

# Malnutrition and Anemia Prevalence in Adolescent Women of Nepal

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## Abstract

*Adolescents have seen a rise in the problem of malnutrition over many years. In adolescents, mainly girls have been seen to be more vulnerable than boys in the case of nutrition deficiency. Malnutrition is mainly caused due to eating and dietary habits among the concerned group. This study has tried to find the status of malnutrition among adolescent women aged 15–19 years based on secondary data from the Nepal Demographic and Health Survey (NDHS) in 2011, 2016, and 2022. This study found that 27 percent of adolescent girls are of short stature. The number has slightly increased in the past year. The percentage of obese people has been increasing as (0.3%, 0.4%, and 0.6%) in 2011, 2016, and 2022 respectively. Similarly, the prevalence of anemia in adolescent girls has been seen comparatively high, despite fluctuations in the trend appearing in three different surveys as (38.5%, 43.6%, and 39.4%) in 2011, 2016, and 2022 respectively. The anemia problem has mainly increased due to micronutrition deficiency among adolescent girls. Only 17 percent of adolescent women are taking iron and folic acid. To eradicate the level of malnutrition among adolescents, it is necessary to launch a broader nutritional program that should be focused on adolescents in community- and region-based malnutrition programs.*

**Keywords:** Adolescent, malnutrition, anemia, obesity, micronutrient deficiencies.

## Introduction

Beginning with the onset of puberty, adolescence is a time of substantial development that ends in the mid-20s. The World Health Organization has defined adolescence as the phase of life between childhood and adulthood, from ages 10 to 19 (World Health Organization). It is a special time in human development and a crucial time to establish the foundation for long-term health.

There are 1.3 billion adolescents in the world today, more than ever before, accounting for 16 percent of the world's population (UNICEF, 2023). South Asia is home to about 350 million adolescents compared to any other region. According to the 2011 census, Nepal has 6.4 million adolescents aged 10–19 years, which is 24 percent of the total population. This number appears to have decreased somewhat in the 2021 census, where 5.8 million, or 20.15 percent, are adolescents.

In the adolescent period, they experience rapid physical, mental, and psychosocial growth. This has an impact on their emotions, thoughts, decision-making, and interactions with the

outside environment. Even though adolescence is a healthy time in life, there are still a lot of deaths, illnesses, and injuries during this period. Many of these can be treated or prevented. However, adolescents' behaviors relating to food, exercise, substance use, and sexual activity may endanger their health in the future (WHO,2020).

Adolescents are nutritionally vulnerable. Inadequate nutrition in adolescence can potentially delay (mentally, physically) growth and sexual maturation and put adolescents at high risk of chronic disease. (Aryal et.al., 2016). Adolescent girls are more vulnerable to malnutrition than boys because girls grow faster than boys at any time after their first year of life. Adolescent girls need sufficient protein, iron, and other micronutrients to support their physical and mental growth and need more iron to regulate their menstruation.

Million adolescent girls and women, or at least two-thirds of them, suffer from anemia, micronutrient deficiencies, and undernutrition, which have a severe negative impact on their quality of life. The current food and nutrition crisis may make the slow progress made in improving the nutrition of adolescent girls and women even worse. According to the analysis, the number of adolescent girls and women who are pregnant and suffering from acute malnutrition has increased by 25 percent since 2020 (UNICEF,2023). Pregnant adolescents who are suffering from malnutrition are especially likely to have other obstetric complications, which can raise the infant's risk of low birth weight, preterm birth, etc. (PRB,2003).

The triple burden of malnutrition (underweight, micronutrient deficiencies, and overnutrition) is an emerging issue in Nepal. The National Micronutrient Status Survey Report 2016 revealed that 32 percent of adolescent girls and boys aged 10–19 years are stunted in Nepal. Regarding thinness, adolescent boys are two times higher than adolescent girls. (UNICEF2016). Poor quality of diet, infection, an inadequate number of adolescent-friendly health services, inadequate participation of adolescent girls and boys in school health and nutrition programs, early pregnancy, and child marriage are the main causes of malnutrition in Nepal. (UNICEF, 2016).

The Adolescent Nutrition Survey 2014 reveals that 59 percent of adolescents in the female group and 71 percent of adolescents in the male group were undernourished (95% CI: 48.2-68.5), respectively. Over two-fifths of married adolescents (43.3%; 95% CI: 28.2-58.4) and unmarried adolescents (65.5%; 95% CI: 55.5-74.2) were undernourished (NHRC,2016). The Nepal Demographic and Health Survey calculated two measures of nutritional status for women: height for age and BMI for age. According to the Nepal Demographic and Health Survey 2022, 27 percent of adolescent girls are of short stature, 26 percent are thin, 5 percent are overweight, and less than one percent are obese (MOHP,2023).

