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### A review of status of the maternal component of Maternal, Infant and young child nutrition in India

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#### Abstract

**Introduction:** Improving maternal nutrition will have an important and significant impact on the first 1000 days of a child's life. Macronutrient as well as Micronutrient Deficiencies are found across all age group but pregnant women and their children form the most vulnerable. The effects of nutritional deficiencies are numerous and the most profound impact are seen in and through mothers because of maternal mortalities and morbidities associated with micronutrient deficiencies and the "intergenerational or multigenerational effects". The objective of the study was to review the maternal health status against the Maternal, Infant and Young Child Nutrition indicators of WHO.

**Methods:** Databases in Pubmed and Google Scholar were searched for articles using keywords such as 'Maternal Malnutrition' 'Maternal micronutrient deficiency' 'MIYCN' 'Maternal anaemia' 'Maternal Infant and Young Child Nutrition' and data extracted using a proforma.

**Results:** Prevalence of Haemoglobin in pregnant women was 50.3% and among non-pregnant women was 53.1%, underweight was seen in 22.9% of women in reproductive age group, and proportion of pregnant women receiving 100 tablets of iron and folic acid was 30.3%.

**Conclusion:** The progress made in relation to maternal nutrition was found to be dismal and a more comprehensive approach needs to be adopted to improve their status and in turn the health of nation's children and at large the health of the nation.

**Keywords:** Maternal malnutrition, micronutrient deficiency, MIYCN

#### Introduction

Maternal malnutrition is a common problem in the world and especially in India. Chronic energy malnutrition as well as Micronutrient deficiencies (MNDs) or 'Hidden Hunger' are known to be rampant worldwide but with neither nationally representative surveys nor functional indicators, the real magnitude of the problems of micronutrient deficiencies remain largely unknown. The common MNDs considered prevalent globally are those of Iron, Folate, Vitamin A, Iodine and Zinc, with Iron deficiency being considered the most common MND affecting almost 30% of the world's population and Iodine deficiency most likely being the most common preventable cause of mental retardation and brain damage [1-3].

Under-nutrition and MNDs are found across all age group but pregnant women and their children form the most vulnerable groups along with their under 5 children. The deficiencies of various vitamins and minerals among them are higher as compared to other groups. The effects of micronutrient deficiencies are numerous and the most profound impact of MNDs are seen in and through mothers because of maternal mortalities and morbidities associated with micronutrient deficiencies and the "intergenerational or multigenerational effects"- the nutritional status of one generation of women affects the nutritional and physical well-being of their children in childhood and subsequently in adulthood, ranging from immediate effects of neonatal deaths, low birth weight, neural tube defects to long term effects of various chronic non communicable diseases [4-12].

Taking cognizant of the importance of maternal nutrition and its impact on health and nutrition of the offspring, the 65<sup>th</sup> World Health Assembly endorsed the comprehensive implementation plan on Maternal, Infant and young child nutrition (MIYCN) in May 2012, to be achieved by 2025. In India, Maternal Micronutrient supplementation programs in India are available for Iron and Folic Acid through National Iron Plus initiative, and Iodine through food fortification in common salt, with government of India banning the sale of non-iodized salt.

The review aims to assess the current status of maternal nutrition using the indicators given under MIYCN and also assess the nutritional status of mothers.

### Methods

The search for literature was done in PubMed, Google Scholar with the search terms used were 'Maternal Malnutrition' 'Maternal micronutrient deficiency' 'MIYCN' 'Maternal anaemia' 'Maternal Infant and Young Child Nutrition'. Any type of studies were included in the study and only those which were published in English were included in the review. Data were then extracted using a standard proforma.

