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## NUTRITIONAL STATUS AND ANAEMIA AMONG CHILDREN AND WOMEN IN ANDHRA PRADESH: BASED ON NFHS DATA

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### Abstract

Anaemia can result in maternal mortality, weakness, diminished physical and mental capacity, increased morbidity from infectious diseases, perinatal mortality, premature delivery, low birth weight, and (in children) impaired cognitive performance, motor development, and scholastic achievement. Anaemia is a major health problem in Andhra Pradesh, especially among women and children. In Andhra Pradesh, 4 in 5 children age 9-35 months were given a vitamin A supplement in the last six months, but only 2 in 5 youngest children age 6-23 months living with their mother consumed vitamin A-rich foods during the day or night before the survey. Majority of children (63%) age 6-59 months are anaemic. This includes 26 percent who are mildly anaemic, 35 percent who are moderately anaemic, and 2 percent who have severe anaemia. The overall prevalence of anaemia in children increased from 59% in NFHS-4 to 63% in NFHS-5. The percentage of children who are wasted decreased marginally from 17 percent to 16 percent, and percentage of children who are underweight from 32 percent to 30 percent in the 4 years between NFHS-4 and NFHS-5. As many as 63.2 per cent children and 58.8 per cent women surveyed suffered from anaemia in 2019; 58.6 per cent children and 60 per cent women were anaemic in 2016 in Andhra Pradesh. The number of children's suffering from anaemia increased by 4.6 percentage points in Andhra Pradesh. The highest percentage of school children suffering from anaemia, according to NFHS-5, was observed in Visakhapatnam (72.6 per cent).

**Keywords:** Children, Women, Breast milk, NFHS, Health, Anaemia, Mortality

## Introduction

Anaemia is a condition that is marked by low levels of haemoglobin in the blood. Iron deficiency is estimated to be responsible for about half of all anaemia globally, but anaemia can also be caused by malaria, hookworms and other helminths, other nutritional deficiencies, chronic infections, and genetic conditions. Although breastfeeding is nearly universal in Andhra Pradesh, only 68 percent of children under 6 months are exclusively breastfed, as the World Health Organization (WHO) recommends. Eighty-eight percent are put to the breast within the first day of life, but only 52 percent started breastfeeding in the first hour of life (as recommended). While breastfeeding is widespread, many infants are still deprived of the highly nutritious first milk (colostrum) and the antibodies it contains. It is recommended that nothing be given to children other than breast milk even in the first three days when the milk has not begun to flow regularly because pre-lacteal feeds limit the frequency of suckling by the infant and expose the baby to the risk of infection. However, 14 percent of children are given something other than breast milk during the first three days. Overall, 70 percent of children continue breastfeeding at 1 year and more than half (55%) continue breastfeeding at 2 years. The median duration of breastfeeding is 22.6 months, which is the age to which half of children are breastfed.

After the first 6 months, breast milk is no longer enough to meet the nutritional needs of infants. Therefore, complementary foods should be added to the diet of the child. However, at age 6-8 months, only 48 percent of children in Andhra Pradesh receive breast milk and complementary foods. WHO has several recommendations for infant and young child feeding (IYCF) practices for children age 6-23 months. The key IYCF indicators measure the adequacy of dietary diversity and meal frequency for breastfed and non-breastfed children. More than one-third (35%) of children age 6-23 months are fed the recommended minimum number of times per day and even fewer (20%) are fed from the appropriate number of food groups. Only 9 percent are fed according to all three recommended practices.

Micronutrient deficiency is a major component of childhood under nutrition and a significant contributor to childhood morbidity and mortality. Vitamin A is an essential nutrient for growth, immunity, and vision. Severe vitamin A deficiency (VAD) can cause eye damage and a higher risk of dying from measles and diarrhoeal disease. The Government of India recommends that children under 5 years of age receive vitamin A supplements every six months, starting at age 9 months. In Andhra Pradesh, 4 in 5 children age 9-35 months were given a vitamin A supplement in the last six months, but only 2 in 5 youngest children age 6-23 months living with their mother consumed vitamin A-rich foods during the day or night before the survey. Iron deficiency is a primary cause of anaemia. Eating foods rich in iron and taking iron supplements can help prevent anaemia. Twenty-eight percent of children age 6-23 months ate iron-rich foods during the day or night before the survey; however, 41 percent of children in the same age group were given iron supplements in the week before the survey.

