



INDIAN DIETETIC ASSOCIATION (IDA)

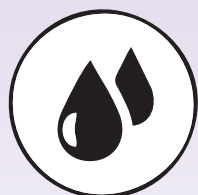
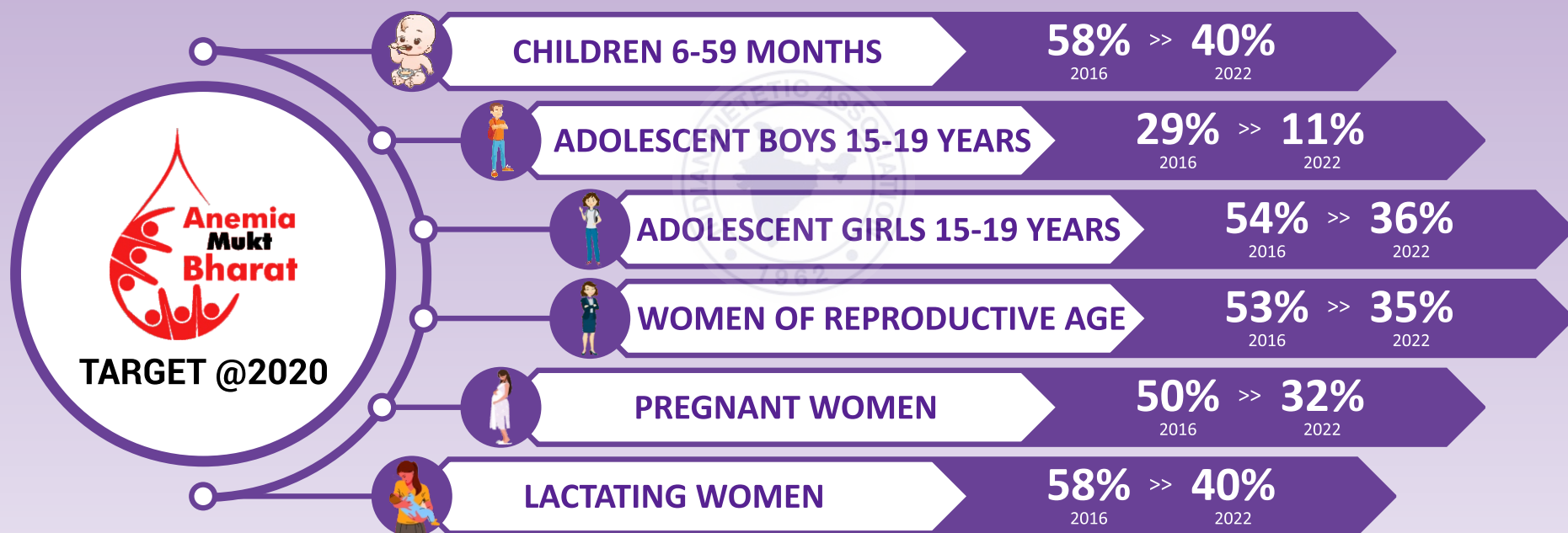
IRON DEFICIENCY ANEMIA TOOLKIT

DEFINITION AND PREVALENCE

- **ANAEMIA** - condition in which the number of red blood cells or the hemoglobin concentration is lower than normal (WHO, 2020).
- **"IRON DEFICIENCY ANAEMIA"** - caused due to the lack of sufficient iron to form normal red blood cells (Johnson Wimbley & Graham, 2011).

CAUSES

- **INADEQUATE INTAKE** [Poor intake of iron, protein & vitamin C / vegan diet / poverty]
- **DECREASED ABSORPTION / POOR BIO-AVAILABILITY** [less of Heme iron / Inhibitors / gastric surgery]
- **INCREASED DEMAND OF IRON** [Pregnancy / Lactation / Infancy / Adolescent]
- **EXCESSIVE LOSS OF IRON** [Accidents / Trauma / Surgery / Blood Donation/PICA/Hookworm infestations] (WHO,1990)