### Result and Discussion

In India 62% of preschool aged children and 16% of pregnant women are deficient in vitamin A.<sup>13</sup> Iron deficiency anemia among women in the reproductive age group is 53% and in children from 6 months to 5 year of age is 58.3%<sup>14</sup> Iodine deficiency is associated with the content of iodine in soil and consequently India's iodine deficient soil put its whole population at risk of development of Iodine deficient disorders (IDD), and currently IDD is a public health problem in India<sup>15</sup>

UNICEF has given the conceptual framework on malnutrition where the causes of malnutrition were identified as basic, underlying and immediate causes<sup>16</sup> Surveys conducted in India by NIN has shown a gross deficit in the intake of micronutrients by Indian population<sup>17</sup>. Unavailability of food, type of dietary intake, maternal deficiency of micronutrients affecting infants, or illnesses are some of causes of micronutrient deficiency seen in India along with a host of other causes.

Improving maternal nutrition will have an important and significant impact on the first 1000 days of a child's life-from conception to 2<sup>nd</sup> birthday of a child, 'the 1000 golden days', 'window of opportunity'; to give a healthy start in life<sup>18</sup>.

Among the World health organization's 6 global nutrition

targets in its comprehensive implementation plan on Maternal, Infant and Young Child Nutrition (MIYCN) target for maternal nutrition included is "A 50% reduction of anaemia in women of reproductive age group"<sup>19</sup> The Global monitoring framework on MIYCN has given two sets on indicators-Core and Extended indicators. The core set of indicators for monitoring of global targets, and 'tracer' indicators for tracking the processes required in achieving the global targets. All countries require reporting on the core set of indicators. Extended indicator also report on processes, but are country specific<sup>19</sup>. From there 4 types of indicators were developed and except for the primary outcome indicators, the others are proposed indicators

1. Primary outcome indicators-monitoring progress towards the 6 global nutrition targets (Given are Maternal nutrition relevant indicators)
  1. Prevalence of haemoglobin less than 12 gm/dl in non-pregnant women
  2. Prevalence of haemoglobin less than 11gm/dl in pregnant women
2. Intermediate outcome indicators - monitoring conditions on the causal pathways to the targets (Given are Maternal nutrition relevant indicators)
  1. Underweight in women of reproductive age group (BMI <18.5 kg/m<sup>2</sup>)
  2. Overweight or obesity in women of reproductive age group (BMI ≥ 25 kg/m<sup>2</sup>)
3. Process Indicators-monitoring programmes and situation specific progress (Given are Maternal nutrition relevant indicators)
  1. Proportion of women receiving iron and folic acid supplementation
4. Policy environment and capacity indicators-measuring political commitment (Given are Maternal nutrition relevant indicators)
 

Maternity protection: Country has maternity protection laws or regulations in place in line with the ILO Maternity Protection Convention 183 and recommendation 191.

**Table 1:** In India, MIYCN Indicators are

	Indicator	Data	Data Source
Primary outcome indicators			
1	Prevalence of haemoglobin less than 12gm/dl in non-pregnant women	53.1%	NFHS-4 <sup>14</sup>
2	Prevalence of haemoglobin less than 11gm/dl in pregnant women	50.3%	NFHS-4 <sup>14</sup>
Intermediate outcome indicators			
3	Underweight in women of reproductive age group (BMI <18.5 kg/m <sup>2</sup> )	22.9%	NFHS -4 <sup>14</sup>
4	Overweight or obesity in women of reproductive age group (BMI ≥ 25 kg/m <sup>2</sup> )	20.7%	NFHS -4 <sup>14</sup>
Process Indicators			
5	Proportion of women receiving iron and folic acid supplementation [Mothers who consumed iron folic acid for 100 days or more when they were pregnant]	30.3%	NFHS -4 <sup>14</sup>
Policy environment and capacity indicators			
6	Maternity protection	Partially in the organized sector	

### Conclusion

The data shown against the indicators given to monitor progress in the reduction in Maternal malnutrition shows a dismal improvement in the health status of India's mothers, which leaves the country wanting for a much more comprehensive approach to reduce maternal malnutrition.

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