

Anemia Prevalence in India Over Two Decades: Evidence from National Family Health Survey (NFHS)

Ekta Belwal¹, Shalini Pandey², Supta Sarkar³

¹PhD Scholar, Department of Foods and Nutrition, College of Home Science,
G.B Pant University of Agriculture and Technology, Pantnagar, US Nagar, India

²Assistant Professor, Department of Home Science, Government Degree College, Kanda, Bageshwar, India

³Assistant Professor, Department of Foods & Nutrition, College of Community Science,
Prof. Jayashankar Telangana State Agricultural University, Saifabad, Hyderabad-500 004

Corresponding Author: Ekta Belwal

ABSTRACT

Anemia is the most prevalent deficiency disease and one among the major nutrition related goals globally. Children and women of reproductive age are the most vulnerable groups for anemia everywhere. While there are various nutritional and non-nutritional factors causing anemia, Iron deficiency is the most prominent of them. In India, more than half population of preschool age children and reproductive age women is suffering from anemia. Indian government had started anemia prophylaxis efforts a half century ago and still continuing to battle with this ever prevalent disease to bring down its occurrence. National Family Health Survey is the large-scale survey conducted in India to provide high-quality data on health and family welfare and related emerging issues. The data provided not only helps in formulation, revision and monitoring of the policies and programs but in situating the development of India globally. Studying the time trend for anemia prevalence and other related parameters reported in NFHS surveys helps how well India has performed until now and how far is from its goal to become Anemia free country.

Keywords: Anemia, iron deficiency, health survey, child health, maternal health

INTRODUCTION

Anemia is the most widespread clinical nutritional deficiency disease; a topic of global concern is always among the

prime agendas of various development goals in India and globally. World is continuously combating with this problem despite the fact that this problem is largely preventable & easily treatable. Anemia has variable causes but 50% of the time is due to Iron deficiency. India ranks 170 out of 180 countries for anemia among women, according to the global nutrition survey, 2016.^[1] While, WHO (in 2012) had targeted to achieve 50% reduction of anemia in reproductive age women by 2025,^[2] India targeted to achieve 3 percentage points per year decline of anemia prevalence among children 6-59 months, adolescents and women of reproductive age by *Anemia Mukh Bharat* Program under POSHAN Abhiyaan (2018-20).^[3]

Anemia and iron deficiency reduce individuals' wellbeing, cause fatigue and lethargy, and impair physical capacity and work performance. Failure to reduce anemia worldwide consigns millions of women to impaired health and quality of life, generations of children to impaired development and learning, and communities and nations to impaired economic productivity and development. Iron deficiency (due to nutritional deficiency, blood loss and helminth infestation), nutritional deficiencies (of folate and vitamins B12, A and C), teenage pregnancy

and malaria are the possible cause and factors for Anemia.^[2]

National Family Health Surveys (NFHS-1 to NFHS-5) are the large-scale survey conducted in India since 1992,^[4] in order to collect extensive information and provide the population, health, and nutrition related essential data to Health Ministry and other agencies for policy formulation and program planning and help India situating its development globally. So far, five surveys have been conducted over a span of almost two decades (1992-2021).

METHODOLOGY

NFHS survey reports (NFHS-1 to NFHS-5) were studied thoroughly and data on prevalence of anemia in various age groups and related key indicators were

tabulated and analyzed using Microsoft Excel to study the trends of anemia prevalence in India for various age groups reported in these survey.^[5-7]

RESULTS AND DISCUSSION

Data obtained from NFHS fact sheets (India) on prevalence of anemia data was collated and represented in Fig.1. It was observed that anemia is present in all life stages and effect both male and female but children under 5 year of age and reproductive age women (15-49 year) are the most vulnerable group as more than half of their population is suffering from anemia. Men also not remain unaffected of anemia but for them only 1/4th population are effected which almost half as compared to women is.

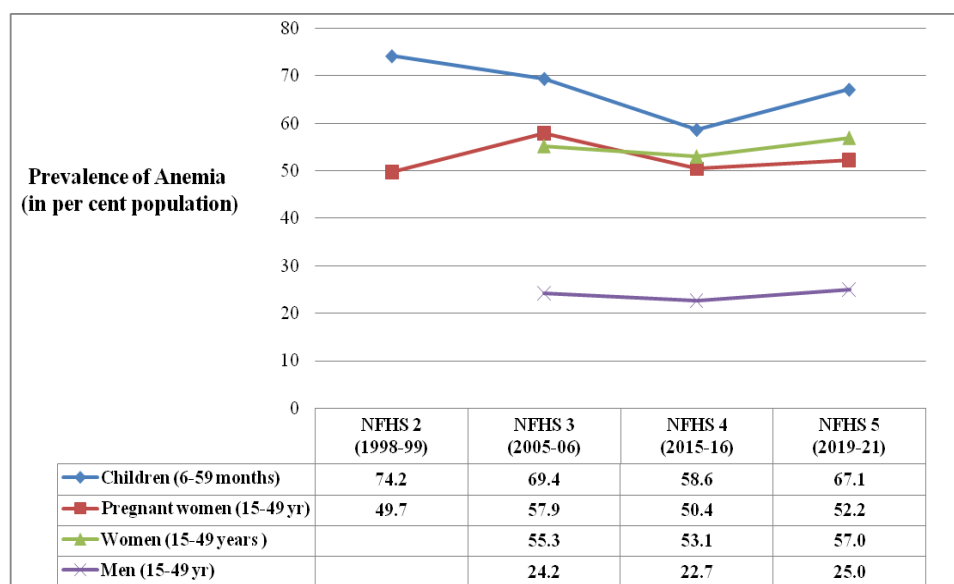


Figure 1: Prevalence of Anemia (%) in Indian Population from NFHS-2 to NFHS-5

Ever since the inception of anemia monitoring in NFHS-2 survey (2005-06), a declining trend was observed for all groups in the successive NFHS surveys up to NFHS 4, but a sudden rise in anemia prevalence was observed during NFHS-5 for all and was most prominent in under 5 year children. Even the anemic adolescents (15-19 year) who were reported only in NFHS-4 and NFHS-5 showed an increase of 2% for male (29.2 to 31.1) and 5% (54.1 to 59.1) for female in a period of half decade.^[5]

Anemia in Children: Iron deficiency particularly affects preschool-age children (0-5 years) because of the disequilibrium at this age between rapid growth and insufficient iron intakes.^[8] Chronic anemia in children can delay or impair their growth in physical, mental, social and pubertal terms, which affects their school performance.^[9] As per WHO global estimate (2021) 39.8% of children aged 6-59 months suffered from anaemia in 2019 which is nearly half of the percent of

children of same age who are anemic in India (67.1%) as per latest NFHS report^[5].

India had a national target to bring down the anemia prevalence to 40% in children (6-59 months), 36% and 11% in adolescent (15-19 years) girls and boys respectively, by 2022.^[3] However, the data from NFHS-5 factsheets reveals that India had reached only halfway to those targets. School age children (5-15 years) are the only group who found no place in NFHS surveys even after two decades. Forty-one percent of pre-school children, 24% of school-age children and 28% of adolescents were found to be anemic as per CNNS report^[11] and prevalence is higher in urban children compared to those from rural areas contrary to what is observed in NFHS survey.

In children, anemia is found to be interlinked with the malnutrition and breastfeeding.^[2] While situation of under-nutrition had slightly improved for pre-school children by showing a decrease in prevalence of underweight (35.8 to 32.1%), stunted (38.4 to 35.5%) and wasted (21.0 to 19.3%) children from NFHS-4 to NFHS-5, prevalence of such overweight children increased (2.1 to 3.2%) which was not

reported in previous family health surveys. The results of NFHS-5 are in line with the CNNS-18 survey which reported prevalence of underweight, stunted, wasted and overweight or obese pre-school children as 33%, 35%, 17% and 2%, respectively.^[11]

It is impressive to see the increasing trend in prevalence of exclusive breastfed children (0-6 months) and children breastfed within one hour of birth (Fig. 2). India had performed very well to achieve its target of 69% exclusive breastfeeding by 2025 set by World Health Assembly (WHA) in 2012 as one of the six global nutrition targets.^[12] Only a marginal increase (0.48%) in the percentage of children below three who have been breastfed within one hour of birth were observed in NFHS-5 from NFHS-4.

