

SHORT ARTICLE

Prevalence of anemia amongst overweight and obese children in NCT of DelhiUmesh Kapil¹, Neha Sareen²¹Professor, Public Health Nutrition, ²Department of Human Nutrition, All India Institute of Medical Sciences, Ansari Nagar, New Delhi-110029

Abstract	Introduction	Methodology	Results	Conclusion	References	Citation
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Abstract

Introduction: Anemia amongst children has been associated with impaired cognitive functions, developmental delays, behavioral and learning disturbances. Young children from high-income groups could be also being affected from anemia.

Objective: To assess the prevalence of anemia amongst overweight and obese children in the age group of 5-18 years residing in National Capital Territory (NCT) of Delhi. **Material and Methods:** Total of 413 children was included in the present study. The hemoglobin (Hb) estimation was done by cyanmethemoglobin method. **Results:** In the age group of 5-11 years, the prevalence of anemia amongst overweight and obese children was found to be 38.4% and 29.2%. And in the age group of 12-18 years, the prevalence of anemia amongst overweight and obese children was found to be 33.3% and 21.7%; respectively.

Conclusion: The findings of the present study revealed that there is a high prevalence of anemia amongst overweight and obese children in the age group of 5-18 years in NCT, Delhi.

Key Words

Anemia; Overweight; Obese; Delhi.

Introduction

Anemia amongst children has been associated with impaired cognitive functions, developmental delays, behavioral and learning disturbances.[1-2] It is commonly believed that the children who are undernourished suffer from anemia because of less intake of food and thereby low intake of iron in their diet which is essential for synthesis of hemoglobin.[2] A study conducted in 2001 reported the average prevalence of anemia and severe anemia in unmarried adolescent girls of 16 districts of India as 90.1% and 7.1%, respectively.[3] Evidence suggests that the young children from high-income groups could be also being affected from anemia.[4] The changes in dietary habits and lifestyle have been associated with an increase in the prevalence of overweight and obesity.[5]

Aims & Objectives

We have limited data on prevalence of anemia amongst children who are overweight and obese from NCT of Delhi. Hence, we conducted this study

to assess the prevalence of anemia amongst overweight and obese children in the age group of 5-18 years residing in National Capital Territory (NCT) of Delhi.

Material and Methods

This study was a part of a large survey data set, amongst children of 5-18 years in NCT of Delhi, which has been published earlier.[6] In the larger study, we identified 193 overweight and 219 obese children in the age group of 5-18 years. We included 413 children in this study. The hemoglobin (Hb) estimation was done by cyanmethemoglobin method. Ethical approval was obtained from the ethics committee of the All India Institute of Medical Sciences, New Delhi. The Hb level of <11.5 mg/dl (5-11 years) and <12.0 mg/dl (12-18 years) were considered as cut off for anemia.

Results

In the age group of 5-11 years, it was found that 31.0% (n=42) of overweight and 25.8% (n=15) obese children had mild anemia (10.0-11.4 mg/dl).

Similarly, 7.4% (n=10) overweight and 3.4% (n=2) obese children had moderate anemia (9.9-7.0 mg/dl). We did not find any child suffering from severe anemia (<7.0 mg/dl). In the age group of 5-11 years, the prevalence of anemia amongst overweight and obese children was found to be 38.4% and 29.2%, respectively. In the age group of 12-18 years, it was found that 26.2% (n=37) overweight and 19.2% (n=15) obese children had mild anemia (10.0-11.0 mg/dl). Similarly, 6.3% (n=9) overweight and 2.5% (n=2) obese children had moderate anemia (9.9-7.0 mg/dl). Only 1 child had severe anemia (<7.0 mg/dl). In the age group of 12-18 years, the prevalence of anemia amongst overweight and obese children was found to be 33.3% and 21.7%; respectively.

Discussion

The overall prevalence of anemia amongst overweight and obese children in the age group of 5-18 years was found to be 51.3% and 15.5%, respectively. This was higher than an earlier study conducted amongst children reported the prevalence of anemia as 38.8% amongst obese and 12.1% in overweight children.[7] Similarly, another recent study conducted amongst adolescent boys reported the high prevalence of anemia (50%) amongst overweight and obese children.[8]

A high prevalence of anemia has been documented in upper (27.3%) and upper middle (39.1%) socioeconomic class. High prevalence of anemia was also reported in upper and upper middle class (14.0% and 39.4%, respectively) among urban school children (5-15 years) of Punjab. It also found 47.6% prevalence of anemia in well-nourished urban school children of Punjab.[9]

In the study on anemia among Egyptian adolescents it was found that prevalence of anemia was relatively high among adolescents belonging to higher socioeconomic stratum (43.4%). Authors suggested that anemia in higher stratum of society may be related to their choice in dietary habits.[10]

Iron deficiency was probably the most common cause of anemia.[9] However, anemia could also be due to other factors such as, deficiencies of folate, vitamin B12 or vitamin A, chronic infections and inflammations and hemorrhages.[11]

Low intake of iron, poor bioavailability of iron from the Indian diet and rising trend of consumption of 'empty calorie' foods could be the other causes of anemia in the overweight and obese children.[9]

A number of etiological factors have been proposed to explain the association between iron deficiency and overweight like i) genetics influences; ii) low physical activity, leading to decreased myoglobin breakdown and thus decreased amounts of iron released into the blood; iii) imbalance diet like fast food, alcohol, high calorie diet and limited intake of iron rich foods.[12]

Recent evidence suggests that Hepcidin may be a potential mediator for anemia in obese children.[13-14] The hepcidin-mediated reduced iron absorption has been suggested.[15]

Conclusion

The findings of the present study revealed that there is a high prevalence of anemia amongst overweight (51.3%) and obese (15.5%) children in the age group of 5-18 years in NCT, Delhi.

Authors Contribution

UK: conception and design, acquisition of data, analysis and interpretation of data, drafting the article, final approval of the version, NS: acquisition of data, analysis and interpretation of data, drafting the article

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