## Objectives

The Objectives of the Paper are:

- To estimate the frequency of iron deficiency anemia among women of childbearing age
- To estimate the nutritional deficit in antenatal women and children with anaemia.
- To analyze District wise Anaemia among Children and Women in Andhra Pradesh

## Methodology

The study collected NFHS wise anaemia data from 1990 to 2019 from National Family Health Survey (NFHS), International Institute for Population Sciences for comparative analysis. Data used to study the distribution of children according to background characteristics in Andhra Pradesh. NFHS is a nationally representative sample covering samples from across the countries with a well-specified sampling procedure. All the NFHS uses multi-stage stratified sampling for sample selection.

## Review of Literature

The study was included a total of 2,149 children aged 6–59 months and 2,145 nonpregnant women of childbearing age (15–49 years). In addition, feeding practices of 232 infants aged 0–6 months were recorded. The study sample represented mostly individuals living in rural areas with the exception of Dushanbe, which included only urban dwellings. Overall, 17.3% of household heads were female, and the majority had secondary education 10 and 11 grades (Tanja Barth-Jaeggi, 2019). Of the 1354 children 0–59 months enrolled in the GMNS, 51.1% were male and 48.9% female. From the age groups 0–5 months and 6–11 months 143 and 124 children were recruited, representing 10.6% and 9.2% of the survey sample. For the other age groups the distribution was as follows: 273 children aged 12–23 months (20.2%), 266 children aged 24–35 months (19.6%), 297 children aged 36–47 months (21.9%), and 251 children aged 48–59 months (18.5%). While more children from rural areas were enrolled (rural: 804 versus urban: 550), rural children represented about 37% of the total sampling following statistical weighting, due to the large proportion of the Gambian population residing in urban areas (Nicolai Petry, 2019).

Promoting breastfeeding and reducing the infant's intake of calories without micronutrients as with breastmilk substitutes and processed complementary foods, can counteract obesity in women and children, as well as children's undernutrition and stunting at the same time (Dietz, 2017). Estimates of maternal mortality rate and maternal mortality ratio obtained in the rural sector of North 24 Parganas West Bengal. The study also shows maternal mortality rate is higher in non-BPHC villages especially in PHC, Sub-Centre and non-Sub-centre villages. Anemia was found to be the major cause of maternal mortality. The study observed that at least 38 per cent of maternal deaths can be controlled by proper health care (Pal M et.al, 2002). The study reveals that lack of proper care and nutrition during pregnancy, not only the mother's health but also the health of the infant suffers. The birth weight is an important determinant of infant survival and development. He pointed out that Anemia and Toxemia are leading causes of low birth weight in this country. According to him there are also some contributory factors for maternal health in India like female illiteracy, early marriage, uncontrolled fertility crucial to safe motherhood is family planning (Bhaskara Rao K, 1991).

## Children's Nutritional Status

Childhood under nutrition contributes to childhood diseases and is a major cause of child mortality in India. Thirty-one percent of children under age five years are stunted, or too short for their age, which indicates that they have been undernourished for some time. Sixteen percent are wasted, or too thin for their height, which may result from inadequate recent food intake or a recent illness causing weight loss, and 6 percent are severely wasted. Thirty percent are underweight, which takes into account both chronic and acute under nutrition. Even during the first six months of life when almost all babies are breastfed, 16 percent of children are stunted, 24 percent are wasted, and 26 percent are underweight. Children's nutritional status in Andhra Pradesh has marginally changed since NFHS-4 by all measures. The percentage of children who are wasted decreased marginally from 17 percent to 16 percent, and percentage of children who are underweight from 32 percent to 30 percent in the 4 years between NFHS-4 and NFHS-5. The percentage of children who are stunted (31%) has not changed since NFHS-4. Differences in the levels of malnutrition are more pronounced for several