Timely and complete vaccination of children boosts their immunity to fight against infections and diseases which is one of the factors of anemia among children. Though the prevalence of fully vaccinated children had increased very much after NFHS-3 (in year 2005-06), yet ~20% of children below 5 year age are still not being fully immunized against various diseases (BCG, Measles, Polio and DPT or penta vaccine) in India. (Fig. 2)

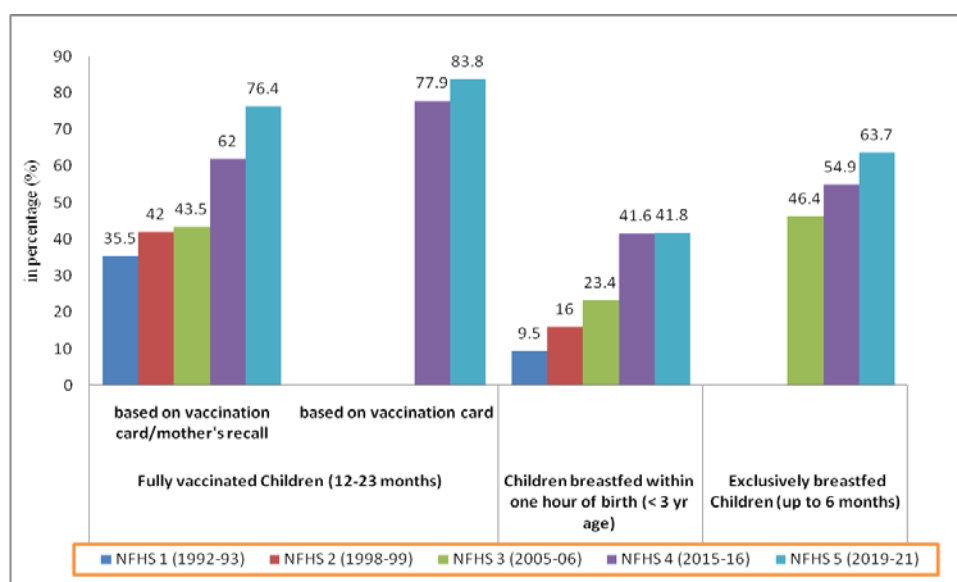


Figure 2: Child Health indicators related to anemia and reported in NFHS surveys

Anemia in Women: The control of anemia in women of childbearing age is essential to prevent low birth weight, perinatal and

maternal mortality, as well as the prevalence of disease later in life. Since 2000, the global prevalence of anemia in women of

reproductive age has been stagnant, while the prevalence of anemia in pregnant women has decreased slightly [10] and the same can be said about the Indian women based on the NFHS reports as depicted in Fig. 1.

Situation of anemia is better for pregnant women as compared to non-

pregnant women in India, but global estimate of anemia prevalence are far better than in Indian women (Table 1). India is lagging behind in terms of achieving its national targets of *Anemia Mukh Bharat Abhiyan* under *Poshan Abhiyan* (2018).

Table 1: Prevalence of anemia in India and World and targets to be achieved by India

	#Prevalence in World (2019)	Prevalence in India(NFHS-5)	(%difference)	Targets to Achieve by India	
				National target 2022 (of Poshan Abhiyan, India) [3]	Global Nutrition Target, 2025 (by WHO)[13]
Women of reproductive age	29.9%	57.0%	(-27.1)	35%	23%
Non-pregnant women of reproductive age	29.6%	57.2 %	(-27.6)		
Pregnant women	36.5%	52.2%	(-15.7)	32%	

WHO, Global Anaemia estimates, 2021 Edition^[10]

Improvement in maternal health outcomes has the potential to not only improve the health of women but it also impacts the health and nutrition outcomes of their children, especially in the initial years of growth. It was observed that consumption of IFA supplement for at least 100 days during pregnancy has improved much over the years, which is attributed to the focused government interventions programs. Increase in the prevalence of pregnant women taking IFA supplements during pregnancy and lactation will ensure optimum iron reserve in newborns and will

ultimately result in reduction in anemia prevalence in children below five years of age.

