delivery of IFA and deworming.

Young people are generally not part of community groups (women's groups, farmer field schools, microcredit groups, water committees, etc) linked to services or local decision-making structures. Yet as a group, adolescents are very open to innovation and their inclusion can potentially stimulate important discussions that would benefit others. Approaches such as those seen in Ethiopia and Bangladesh (see Box 1), where peer groups are used to reach adolescents, could be further explored.

Some groups of adolescents face particular challenges, and specialised interventions will need to be developed to improve their nutritional status (this includes adolescents living with HIV and AIDS, and homeless young people). Delivery platforms for such programmes could include youth drop-in centres, vocational training and runaway shelters (Bhutta et al pers comm, 2014).

RECOMMENDATIONS

Based on the findings of this review, Save the Children calls on relevant governments, donors, policy makers and practitioners to bring about urgent and much-needed improvements in adolescent nutrition:

1. INCREASE POLITICAL TRACTION AND FUNDING

The issue of adolescent nutrition needs greater visibility globally and nationally, but there is a need for more robust data on the extent of the problem and evidence about what works in tackling it. These data could then be used to galvanise funding from national and donor governments and would provide a basis from which to track progress. Data should include anthropometric status of adolescents, dietary intakes, micronutrient status and pregnancy outcomes. Furthermore, stronger and better terminology is required for effective advocacy and leveraging of funding opportunities. The annual *Global Nutrition Report* needs to include existing analyses of adolescent nutrition status, which should itself gain traction year on year, and the indicator must remain with the Sustainable Development Goals.

2. CREATE UN LEADERSHIP TO CHAMPION ADOLESCENT NUTRITION

An institutional home for adolescent issues at the global and country levels is needed in order to provide leadership, properly coordinate the multi-sectoral components, and to coordinate the mix of public and private activities needed to access and support them. Mandates need to be clarified (particularly among UN agencies) to ensure that adolescent nutrition issues get appropriate leverage at international and country levels. The roles of a lead agency (or agencies) should include:

- compiling current recommendations in relation to adolescents. For example, it is important that WHO includes the adolescent section of its 'Maternal, new-born, child and adolescent health approved by the WHO guidelines review committee'. A more in-depth case study of one or two countries, including field visits to document what is being done and to support collection of information on outcomes, could aid such recommendations
- producing a report card on adolescents spanning all sectors in order to gain a greater understanding of the situations adolescents face. This would be particularly pertinent for nutrition, as nutrition outcomes for adolescents require progress on a number of key determinants spanning a variety of sectors. Each country should have the ability to collect and analyse its own disaggregated data, to help target geographic "hotspot" areas where, for example, a high number and proportion of adolescent girls are at risk. This could build on the UNICEF global report card for adolescents produced in 2012. As a starting point, SUN should include adolescent nutrition in its country plans and M&E frameworks
- leading on filling the research gaps (see below).

In the medium term, a multi-agency group should be established to discuss the issues around adolescent nutrition programming to recommend a way forward for policy and programming. This group should identify gaps in data that need to be filled, devise a plan to align data collection (an agreed set of collectable indicators) and begin the necessary research (including how to obtain reliable data on out-of-school vulnerable adolescents).

3. PROVIDE GUIDANCE TO SUN COUNTRY GOVERNMENTS ON HOW TO ADDRESS ADOLESCENT NUTRITION

In general, the evidence and experiences from this review indicate that taking a holistic approach to programming for adolescents is more likely to be effective than individual standalone interventions. This requires looking at all avenues to target and reach adolescents, rooting the approach in policy and guidance, and ensuring that appropriate cross-sectoral monitoring is in place. The following points are aimed at SUN country ministers and focal points but are equally relevant for agency country representatives:

- *Nutrition policies* must address adolescents as a specific group in their own right. Policies must support the provision of innovative, youth-friendly services for nutrition. Policies in other sectors (in particular, reproductive health, social protection, and education) should endeavour to reinforce improved nutrition for adolescents.
- *Prevention of early marriage and teenage pregnancy:* any increased investment in adolescent nutrition must be linked to interventions to prevent early marriage and delay first pregnancy. Links should be made with reproductive health and family planning interventions that share these objectives, with more emphasis on direct nutrition interventions such as intermittent IFA supplementation.
- *Multi-sectoral programming:* it is clear that experience in accessing adolescents lies mainly outside of the nutrition sphere. Therefore, learning exchanges – such as the one led by the World Bank in 2003 (Elder, 2003) – could be particularly useful to address the question of how to effectively reach adolescents with nutrition interventions. Efforts must be coordinated (either at country level or globally) to collectively address the various factors that influence the health and well-being of adolescent girls in particular, and how to make programmes that reach adolescent girls – but are not explicitly about nutrition – more 'nutrition-sensitive'. For example, there has been little exploration of opportunities to channel nutrition messages through the agriculture sector (in particular, agricultural extension) and to reach adolescents through engagement in this sector.
- *Design for, rather than assume inclusion of, adolescents in indirect nutrition approaches* – particularly those aimed at improving dietary diversity, dietary intake and micronutrient status. This means, at the design phase, considering how adolescents will be included and how their particular needs will be met, as well as building in systems to measure the intended outcomes for this group. It is particularly important to include pregnant adolescent girls as a target group in interventions for maternal nutrition and antenatal care.

- *Design interventions according to age (and gender):* due to the rate of growth during the years of adolescence there are significant differences in ability, knowledge, and life experience within very narrow age bands. Programmes need to take account of these different characteristics by, for example, determining age-appropriate ways to access and deliver services and formulate nutrition promotion strategies. It has been recommended to divide adolescents into age groups of 10–14 and 15–19 (Sawyer, 2012) at a minimum, perhaps even breaking down these age groups further (Elder, 2004).
- *Programming should acknowledge obesity issues in adolescents*: strategies need to be developed to combine prevention of obesity in adolescents (particularly in urban areas) alongside services to support undernutrition in countries experiencing the double burden – for example, promoting healthy eating and lifestyles among adolescents through the school system.
- *Address specific health issues of adolescents*: notably, providing emotional or peer support to adolescents already coping with chronic diseases (especially diabetes) as well as those living with HIV. Additional interventions may be needed for adolescents with substance abuse problems, such as educational interventions and programmes involving parents (Bhutta et al pers comm, 2014).
- *Further develop the skills of service providers*: service providers (whether in direct or indirect nutrition interventions) must be equipped with knowledge and skills, particularly counselling and communication skills, needed to work with adolescents. There is also a need to develop appropriate training tools and methodologies.
- *Develop systems and structures (at national level) to monitor and evaluate outcomes for adolescents* from programmes and services for nutrition, either specifically designed for adolescents or in which adolescents are included (directly and indirectly). Furthermore, the current assumption of coverage is not sufficient. Methods/tools should be developed to assess, either periodically or routinely, the accessibility of services for adolescents, particularly the most vulnerable groups.

4. IMPROVE ACCESS FOR ADOLESCENTS

- It is necessary to capitalise on the mechanisms other programmes use to reach this target group with adolescent-responsive services. Such programmes include reproductive health (contraception promotion, advocacy/education around child marriage, HPV vaccination), child protection and social protection. Reproductive health programmes, networks of youth centres, and other youth-targeted groups and programmes frequently have no links with nutrition.
- There is considerable scope for making better use of multiple avenues to reach adolescents, including school-based, health system-based and community-based approaches; marriage registries (where available) could be used to target newlywed adolescents.

5. FILL RESEARCH GAPS

Judging on how instrumental the two maternal and child nutrition series produced by *The Lancet* have been in defining the work of the global nutrition community, a mini-series publication in the same journal, providing research findings and recommendations on how to address adolescent nutrition, is strongly recommended. Donors and implementing agencies need to work with academics to address the research gaps with particular priority given to the following:

- *Establishing a standardised and doable assessment method* for identifying undernutrition in adolescents at population level. This will allow the needs of this group to be more easily assessed and incorporated into the systems recommended above, in order to make adolescents more 'visible'.
- *Building the evidence base for multi-sectoral initiatives to support adolescent nutrition*: as noted, there is an urgent need for operational research at implementation level to focus on the potential impacts different multi-sectoral approaches can have on adolescent nutrition. Researchers need to collaborate with country-level stakeholders and donors to support this.
- *Using social media to target adolescents:* the use of social media and related platforms needs to be evaluated to assess their impact on behaviour change among adolescents, including how effective these are in delivering health and nutrition information to different groups of adolescents.

