

Maternal Nutrition in Preventing Disability

There is now ample evidence that impairments and disabilities in babies can be caused by poor nutrition of mothers before, as well as during, pregnancy.

Birth weight Low birth weight babies account for a high proportion of infant mortality. If they survive they tend to have higher rates of childhood illness and disabling conditions such as learning disability, behavioural disorders, cerebral palsy and impairment of vision and deafness. Poor maternal nutrition is linked to low birth weight. Slimming alone can cause low birth weight when diet is only just adequate for fertility. Well fed women have very few low birth weight babies.

Hormone levels A diet lacking in iodine has been linked to the retarding of foetal brain development and to neurological defects including deaf mutism, learning disability and spastic diplegia. The most serious consequences are those that originate before or around conception. There appears to be a minority of women in Britain today with iodine intakes low enough to affect the next generation of children.

That nutrition affects other hormones besides that of the thyroid gland is well known. It is during the 14 days before conception that it is most important for diet to be adequate and regular, with no missed meals. Both long term, habitual diet and short term, contemporary diet affect development. Slower maturation and delayed ovulation are linked to retarded foetal growth and a risk of babies born with malformations.

During the 14 days and possibly up to 65 days before ovulation, the ovum is increasingly susceptible to external influences, including maternal nutrition. The mother's endocrine system is itself responding to the developing ovum, and poor nutrition may lead to a less-than-satisfactory response, with hormone levels inadequate to stimulate growth as the follicle and the ovum it contains both mature.

Metals Satisfactory hormone levels are not sufficient in themselves to ensure healthy reproduction; the hormones have to have magnesium which increases their effectiveness ten-fold. There is a minority of women in Britain whose diets are too low in magnesium. Significantly, mothers of low birth weight babies belong to this minority of women with low daily intakes of magnesium. Satisfactory hormone levels also need other divalent metals for special purposes, including calcium, manganese and zinc. Zinc deficiency is mutagenic and can adversely affect the development of the brain and nervous system. Susceptibility to zinc deficiency in the short term is a good reason for regularity of meals during the period before conception and during early pregnancy.

Genetic mutations Faulty nutrition can be mutagenic (i.e. damage the genetic material of an organism). Folic

acid deficiency has been known for more than 30 years to be mutagenic. That it can cause neural tube defects such as spina bifida in humans has now been fully recognised.

Many essential nutrients are anti-mutagenic; these include some of the B vitamins - for example riboflavin (B2) - vitamins A, C and E and the minerals zinc and selenium. In excess, some of these are harmful or mutagenic, including vitamin A, zinc and selenium.

Monounsaturated and polyunsaturated fats are also anti-mutagenic and play an important role in inactivating mutagens in the digestive tract. There are other components of the diet which are anti-mutagenic but are not essential nutrients such as carotene, the catechins in tea, and chlorophyll.

Nearly all edible plant juices are anti-mutagenic to different degrees but the anti-mutagenicity is generally destroyed by cooking. Cooking may also lead to the creation of the most important mutagens in the diet: over-heated proteins. To avoid the mutagens, meat should be boiled, steamed or braised, or cooked in a microwave oven without browning.

Anti-mutagens are important because today there is no possibility of eliminating all exposure to mutagens.

A diet for women Although good nutrition before and during pregnancy provides no guarantees, it reduces risks. A diet aimed at prevention must begin before pregnancy, preferably provided to girls throughout their adolescence. A nation which feeds its girls and young women well will have fewer men and women in the next generation suffering from disorders of mutagenic origin - and in the next but one.

How well we feed girls, both in school and at home, not only affects their health but influences their food choices and habits in their child-bearing years. If future mothers are not well fed, through choice or because of the stresses of life and income, the next generation will have ill-health and disabilities which could have been avoided.

Reference Wynn, M, & Wynn, A, 1993, *No Nation Can Rise Above the Level of its Women - New Thoughts on Maternal Nutrition*, Caroline Walker Trust. Price: £7.50. ISBN 1-897820-01-1 Available by post from the Trust, c/o 6 Aldrich Road Villas, London W11 1BP. Cheques to be made payable to the Caroline Walker Trust.

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