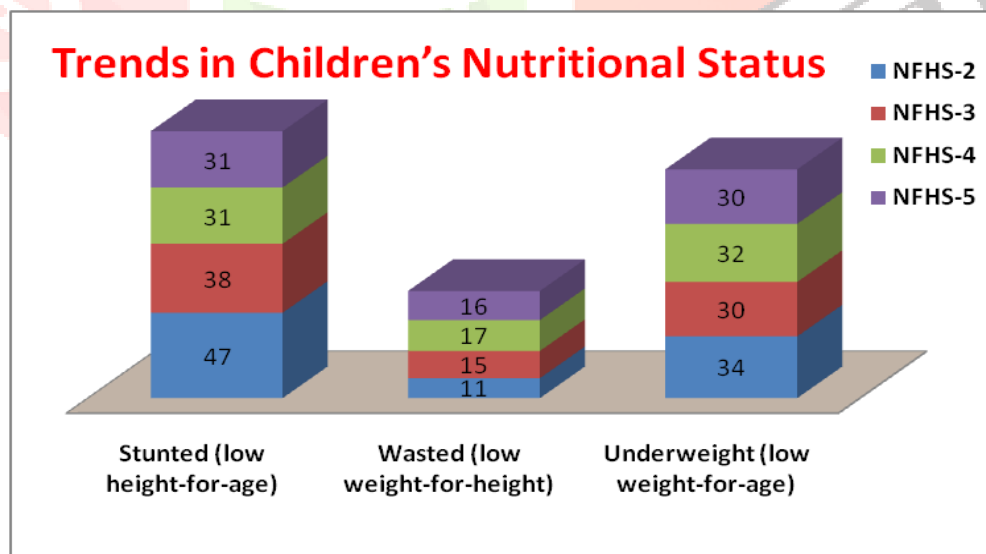
background characteristics. Malnutrition generally decreases with better nutritional status of the mother. The level of under nutrition is relatively high for rural children and children of higher birth orders.

Forty-three percent of children under age five are stunted, or too short for their age, which indicates that they have been undernourished for some time. Twelve percent are wasted, or too thin for their height, which may result from inadequate recent food intake or a recent illness. 1/3<sup>rd</sup> are underweight, which takes into account both chronic and acute under nutrition. Even during the first six months of life, when most babies are being breastfed, 21 percent of children are stunted, 18 percent are wasted, and 29 percent are underweight. Children in rural areas are somewhat more likely to be undernourished, but even in urban areas, more than one-third (37%) of children suffer from chronic under nutrition. Even in the wealthiest households, 28 percent of children are stunted, 7 percent are wasted, and 16 percent are underweight. Girls and boys are about equally likely to be undernourished. Children's nutritional status in Andhra Pradesh has improved slightly since NFHS-2 by some measures but not by all measures. Children under age three years (the age group for which nutritional status data are available in NFHS-2) are less likely to be too short for their age today than they were seven years ago (which means that chronic under nutrition is less widespread). They are also less likely to be underweight, but they are slightly more likely to be too thin for their height, which means that acute under nutrition is still a major problem in Andhra Pradesh (table-1).

**Table-1**  
**Trends in Children's Nutritional Status**

Trends	Percentage of children under five years			
	NFHS-2	NFHS-3	NFHS-4	NFHS-5
Stunted (low height-for-age)	47	38	31	31
Wasted (low weight-for-height)	11	15	17	16
Underweight (low weight-for-age)	34	30	32	30