APPENDICES

APPENDIX 1: QUESTIONS TO KEY INFORMANTS (AGENCIES, DONORS, ACADEMICS)

KEY INFORMANTS

Agency	Contact	Title
SUN secretariat	Patrizia Fracassi	Senior nutrition analyst and policy adviser
SUN CS network chair	Claire Blanchard Cara Flowers	Civil society network coordinator
SUN donor network chair	Kornelius Shiffer Anne Peniston (USAID)	SUN donor network coordinator
FAO	Ellen Muehlhoff	ESN Director
UNFPA	Silvia Wong	Technical specialist, adolescents and youth
UNICEF	Werner Schultink	Nutrition chief
WHO	Zita Weise Prinzo	Nutrition
GAIN	Sonia Perrier	
ICRC	Manuel Duce	Economic security unit
IFRC	Nathalie Bonvin	
World Bank	Leslie Elder Zia Hyder	Senior nutrition adviser
DFATD	Erin Mclean	
DFID	Anna Taylor Abigail Perry	Senior nutrition adviser Adviser
ECHO	Catherine Chazaly	Food security & nutrition
EC	Pedro Campo Llopis Lola Gostelow	Nutrition acting team leader EC-NAS
Gates	Yvette Mirabal	Associate Program Officer Nutrition, Global Development Program
Irish Aid	Mags Gaynor	Hunger Unit Deputy Director
OFDA	Erin Boyd	

KEY INFORMANTS *continued*

Agency	Contact	Title
ACF	Maureen Gallagher	Senior Nutrition & Health Adviser
Concern	Regine Kopplow	Nutrition adviser
Plan International	Susan Brinkman	Nutrition Specialist, Food Assistance & Nutrition Unit
Micronutrient Initiative	Sarah Wuehler	
CDC	Leisel Tally	
ENN	Marie McGrath	Technical director
IFPRI	Lawrence Haddad Stuart Gillespie	
UCL/IGH	Andrew Seal	
LSHTM	David Ross	
Independent	Mija Tesse-Ververs	
UC Davis	Kay Dewey	
Aberdeen University	Michael Golden	
Tulane	John Mason	
Independent	Roger Shrimpton	

QUESTIONS TO AGENCIES AND INDIVIDUALS

1. How is adolescent nutrition currently reflected in your agency policy(ies) generally, in nutrition and/or other sectors?
2. What are the main programmes your agency implements/supports that are designed to directly or indirectly support adolescent nutrition?
3. Have you conducted (or have planned) any programme evaluations looking at outcomes for, or impacts on, adolescent nutrition?
4. Are you conducting any research relevant to adolescent nutrition?
5. In your opinion, what are the main research gaps with respect to supporting adolescent nutrition?
6. What do you feel are the main missed opportunities within your agency and/or globally for supporting adolescent nutrition?

ADDITIONAL QUESTION TO ACADEMICS

7. What, in your view, should be the major priorities, based on current evidence, for supporting adolescent nutrition in countries with high rates of malnutrition?

APPENDIX 2: QUESTIONS TO SUN FOCAL POINTS

SUN FOCAL POINTS

Country	Focal point	Position	Organisation/body
Bangladesh	Ms. Roxana QUADER & Nasreen KHAN (technical)	Additional Secretary	Ministry of Health and Family Welfare
Benin	Jean Cokou TOSSA	Director	CAN – Conseil de l'Alimentation et de la Nutrition under the President Office
Ethiopia	H.E. Dr KESETE & Dr Ferew Lemma (Adviser)		Ministry of Health
Guatemala	Luis Enrique MONTERROSO	National Coordinator	SESAN – National Secretariat for Food and Nutrition Security (under the National Council for Food Security and Nutrition chaired by the Vice President)
Madagascar	Jean FRANCOIS	National Coordinator	ONN – Office National de Nutrition under the Prime Minister
Mozambique	Marcela LIBOMBO & Claudia Lopes (Advisor)	National Coordinator	SETSAN – Technical Secretariat for Food and Nutrition Security (administered by the Ministry of Agriculture)
Nepal	Dr. Yagya Bahadur Karki Bishnu Prasad Nepal Radhakrishna Pradahn (Technical)	Honourable member Joint Secretary SUN Technical Coordinator	National Planning Commission

