‘Impact of fortifying white flour with folic acid on the number of pregnancies affected by neural tube defects’

Lords Debate  
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The British Medical Association (BMA) is an independent trade union and voluntary professional association which represents doctors from all branches of medicine throughout the UK. It has a membership of over 152,000 doctors.

Introduction  
At the BMA’s 2012 Annual Representative Meeting (ARM), doctors expressed concern about the number of pregnancies in the UK that continue to be affected by neural tube defects (NTDs). NTDs are severe birth anomalies that result from the failure of the neural tube to close properly, approximately 28 days post-conception. They are the leading cause of infant mortality worldwide, and are associated with a range of complications that can cause severe disability and morbidity. Two of the most common NTDs are spina bifida and anencephaly.

Despite a decline in their occurrence over the last 30 years, the UK still has the highest levels of NTDs in Europe, with a prevalence rate ranging from 0.8 to 1.5 per 1000 births, depending on ethnic, geographic, and nutritional factors. The BMA has examined the available evidence about NTDs and how measures such as the fortification of flour could have a significant impact, and came to the conclusion that the mandatory fortification of flour would be the most cost effective strategy for reducing NTDs in a population.

The BMA is calling on the Government to introduce legislation requiring the mandatory fortification of flour with folic acid. This is an important public health measure to reduce the risk of common birth defects such as spina bifida and anencephaly occurring.

Occurrence of neural tube defects  
The decline in occurrence of neural tube defects in the UK can be in part attributed to the effect of improved antenatal screening, an increase in terminations after prenatal diagnosis of an NTD and the introduction of folate fortification of cereals in the 1970s.

However, despite the decline and these measures, the UK still has the highest levels of NTDs in Europe. There is no clear understanding why the UK has higher rates than other European countries.

Reducing the risk of neural tube defects – the case for fortification  
There is substantial evidence demonstrating that increased folate intake can reduce the risk of NTDs occurring in pregnancy. A number of reviews have found that folic acid supplementation and fortification are effective public health strategies for reducing neonatal mortality from NTDs.

The BMA recommends fortification over supplementation. The critical period for ensuring adequate folate levels is during the first 28 days following conception (i.e. during the perinatal period before closure of the neural tube). Official guidance from the UK health departments recommends that ‘all women who could become pregnant should take 400µg (0.4mg) folic acid per day as a medicinal or food supplement prior to conception until the twelfth week of pregnancy’.
However, whilst some women in the UK are aware of the benefits of increasing folic acid intake when planning to conceive a child and take regular supplements in preparation for conception, many women remain unaware of the benefits, and some conceptions are unplanned. Even where there is awareness there is poor compliance with the advice to take folic acid pre-conceptually, and educational campaigns encouraging women to increase their use of supplements have not been effective at reaching every high-risk population. The first time many women see a health practitioner for advice on their pregnancy will be beyond the 28 days post-conception it takes for an NTD to develop. These women will not have sought advice before conceiving, and by this point it is too late to take the necessary precautions to reduce the risk of a NTD. The number of women potentially affected is considerable, as it is estimated that nearly half of all pregnancies in the UK are unplanned.

The limitations of encouraging supplementation can be overcome by the implementation of a mandatory folic acid fortification programme. In 2006, the Scientific Advisory Committee on Nutrition (SACN) recommended mandatory folic acid fortification as the most effective way of increasing folate acid intake of women most at risk of NTD-affected pregnancies. There is international evidence from the United States, Canada, and Chile demonstrating that mandatory fortification programmes can be effective at reducing the rate of NTDs by approximately 25 and 50 per cent.

**Fortification of flour**

Flour is an appropriate vehicle for fortification as a large proportion of the UK population regularly consumes flour based products. The UK also currently requires the fortification of flour with calcium, thiamine, iron and niacin. The use of flour-based products for mandatory folic acid fortification is supported by the Department of Health Committee on Medical Aspects of Food and Nutrition Policy, the SACN, and the Food Standards Agency (FSA).

The introduction of mandatory fortification of flour with folic acid would need to be accompanied by advice for women of child bearing age who do not consume any flour based products. This group may include those with coeliac disease, those with gluten sensitivity, some individuals with irritable bowel syndrome and those on gluten free or carbohydrate free diets.

In the UK, a guidance level of 1mg per day has been set for adults, and a daily intake below this level has not been found to cause harm to the general population. Extremely large dosages (more than 15mg), however, can result in digestive problems, insomnia, skin reactions and seizures. The risk of masking vitamin B12 deficiency in the over 65s has been cited as an objection for folic acid fortification, but it has been found that masking vitamin B12 deficiency is not associated with doses of folic acid up to 1mg per day. Provided there are appropriate controls on mandatory fortification to ensure that individuals do not exceed the upper intake level of 1mg per day, there is no evidence to suggest any adverse harm from the introduction of a mandatory folic acid fortification programme.

Whilst there are limited data on the costs effectiveness of folic acid fortification programmes, a 2012 review of contrasting strategies for the prevention of NTDs estimated that the annual cost saving of folic acid fortification would be £5.1million. These findings are supported by a 2011 literature review of international prevention programme, which concluded that folic acid fortification in food is a cost effective way to reduce the incidence and prevalence of NTDs.

**The BMA strongly supports the fortification of flour with folic acid as a public health measure to reduce the number of pregnancies affected by NTDs. It has been found to be a highly protective against NTDs and there is no evidence to suggest any adverse risk to human health, provided there are adequate controls on fortification.**

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References

21. www.nabim.org.uk/content/1/1/01/flour---bread-consumption.html (Flour and bread consumption, accessed October 2012)