Commentary: Epidemiology? Keep it broad and deep

Klim McPherson

Zielhuis and Lambertus\(^1\) are asking us to draw a boundary around epidemiology that includes only so-called ‘biological’ determinants of disease. They invoke no clear justification or claim any advantage for so doing. Needless to say their argument seems to assume that biology is scientific and that the social sciences like sociology and psychology are not, and they also implicitly connect biology with medicine. This is a normal part of a sloppy argument. Public health in the UK is currently likewise professionally protected for doctors, and hence it has come to be synonymous with public health medicine. Then the illegitimate protection is self-justified and the dominant protectors of the boundaries (the BMA in this case) no longer need to justify them, except when challenged.

I believe we must resist (or simply ignore) this derivative proposal for similar reasons. Epidemiology is understanding the systematic determination of ill health by time, place, and person. Firstly, it is the study of causes and determinants of disease and as such it must allow specialization within its boundaries to study, with enthusiasm, any plausible set of determinants. Secondly, most determinants interact in complicated ways, so even without specializing in social causes every epidemiologist must surely understand the rudiments of their potential effect. To exclude these experts by assigning them necessarily to another enterprise is simply stupid. To describe an epidemiologist who confronts questions from sociology as ‘merely a technician’ describes precisely why.

What, moreover, is the point of attempting to exclude parts of the complex epidemiological landscape? I believe this argument is grounded in an elitist agenda (just like UK public health medicine currently is). All such elitist agendas must have, at the very least, a clear net benefit for the purpose of epidemiology, and in this case no such benefit can be possible. The single argument proposed in favour is that ‘shopping in neighbouring scientific fields’ invites inexpert interpretation. Well not necessarily! The solution is not to ban such progress but to require appropriate knowledge to enable people to make progress. After all the ‘social’ component of human immunodeficiency virus, of coronary heart disease and of most cancers is palpable and germane, but complex. The psychological component is less obvious possibly because we have all kept it on the periphery of our concerns. We should instead be encouraging rigorous and systematic study from knowledgeable specialists to advance this understanding too. To tell the best psychologists that they have no place in the epidemiological enterprise can only be justified by evidence, and these authors have none.

These proposals are therefore just silly! Worse, they invite further disparagement and scientific neglect of important areas. For what scientific purpose I simply cannot discern from their article.

Reference


Commentary: Social epidemiology? Way!

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The central assertion contained in the essay by Zielhuis and Kiemeney is that epidemiology is a ‘part of medical sciences and rests on human-biological (scientific) background’.\(^1\) On the basis of this broad contention, the authors attempt to draw two corollaries. The first is that training ‘comparable to the training necessary for anyone engaged in the scientific study of health and disease. Nonetheless, people achieve intellectual development through varied means, of which formal progress through a degree programme in order to obtain a credential is but one. Ultimately, we do not judge scientific knowledge on the basis of the authors’ credentials, but rather on the objective merit of the work.
For example, we do not reject the biostatistical techniques developed by Jerry Cornfield and James Robins, simply because these individuals never obtained doctoral degrees in statistics. Similarly, Gertrude Elion was awarded the Nobel Prize in Medicine in 1988, although she possessed no degree in medicine, nor in fact, any doctoral degree at all. While not seeking to denigrate formal training programmes, I merely note that these are a means to an end; namely, knowledge and understanding. We must never become so obsessed with our little merit badges (MD, PhD, etc.) that we mistake these for the actual professional competence they are meant to portend.

Moreover, if the authors believe that epidemiology ‘rests on … scientific background’, then would it not be more advantageous for aspiring epidemiologists to obtain training in the conduct of scientific research, rather than the clinical instruction that prepares practitioners of the healing arts? Clinical training is appropriately geared to provide the skills necessary for the noble pursuits of diagnosis and healing. Even if we focus narrowly on ‘medical knowledge’, would the task of untangling disease aetiology not be well served by a doctorate in, say, physiology or biochemistry? At very least, formal training in an academic discipline provides some introduction to scientific conduct, research design, and statistical analysis—topics that justifiably might never surface in the training of an expert clinician.