QUESTIONS

1. Do you feel that adolescent nutrition is adequately covered in the national nutrition plan (policy, assessment, interventions, cross-sectoral links, monitoring and evaluation)?
   - Are there important gaps that you would like to see addressed?
   - Which areas do you feel are well covered?
   - What about the balance of direct and indirect interventions?
   - What about the balance between adolescents being addressed in policies compared to interventions?
2. Depending on the stage of implementation of the national nutrition plan, are there particular challenges being experienced in implementing the interventions aimed at supporting adolescent nutrition?
3. Are there challenges at country level in accessing adolescents for provision of services? Any issues for nutrition in particular?
4. Who/what bodies are responsible for services to adolescents in-country?
   - Are there particular challenges involved for coordination?
   - How are you trying to integrate/link different services for adolescents?
5. Is adolescent nutrition reflected in any other national plans or policy documents in-country (please share any)?
6. Have any reviews been conducted (or planned) to assess impact of the activities in the nutrition plan on adolescent nutrition?
7. Are there any research gaps that you have identified as needing to be addressed in order to better support adolescent nutrition in-country?
   - What are those gaps?
   - Are there plans to conduct research to fill them (or currently underway)?

APPENDIX 3: LIST OF POLICY DOCUMENTS

AGENCY POLICY DOCUMENTS

1. ACF 2010. Taking Action Nutrition for Survival, Growth & Development. White Paper
2. CIF/IDS 2013. Ending Undernutrition: Our Legacy to the Post 2015 Generation. Lawrence Haddad, Institute of Development Studies in partnership with the Children's Investment Fund Foundation
3. CIF 2009. Hunger Alleviation & Nutrition Landscape Analysis
4. Concern Worldwide 2002. Concern Worldwide's Health Policy
5. DFID 2013. Nutrition for Growth Commitments
6. DFID 2010. The neglected crisis of undernutrition: DFID's Strategy
7. DFID 2011. Scaling Up Nutrition: The UK's position paper on undernutrition
8. EC 2013. Communication from the Commission to the European Parliament and the Council. Enhancing Maternal and Child Nutrition in External Assistance: an EU Policy Framework
9. EC 2013. COMMISSION STAFF WORKING DOCUMENT. Addressing Undernutrition in Emergencies
10. EC 2013. COMMISSION STAFF WORKING DOCUMENT. Gender in Humanitarian Aid: Different Needs, Adapted Assistance
11. EC 2011. Addressing undernutrition in external assistance. An integrated approach through sectors and aid modalities
12. EC 2014. COMMISSION STAFF WORKING DOCUMENT. Action Plan on Nutrition
13. FANTA 2010. Guide to Screening for Food and Nutrition Services among Adolescents and Adults Living with HIV
14. FANTA 2006. Maternal Anemia: A Preventable Killer
15. FAO 2014. Decent employment for rural youth in Africa: Relevant institutional context and FAO's previous and current involvement
16. GAIN 2006. Vitamin and Mineral Deficiencies Technical Situation Analysis. Ten year strategy for the reduction of vitamin and mineral deficiencies
17. GAIN 2010. Putting Nutrition into School Feeding
18. Global Nutrition Cluster 2014. Moderate acute malnutrition: a decision tool for emergencies
19. IFPRI 2013. IFPRI strategy 2013–2018. Food Policy Research in a Time of Unprecedented Challenges
20. IFPRI 2003. Policy – Food security and nutrition
21. ILO 2011. Growing up Protected. A Handbook for the protection of adolescent workers
22. Irish Aid 2013. One World, One Future. Ireland's Policy for International Development
23. Micronutrient Initiative 2009. Investing in the future. A united call for action on vitamin and mineral deficiencies
24. WHO Partnership for Maternal, Newborn and Child Health 2012. Reaching child brides
25. WHO Partnership for Maternal, Newborn and Child Health 2012. New global investment framework for women's and children's health
26. Save the Children 2012. A life free from Hunger. Tackling child malnutrition
27. UNFPA 2013. UNFPA's Adolescent Girls Initiative. Programme document
28. UNHCR 2008. UNHCR Strategic Plan for Anaemia Prevention, Control and Reduction. Reducing the Global Burden of Anaemia in Refugee Populations 2008–2010
29. UNHCR 2005. UNHCR's Strategy and Activities concerning Refugee Children
30. UNHCR/WFP 2011. Guidelines for selective feeding: the management of malnutrition in emergencies
31. UNICEF 2013. Improving child nutrition. The achievable imperative for global progress
32. USAID 2013. Multi-sectoral nutrition strategy 2014–2025
33. The World Bank 2006. Repositioning Nutrition as Central to Development: A Strategy for Large-Scale Action
34. The World Bank 2007. Healthy development, the world bank strategy for health, nutrition, & population results
35. The World Bank 2010. Better Health for Women and Families: The World Bank's Reproductive Health Action Plan 2010–2015

