

BRIEF COMMUNICATION

“Race” and Biomedical Research: An Educational Perspective

GORAN ŠTRKALJ & A. TRACEY WILKINSON

School of Anatomical Sciences, University of the Witwatersrand, South Africa

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All humans belong to the same species: *Homo sapiens*. Biologically, however, they vary significantly in terms of individuality, age, sex, and population group. In medicine, it is generally accepted that the first three are of importance in both practice and theory. The fourth is a more contentious issue.

One of the major problems with the study of variation between populations has been its reliance on the concept of race (e.g., Marks, 1995). “Race” has been variously defined, but has most commonly been understood as a synonym for subspecies. Templeton (1998, p. 632) defines a subspecies as “a geographically circumscribed, genetically differentiated population”. However, this concept has been challenged in anthropology for decades. Some of the main reasons are: the lack of agreement on the number of human races, the continuous distribution of many traits (making boundaries between ‘races’ arbitrary), the level of variation within races (which exceeds the level of variation between groups designated as races), and the fact that racial classification varies with the traits chosen (Relethford, 2003).

The curriculum of today’s medical student does not seem to address the issue of “race” and human variation (from here on taken to mean variation between populations) to any great degree. These subjects have traditionally been left in the domain of the biological anthropologist. However, the claim that different “races” respond differently to the same drugs, culminating in the recent release of the first patented “ethnic drug”, is an example of the importance of human variation, not only in research but also in medical practice (Hacking, 2005). Bamshad and Olson (2003, p. 79) encapsulated the key issues of the current

Author for correspondence: Goran Štrkalj, School of Anatomical Sciences, University of the Witwatersrand, 7 York Road, Parktown 2193, South Africa. Phone: +27 11 717 2114. Fax: +27 11 717 2422. E-mail: strkaljg@anatomy.wits.ac.za

race debate when they posed the following three questions: “Can genetic information be used to distinguish human groups having a common heritage and to assign individuals to particular ones? Do such groups correspond well to predefined descriptions now widely used to specify race? And, more practically, does dividing people by familiar racial definitions or by genetic similarities say anything useful about how members of those groups experience disease or respond to drug treatment?”.

The way in which biomedical researchers deal with these questions is wide and varied. An example can be seen in a recent issue of one of the leading medical journals where two contrasting views were published back to back. The first states that “race, at the continental level, has not been shown to provide a useful categorization of genetic information about the response to drugs, diagnosis, or causes of disease” (Cooper *et al.*, 2003, p. 1168), while the second concludes that “there are racial and ethnic differences in the causes, expression, and prevalence of various diseases” (Burchard *et al.*, 2003, p. 1174).

The reasons for the existence of different views on “race” are numerous and include both scientific and external factors. A number of studies on the status of the race concept have been carried out, some of which have delineated these factors (Littlefield *et al.*, 1982; Lieberman *et al.*, 1989; Kaszycka & Štrkalj, 2002; Wang *et al.*, 2003; Lieberman *et al.*, 2004). These researchers argued that the issue of human biological variation is too complex for consensus to be reached easily, although this might change as more becomes known. They have also shown that external factors, such as the broader social context, the political climate, and the way in which the scientific community is organized, play a role.

Bearing this in mind, it would be too optimistic to expect a quick and simple resolution of the current controversies concerning human variation. However, this does not mean that some attempt should not be made.

It is possible, for example, that some of the controversies and misconceptions concerning race in biomedical research may be due to lack of adequate information on human variation in medical curricula. Recent surveys on anatomists’ attitudes towards the concept of race have shown, at least in South Africa, that not only is there little agreement on race but also that serious misunderstandings on human variation are rife in South African anatomical research (Morris, 2003; Štrkalj *et al.*, 2004). The most common mistakes were confusing socio-political traits and groups with biological ones, and using small populations to generalize about much larger groups not represented by the sample (Morris, 2003).

These studies lead to the conclusion that anatomists’ knowledge in this field is far from ideal. Since most of those surveyed were involved in the education of biomedical science students, it is likely that their ideas will be passed on to the next generation.

It has recently been demonstrated that even a modicum of education can have a strong impact on students’ attitudes towards race (Štrkalj & Wilkinson, 2005). In a study where students’ opinions were elicited before and after a

two-week module on human variation, it was observed that not only did their knowledge of human variation improve, but also that there was a statistically significant shift towards discarding the traditional race concept. It might be assumed that both the course material and the views of the lecturer played an important role in this process. This example shows that even a small amount of teaching can dramatically improve students' understanding of the subject and can change their (often simplistic) views on human variation.

If students' opinions can be changed relatively easily in this way, perhaps future medical researchers, practitioners, and educators might be expected to have a better understanding of the subject after going through a similar process. The medical educators may then influence the generation that they come to teach.

It seems therefore that inclusion of a few lectures (possibly incorporated as part of anatomy, physiology, or medical genetics) on human variation by someone up-to-date with current developments in the field would be profitable for biomedical students. It is unlikely that this would solve all the issues in the field but it may be a step in the right direction.

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