Although malnutrition is a problem that affects both boys and girls, girls are more likely to suffer from it. A malnourished adolescent girl who starts her reproductive cycle will grow up to be an adult and give birth to another malnourished child; who is the future human capital of the country perpetuating the cycle of intergenerational malnutrition transfer within the community (Shapu, et al., 2023). The study of the Food and Nutrition Technical

Assistance III Project (FANTA) (2014) also reveals that the most malnourished group of women of reproductive age is adolescent girls (29%), and although it is decreasing, adolescent pregnancy still plays a major role in low birth weight and child malnutrition. That's why reducing adolescent malnutrition can help to break the intergenerational cycle of malnutrition and, in the short term, improve the physical, mental, social, and emotional wellbeing of adolescents (Gyawali, et al., nd). As well, by ensuring that teenage girls eat a balanced diet, take iron and folate supplements, and eat foods rich in iron and iodine, they can be healthy women, delaying their first pregnancy and preventing disease.

### Objective

This article has tried to find the status of malnutrition among adolescents in Nepal. More specifically, it has explored the levels and trends of malnutrition since 2011.

### Methodology

This article is based on secondary data from the Nepal Demographic and Health Survey in 2011, 2016, and 2022. Some indicators, such as being underweight, anemia prevalence, and some associated factors of nutritional status in adolescents, have been presented in this study.

### Results and Discussion

The term "malnutrition" describes dietary excesses or deficiencies, an unbalanced intake of vital nutrients, or poor nutrient use. (WHO,2024). It is a major public health problem among adolescent girls aged 15–19, which is presented as follows:

Table 1: Trend and Distribution of Height for age and BMI of adolescents (15-19 years) women in Nepal

Indices	NDHS 2011 (%)	NDHS 2016 (%)	NDHS 2022*(%)
Height (% Below 145 cm)	10.1	10.2	27.1
Thin (< 18)	25.8	30.3	25.7
Severely thin (<17)	10.4	10.0	5.1
Obese	0.3	0.4	0.6

Source: Nepal Demography and Health Survey, 2011, 2016 & 2022

\*Height-for age below  $-2$  SD

Table 1 shows the trend of nutritional status of adolescences in different surveys. The Nepal Demographic and Health Survey calculated two measures of nutritional status for women: height for age and BMI for age. According to height for age, data shows a slight increase in the number of girls whose height is less than 145 cm from 2011 to 2016. Even more surprisingly, this figure has increased to 27 percent in 2022. The Nepal Demographic and Health Survey 2022 has adopted a new method of measuring height. Similarly, adolescent girls BMI less than 18 (Thin) was in an increasing trend in 2011 (25.5%) and 2016 (30.3%); however, in 2022, this percent has decreased to 27 percent. About 10 percent of adolescent

girls were severely thin (BMI < 17) in 2011 and 2016 and decreased in 2022 (5%). Obesity is on an increasing trend in 2011, 2016, and 2022 (0.3%), (0.4%), and (0.6%), respectively.

Micronutrient deficiency, such as anemia, has commonly affected adolescents in developing countries. Anemia is a condition where the number of red blood cells or the concentration of hemoglobin in those cells is lower than usual, which lowers the ability of the blood to carry oxygen (WHO, 2023). Approximately one-quarter of adolescents in developing countries are anemic, although prevalence estimates for adolescent anemia in the Southeast Asia region range from 27 percent to 55 percent (WHO, 2023).

Anemia has adverse effects on adolescents' physical and mental health. Weakness, tiredness, and breathlessness are the most common physical symptoms of anemia. These symptoms can lead to anxiety, depression, and a general reduction in quality of life. Which makes it difficult for them to go about their daily lives. Similarly, anemia raises the risk of preterm birth, low birth weight, and birth problems in pregnant girls. Thus, anemia poses a risk not just to today's adolescents but also to the development of society in the future. (Chalise et al., 2018)

Adolescent girls are at a higher risk of iron deficiency anemia due to factors like iron loss during menstruation and inadequate iron intake. In Nepal, anemia is a serious health concern, particularly for child and pregnant mothers as well as adolescent girls. It has long-term negative effects on health of women child and the economic development. Severe anemia raises the mortality. The most common reason of anemia in Nepal is a diet deficient in iron, folic acid, and vitamin B12, which are essential for the synthesis of hemoglobin (Paudel, 2020).