36. WFP 2009. WFP School Feeding Policy. Executive Board Second Regular Session Rome, 9–13 November 2009
37. WFP 2012. Nutrition at the World Food Programme: Programming for Nutrition-Specific Interventions
38. WHO/UNICEF 2001. Iron Deficiency Anaemia Assessment, Prevention, and Control: A guide for programme managers
39. WHO/UNICEF 2003. Global Strategy for Infant and Young Child Feeding
40. WHO 2002. Adolescent-friendly Health Services. An Agenda for Change
41. WHO 2009. Guidelines for an Integrated Approach to the Nutritional care of HIV-infected children (6 months–14 years). Handbook
42. WHO 2013. HIV and adolescents: Guidance for HIV testing and counselling and care for adolescents living with HIV. Recommendations for a public health approach and considerations for policy-makers and managers
43. WHO 2013. Essential Nutrition Actions: improving maternal, newborn, infant and young child health and nutrition
44. WHO 2013. Preconception care: Maximizing the gains for maternal and child health
45. WHO 2014. Investing in early child development: an imperative for sustainable development. Margaret Chan Director-General of the World Health Organisation. Ann. N.Y. Acad. Sci. 1308 (2014) vii–viii
46. WHO 2014. Comprehensive implementation plan on maternal, infant and young child nutrition
47. WHO 2014. Global nutrition targets policy brief series
48. WHO 2014. Health for the World's Adolescents: A second chance in the second decade

GLOBAL POLICY DOCUMENTS

1. Family planning and the post-2015 development agenda 2014. Bull World Health Organ 2014, 92, pp 548–548A
2. Global Nutrition for Growth Compact 2014
3. Post 2015 Partners forum 2014. Investing in adolescents and youth as agents of change. The future is a girl aged ten
4. Post 2015 Partners forum 2014. A framework for improving the health of adolescent girls
5. Open Working Group for Sustainable Development Goals. Introduction to the proposal of the open working group for sustainable development goals. July 2014
6. Second International Conference on Nutrition (ICN2). Framework for Action 2014 (Draft)
7. Second International Conference on Nutrition (ICN2). Draft of the Rome Declaration on Nutrition 2014
8. Second International Conference on Nutrition (ICN2). Open discussion on the political outcome document of the ICN2. Discussion No. 97 from 21 February to 21 March 2014. Collection of contributions received
9. SUN Movement: Revised Road Map. Secretariat of the SUN movement. September 2012
10. Scaling Up Nutrition (SUN) Movement Strategy [2012–2015]. September 2012

APPENDIX 4: ADOLESCENT NUTRIENT REQUIREMENTS

Safe level of protein intake – Adolescent girls – 0.84g/kg/d – age 15–18, 0.89g/kg/d aged 11–14

For pregnancy in adolescents add on:
Trimester 1 – 1g/d protein and 375 Kj/d energy
Trimester 2 – 10g/d protein and 1200 Kj/d energy
Trimester 3 – 31g/d protein and 1950 Kj/d energy

During lactation for adolescents add on:
19g/d protein and 2800KJ/d energy (WHO 2007)

APPENDIX 5: RESEARCH GAPS

GENERAL

- What are the risks that interventions to improve adolescent nutrition may negatively impact adolescent obesity? And how can they be mitigated?
- Further clarity is needed on all nutrient requirements for adolescents, in particular during pregnancy and lactation compared to older women.
- Agreement is needed on the definition of age groups within the 'adolescent' band. This is important because characteristics vary greatly between bands, given the degree of physical, social and psychological change over the time period. Age groups currently vary too much country to country and project to project.
- The possible impact of health and nutrition interventions on age of menarche (ie, earlier onset due to improvements in nutritional status) needs to be monitored and assessed, in view of the potential negative effects (school drop-out, increased fertility rate) that reduction of age of menarche may bring.
- What is the effect of urbanisation on obesity in adolescents in countries with a double burden of undernutrition (including assessment of consumption of processed foods, television viewing, effects of media advertisements for sodas and fast food)?

