

Does India need 'mandatory flour fortification with folic acid' policy to prevent neural tube defects?

Dear sir,

Folic acid intake has been proven to reduce the risk of occurrence and recurrence of neural tube defects such as spina bifida and anencephaly, which belong to one of the most common birth defects. It also has a significant role in preventing the risk of cardiovascular disorders through homocysteine regulation. In addition, ample evidence shows that there are beneficial effects of taking folic acid in various types of cancers and neurological disorders.^[1] It is estimated that the prevalence of neural tube defects in India 4.5 per 1000 births.^[2] World Health Organization recommended that folic acid supplementation to be given to all women planning to become pregnant to prevent neural tube effects. They need to consume 0.4 mg of folic acid/day in their childbearing age and throughout pregnancy.^[3] At primary healthcare level, this requirement needs to be fulfilled by providing tablets containing iron and folic acid to all women of childbearing age group under 'Anaemia Mukta Bharat' (Intensified National Iron Plus Initiative) programme in India.^[4] This strategy is ineffective due to poor adherence to folic acid tablets by women of childbearing age.^[5]

To overcome this in-effectiveness of oral consumption of folic acid tablets by women of childbearing age, US Food and Drug Administration (in 1998) mandated that flour be fortified with folic acid to secure an adequate supply of folate for women of childbearing age. Until 2018, about hundred countries had similar mandates to ensure adequate access to folic acid. In a systematic review on the Impact of mandatory folic acid fortification of flour on neural tube defects, Castillo-Lancellotti C *et al.* (2012) concluded that fortification of flour with folic acid has significantly reduced the number of children with NTD in all countries that have mandated it.^[6,7] World Health Organization recommended that mandatory wheat fortification should be considered by country, where industrially produced flour is regularly consumed by large population groups.^[8,9]

Previously costs involved in fortification were very high but now fortification is also very inexpensive. According to Sirohi A *et al.* cost of fortification of 1 kg flour with Iron, Folic Acid and Vitamin B12 is only 20-25 paise per kg.^[10] As per IKON's

estimates (2015), packaged wheat flour occupies more than 90% of the total urban market and it is on increasing trends in rural areas as rural consumers' willingness towards the packaged wheat flour is increased.^[11] Flour fortification standards as established by the Food Safety Standards Authority of India (FSSAI) are also available as Food Safety and Standards (Fortification of Food) Regulation, 2018. It is recommended that fortification of wheat flour or maida should be done at the level of 28-42.5 mg/kg Iron, 75-125 µg/kg Folic Acid and 0.75-1.25 µg/kg Vitamin B12. They also made this clear that the fortification of flour is not mandatory.^[12]

Despite this high consumption of packaged wheat flour, available recommendation by WHO, FSSAI guidelines for fortification and inexpensive cost of flour fortification, India has not yet adopted mandatory fortification of flour with folic acid as policy. This is high time that Indian policymakers need to consider this proven effective strategy to combat this public health problem.

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