EDITOR’S CHOICE

The lights went out...

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At 2.33 am on 30 July 2012, the generator thudded into life, vibrating the bedroom in a steady, comforting rhythm. By morning everyone knew something was wrong. Power outages in Delhi seldom last more than a couple of hours, particularly in the luxurious suburbs of the affluent. By midday, it was clear that 300 million people in north India were without power. The following day it was 600 million. Commuters were trapped on the trains and Metro, traffic gridlocked, television and radio were off air, shops were shuttered down and diesel for the generators was becoming a scarce commodity. People were hot and angry. It felt like the beginning of the end of the world.

Now the lights are on again, and things are back to normal for aspiring, gilded, incredible India. The irony is that >300 million Indians are not even connected to the grid and to add to their misfortunes, they also appear to be at increased risk of chronic diseases—a fact that has escaped the UK Department for International Development, which recently discussed non-communicable diseases in terms of ‘diseases of the greedy’, excusing them to concentrate on ‘diseases of the needy’.1

In this issue, two articles focus on socio-economic patterning of cardiovascular risk factors in India. Zaman et al.2 studying >4000 middle-aged villagers, half of whom had had no formal education, found that in people of lower socio-economic position (measured in terms of education, occupation and income) diets were poorer, smoking and alcohol use were more common, and conversely that physical inactivity, obesity and diabetes were more common among those in higher socio-economic positions. Hypertension was most prevalent in low income groups in men (35.4%) and was more common for all low socio-economic position markers for women. Combining risk factors into a single Framingham score showed that men and women in the ‘lowest’ income group were at ‘higher’ predicted 10-year risk of a coronary heart disease (CHD) event than others.

Socio-economic patterning of risk factors was also studied in south India, using data from the Vellore birth cohort of >2000 rural and urban people aged between 26 and 32 years.3 The investigation of Samuel et al., led by the Christian Medical College Vellore, found that higher socio-economic position (measured by household possessions score, education and paternal education) was associated with more adverse risk factor profiles, with the exception of tobacco use, which was much more prevalent among lower socio-economic groups. The investigators had expected to see evidence of a higher risk factor prevalence in the lower socio-economic groups in the urban compared with the rural samples, but this was not the case. Surprisingly, compared with previous studies, levels of hypertension were low in both urban and rural groups (1.5–4.6%), whereas diabetes, impaired glucose tolerance (IGT) and impaired fasting glucose (IFG) were remarkably high in both urban and rural groups (~20%). Moreover, in the lowest household possessions group, 26% of urban men and 11% of rural men were affected by diabetes/IGT/IFG compared with 32% of urban and rural men in the highest group. These are worryingly high levels of diabetes/IGT/IFG in such a young population and suggest that burdens of cardiovascular disease (CVD) are likely to increase dramatically in all socio-economic groups as these young adults get older.

These two articles exemplify, in different ways, how to overcome our concerns expressed recently about how research conducted in resource-poor countries is exploited by investigators in resource-rich countries.4,5 Zaman’s article uses data collected by the Australian George Institute’s research institute in India and includes two India-based authors out of seven, but disappoints as neither of these are in first, senior or corresponding author positions. Samuel’s article is authored by five investigators, four of whom are India-based and hold first and corresponding author positions; the senior author is from the UK. Getting the authorship balance right is important for building capacity, ensuring recognition and helps career progression. As the ‘global health’ movement advances, many institutions—my own included—are attempting to build stronger north-south partnerships. A key element is the sort of commitment shown by the George Institute in establishing its research sites in India and China so that national and international investigators can work side by side and build capacity to carry out excellent research. However, the era of the ‘data grab’ and neo-colonial research by remote control is still not dead. A young investigator from the USA discussed
his research plans for a study in India with me. When I asked him when he would be coming to India to set it up, he told me it would be ‘career suicide’ to be based in India—even for a year. By contrast, at the same time, another young American investigator spent a successful year in India working with my colleagues to mutual benefit, which has led to long-term activities—and it has not done his career any harm. Institutional attitudes, moulded by senior faculty, shape behaviour of junior faculty and have to change.

Turn back the clock to the 1950s and read Gerry Shaper’s article on cholesterol, diet and CHD in Africans and Asians conducted from the colonial medical school of Makerere in Uganda. Gerry was a contemporary of my father at Cape Town Medical School in the 1940s, and whereas Gerry completed the course, finally leaving South Africa in 1951, my father migrated to the UK, completing his medical training at Sheffield University. Gerry’s reflections on carrying out this study and becoming an epidemiologist without realizing it demonstrate a curiosity arising from clinical observation—no African CHD patients in a whole year working in Zimbabwe but lots of Asian patients with CHD in South Africa—tempered with scientific method. The major findings of higher levels of serum cholesterol in Asians than in Africans and no increase in cholesterol levels with age in Africans were attributed to differences in dietary fat. Neil Poulter and Nish Chaturvedi note that the design of the study and interpretation of the findings anticipated life course epidemiology, but not genetic epidemiology, and provide a contemporary interpretation of the findings. Kay-Tee Khaw in her commentary reminds us that cardiovascular epidemiology is one of our major success stories, but that there are still unanswered questions. Bongani Mayosi and Terrance Forrester provide some reasons for optimism, suggesting that coronary heart disease mortality rates may be declining in some African countries and highlight what needs to be done.

Gerry is disappointed that scientifically we lack commitment to the diet–heart hypothesis. Ancel Keys set

Figure 1 Gerry Shaper in London, 1975
up the Seven Countries Study of just <13 000 men to examine the diet–heart hypothesis, measuring blood cholesterol in widely different populations to examine its association with dietary saturated fat intake and, in time, with incident CHD (see Figure 2).11 Clear positive associations were seen between blood cholesterol and CHD in northern Europe and USA but, as the numbers of CHD events in Japanese participants were so small, it was unclear whether there was any hazard associated at the low levels of cholesterol experienced there. However, an analysis based on only 43 CHD deaths occurring in 9021 Chinese people (who also have low average levels of blood cholesterol compared with USA and northern Europe) followed for 8–13 years provided evidence of increased CHD risk even at levels of blood cholesterol considered low in high income countries (see Figure 3).12 This was the first indication that there is no ‘safe’ level of blood cholesterol, a finding of relevance to all countries, not just China. This finding resulted in trials of cholesterol lowering with statins among people with average levels, and these paved the way for their widespread use in resource-rich countries to prevent major vascular events based on the absolute risk of CVD regardless of blood cholesterol level.13 Unfortunately, there has been much less enthusiasm for curbing saturated fat intake in the population at large—an intervention that is credible and does appear to lower blood cholesterol, at least in Mauritius.14 However, the opposite policy of increasing palm oil consumption (40% increase between 1990 and 2007 in resource-poor countries) is associated with increases in CHD deaths—68 extra deaths per 100 000 per year for each 1 kg palm oil increase per person consumed.15

Although physical activity and dietary intake were the persuasions of 20th century epidemiology, we now study what we do most—sedentary behaviour.
methods to improve pattern recognition of signals indicating sedentary behaviour are all coming on stream.

But which methods are best? Stamatakis et al. have compared self-reported sedentary behaviour with accelerometers and found that self-reports in >1000 participants of the Health Survey for England were associated with cardiometabolic risk factors, but their accelerometer data were only associated with total blood cholesterol. Surprising, so what does it mean? The authors believe that self-reported sedentary behaviour is a proxy for other behavioural/psychological factors that are not captured by accelerometers, or, alternatively, that accelerometers are less good than self-reports at measuring sedentary behaviour.

And does sedentary behaviour matter? Ford and Caspersen have carried out a review of prospective studies of sedentary behaviour and CVD, and point out that sedentary behaviour is not necessarily just the end of the spectrum of physical activity but may be a distinct independent risk factor. The studies generally show increased risk of CVD with increased sedentary behaviour independent of physical activity, but they have their limitations. Commenting on these two articles, Ulf Ekelund considers that it would be premature to implement public health measures on current evidence but considers that what could be done—changes in transport systems, built environment and in schools—would only be beneficial, so why not?

Finally, these days size does matter. Historically, height was not related to mortality until the 18th century by when infectious disease had ceased to dominate causes of death, and since then has provided a useful marker of nutritional status in terms of stunting in attempts to disentangle the contribution of different explanations for the declines in mortality seen over the last two centuries. In this issue, John Danesh’s team have produced one of the largest meta-analyses of individual participant data culled from 121 prospective studies to examine the association of adult height with cause-specific mortality and vascular morbidity in 1 million people. The findings show inverse associations for CHD and stroke and positive associations with cancer mortality that are robust to adjustment for smoking, obesity, inflammatory markers, diabetes, blood pressure, occupation and education. The issue of ‘shrinkage’, that is the decline in height that occurs in people with chronic diseases, which may lead to reverse causation, is dealt with by excluding the first 5 years of follow-up, which does not alter the findings. Excluding participants with any evidence of chronic disease would be an alternative...
means of avoiding shrinkage effects; those with diabetes were excluded in a sub-analysis without any material difference in results. However, as acknowledged by the authors, the findings may be affected by unmeasured, imprecisely or incompletely measured confounding factors, particularly socio-economic and nutritional factors.

Height is an intuitive marker of social position as reflected by the famous ‘I know my place’ sketch—‘I look down on him because I am upper class; I look up to him but down on him because I am middle class; I know my place’—featuring John Cleese, Ronnie Barker and Ronnie Corbett shown on British television in the 1960s (see Figure 4) [http://www.youtube.com/watch?v=K2k1lRD2f-c (accessed 14 August 2012)]. In Europe, adult height continues to increase but socio-economic patterning is still apparent. 23

Sadly, in resource-poor countries, there is evidence that declines in height have occurred in successive birth cohorts, particularly in the poor socio-economic groups in Africa, suggesting worsening early life conditions and persistence of social inequalities in health. 24

References