ASSESSMENT AND DATA

- How to assess undernutrition using anthropometry in adolescents, particularly in low resource settings (including humanitarian action). Issues with BMI-for-age include; difficulty with implementation, impact of growth retardation on results, the influence of individual processes of sexual maturation and difficulties in determining age. Are there possibilities for the use of MUAC?
- Need international reference data for adolescents – based on multi-country cross-sectional and longitudinal studies.
- Need for monitoring systems to generate statistics on adolescent nutrition (or disaggregation of existing statistics, eg, on diet diversity and consumption, to include adolescent groups) at national level, in order to track progress.
- Are there reliable, short-term proxy indicators for key long-term nutritional outcomes (eg, low birthweight, maternal anaemia, optimal breastfeeding) for adolescents?
- Synthesis at international level is needed to provide clarity both about the full range and prevalence of nutrition issues for adolescents (including obesity, micronutrient deficiencies and undernutrition) and the key determinants (including adolescent pregnancy).
- Investigation of dietary adequacy (including diet diversity) among adolescents and of adolescent girls in particular. The Women's Dietary Diversity Project (WDDP),[41] a FANTA-led collaborative research initiative with the broad objective of using existing datasets to investigate the micronutrient adequacy of women's diets in resource-poor settings, could perhaps provide an opportunity to do this.

TECHNICAL (WHO, WHAT AND WHEN?)

Who?

- What happens long term to the infants of malnourished adolescent mothers?
- To what extent would inclusion of adolescent boys in nutrition and healthy lifestyle programmes contribute to the improved nutrition and health of women during childbearing, and for infants and young children in the critical early years of life?
- What are outcomes of interventions particularly for younger adolescent girls aged 10–14?

What to do?

- What is the best/most effective package to support adolescent nutrition? We need a systematic review.
- What is the ideal micronutrient profile of supplements/which supplements are most efficacious to achieve specific impacts for adolescents at different stages – pre-pregnancy, pregnancy stages, lactation?
- Which products/supplements are most acceptable for adolescents and for how long should they be given?
- Which products/supplements and regimes are most cost effective for adolescents?
- What should be done to effectively delay teenage marriage and pregnancies?

- What are the effective interventions for obesity prevention and treatment among adolescents?
- Cost-benefit analysis is needed to compare adolescent nutrition interventions against maternal or 1,000 days interventions.
- What quantifiable long-term gains can be expected in key nutrition outcomes (eg, maternal anaemia, low birthweight, optimal breastfeeding) with increased empowerment, agency and equity, especially in very young adolescent girls (10–14 years old)?
- Are current extrapolated protocols for the treatment of acute malnutrition in adolescents appropriate, given their higher requirements for some nutrients?

When?

- What is the ideal time (age, stage of pregnancy, lactation) to intervene in the life of an adolescent (with nutritional inputs) to impact both their nutrition and on the foetal growth and development of their offspring?
- What is the critical window of time/stage of development (including age group) by which to intervene in the life of an adolescent, to change behaviours that impact nutrition outcomes?
- What should be done to support lactation in adolescent mothers? What are their particular needs compared to older mothers? What are the effects of nutrient deficiencies during adolescence on breastmilk quality?
- Can catch-up growth really occur during puberty? If so, how and when should it be supported (boys and girls)?

CROSS-SECTORAL

- To what extent can existing indirect interventions such as WASH, education, social protection and social safety nets and agriculture impact on adolescent nutrition? In what ways could they be made more nutrition-sensitive?
- To what extent can adolescent-friendly health service models affect nutrition outcomes?
- What roles can school feeding programmes and other school-based initiatives to improve nutrition of adolescent girls play in achieving impact – including to prevent overweight/obesity? How cost-effective are they compared to alternative approaches?
- Of the intersecting structural oppressions that constrain adolescent girls, which are the most limiting to optimal nutrition outcomes? Which are most susceptible to change?
- What impact can addressing disempowerment and social exclusion of adolescent girls in family decision-making have on nutrition?
- What is the potential impact and cost effectiveness of social transfers to support adolescent nutrition?

OPERATIONAL (HOW?)

- How to best reach adolescents (especially out of school, married, child labour/sex worker) – ie, what are the appropriate and cost effective channels and delivery platforms in different contexts (Africa, Asia, Latin America), and for different sub-age groups? What makes a delivery system work or not work?
- How to effectively deliver health and nutrition information for adolescents – what needs to be different? How best to use social media?
- How to make existing health services more adolescent friendly to meet particular needs of adolescent mothers – what is needed different from older mothers?
- How to create demand for services among adolescents?
- How to get more adolescents into school and keep them there longer, given that schools are the best place to reach them?
- How to address capacity issues of front line health workers to support adolescents?
- How to deliver packages for adolescent nutrition at scale?
- How to address the specific nutrition needs of adolescents in humanitarian contexts (eg, adolescent-sensitive food assistance)?