These remarks are not intended to detract in any way from the many profound contributions made to our field by clinically trained epidemiologists. Rather, the accomplishments of such individuals demonstrate clearly a phenomenon that Drs Zielhuis and Kiemene appear to fail to appreciate, which is the capacity of individuals to broaden themselves beyond their formal credentials. Though some of our finest methodologists, including Olli Miettinen, Kenneth Rothman and James Robins, obtained formal credentials as clinicians, they subsequently availed themselves of additional training or self-study in the quantitative dimension, without which they could not have distinguished themselves so remarkably as epidemiological pioneers and leaders. Likewise, many distinguished epidemiologists began professional life with a foundation in clinical training, and broadened themselves by pursuing greater understanding and expertise in the sociological dimension, including luminaries such as Mervyn Susser, John Cassel and Michael Marmot. Is it so difficult to imagine, therefore, that one might fruitfully approach epidemiology by obtaining doctoral training in a social or quantitative science, and subsequently, by one means or another, master elements of pathophysiology and anatomy?

The authors’ central polemic, however, concerns the question of whether social factors constitute a legitimate province of epidemiological inquiry. Petulant and derisive remarks such as ‘Epidemiology deals with medical knowledge itself’ are intended to locate the causes of human disease strictly within the confines of the visceral body, as though this collection of organs and tissues is a lone satellite that floats haplessly through empty space. The greatest achievements of our field, however, belie such simplistic and parochial perspective. What would we know of the distribution of malaria without entomology and ecology? What would we know of the spread of HIV/AIDS without a detailed ethnology of human sexuality? Consider, for example, the West African Diaspora: several geographically isolated populations, each composed of individuals with the same basic human physiology and the same distribution of basic genetic potential, but in radically different environments, ranging from subsistence agriculture in Nigeria to post-industrial late-Capitalism in Chicago, USA. The variation between these groups in diseases such as hypertension and diabetes is striking, and the determining role of social institutions (e.g. diet, political economy) is readily apparent.

Traditional academic disciplines, like nation states, have borders that are constantly in flux because they have no objective justification. Lines are needed on the world map for governmental convenience, just as academics need disciplinary identities for purposes of training, providing credentials and administration of our professional societies and university departments. Nevertheless, nature resists such intellectual Balkanization, and great scientists frequently find themselves at the cusp of traditional fields. Was Linus Pauling, for example, a chemist or a physicist? Or to pick an example closer to home, is Roy Anderson an epidemiologist? A zoologist? A mathematician? Perhaps all of the above?

In the attempt to make intellectual progress as epidemiologists, most of us find that we must also strive to be ‘all of the above’, simply because the facts of human epidemiogenesis do not lie squarely within a single traditional discipline. Social interactions and structures, in particular, govern our diets, environmental exposures, physical activity, sexual contacts, and so forth. No modern epidemiologist would deny the centrality of such factors in determining disease incidence, so how could we justify not studying them? Zielhuis and Kiemene offer several weak and disjointed arguments, advocating that we leave these quantities to others who better understand them (e.g. sociologists and psychologists). By this logic, however, we might also be forced to relinquish use of statistics to ‘real’ statisticians.

The task of integrating sociological and psychological expertise into our field is aided by the very fact that Zielhuis and Kiemene decry: the prominent contributions made by numerous epidemiologists with formal training in these subjects, including Sherman James, George Kaplan, Stan Kasl, Carles Muntaner and Len Syne to name but a few. The social context in which organisms live is part of the ‘human-biological (scientific) background’ that Zielhuis and Kiemene locate as the foundation of epidemiology, and is therefore an essential ingredient in the development and elaboration of the sorts of modern epidemiological theories to which they refer. In light of this central position of social relations in the processes by which human diseases wax and wane in populations, our task is clearly to develop a meaningful and fruitful social epidemiology, not to abandon study of these important questions to other disciplines.

References