BNF Task Force Report Launch – 10 key facts

The British Nutrition Foundation held a conference, on the 21st May 2013, to launch the new BNF Task Force Report “Nutrition and Development: Short- and long-term consequences for health”. Below are 10 key points from the day.

1. The concept that early growth and development determines health in animals has been known for more than 70 years. However, it is also realised that this concept has major implications for human health. There has been a recent shift in focus from studying the effects of undernutrition to overnutrition in early life, in response to the change in health and disease patterns seen across the world, particularly in Westernised countries. The Task Force set out to summarise current knowledge on early life and later disease and to identify gaps in knowledge where further research is needed.

2. The permanent impact of a stimulus or insult acting at a critical phase of development, that results in long-term changes in the offspring has long been known. However, more recent evidence indicates impaired fetal and infant growth are linked to an increased risk of developing specific conditions, such as cardiovascular disease and diabetes, in later life. This link cannot be explained by differences in adult lifestyle.

3. There are ‘critical windows’ in development, where the fetus is susceptible to suboptimal nutrition and during which an offspring’s future health and development may be ‘programmed’. The vulnerability of organs to insult differs and this is influenced by the different stages of organ growth and development. First, cells develop into different types of cell (e.g. blood cells, kidney cells and nerve cells), known as cell differentiation. Following this, the number of each different type of cell increases. This is known as cell proliferation. The timing of the differentiation and proliferation stages is different for each tissue and organ. The consequences of inappropriate nutrition may depend on whether the organ is undergoing differentiation or proliferation.

4. The human gut microbiota plays a key role in host health and well-being. Many factors are known to affect the acquisition and development of the gut microbiota (e.g. host genetics, gestational age, microbial exposure, diet and therapeutics). The acquisition and development of the infant gut microbiota may form a blue-print for gastrointestinal microbiota and the health of individuals later in life.

5. Masculinisation, as a result of fetal androgens, not only transforms the fetus from female (the ‘set-up’ program) to male in terms of the reproductive system but, in so doing, fundamentally alters future body composition, behaviour and susceptibility (increase or decrease) to many common diseases, and even death.
6. Brain growth is most vulnerable in early pregnancy, particularly to low intakes of folate and iodine and can be harmed by excessive intakes of vitamin A and alcohol. Fetal brain growth in late pregnancy is dependent on a healthy blood supply of nutrients from the mother but there is little evidence to show that maternal diet or dietary supplements in late pregnancy affects brain growth.

7. In the early 1990s, the available evidence led to the belief that maternal consumption of food allergens, such as peanuts, during pregnancy and breastfeeding increased the likelihood of susceptible children developing a peanut allergy. However, more recent evidence has not supported this view, and allergen avoidance during pregnancy and lactation is no longer generally recommended. Recent evidence suggests that maternal diet and nutrient intake (e.g. antioxidants, polyunsaturated fatty acids and vitamin D) during pregnancy might help reduce the development of asthma and allergy during childhood. But further studies are required to establish a firm understanding of the mechanisms involved and to inform future dietary advice for pregnant women.

8. The incidence of obesity amongst pregnant women in the UK has risen dramatically in recent years. Maternal obesity increases the risk of complications in pregnancy, such as gestational diabetes. Obese mothers are more likely to have a baby with an excessive birth weight (over 4kg), which is associated with an increased risk of obesity in later life for the child. Being overweight during pregnancy also increases the risk of pre-eclampsia which can result in a small, growth-retarded baby.

9. Poor fetal growth, especially if followed by accelerated postnatal growth (which involves crossing growth centiles), may be a determinant of obesity and cardiovascular disease in later life. Shortness in stature, which is determined by growth in early life, is linked with the development of high blood pressure and cardiovascular disease, especially stroke, in adult life. Poor fetal growth may also affect kidney development, making offspring more sensitive to the blood pressure raising effect of salt and, therefore, increasing their risk of cardiovascular disease.

10. Maternal body weight and diet quality, even pre-pregnancy, can affect the uterine environment, birth weight, and the baby’s subsequent health into adulthood. There also remains a need to promote awareness of the requirement for folic acid and vitamin D supplementation and the importance of a nutrient-rich diet during pregnancy. Pregnancy is a good time to target healthy behaviour change. However, since around half of all pregnancies are unplanned, a broad preventative and public health strategy is needed, particularly amongst vulnerable groups such as teenagers, ethnic minority groups, obese women and women from low socioeconomic groups.

For more information about the Task Force conference see:
http://www.nutrition.org.uk/bnfevents/pastevents/task-force-report-launch

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