Table 2: Trend and Distribution of anemia prevalence of adolescents (15-19 years) women in Nepal

Anemia	NDHS 2011 (%)	NDHS 2016 (%)	NDHS 2022 (%)
Any	38.5	43.6	39.4
Mild (NP 11.0-11.9 g/dl / P 10.0-10.9 g/dl)	32.5	35.6	21.3
Moderate (NP 8-10.9 g/dl / P 7.0-9.9 g/dl)	5.7	7.7	16.2
Severe (NP < 8.0 g/dl / P < 7.0 g/dl)	0.4	0.3	2.0

Source: Nepal Demography and Health Survey, 2011, 2016 & 2022

Table 2 shows the prevalence of anemia among adolescents. Data reveals that 39 percent of adolescent women are anemic; this number has increased to 44 percent in 2016. However, In 2022, 39 percent of adolescent women have any type of anemia. Severe anemia is becoming more common. In 2011, severe anemia was 0.4 percent, and 2.0 percent in 2022.

Anemia has an adverse effect on the physical and mental health of adolescent girls, and in pregnant girls, anemia is likely to cause birth complications and low birth weight babies. Therefore, the problem of anemia is a concern not only for the present but also for future

adolescents (Chalisse et al., 2018). The condition of anemia among the adolescent girls in Nepal has been serious for the past few years, as shown in the table below.

Table 3: Trend and pattern of anemia status among adolescents (15-19) by background characteristics (based on hemoglobin level)

Background Characteristics	NDHS 2011 (%)	NDHS 2016 (%)	NDHS 2022 (%)
<b>Place of Residence</b>			
Urban	28.3	43.9	41.4
Rural	40.1	43.0	35.7
<b>Marital status</b>			
Never married	35.5	44.0	40.5
Married	40.8	42.7	35.9
Widowed	100	00.0	00.0
Divorced/ Separated	100	33.3	25.0
<b>Pregnancy Status</b>			
Yes	47.3	42.3	39.7
No	38.0	43.7	33.3
<b>Breast feeding</b>			
Yes	46.4	43.6	39.5
No	37.6	43.1	38.3
<b>Educational Attainment</b>			
No education	44.1	49.3	61.4
Primary education	41.4	39.5	41.1
Secondary education	37.5	45.2	36.9
Higher education	30.0	35.3	00.0
<b>Caste/ Ethnicity</b>			
Brahmin/ Chhetri	35.4	35.9	30.2
Dalits	38.9	30.1	43.5
Janajatis	39.6	45.1	39.5
Muslim	34.4	56.3	50.5
Others	50.0	43.3	39.4
<b>Wealth quintile</b>			
Poorest	37.9	35.9	25.5
Poorest	36.5	43.1	43.4
Middle	40.9	53.5	42.5
Richer	41.9	44.7	40.9
Richest	35.0	38.4	41.5

Source: Nepal Demography and Health Survey, 2011, 2016 & 2022

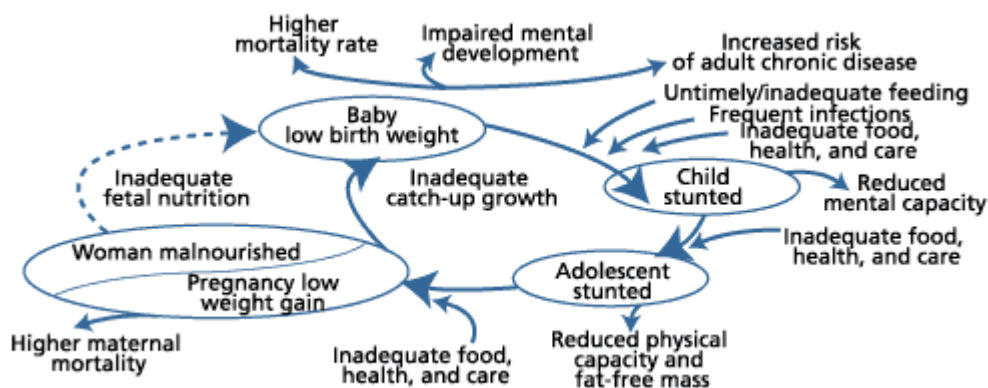
Table 3 shows that the results of anemia among adolescent women aged 15–19 years. It shows that adolescents who live in rural areas had higher (40%) anemia than those living in urban areas (28%) in 2011. However, again in 2022, it has been shown that adolescents living in rural areas have lower anemia (36%) than those living in urban areas (41.4%). Similarly, adolescent females who have never married appear to have more anemia (41%) than those who are married. Similarly, currently pregnant adolescents are more likely to be

anemic than non-pregnant women (40%) and lactating women are more likely to be anemic than others (40%). Similarly, the prevalence of anemia is higher among girls with no education compared to other educational levels: (44.1%) in 2011, (49.3%) in 2016, and (61.4%) in 2022. Similarly, the prevalence of anemia (51%) among adolescents from the Muslim community is higher than that of other ethnic groups. Additionally, adolescent girls who are in the middle wealth quintile have a higher prevalence of anemia (43%) than those in other wealth quintiles.

