



Burden of Anaemia in Indian Adolescent Girls: A Systematic Review

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Abstract

Iron deficiency anaemia, which is still a major health concern, it is the disease caused by nutritional deficiencies that are most common in India. It is more likely to occur throughout the later school years and the beginning of puberty. The adolescent period is recognised by marked physical activity and rapid growth spurt, therefore, they need additional nutritional supplements and are at risk of developing anaemia. The National Family Health Survey found that adolescent girls receive lesser medical care and facilities than boys of the same age group. When compared to other developing countries, India has reported a higher-than-average frequency of anaemia among teenage girls. It has been a problem for the country for the past 20 years (NFHS-3 and NFHS-4) even government programmes launched to improve their quality of life. In NFHS reports (3,4,and 5) at the national and state levels, the prevalence of anaemia seems to rise rapidly which is affecting more than 50% of adolescent girls. According to these NFHS reports, urban adolescent girls are as affected as rural adolescent girls. Now in the present time if we want to defeat anaemia the health and education sectors must work together.

Keywords: Adolescent, anaemia, prevalence, NFHS (National family health survey), IFA (iron folic acid), WIFAS (weekly iron-folic acid supplement)

Introduction

Adolescents are the future generation of our country. Adolescent girls are regarded as the foundation of a healthy, open-minded family and the future creators of a fit community. They require special attention due to their influence on the health and well-being of both the present and future generations. According to WHO, "Adolescence is the phase of life between childhood and adulthood, from ages 10 to 19" (WHO, 2011). Anaemia and lack of iron are major health concerns for adolescents. India has a greater incidence of anaemia, with six out of ten teenage girls being anaemic (WHO, 2011). At the time of puberty, the requirement of iron for the production of myoglobin in muscles and haemoglobin in the blood rises, with a rapid increment in lean body mass, blood volume and red cell mass (WHO, 2011). Anaemia is most likely to occur during this phase of the life cycle due to inadequate nutrition and medical care. Adolescent girl's anaemia increases the risk of maternal and foetal anaemia, as well as death, in the future. The National Family Health Survey found that adolescent girls receive lesser medical care and facilities than boys of the same age group. Also, they are less likely to be vaccinated on time and receive treatment for diarrhoea, fever and respiratory tract infections (NFHS 4). Malnutrition is common among adolescent girls and with the onset of menarche, an average Indian girl becomes highly susceptible to anaemia (Alam et. al., 2010). According to studies, the biggest nutritional issue in developing nations is anaemia in adolescent girls. When compared to other developing countries, India has reported a higher-than-average frequency of anaemia among teenage girls (Chatterjee R., 2008).

The starting of early adolescence years also marks the probability of getting iron deficiency anaemia which is more common in girls as their bodies have increased nutritional demands for growth and development. This condition may worsen with the onset of menarche because of heavy blood loss (Usha R., 2001).

Definition of anaemia by WHO

“Anaemia is well-defined as the condition in which the number and size of red blood cells (RBCs), or the haemoglobin (Hb) concentration, falls below an established cut-off value, consequently impairing the capacity of the blood to transport oxygen around the body and lacking to provide for a person's physiological needs” (WHO, 2020).

Prevalence of anaemia in different states of India

India faces a struggle with anaemia, which is affecting more than 50% of adolescent girls and it has been a problem for the country for the past 20 years (NFHS-3 and NFHS-4). In NFHS reports (3,4,and 5) at the national and state levels, the prevalence of anaemia seems to be rising rapidly. According to NFHS-3 (2005–2006), 55.8% of adolescent girls (15–19 years old) were anaemic. Among these adolescent girls, 57.4% are from rural and 50.9% are from urban regions. According to NFHS-4 (2015–16), 54.1% of adolescent girls (15–19 years old) were anaemic, out of which 54% live in rural and 51% live in urban areas in India. According to the recent report of NFHS-5 (2019-2021), 59.1% of adolescent girls (15 to 19 years old) were found to be anaemic, with 58.5% living in rural and 53.8% in urban regions. This data represents a 5.0% higher occurrence of anaemia than that of NFHS-4. Anaemia rates among adolescent girls have significantly increased, thus it's important to prevent it to promote healthy growth. According to these NFHS reports, urban adolescent girls are as affected as rural adolescent girls.

