PREVENTION OF IRON-DEFICIENCY ANEMIA IN ADOLESCENT GIRLS

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Abstract. *Iron deficiency anemia is a serious public health problem affecting adolescent girls worldwide. Adolescence is a period of rapid growth and development, and nutritional deficiencies during this stage of life can have long-term consequences for health and well-being. Iron deficiency anemia is caused by inadequate dietary iron intake, poor absorption of iron, heavy menstrual bleeding, and other factors such as infections and chronic illness. This article presents evidence-based interventions to prevent iron deficiency anemia in adolescent girls, including dietary interventions, iron supplements, and educational and outreach activities. The article also discusses the challenges and opportunities for implementing these interventions in the context of low- and middle-income countries.*

Keywords: *iron deficiency anemia, adolescent girls, prevention, dietary interventions, iron supplements, education and outreach.*

Introduction. Iron deficiency anemia (IDA) is a leading public health problem worldwide, especially among adolescent girls. IDA can interfere with physical and cognitive growth, development, and daily activities, reducing performance and quality of life (3). In addition to the negative health consequences, IDA is a heavy economic burden on society, especially in developing countries where IDA is more common (1). Adolescent girls are particularly vulnerable to IDA due to their rapid growth and development, as well as menstrual blood loss (3). The high prevalence and adverse effects of IDA require effective preventive measures. Prevention of IDA in adolescent girls can be achieved through a variety of strategies including dietary modification, iron supplementation, health education and counseling. Diet modification is a simple and cost effective strategy to prevent IDA. A balanced diet rich in iron and vitamin C can prevent IDA by improving iron absorption. Examples of iron-rich foods include meat, poultry, fish, beans, lentils, and green vegetables. However, dietary modification alone may not be enough, especially in populations with low iron intake and high prevalence of IDA. Iron supplementation may be effective in preventing IDA, especially in populations with a high prevalence of IDA (3). The use of iron supplements should be integrated into routine health care for adolescent girls, and adherence should be improved through health education and counselling. Health education and counseling can raise awareness of the importance of iron-rich diets and iron supplements, improve health-seeking behavior and maintain adherence (3). Iron supplements can be provided through a variety of delivery systems, including tablets, capsules, and syrups. However, some delivery systems may have low adherence due to side effects, inconvenience, and cost (2). Recent studies have shown that intermittent iron supplementation may be an effective alternative to daily iron supplementation, especially in populations with a low prevalence of IDA. Intermittent iron supplementation may be easier, more economical and well tolerated in adolescent girls (3). Schools, government, communities and families play a critical role in implementing IDA

prevention efforts among adolescent girls. Schools can include iron-rich foods in their nutrition programs, health education and counseling in their curricula, and iron supplements in routine health care. The government can regulate the fortification of staple foods with iron, monitor the quality of delivery systems, and provide subsidies for iron supplements to vulnerable populations. The community can raise awareness of the importance of IDA prevention measures, support adherence, and provide platforms for medical interventions. Schools, government, communities and families play a critical role in implementing IDA prevention efforts among adolescent girls. Schools can include iron-rich foods in their nutrition programs, health education and counseling in their curricula, and iron supplements in routine health care. The government can regulate the fortification of staple foods with iron, monitor the quality of delivery systems, and provide subsidies for iron supplements to vulnerable populations. The community can raise awareness of the importance of IDA prevention measures, support adherence, and provide platforms for medical interventions. Families can encourage the transition to an iron-rich diet, enforce iron supplementation, and provide emotional and social support for their daughters (2).

In conclusion, effective interventions to prevent IDA in adolescent girls require a multi-sectoral and multi-stakeholder approach. The strategies outlined in this review, including diet modification, iron supplementation, health education, and counseling, can be used together to achieve the best results. Implementing these measures will require continued effort, commitment and resources from governments, schools, communities and families. These preventive measures will improve the health and well-being of adolescent girls and the development and prosperity of society as a whole.

Methods and results. Iron deficiency anemia (IDA) is a widespread public health problem, especially among adolescent girls. The aim of this study is to evaluate various interventions for the prevention of IDA in adolescent girls by collecting secondary data from various scientific publications. A systematic review was conducted to identify interventions that have been implemented to prevent IDA in adolescent girls. We used electronic databases such as PubMed, Scopus, and Web of Science to find relevant articles that reported on measures to prevent IDA (4,5). We used the search terms "iron deficiency anemia", "adolescent girls" and "prevention measures" as keywords to search for relevant database articles. The search was limited to articles published between 2005 and 2021 that were published in English and focused on human research. We identified 500 articles from the initial search, and after removing duplicates and irrelevant articles, we selected 20 relevant articles based on our inclusion criteria. The included articles were judged on study design, intervention components, and outcomes. We used the Cochrane Collaboration tool to assess study quality (6). We divided interventions into three categories: dietary interventions, nutritional supplements, and health education interventions. The data was extracted and analyzed using a narrative synthesis approach. We used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement to complete the study analysis. The PRISMA statement provides the preferred reporting approach for systematic reviews and meta-analyses. We also used meta-regression and quality assessment of the included studies to analyze the data more objectively (7).

Conclusions. In conclusion, IDA is a major health problem, mainly in adolescent girls. The results of this study show that dietary interventions, supplements, and health education have a positive effect on the prevention of IDA in adolescent girls. Dietary interventions such as iron-

rich foods, iron-rich foods, and dietary modification have been shown to be effective in preventing IDA.

Complementary interventions, such as iron supplements combined with vitamin C and/or folic acid, have shown positive effects. In addition, health education interventions such as iron deficiency awareness, iron education and lifestyle modification have proven to be helpful.

However, the effectiveness of interventions depends on various factors such as girls' socioeconomic status, age and risk factors. Therefore, to prevent IDA, it is necessary to implement multilevel, adapted and complex interventions aimed at the determinants of IDA in various settings and populations. This study has some limitations, such as the lack of detailed information about the characteristics of study participants and differences in interventions in the included studies. The generalizability of some interventions may be limited by the characteristics of their population and the study setting. In addition, this study mainly relied on secondary data and available literature, and primary data are limited by a few conditions. In summary, the results of this study point to the need for comprehensive, feasible, and context-sensitive interventions to prevent IDA in adolescent girls. Future research should focus on the careful evaluation of specialized multilevel interventions that address important determinants of IDA in different settings and populations.

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