

# The Crisis in Nutrition and Poverty

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**Michael A Crawford**

## Global Health and Poverty

Two issues critical to the future are being ignored in the countdown for the population to reach 9 billion: the supreme importance of the mother, and the significance of brain-specific nutrition to prosperity or poverty. Both were omitted by the Foresight Task Force in its report on the future of food and farming (Foresight Task Force, 2011). Despite this omission the think tank identified the gravity and the challenge of population growth, which is now exponential. They focused on the protein requirements to be met. However, it is the brain that makes us different from apes. The critical period of brain development is before birth. A mother's milk contains the least amount of protein of any large mammal. Protein is not the limiting principle, and it is that which makes the projections for the future even more formidable. Yet the gap between the understanding of nutritional science, epigenetics with the nutritional needs for maternal health, and the future health and ability of the newborn, is too wide for comfort.

Sir Kenneth Stuart, a previous medical advisor to the Commonwealth, has collaborated with Lord Soulsby in writing three seminal papers on global health and poverty in the *Journal of the Royal Society of Medicine* (Stuart and Soulsby, 2011a, 2011b, 2011c). In these papers can be found a deep-seated conviction of the need and the urgency to address poverty. The authors describe 'the background of misplaced optimism and false hopes which characterized the UK's own record of health inequalities'. They identify these with efforts set by the challenge of poverty.

The elimination of global poverty has been recognized as a priority over the past 50 years or more (Black et al., 1980). Yet even in the UK health and economic inequalities are widening (Hacking et al., 2011). To some, the answer to poverty is seen through the eyes of industrial investment and enhanced earning capacity.

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Imperial College, Reproductive Physiology, Chelsea and Westminster Hospital Campus, London, UK

### Corresponding author:

Michael A Crawford, Imperial College, Reproductive Physiology, Chelsea and Westminster Hospital Campus, London SW10 9NH, UK.

Email: michael.crawford@imperial.ac.uk

There are three problems with this much-favoured economic solution. The first is the financial crisis, which since 2008 has clouded that vision. It is not the first, nor likely the last. In its wake the rich get richer and the poor get poorer. The second is that maternal chronic malnutrition and under-nutrition deny the abilities needed for initiative and cognitive development so essential to the creation of wealth. The third is that increased wealth in many countries, from China to Japan, Indonesia and the Gulf States, is now associated with importation of western foods that are directly linked to obesity, diabetes, heart disease and western cancers. In the Gulf States some 24% are diabetic and obese. These are similar to statistics in the US and UK because they are now importing and eating the same foods and life style.

### **Change is needed in nutritional and food policy requirements**

In 1990 Sir Roderick Floud, with the group of Economic Historians from Cambridge University, published a treatise on 'Health, Height and History' (Floud et al., 1990). Ten years in the research of historical records, they were seeking a reason for the economic ups and downs of the past. In the end their conclusion was that economic progress was linked to periods of enhanced nutrition, and regression to poverty. They conceded they were not nutritionists and would not wish to identify any specific nutritional principles involved. Nonetheless, the records were a testimony to periods of better growth and health with periods of economic prosperity and the reverse. However, the foods of those days were very different to the high-energy, intensively reared food of today.

Moreover, the specific nutritional requirements of humans are different from protein and body growth on which so much policy has been predicated. The brain evolved in the sea 500–600 million years ago, with the marine food web being central to its growth, function and subsequent evolution. The chemistry of the brain is the same today (Crawford et al., 2013). In recent time the balance between land and sea food has shifted to a domination of land food, and this food is now intensively produced, which has changed its character. To solve this part of the equation for future food supplies we will have to develop marine agriculture – learn to farm the sea bed and its products, as people did when they first domesticated plants and animals 10,000 years ago. This concept is different from aquaculture, which has a role to play but requires the feeding of fish. As on land, marine agriculture depends on sunlight and the nutritional wealth of the oceans and sea bed.

