Nutrition and disease: lessons learnt from Gallipoli

Geoffrey W Rice

The link between nutrition and good health is so fundamental that we take it for granted most of the time, vaguely hoping that variety means a balanced diet as we indulge ourselves in another rasher of breakfast bacon or that extra helping of pavlova with cream and kiwifruit.

The link between nutrition and deficiency-diseases is also pretty obvious. Everyone knows about scurvy and ascorbic acid, and Captain Cook’s careful attention to diet, which made his crews perhaps the healthiest of all those on long voyages of exploration in the 18th Century. That success was largely the result of observation and experiment, long before the science behind it was fully explained.

Historians interested in population increase in the past have long been aware of the complex interrelationship between nutrition and disease,¹ but the links between nutrition and epidemic diseases have been more elusive. Many other factors come into the equation, which are often difficult or impossible to measure precisely.

In his 2004 doctoral thesis on 1840s Edinburgh, Neil MacGillivray attempted to show how poor nutrition made recent migrants to the city more vulnerable to outbreaks of typhoid and cholera, but found that overcrowding, poor sanitation and lack of potable water were probably just as important contributors to mortality.²

Stephan Curtis on the other hand examined the social and economic contexts of three scarlet fever epidemics in Sweden in the period 1860-90 and found a convincing correlation between food shortages from bad harvests, poor nutrition during pregnancy, and compromised immune-competence of young children.³

The impact of major epidemic diseases such as influenza, most obviously in the so-called ‘Spanish Flu’ of 1918–19, may well have been magnified by the vulnerability of some sections of the population from poor nutrition.

Svenn-Erik Mamelund’s detailed analysis of social class, household wealth and influenza mortality in Norway has shown that poorer people were probably more at risk of dying in this pandemic than better-fed neighbours,⁴ yet the evidence from New Zealand tends to suggest that infection was indiscriminate and that big strong men were more likely to die than skinny asthmatics, thanks to overreaction by their immune responses. As several doctors observed at the time, victims drowned in their own secretions.⁵

An article in this issue of NZMJ by Nick Wilson and colleagues⁶ on the nutrition of New Zealand soldiers at Gallipoli in 1915 is a salutary reminder to historians that what people ate directly affected their state of health, and may therefore help to explain the outcome of larger events.

Far from home, the ANZACs (Australian and New Zealand army troops) on Gallipoli were supplied by the British Army, and front-line troops were expected to feed themselves on the standard fare of tinned ‘bully-beef’ and biscuit, tea and sugar, jam
and condensed milk. However, the heat and the flies made feeding a difficult business. Flies were especially attracted to jam, and as they may have been previously feeding on corpses, cross-infection was almost inevitable.

Lack of clean water and sanitation in the trenches meant that diarrhoea and dysentery were commonplace, for the better-fed officers as well as the troops. The lack of fresh fruit and vegetables, for months on end, caused serious deficiencies in vitamin A and vitamin C, which in turn caused night-blindness and scurvy.

These troops were seriously under-nourished, yet they showed remarkable resilience and bravery under appalling conditions. One wonders what they would have achieved if they had been fed on the steaks and ice-cream of a modern US army field-kitchen. On the other side of no-man’s land, the Turkish soldiers enjoyed a diet remarkably similar to that of the legions of ancient Rome: wheat bread, olive oil, nuts and dried fruits.

Gallipoli was a hastily-improvised campaign, and problems of supply had not been fully thought-through. Nor had the likelihood of heavy casualties. The British high command expected this to be a quick success, and had not planned for the evacuation of large numbers of wounded men.

The New Zealanders wounded at Gallipoli were scattered across more than 100 British military hospitals in the East Mediterranean and many lost touch with their families back home. The New Zealand government sent a cabinet minister, Heaton Rhodes, on a special mission to visit them and ensure that their delayed mail reached them from Egypt.

As the months went by, supply problems on Gallipoli were resolved and the food improved somewhat, yet the importance of fruit and vegetables was not fully realised. Tinned fruit and peas from New Zealand would have made a significant difference, as the article in this issue argues, but the logistics of shipping and distance made this an impossible option at the time.

Lessons were learned, however slowly, and the New Zealanders in France in the later years of the First World War were far better fed than the ANZACs on Gallipoli. Colonel Stewart of the Canterbury Regiment recalled the ‘unfailing quantity and variety’ of the rations sent up to the line from well-organised quartermasters’ stores and kitchens.

Thanks to recent work by Rachel Duffett, much more is now known about the provisioning and nutrition of soldiers on the Western Front of Europe. The military approach to feeding was based on calories and the calculated energy values of various foods, as ‘fuel for the human motor’. The target of about 4000 calories per day was very similar to that adopted by most modern armies, but it was heavy in fats and carbohydrates.

The standard meat and potato stew made famous by its brand name ‘Machonochie’ was hard to digest, and as the body slowed gastric emptying to allow more time to digest the fat, troops suffered from constipation and that in turn led to bleeding piles.

Lack of ascorbic acid gave rise to the early stages of scurvy, most notably bleeding gums, loss of teeth and sore mouth, besides causing boils and impairing wound-healing.
The lessons of the past are easily forgotten in a world where few people read history books and prefer instead to rely on the History Channel or Time Team for their brief glimpses of the past. Today’s main concern in the field of nutrition and disease is the growing problem of obesity as a cause of chronic non-communicable diseases such as diabetes, cancer and cardiovascular illness.10

The World Health Organization estimates that by 2020 two-thirds of the global burden of disease will be attributable to such chronic diseases, most of them strongly associated with diet. Yet as MacGillivray has shown for Edinburgh in the 1840s, many other factors may contribute towards disease mortality.

Poverty, poor housing conditions and inappropriate nutrition are still major issues for public health in some parts of New Zealand let alone the South Pacific and the Third World.

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References: