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Neural tube defects in India—time for action

In today's *Lancet*, Anil Cherian and colleagues¹ report the incidence of neural tube defects in village clusters in one of the most underdeveloped areas in India. The investigators found an incidence of 6.57–8.21 per 1000 livebirths. This rate is one of the highest in the world. Several factors have been implicated as causes of neural tube defects.² However, the role of folic acid deficiency in causing birth defects and the corollary that folic acid supplementation prevents them has now gained universal acceptance.

Maternal malnutrition, which includes folic acid deficiency, is a major concern for all developing countries and India is no exception. The Indian economy might be booming but its effects are yet to reach the vast majority in the rural hinterland. A sex bias exists, which even extends to the allocation of food and is compounded by the fact that women customarily eat after the rest of the family. The National Pilot Programme on Control of Micronutrient Malnutrition estimated that daily intake of folic acid in rural areas of various Indian states (north and north-east) ranged between 75.0 µg and 167.7 µg,³ which is far lower than the 400 µg necessary to prevent birth defects.

Cherian and colleagues discuss the policy implications of their research and the need for periconceptual folate supplementation. Although the chapter on Food and Nutrition Security in India's Tenth Five Year Plan⁴ did not

address the specific issue of prevention of neural tube defects, there is much discussion about micronutrient deficiencies, including folic acid. The plan identifies some of the major problems, such as poor quality and inadequate supply of iron and folic acid tablets, erratic distribution because of the poor motivation of distributors, and erratic intake by women. The recent efforts to improve packaging and availability of iron and folic acid tablets have not yet affected the regularity of intake.

The financial implications of nutritional supplementation in a country with a population of over a billion are tremendous. As outlined in the Tenth Five Year Plan,⁴ government funds available for supplementary nutrition are Rs12036.5 million (US\$267.5 million) a year. However, just to provide cover for pregnant women and children for up to 6 years, existing below the poverty line, at a mere Rs1 (US\$0.02) a day for 300 days a year, the plan estimates that over Rs14000 million (US\$311.7 million) would be needed.³ The Government of India is already moving in the right direction with the budget for 2005–06, proposing to double the funds allocated for nutritional supplementation.⁵ However, at present, the aim of providing cover for the entire population seems unattainable.

China has had success in periconceptual supplementation with folic acid. But all Chinese couples have a premarital examination,⁶ so that women who need

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periconceptional folic acid can be identified. Except perhaps for the mammoth size of their respective populations, there is little similarity between communist China and democratic India. Although the objective of such a screening measure might be laudable, it is difficult to envision its enforcement in a country such as India.

Although the burden of neural tube defects can be dramatically reduced by folic acid supplementation, the supplement needs to be provided universally. India will have to seek its own pathway to achieve this. The country has had much experience in micronutrient deficiency with its programme of fortification of salt with iodine. The National Goitre Control Programme, renamed as the National Iodine Deficiency Disorders Control Programme, ensured that by the late 1990s, 49% of households used cooking salt that is iodised at the recommended levels.⁴

A similar programme would probably be needed for folic acid. Several countries in North and South America

have begun to fortify food grains with folic acid.⁷ In India, as in other countries, it would be necessary to identify an item of staple diet that can be fortified and is available through the public distribution system, which currently distributes rice, wheat grains, and sugar. Moreover, legislation would be needed in India to recognise folic acid as a food additive under the Prevention of Food Adulteration Act as an essential prerequisite for fortification.

Mass campaigns for HIV and goitre prevention exist. No such public campaign exists to prevent neural tube defects by dietary folates or its synthetic supplements. Giving prevention of birth defects the status of a national programme should be the goal.

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We declare that we have no conflict of interest.

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No role for extroversion and neuroticism in cancer development

Recently, Pernille Hansen and co-workers¹ reported on the role of personality factors in the development of cancer. After some 30 years of research, the question is still unanswered about whether psychological factors have an influence on cancer initiation and progression,

or not. This question is not only of interest for scientists, but is also of importance for patients. Being diagnosed with cancer means a serious disturbance of one's course of life. This fate may be considered as more personal and controllable if one's adjustment style could affect cancer