### **The pivotal importance of the mother**

Wealth is created by intelligence, poverty by lack of it. It seems pretty obvious that if a child is born in a malnourished state, and brain development has been impaired or compromised by maternal malnutrition, the child is unlikely to perform well at school and unlikely to be creative, or may even be unsuitable for employment other than the most simple of tasks. In 1970 Herbert Birch (then Professor of Pediatrics at the Albert Einstein College of Medicine, USA) and Jean Gussow, a psychologist, published a book titled 'Disadvantaged Children' (Birch and Gussow, 1970). The book was subtitled 'Health Nutrition and School Failure'. In the book they draw attention to low birth weight and handicap, showing how even at that early date there was evidence that poor

maternal nutrition was a cause of inadequate development of the brain, leading to school failure and much more. They cite mental development tests at different ages in relation to birth weight.

Although we know more about the specific nutrient requirements for brain growth today, the basic principle was known that specific nutrients were important in brain growth and were different from those required for body growth. That much was known in the 1970s and reported in the FAO-WHO 1976 Expert Consultation, (FAO-WHO, 1978), yet so little has been done.

Much attention is rightly given to the child, but little to the mother. At the opening conference of the Mother and Child Foundation in 1993, at the Royal Society of Medicine, Dr Mark Belsey, who was then Director of Maternal and Child Health at WHO in Geneva, commented that at every turn the interest of the child is served by the many international and national institutions for the child – *‘but there is no voice for the mother’*. Who now prioritizes maternal nutrition and health?

Dr. Gro Harlem Brundtland, when Director General of WHO, opened the XVIII European Congress of Perinatal Medicine, Oslo, 2002. She similarly commented on the appalling neglect of the mother, pointing out that ‘A young women in Ethiopia, for example, goes into the reproductive phase of her life with a one-in-ten chance that she will die as a result of pregnancy or delivery. That is not only shocking – it is totally unacceptable’ (Brundtland, 2002).

The World Health Assembly 2012 invited member states to sign up to the attack on non-communicable disease (NCD). These NCDs are diabetes, heart disease, stroke, cancer and chronic lung disorders. Laudable as this is, maternal nutrition and health and that of the brain would seem to be a priority ahead of all five. There is an increasing understanding that it is not just the fate of the brain and mental health that is decided before birth but also diabetes, heart disease and stroke (Barker, 2007). Moreover, it is likely that the competence of the immune system is also defined before birth, if for no other reason than to face the challenge presented by the birth process itself.

Mental ill-health has now overtaken the cost of all other burdens of ill-health (Andlin-Sobocki et al., 2005), hence a new priority is needed. Maternal and foetal malnutrition adversely insinuates a cost greater than any specific targets in the NCDs. The start of life is a part of the process that leads to these NCDs and, critically, to brain disorders. Dr Jo Nurse at the Department of Health presented the UK cost of mental ill-health in 2007 at £77 billion – a cost greater than heart disease and cancer combined (Department of Health).

The Global Forum for Health predicts mental ill-health will be number two in the list of burdens of ill-health, world-wide, in less than 8 years’ time, a position it will share with heart disease and adverse pregnancy outcomes. Although these have multiple factor causation, there can be little doubt from the historical, epidemiological, experimental and clinical trial evidence that adverse nutritional conditions are a major cause.

The inequality of maternal nutrition and health internationally is a major limitation to happiness, to cognitive ability and hence a threat for poverty on one hand, and on the other, harmony, wealth and peace. It also seems clear that the ubiquitous programmes for children are valid in their own right, but will not address the fundamental impact on poverty of poor maternal health and nutrition stunting early brain development.

Important as it is to help the children, as far as this issue is concerned it is closing the stable door after the horse has bolted. Sir Kenneth has called for a 'World Charter for Mothers' to ensure proper support and investment in their pivotal role in both their health and happiness and in the health and ability of their children.

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