### Associated Factors of Malnutrition

Everybody's health depends on having a sufficient diet, but women are particularly vulnerable to this. Poor nutrition affects not only their own health but also the health of their children. Children of undernourished mothers are vulnerable to cognitive deficits, short stature, lower immune systems, and a higher risk of disease and death (PRB, 2003).

**Figure 1.** Nutrition throughout the life cycle shows the effect of malnutrition on the adolescent girl and her unborn child.



Source: <https://www.prb.org/resources/nutrition-of-women-and-adolescent-girls-why-it-matters/>

Some associated factors, such as diet pattern, micronutrient intake, and physical activity, are major causes of malnutrition among adolescents. Dietary diversity is an important determinant of nutritional wellbeing. Women of reproductive age are especially vulnerable to insufficient micronutrient intake in low- and middle-income countries due to inadequately diverse diets (Islam, et al., 2023). The Nepal Demographic and Health Survey 2022 revealed that 53 percent of adolescents consume a minimum diet of diversity. Similarly, 64 percent of adolescents consume sweet beverages, but 70 percent of adolescent girls consume unhealthy diets. Regarding the micronutrient intake, only 17 percent of women aged 15–19 received iron and folic acid supplementation in the 3 months prior to the survey (MoPH, 2022).

### Discussion

This article revealed malnutrition and anemia prevalence among adolescents and women aged 15–19 years in Nepal. Study found that 27 percent of adolescents women aged 15-19 are short (below 145cm), 5 percent are severely thin (<17.0) and 0.6 percent are obese (>=30.0). It observed that the situation of malnutrition is a serious problem in Nepal.

Especially children, women, and adolescents are more affected by malnutrition. The same nature of study done in India revealed that 14 percent of adolescents are stunted (below 145 cm), around 20 percent are severely thin (<17.0), and 1.2 percent are obese ( $\geq 30.0$ ), which is more than the data presented in this study. (GoIMoHFW, 2022). Despite that, a school-based cross-sectional study that was conducted in Dang district, Nepal, has revealed that 26 percent of adolescents are malnourished, 22 percent are underweight, and 0.8 percent are obese. (Bhattarai & Bhusal, 2019). Regarding anemia, this study found that 39 percent of adolescent girls are anemic. Some socio-economic factors vary the level of anemia, such as the fact that anemia is more common among the illiterate than among the educated; Muslims have more anemia (50%) than other castes. But what is surprising is that there is less anemia (26%) among the poorer wealth quintiles than among the richer wealth quintiles (41%). The reduction of anemia among the poor may be due to the poor targeted nutrition program conducted by the government. Adolescent females who have never been married have more anemia (41%), compared to those who are married. Similarly, pregnant adolescents are more likely to be anemic (40%) than non-pregnant women (33%), and lactating women are more anemic (40%) than others. The same nature of the study done in India has revealed that 59 percent of adolescent women are anemic. Similarly, 57 percent of pregnant women, 67 percent of breast-feeding mothers, and 65 percent of adolescent women with no formal education are anemic. Regarding religion, Hindu and Muslim adolescents are 59 and 57 percent anemic, respectively. Poorer wealth quintiles have more anemia (64%), and rural areas have higher (60%) anemia than urban areas (56.4%) (GoIMoHFW 2022).

### **Conclusion**

This article concludes that malnutrition is a major public health problem. This problem has mainly affected females compared to males, and adolescents have been seen to be mostly affected. Since the adolescent period is the most important period in human life in the context of mental, physical, and cognitive development, it is essential that adolescents receive more amounts of iron, protein, vitamins, and minerals from their diet. Due to inferior food-taking practices and harmful dietary habits, as well as physical inactivity, adolescents (especially girls) are suffering from nutritional deficiency. As a result, malnutrition problems related to being underweighted, as well as other problems such as obesity and anemia, affect them. Dietary diversity is an important determinant of nutritional deficiency. According to the Nepal Demographic and Health Survey 2022, 53 percent of adolescent girls consume a minimum diet of diversity; 64 percent of adolescents consume sweet beverages; and 70 percent of adolescent girls consume unhealthy diets; in contrast, only 17 percent have received iron and folic acid supplementation. To put this issue to a close, it is crucial for the government of Nepal to apply effective nutritional programs to all concerned people. Adolescent girls are potential mothers, and a healthy mother gives birth to a healthy baby.

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