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ENDNOTES

[1] Scaling Up Nutrition, or SUN, is a movement founded on the principle that all people have a right to food and good nutrition. It unites people – including governments, civil society, the United Nations, donors, businesses and researchers – in a collective effort to improve nutrition. Within the SUN Movement, national leaders are prioritising efforts to address malnutrition.

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[4] The World Bank website, 'Adolescent nutrition', http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTNUTRITION/0,,contentMDK:20206757~menuPK:483704~pagePK:148956~piPK:216618~theSitePK:282575,00.html

[5] WHO website, 'Adolescent development', www.who.int/maternal_child_adolescent/topics/adolescence/dev/en/ (accessed 11 February 2015).

[6] Editorial, 'Putting adolescents at the centre of health and development', *The Lancet*, April 2012, www.thelancet.com/journals/lancet/article/PIIS0140-6736%2812%2960536-4/fulltext?rss=yes

[7] Scaling Up Nutrition (SUN) website, 'SUN countries', http://scalingupnutrition.org/sun-countries

[8] Bangladesh, Benin, Ethiopia, Guatemala, Madagascar, Mozambique, Nepal

[9] Based on a body mass index <18.5. It should be noted that adolescent nutrition is best measured using the anthropometric indicator body mass index for age.

[10] Bangladesh, Niger, Senegal, Timor-Leste, Ethiopia, Namibia, Madagascar, Cambodia, Nepal, Democratic Republic of Congo (DRC).

[11] Historical population data from China does suggest that greater increments in height gains are experienced during the pubertal phase than in any other, in response to economic development.

[12] Ghana, Malawi, Mali, Mozambique and Tanzania.

[13] Excluding Ghana.

[14] Defined as infants born at term (gestational age of 37 weeks or more) but whose birth weight is <2.5kg at birth.

[15] This is a traditional practice whereby young girls are forced to have sex with an older man to prepare them for adulthood. See Dunning and Mkandawire, 2014.

[16] 1% of annual GDP in China, 30% in Uganda, 27% in Malawi and 26% in Nigeria.

[17] WHO member states have endorsed global targets for improving maternal, infant and young child nutrition and are committed to monitoring progress against these targets. See Global targets 2025 posters on WHO website, www.who.int/nutrition/topics/nutrition_globaltargets2025/en/ (accessed 11 February 2015).

[18] At Rio+20 – the UN Conference on Sustainable Development – countries agreed to establish an intergovernmental process to develop a set of "action-oriented, concise and easy to communicate" Sustainable Development Goals (SDGs) to help drive the implementation of sustainable development post-2015.

[19] SUN, Draft Compendium of SUN Country Fiches (September 2013) http://scalingupnutrition.org/wp-content/uploads/2013/09/130916Compendium2013-English.pdf (accessed 11 February 2015).

[20] CAN is a multi-sectoral and multi-stakeholder platform of 17 members under the authority of the President and includes representatives from: the ministries of agriculture, health, social protection, development, finance, decentralisation, trade, the National Association of Communes in Benin, the Association of Food Manufacturers, training and research institutions for food and nutrition, civil society, the National Chamber of Agriculture and professional agricultural organisations.

[21] For out-of-school adolescents in Ethiopia, households with female adolescents in Nepal and Mozambique, and adolescents with children in Mozambique.

[22] National Sixth Five Year Plan, Outline Perspective Plan (Vision 2021), Strategy for Health, Population and Nutrition Sector Development Program (HPNSDP-2011-16), National Nutrition Services Operational Plan (NNS), MNCAH and MCRAH operational Plan as well as in National Strategy for maternal, Adolescent and Reproductive Health.

[23] Dietary habits, nutrition status, pregnancy, anaemia and HIV status.

[24] Conducted by the Nepal Health Research Council, a survey of 13 districts, including mountain, hill and terai (lowland) areas, total sample size of over 3,750 adolescents – 10–19 years old. The survey aims to assess food consumption patterns, knowledge on nutrition, hygiene and sanitation, and anthropometric measures.

[25] The majority of documents reviewed were either nutrition or health and nutrition strategies and policies (53), with a few additional documents (5) relating to gender, post-2015 negotiations or child protection. A key word search for "adolescent", "adolescence" and "youth" was performed on each document, with information relating to context and specific information recorded for each mention (where relevant).

[26] WFP nutrition strategy, EU SWD Nutrition action plan, brochure 'Putting nutrition into school feeding', and WFP School Feeding Policy 2009.

