

Improving adolescent undernutrition in Ethiopia: a rapid evidence brief

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1. Background

The nutritional status of adolescents (10-19 years old) is known to have a profound and multiple impacts on their immediate and future health (UNICEF, 2012). This is because, nutrient requirements increase in adolescence as this is the period of rapid growth (Christian and Smith, 2018). Healthy diet and eating practices during adolescence have the potential to rectify nutritional deficits during the first 10 years of life, and may curb harmful behaviors which may contribute to the rise of non-communicable diseases (NCDs) in adulthood (Sawyer et al., 2012; Prentice et al., 2013). Because of these unique windows of opportunities in this age group; investing in adolescent health has the potential in bringing triple returns: better health for adolescents now, for their adult life and their children (WHO, 2018).

However, undernutrition which is manifested as wasting, stunting or chronic undernutrition, and thinness or underweight and deficiencies in vitamins and minerals (WHO, 2022) is a serious public health problem globally (Christian and Smith, 2018). Though the prevalence of overweight and obesity is increasing in most regions of the world, more children and adolescents are moderately or severely underweight than obese and the burden is increasingly concentrated in South Asia, Central, East and West Africa. The mean BMI estimates for adolescents in these areas were <20 in 2016 (NCD Risk factor Collaboration, 2012). The implications of under nutrition are manifold: stunting often results in delayed mental development, poor school performance and reduced intellectual capacity which in turn affect future economic productivity. Obstetric complications during child birth and risk of delivering an infant with low birth weight contributing to intergenerational cycle of malnutrition are also associated with stunting. Wasting impairs the immune system resulting in increased risk of infections and death (WHO, 2022). As a result, nutrition is considered as the leading risk factor contributing to major causes of adolescent deaths (Christian and Smith, 2018).

Regardless of the importance and magnitude of adolescent health, historically it has received limited attention (WHO, 2017). Provision of due attention to every aspect of adolescent health will deliver significant future dividends both at individual and societal level (Sawyer et al., 2012).). Research is needed to bridge the huge knowledge gap related to adolescent growth and nutrition, in addition to evaluating interventions to help growth and development, thereby end the intergenerational cycle of growth failure (Christian and Smith, 2018).

It is strongly believed that the Sustainable Development Goals which aim at achieving global economic, social and environmentally sustainable development by 2030, will not be realized without investing in adolescent health and wellbeing (WHO, 2017). During a priority setting exercise on nutrition related problems in the country in 2019, adolescent undernutrition was identified as one of the priority areas which requires immediate response. The objective of this rapid evidence brief is, therefore, to summarize the best available evidence describing the problem of adolescent undernutrition in Ethiopia and potential solutions for addressing the problem.

2. Size of the problem

In 2016 Ethiopia has the lowest aged standardized (5-19 years) mean BMI in the world for both sexes; 16.8kgs/m² (95% CI, 15.6-17.9) for girls and 15.5 Kg/m² (14.4-16.6) for boys [NCD Risk factor Collaboration, 2012]. A systematic review by Berhe et al (2019) which involved 17,854 adolescents from 22 studies has reported prevalence of stunting and underweight in Ethiopia to be 20.7% (95% CI:16.08, 25.33) and 27% (95% CI:17.9, 57.14) respectively. The prevalence of stunting in Ethiopia (20.7%) is more than double than that of sub-Saharan Africa which is 9% (Benedict et al., 2017) showing the severity of undernutrition in Ethiopia. In terms of thinness, Ethiopia has the highest prevalence of thinness in boys in the world (28%) followed by Senegal (25%) and Namibia (22%) [Benedict et al., 2018], Of course, the distribution of undernutrition is not uniform throughout the country. According to Derseh et al. (2021), undernutrition in late adolescent girls was more prevalent in Northern and Eastern Ethiopia, while Berhe et al. (2019) reported that adolescent stunting was high in western Ethiopia and the least was in central Ethiopia. Adolescent undernutrition was high in rural areas compared to urban areas (Berhe et al., 2019; Derseh et al., 2021)

3. Causes of the problem

According to a framework by UNICEF (2019), the immediate causes of undernutrition are inadequate dietary intake and diseases. The underlying causes for the immediate causes of undernutrition and diseases are food insecurity, inadequate care for women, and children, insufficient health services, and unsanitary environments which in turn are propelled by basic causes: conflicts, inadequate education, poverty, gender inequality, insufficient infrastructure and other basic issues (UNICEF, 2019).