Table: 1 Anaemia prevalence percentage table of National Family Health Survey reports 4 and 5

State /union territory	NFHS-4 Total (%)	NFHS-5 Total (%)	Difference (%)
India	54.1	59.1	5.0%
Chhattisgarh	45.5	61.4	15.9%
Haryana	62.7	62.3	0.04%
Jharkhand	65.0	65.8	0.08%
Madhya Pradesh	53.2	58.1	4.9%
Odisha	51.0	65.5	14.5%
Punjab	58.0	60.3	2.3%
Rajasthan	49.1	59.4	10.3%
Tamil Nadu	54.2	52.9	1.3%
Puducherry	55.0	58.4	3.4%

As mentioned above, the overall prevalence of anaemia increased up to 5% from NFHS-4 (54.1%) to NFHS-5 (59.1%) in adolescent girls in India. When comparing the data of NFHS-4 and NFHS-5 it shows that in some states prevalence rate of anaemia was increased. The increment in anaemia was observed in Rajasthan, Chhattisgarh, and Odisha and it was 10.3%, 15.9% and 14.5% respectively from NFHS-4 to NFHS-5, whereas Madhya Pradesh and Punjab reported a 2 to 5% increment in the prevalence rate of anaemia which was 4.9% and 2.3% respectively. A 3.4% increment in the prevalence rate of anaemia in adolescent girls was observed in Puducherry. A below 1% increment in anaemia prevalence was observed in Haryana, and Jharkhand and it was 0.04%, and 0.08% respectively. Tamil Nadu is the only state where the prevalence rate of anaemia decreased and it was 1.3%.

Table: 2 Prevalence of anaemia in rural and urban areas according to NFHS-5

State name	Urban (%)	Rural (%)
India	56.5	60.2
Chhattisgarh	62.2	61.2
Haryana	59.3	63.5
Jharkhand	63.2	66.5
Madhya Pradesh	57.4	58.3
Odisha	61.4	66.3
Punjab	58.6	61.3
Rajasthan	56.6	60.1
Tamil Nadu	50.6	54.9
Puducherry	61.1	53.0

Data related to the rural and urban prevalence of anaemia in adolescent girls also shows that not always rural adolescent girls are found to be anaemic but the rate of anaemia is also high in adolescent girls belonging to urban areas. In Pondicherry, the prevalence rate of anaemia was higher in urban areas (61.1%) as compared to rural areas (53.0%). A similar pattern was observed in Chhattisgarh. Data related to the rural and urban prevalence of anaemia in adolescent girls also shows that not always rural adolescent girls are found to be anaemic but the rate of anaemia is also high in adolescent girls belonging to urban areas. In Pondicherry, the prevalence rate of anaemia was higher in urban areas (61.1%) as compared to rural areas (53.0%). A similar pattern was observed in Chhattisgarh. In other states like Haryana, Jharkhand, Rajasthan, Punjab, Odisha, Madhya Pradesh, and Tamil Nadu, reported that more than 60% of adolescent girls were anaemic in rural

areas whereas in urban areas more than 50% of adolescent girls were anaemic. It means adolescent girls in urban areas suffer from anaemia even after having proper education and all facilities.

The government initiative for controlling anaemia

Adolescent girls are now recognised as a distinct and important target population for anaemia in India, and government programmes launched to improve their quality of life. Indian government started the National Iron Plus initiative in 2013 to prevent and manage iron deficiency in adolescent girls. The Strengthened Nationwide Iron Plus Initiative Project aims to reduce anaemia rates by 1–3 percentage points per year and for achieving that, Government introduced Anaemia Mukt Bharat (AMB) in 2018. Teenage girls (less than 19 years of age) are the target group for this programme (Anaemia Mukt Bharat 2018). The Weekly Iron and Folic Acid Supplementation (WIFS) Programme is developed by the Ministry of Health and Family Welfare to address the high risk of anaemia transmission in adolescents which includes weekly blood testing, as well as supervised iron folic acid dosage administration under supervision.

Conclusion

Anaemic adolescent girls consistently increased in both urban and rural areas. Rural adolescent girls are anaemic even after the government provides free-of-cost iron-folic acid supplements through Anganwadi centres and government schools. In urban areas, girls have all the facilities to take iron-rich and nutritious meals but even they suffer from anaemia. Now in the present time if we want to defeat anaemia the health and education sectors must work together. Nutritional education and counselling based on age and menarche status must be delivered for all adolescent girls. Food-based approaches are essential for reducing iron deficiency anaemia. Dietary strategies should focus on maintaining and enhancing iron status. Along with teaching methods to enhance absorption and bioavailability, information on choosing a diet high in iron should also be taken into consideration. Nutritional education and counselling based on age and menarche status must be delivered for all adolescent girls.

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