A positive trend depicting improvement in the parameters related to family planning and spacing of children (Fig 3) will directly or indirectly help women to take care of the health and nutritional needs of their family and self. Spacing between children not only gives women time to replenish and prepare their body for healthy pregnancy in future but also good post-natal care of the infant. [14]

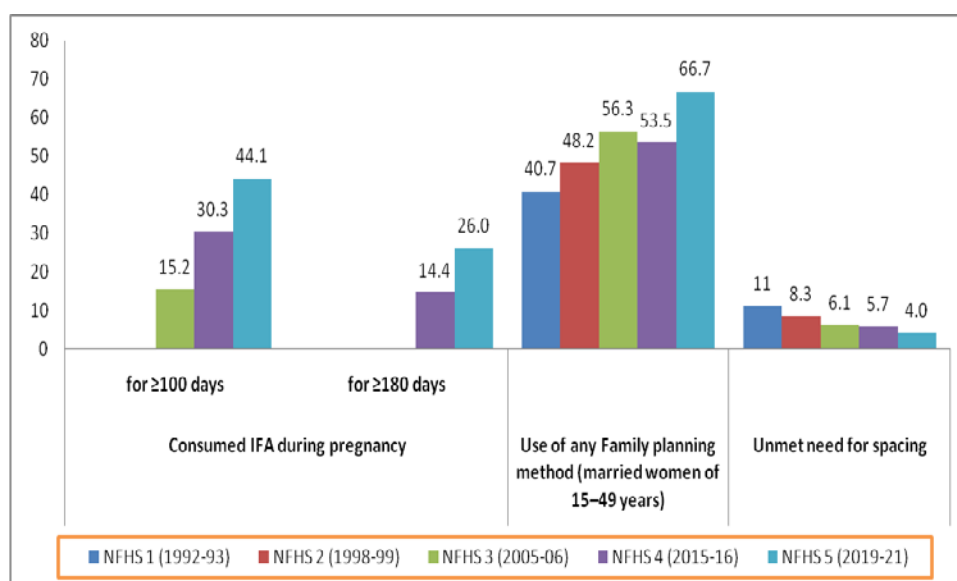


Figure 3: Maternal health factors related to anemia and reported in NFHS surveys

Despite the fact that India has seen a decline in anemia prevalence in successive NFHS survey and had also performed better in other key indicators related to anemia, after NFHS-4 anemia prevalence jumped up in NFHS-5 for all groups. One of the possible reasons demonstrated in a study by Sachdev *et al.* (2021) is the use of inappropriate diagnostic cut-off values for anemia. Prevalence of anemia in children (0-19 year) was 19.2% lower when study cut-offs (10.8%) were used in comparison to WHO cut-off values (30 %). As cutoffs defined by WHO were mostly based on White adult populations and there are enough studies pointing the variations in anemia prevalence for different ethnicity. [15]

Also, NFHS survey uses Capillary blood for onsite hemoglobin assessment using a portable analyser (HemoCue Hb 201+) which is reported to overestimate the hemoglobin values when compared with the use of venous blood sample for same. [16] Another possible reason could be the effect of COVID pandemic on the health of people and a sense of fear (of contracting virus) that developed due to it could have affected the surveyors and surveying methods used by them. However, the NFHS data was collected in two phases but the result of first phase (pre-COVID period) in relation to anemia itself was very close to the prevalence reported in final report of the Survey. We know that poverty and food and nutritional security are important determinants of under-nutrition. High levels of unemployment and food inflation in 2014-2019 time frame could have negatively affected a large number of Indian households [17] and thus high prevalence of anemia in the country. Economic conditions were worsened after 2019 when COVID pandemic struck.

Ever since the initiation of Nutritional Anaemia Prophylaxis Programme (NAPP) in 1970 by national government to prevent anemia in the country we have seen various revisions in the policy and renaming of the programme

as National Nutritional Anaemia Control Programme (NNACP) in 1991, National Iron Plus Initiative (NIPI) programme in 2013 and now reached to Anemia Mukta Bharat under POSHAN Abhiyan (the government's national nutrition mission) launched in 2018. Government continued its efforts to address nutritional as well as the non-nutritional causes of anemia through prophylactic iron and folic acid (IFA) supplementation providing IFA fortified foods in public health programs, deworming and behaviour change communication. We need to ascertain that how many targeted beneficiaries are being benefitted through these provisions actually and to what extent based on in-field conditions rather than on-records data. As an aid to government efforts, households and individuals should also focus on their diets and dietary habits to maintain their optimum hemoglobin levels by including iron, folate, B12 and vitamin C rich foods in their daily diet and not consuming tea/coffee with their main meals as it interferes with the iron absorption and assimilation in the body.

CONCLUSION

National family health survey record reveal that all the efforts made in direction to reduce the anemia prevalence in country are promising but still not able to bring the prevalence below 50% in children and women therefore efforts need to be improved and continued further.

Conflict of Interest: None

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