Source: National Family Health Survey (NFHS) -2,3,4,5



### Anaemia among Women and Children

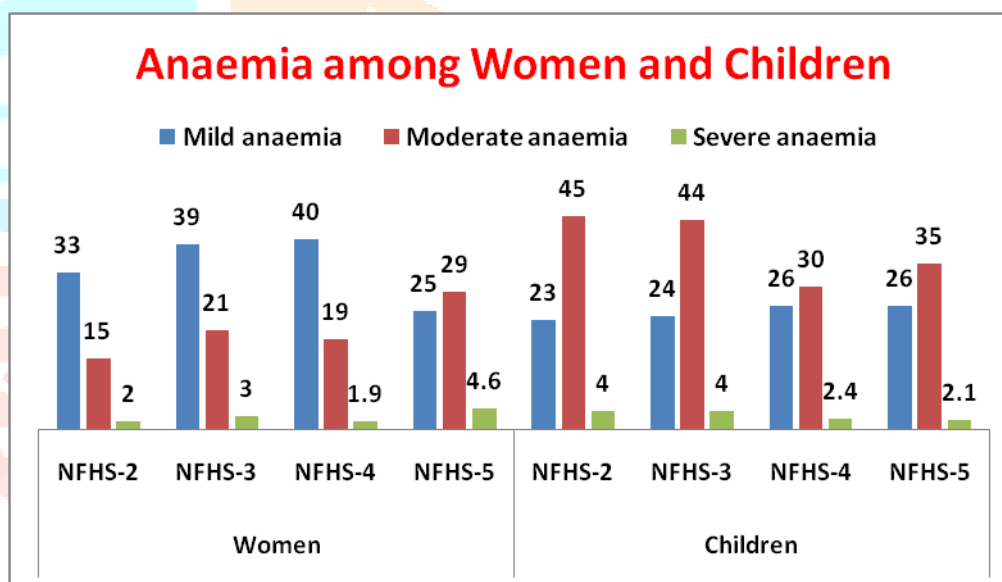
Majority of children (63%) age 6-59 months are anaemic. This includes 26 percent who are mildly anaemic, 35 percent who are moderately anaemic, and 2 percent who have severe anaemia. The overall prevalence of anaemia in children increased from 59% in NFHS-4 to 63% in NFHS-5. Children of mother who have anaemia are much more likely to be anaemic. Although anaemia levels vary somewhat according to background characteristics, anaemia among children is widespread in every group. In Andhra Pradesh, children

from rural areas and those belongs to scheduled tribe are more likely to be anaemic. Fifty-nine percent of women age 15-49 in Andhra Pradesh have anaemia, including 25 percent with mild anaemia, 29 percent with moderate anaemia, and 5 percent with severe anaemia. Anaemia exceeds 54 percent for every group of women since NFHS-4. As per NFHS-3, Sixty-three percent of women in Andhra Pradesh have anaemia, including 39 percent with mild anaemia, 21 percent with moderate anaemia, and 3 percent that have severe anaemia. This includes 24 percent who are mildly anaemic, 44 percent who are moderately anaemic, and 4 percent who suffer from severe anaemia (table-2).

**Table-2**  
**Anaemia among Women and Children**

Anaemia	Women				Children 6-59 months			
	NFHS				NFHS			
	2	3	4	5	2	3	4	5
Mild anaemia	33	39	40	25	23	24	26	26
Moderate anaemia	15	21	19	29	45	44	30	35
Severe anaemia	2	3	1.9	4.6	4	4	2.4	2.1

Source: National Family Health Survey (NFHS)-2,3,4,5



### Prevalence of Anaemia in Children

An increasing number of people across all population groups, including children below five years, adolescent girls and boys, and pregnant women, is being affected by anaemia, findings from the fifth round of National Family Health Survey (NFHS-5, 2019-21) have revealed. “Anaemia among children and women continues to be a cause of concern...in spite of substantial increase in the composition of iron folic acid tablets by pregnant women for 180 days or more,” the health ministry said. Women under reproductive age group are most vulnerable when it comes to IDA. This further gets exacerbated during pregnancy, which is likely to influence maternal, fetal, and newborn health. The prevalence of anemia amongst pregnant women has been consistently remained around 50% since over last four decades.

**Table-3**  
**Prevalence of Anaemia in Children : 2019-21**

Background Characteristics	Anaemia Status by Haemoglobin level			Any Anaemia (<11.0 g/dl)	Number of Children
	Mild (10.0-10.9g/dl)	Moderate (7.0-9.9 g/dl)	Severe (<7.0 g/dl)		
<b>Age in Months</b>					
6-8	28.7	36.0	1.1	65.8	114
9-11	22.9	49.3	4.9	77.1	104
12-17	27.2	46.7	3.9	77.8	220
18-23	26.5	50.8	3.3	80.6	208
24-35	26.7	41.8	2.3	70.9	405
36-47	28.0	23.9	0.7	52.5	402
48-59	23.4	22.3	1.3	47.0	457
<b>Sex</b>					
Male	25.9	36.0	1.7	63.6	976
Female	26.4	33.9	2.5	62.7	933
<b>Birth Order</b>					
1	26.5	33.9	2.2	62.5	814
2-3	25.6	35.7	1.9	63.2	1,050
4-5	(28.9)	(39.3)	(5.5)	(73.7)	42
<b>Mother's Anaemia Status</b>					
Not anaemic	24.8	29.0	1.6	55.4	781
Mildly anaemic	27.1	35.2	1.9	64.2	511
Moderately/ severely anaemic	27.0	42.4	2.9	72.4	612
<b>Total</b>	<b>26.1</b>	<b>35.0</b>	<b>2.1</b>	<b>63.2</b>	<b>1,910</b>
<b>NFHS-4 (2015-16)</b>	<b>26.4</b>	<b>29.9</b>	<b>2.4</b>	<b>58.6</b>	<b>2,165</b>