[27] USAID Multi-sectoral Nutrition Strategy, WHO Adolescent Friendly Health Services, Draft ICN-2 Framework for Action.

[28] Girl Summit 2014, www.gov.uk/government/topical-events/girl-summit-2014

[29] ≥20% in non-pregnant women of reproductive age.

[30] Reference made to other guidance.

[31] Including HPV, MMR, TdaP, meningococcal and varicella vaccines.

[32] A number of agencies reported being in the planning stage of projects in some African countries, including Malawi, Sierra Leone, Zambia and Ethiopia, aiming specifically at reaching adolescents with nutrition objectives (World Bank, Concern, DFID). Additionally, UNFPA stated that plans are being developed for programmes with a nutrition objective in a number of countries (in collaboration with UNICEF and WFP under their emerging adolescent and youth strategy). The SUN donor network reported provision of donor support for the development of a nutrition component for the adolescent health project in Bangladesh (USAID) and for the Affordable Nutritious Foods for Women (ANF4W) pilot project being implemented in Ghana, Bangladesh, Kenya and Tanzania. This project was launched in 2013, will run until 2015, and aims to fill a key gap in terms of accessibility of nutritious foods to women of reproductive age.

[33] For example, DFID Nigeria and Kenya, Gates and Plan), the Tanzania experience (Chandra-Mouli et al, 2013) and the Maharashtra Life Skills programme (UNFPA, 2013b) (*see* Box 8); legislation against early marriage in Ethiopia and India (Mason et al, 2012) and take-home school feeding or cash-for-girls conditional on attendance in Malawi (Baird et al, 2010)

[34] A current research initiative led by FANTA is looking into the use of mid upper arm circumference (MUAC) for identification of undernutrition in adolescents (Tang et al, 2013). Secondary analysis of data, in order to build evidence for the use of standardised MUAC cut-offs for pregnant women and adults, is currently underway as part of this initiative. There is also some work being done on the use of MUAC for identification of overweight in adolescents in resource-poor settings (Craig et al, 2014).

[35] Funded by DFID

[36] Though the most recent collection of adolescent overweight and obesity data indicated that 60 countries are collecting data for this group (Global Nutrition Report draft, 2014).

[37] Underweight data available (ages 13–15) in 71 countries (48% total population). The worst data are from sub-Saharan Africa and central and South East Asia where suspect levels are highest. Similar range of data on overweight.

[38] Given the existing difficulties with the use of BMI-for-age, more research is needed on the use of MUAC or weight-for-height as a form of measurement for pre-pubertal adolescents.

[39] Data from a recent WFP acute malnutrition mapping exercise indicates that about 3.6 million pregnant and lactating women were assisted with supplementary food through WFP-supported programmes in more than 35 countries in 2012, mainly in West, Eastern and Central Africa, and in relief or recovery contexts) (Khara and Mates, 2013).

[40] World Bank, Education statistics, www.worldbank.org/education/edstats

[41] FANTA website, 'Dietary Diversity as a Measure of Micronutrient Adequacy of Women's Diets in Resource-Poor Areas', www.fantaproject.org/research/womens-dietary-diversity-project (accessed 11 February 2015).

ADOLESCENT NUTRITION

Policy and programming in SUN+ countries

Adolescents are a neglected group in terms of nutrition. In some countries up to a half of adolescents are malnourished. Yet optimal nutrition during adolescence – a period of rapid physical growth – is crucial.

Urgent action is needed to address adolescent malnutrition in low- and middle-income countries. And given the high numbers of adolescent girls who give birth and of girls under 18 who get married, it is imperative that – in order to break the intergenerational cycle of malnutrition – nutrition interventions target adolescent girls.

Adolescent Nutrition presents what is being done in Scaling Up Nutrition (SUN) countries and in India to address adolescent nutrition through policy and practice. It also sets out roles and responsibilities for adolescent nutrition at the ministerial and agency levels.

The report goes on to describe promising interventions to address adolescent nutrition. It explores policies and programmes directly aimed at adolescent nutrition as well as those designed to improve it indirectly, as one of a number of other intended impacts.

Adolescent Nutrition is targeted at ministers in SUN countries who are responsible for the welfare of adolescent girls, senior officials in the United Nations and international agencies, programme implementers and policy-makers in SUN+ countries, and officials in donor governments and agencies. It presents a series of recommendations to bring about urgent and much needed improvements in adolescent nutrition.

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