BLOOD LOSS



A LACK OF IRON IN DIET



AN INABILITY TO ABSORB IRON



PREGNANCY

SYMPTOMS OF IRON DEFICIENCY ANEMIA



MENTAL AND PHYSICAL LETHARGY



LOSS OF APPETITE



FATIGUE AND TIREDNESS



DEPRESSION



PALLOR FACE



LEG CRAMPS

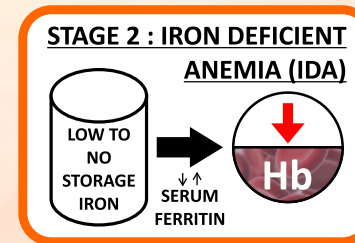
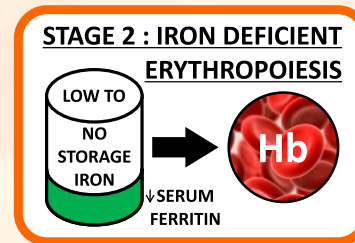
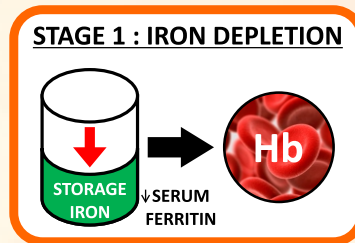
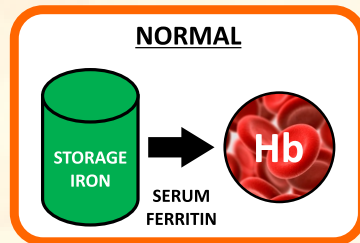


INCREASED SENSITIVITY TO COLD



KOILONYCHIA

STAGES OF IRON DEFICIENCY ANEMIA



NORMAL VALUES : Hemoglobin (g/dL)



13.8-17.2 (men)

12.1-15.1(women)


Iron Recommendation, IFA Supplementation Programme & Service


Age group & Iron RDA (mg/day)	Intervn / Dose	Regime	Service delivery
0-6m: 46mcg/kg/day 6-12months : 5 1-3 years : 9 4-5 years : 13	1ml of IFA syrup containing 20mg of elemental iron and 100mcg of folic acid	Biweekly throughout the period 6-60 months of age and de-worming children 12 months and above.	Through ASHA Inclusion in MCP card
5-6 years : 13 7-9 years : 16	Tablets of 45mg elemental iron and 400mcg of folic acid	Weekly throughout the period 5-10 years of age and biannual de-worming	In school through teachers and for out-of-school children through Anganwadi centre (AWC) Mobilization by ASHA
Age Boys Girls 10-12y 21 27 13-15y 32 27 16-17y 28 26	100tng elemental iron and 500mcg of folic acid	Weekly throughout the period 10-19 years Of age and biannual de-worming	In school through teachers and for those out-of-school children through AWC Mobilization by ASHA
Pregnant : 35 Lactating (0-6M) : 21	100tng elemental iron and 500mcg of folic acid	1 tablet daily for 100 days, starting after the first trimester, at 14-16 weeks of gestation. To be repeated for 100 days post-partum.	ANC/ANM/ASHA Inclusion in MCP card
Women Of Reproductive age group	100tng elemental iron and 500mcg of folic acid	Weekly throughout the reproductive period	Through ASHA during house visit for contraceptive distribution
Men > 18y : 17 Women > 18y : 21			


TIPS TO ENHANCE IRON ABSORPTION


		
		
<table border="1"> <tr> <td>HEME IRON SOURCES</td> <td>NON HEME IRON SOURCES</td> </tr> </table>	HEME IRON SOURCES	NON HEME IRON SOURCES
HEME IRON SOURCES	NON HEME IRON SOURCES	
<p>Mixed diet has a better Bio-availability of iron, whereas a vegetarian diet should aim at providing good non-heme iron food sources</p>		


	<p>Vitamin C rich food enhances the absorption of iron from food</p>	
		
		

 Non-heme iron is harder to absorb. For better absorption, lemon juice or tomato juice are good enhancing sources and can replace other souring agents such as tamarind paste in cooking

 Encourage mothers to exclusively breastfeed their babies until they are six months old

 Avoid combining calcium rich food with iron rich food. Calcium can impair absorption of both and non-heme Iron.
Example : palak paneer, consuming iron tablet with milk etc

 Avoid or reduce consumption of coffee or tea with food as they are rich in Tannin which hinders the absorption of iron.