Source: Source: National Family Health Survey (NFHS)-5

According to the World Health Organization (WHO), women in the reproductive age group and having haemoglobin levels lower than 12 grams per decilitre (g / dL), as well as children under five with haemoglobin levels lower than 11.0 g / dL are considered anemic. The first phase of NFHS-5 was conducted before the novel coronavirus disease (COVID-19) lockdown. If current trends continue, India may miss the sustainable development goal 2 (achieving Zero Hunger by 2030). Anaemia in children and women worsened in the state of Andhra Pradesh according to the latest National Family Health Survey (NFHS). As many as 63.2 per cent children and 58.8 per cent women surveyed suffered from anaemia in 2019; 58.6 per cent children and 60 per cent women were anaemic in 2016 in Andhra Pradesh. The number of children's suffering from anaemia increased by 4.6 percentage points in Andhra Pradesh.

A rise in anaemia was recorded in several districts as well among women aged between 15 and 49 years: Kurnool (4.1 percentage points), West Godavari (3.1 percentage points), Chittoor (3 percentage points), Prakasam (2.7 percentage points), Krishna (0.9 percentage points) and Nellore (0.3 percentage points). Ananthapur, East Godavari, Srikakulam, Vizianagaram, Visakhapatnam and Kadapa districts were the recorded a reverse trend. The highest percentage of school children suffering from anaemia, according to NFHS-5, was observed in Visakhapatnam (72.6 per cent), followed by Kurnool (72.6 per cent), SPS Nellore (70.7 per cent), East Godavari (67.5 per cent), Vizianagaram (66.8 per cent), Krishna (65.7 per cent), Prakasam (62.6 per cent),

West Godavari (62.3 per cent), Y.S.R.Kadapa (60.6 per cent), Srikakulam (59.6 per cent), Guntur (59.3 per cent), Anantapuramu (55.8 per cent) and Chittoor (54.9 per cent) respectively (table-4).

**Table-4**  
**District wise Anaemia among Children and Women**

District	Children having any Anaemia (age 6-59 months) (<11.0 g/dl)		Women having any Anaemia (age 15-49 years)(<12.0 g/dl)	
	NFHS-4	NFHS-5	NFHS-4	NFHS-5
Anantapuramu	53.0	55.8	52.7	50.5
Chittoor	46.6	54.9	48.8	51.8
East Godavari	63.1	66.8	64.6	63.0
Guntur	68.1	59.3	57.9	59.5
Krishna	58.1	65.7	59.4	60.3
Kurnool	54.5	70.7	54.5	58.6
Prakasam	56.3	62.6	57.7	60.4
SPS Nellore	50.4	67.5	59.1	59.4
Srikakulam	70.6	59.6	71.8	62.6
Visakhapatnam	64.5	72.6	66.4	58.0
Vizianagaram	78.7	66.7	75.5	64.0
West Godavari	55.1	62.3	59.9	63.0
Y.S.R.Kadapa	55.8	60.6	57.7	56.1
<b>Andhra Pradesh</b>	<b>58.6</b>	<b>63.2</b>	<b>60.0</b>	<b>58.8</b>

Source: Source: National Family Health Survey (NFHS)-4 & 5

## Conclusion

This study has revealed that the prevalence of anemia in children less than five years is high and a severe public health problem in the study area. Therefore, the policymakers should make a strategy that can reduce poverty and increase the awareness of women on breastfeeding, nutrition, and other associated factors to reduce anemia. India has a long history of various Government-run programs like Integrated Child Development Scheme (ICDS), National Nutritional Anemia Control Program (NNACP), Weekly Iron and Folic Acid Supplementation (WIFS), National Iron Plus Initiative (NIPI), etc to combat anemia. The fact is that in spite of all the programs, no marked improvement had been noticed in the magnitude of anemia.

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