Various underlying and/or basic causes of adolescent undernutrition are reported in Ethiopia. The causes can be grouped into socio-demographic and socio-economic factors.

3.1 Socio-demographic factors associated with adolescent undernutrition in Ethiopia

Based on 4 demographic and health surveys (2000-2016), a study by Derseh et al. (2021) on late adolescent girls has reported that adolescent girls with higher education were 4.4 time more likely to be undernourished than those with no education. The chances of undernutrition in girls living in rural areas was 2.33 higher than those living in urban areas. A study by Berhe et al. (2019) has reported similar results on the significant association between rural residence and adolescent undernutrition. Family sizes of 5 or above and mother's educational status (no formal education) have been linked to adolescent undernutrition (Berhe et al., 2019). Among boys, thinness was reported to more prevalent in rural areas than urban areas (Benedict et al.2018).

3.2 Socio-economic factors associated with adolescent undernutrition in Ethiopia

Derseh et al.(2021) have reported that working adolescent girls have 40% less chance of being undernourished than those who are not working. The odds of undernutrition is higher in girls with unimproved latrines than those with improved latrines (Derseh et al., 2021; Berhe et al., 2019). Other factors which contributed to adolescent undernutrition include unprotected drinking water sources, food insecurity, and low WHO diet score (<4) [Berhe et al., 2019].

4. Policy options

Knowledge gap in adolescent nutrition is currently a problem to inform policies and programs. Lack of information on micronutrient status and diet, and adolescent nutrition interventions require special emphasis (Benedict et al., 2018; Christian & Smith, 2018). Though strategies and programs to address health and nutrition of adolescents and the youth are in place (Meseret et al., 2020); documents addressing specific interventions targeted at adolescent under nutrition are lacking.

The ultimate solution to address adolescent undernutrition lies in addressing the basic causes mentioned above, that is addressing poverty, gender inequality, inadequate infrastructure and similar

basic issues. However, since solving the basic causes can take decades of economic and social growth given the right policies and implementation, policy options which address one of the immediate causes, in adequate dietary intake, are the only pragmatic approach to address adolescent undernutrition if results are expected in the short run.

Option 1. Micronutrient and protein supplementation

Different systematic reviews have reported the benefits of micronutrient supplementation on adolescent nutrition. A systematic review by Roberts & Stein (2017) evaluated the impact of micronutrient (zinc, vitamin A, and multiple micronutrients) and protein supplementation on children aged between 2-20 years old. They found that micronutrient and protein supplementation may have positive effects on linear growth. Iron supplementation, on the other hand, may increase hemoglobin levels and reduce the risk of anemia (da Silva Lopes et al., 2021). It has also been reported that Calcium/Vitamin D supplementation may improve serum 25 -hydroxyvitamin D levels, while calcium only and calcium and Vitamin D supplementation may marginally improve total body bone mineral density (Salam et al., 2020).

Since local variations are common for example in micronutrient deficiencies, local conditions should be assessed in order to choose the best intervention for that particular area. Therefore, research efforts should be focused on different types of interventions to increase the variety of foods and dietary quality as well as take into account the special requirements of different populations (da Silva Lopes et al., 2021)

Option 2. School feeding

A systematic review by Wang et al. (2021) on impacts of school feeding on educational and health outcomes of school age children and adolescents in low-and middle-income countries has reported that school feeding significantly increased height and weight of students over 12 months compared to those in control groups.

School feeding started in Ethiopia in 1994 targeting food insecure areas (WFP,2019). It is now benefiting 1 million people across the country (ENA, 2020). The Federal Ministry of Health could make use of this platform to enhance coverage and nutritional quality of the school feeding program to address children's and adolescents' undernutrition in the country.

Conclusion

Micronutrient and protein supplementation and school feeding are two potential solutions to address adolescent undernutrition. However, implementing this solution would require taking into account local situations as patterns of adolescent undernutrition varies from area to area (Derseh et al., 2021; Berhe et al., 2019). In areas where there is dearth of information, data should be generated to facilitate implementation of the options.

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