 Choose Iron fortified cereals (wheat flour, rice) and double fortified salt

TIPS TO ENHANCE IRON ABSORPTION



ROASTING



STEAMING



GRILLING



STIR FRY

Cooking methods that retain iron



Cooking in iron cast help in releasing iron into food

Quick tip: while cooking Greens or any other vegetables, keep the lid open for one minute to release iron inhibitors like Phytates and Oxalates and then close the lid



Food and drinks high in caffeine like coffee, soda and energy drinks etc. is associated with reduction in iron absorption



Sprouting legumes helps in inactivating Phytate content thus increasing iron absorption

Prefer vegetable cuts like chopping and dicing over mincing as bigger cuts help retain nutrients in food



CHOPPED

DICED

MINCED

IRON RICH FOODS

CEREALS & PULSES



JAGGERY



FRUITS



VEGETABLES



MEAT, FISH & POULTRY



DRY FRUITS



IRON RICH CUISINES OF INDIA



FOOD ITEM

1	Rogan Josh (Mutton Curry)	12	Millet Upma
2	Besan Laddoo	13	Till Laddoo
3	Punjabi Aloo Paratha with Chole	14	Kukuda Kassa (Chicken curry)
4	Daliya Khichdi	15	Dryfruits and Jaggery Chikki
5	Matar Palak	16	Bajra roti
6	Rajma curry	17	Poha
7	Fish curry	18	Gongura Pappu
8	Singju (Manipuri salad)	19	Pesarattu
9	Axone (Fermented Soyabean Curry)	20	Ragi Mudde with Bassaru
10	Cauliflower greens with Besan Muthia	21	Puliogare
11	Palak Dhokla	22	Puttu with Kadala Curry

REFERENCES

- Ministry of Health and Family Welfare. (2017). National Family Health Survey 4. Mumbai: International Institute for Population Sciences (IIPS) and ICF(2017). Retrieved from National Family Health Survey 4: <http://rchiips.org/nfhs/NFHS-4Reports/India.pdf>
- Terri D, D. (2011, May 4). Therapeutic advance in gastroenterology. Retrieved from Diagnosis and management of iron deficiency anemia in the 21st century: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3105608/>
- National Health Mission. (2020). Target @2022. Retrieved August 2020, from Anemia Mukh Bharat, Poshan Abhiyaan: <https://anemiamukhbharat.info/home/target/>
- Gupta, A., Rai, S., & Nayak, R. (2017). Essentials in Hematology and Clinical Pathology. Jaypee Brothers Medical Publishers (P), Ltd. <https://www.nhp.gov.in/disease/blood-lymphatic/iron-deficiency>
- Ministry of Health and Family Welfare. (2019, July 12). National Health Portal. Retrieved from [nhp.gov.in: anemia#:~:text=Normal%20Hemoglobin%20Levels%3A%20Hemoglobin%20is,13.8%20to%2017.2%20gm%2Fdl](http://nhp.gov.in/anemia#:~:text=Normal%20Hemoglobin%20Levels%3A%20Hemoglobin%20is,13.8%20to%2017.2%20gm%2Fdl)
- National Heart, Lung, And Blood Institute. (2011, January). Retrieved from your guide to anemia: <https://www.nhlbi.nih.gov/healthtopics/iron-deficiency-anemia>
- WHO. (2020). Retrieved from https://www.who.int/health-topics/anaemia#tab=tab_1
- DeMaeyer, E. (1990). WHO. Retrieved from Preventing and Controlling Iron Deficiency Anaemia Through Primary Health Care: https://www.who.int/nutrition/publications/micronutrients/anaemia_iron_deficiency/9241542497.pdf Clark S.F. (2009) Iron deficiency anemia: Diagnosis and management. Curr Opin Gastroenterol 25: 122–128 [PubMed] [Google Scholar]
- ICMR. (2010). Nutrient Requirement And Recommended Dietary Allowances For Indians. Hyderabad: National Institute of Nutrition.
- Ministry of Health and Family Welfare. (2001). Guidelines for Control of Iron Deficiency Anaemia. Adolescent Division Ministry of Health and Family Welfare Government of India. Retrieved from [https://www.nhm.gov.in/images/pdf/programmes/child health/guidelines/Control-of-Iron-Deficiency-Anaemia.pdf](https://www.nhm.gov.in/images/pdf/programmes/child%20health/guidelines/Control-of-Iron-Deficiency-Anaemia.pdf)
- Jarrah SS, H. J. (2007). Iron deficiency anemia (IDA) perceptions and dietary iron intake among young women and pregnant women in Jordan. Journal of transcultural nursing. doi:10.1177/1043659606294193

Compiled & Contributed by Indian Dietetic Association (IDA), South Canara Chapter

Reviewed by Scientific Committee, IDA

Issued in Public Interest by:



INDIAN DIETETIC ASSOCIATION (IDA)