

## Issues of bias

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In this issue of the Journal, we address aspects of bias. One source of bias at the editorial level is the possibility that what gets published is influenced by biased reviewing of papers. The current strategy for minimising this possibility is to find three diverse reviewers for each paper, on the basis that it is unlikely that all three will share the same bias. A separate question is whether reviewers should be given the names of the authors of papers, as is the case at present. Several authors and reviewers have suggested recently that reviewing would be fairer if reviewers did not know the authors' identity.

The possibilities for change are multiple: the authors' identity is not revealed to the reviewer and the reviewers' identity is not made known to the authors ('double-blind' reviewing), or the authors' identity is not revealed to the reviewers but the reviewers' identity is provided to the authors, the reverse of current practice. Although this is not an option for us, journals published only on the web often make the whole process public: once a paper is published, its whole history from submitted paper through reviews, authors' responses and revised paper, follow-up comments from reviewers, with everyone identified, can be read online.

We would like to hear your views about whether, and how, we need to re-think anonymity in the review process.

### Methodological issues II: Bias and sample selection

A younger person came home one evening during the first week at university and handed over a book to the older person saying crossly, "You like this guy's poetry – tell me what you think about the actual book". The older person commented on the date (1928), and the overall look of the book itself before starting to turn the pages and look for individual poems. After some minutes the older person, a little surprised, commented, "What's really interesting about this collection are the poems which aren't in there". The younger person was outraged: "That's just the kind of stupid thing the whole lecture was about."

At this distance, it is impossible to tell to what extent the selection of poems was a matter of repression, personal preference, censorship, power or market forces, but the editor had chosen a study sample (the selected poems) that did not reflect all the poems of the author: there was a systematic difference between them. This systematic difference is bias, although the word does not necessarily carry the same pejorative connotations in relation to research as it does in everyday life.

We take bias to mean the extent to which the results of a study do not match what exists in the field where the research was conducted. The first trap researchers face is in inadequate entry into

the field. If we are to represent what is going on in an area of health we need sufficient access to develop a broad overview of the problem and to win the confidence of research participants. Establishing rapport takes time – a point often overlooked by funding bodies – but it is a well-trying way of ensuring that we get the unbiased data that we need for a proper analysis. The paper of Dympna Leonard and colleagues in this issue describes a long, thoughtful and constructive process for consultation, deliberation, and approval leading up to community-based screening for diabetes, obesity and cardiovascular risk factors in Torres Strait Islanders within the Torres Strait and Northern Peninsula Area Health Service, associated with high levels of participation.

We may also need to win over various gatekeepers who need to be persuaded of the importance of our study before they give us access to study participants or data collections. Marie Pirota and colleagues demonstrate in their paper that the standard method of sampling in general practice waiting room surveys misses up to 50% of those waiting. In this context, reception staff are the gatekeepers. The research team discusses possible selection biases but was unable to determine whether the study sample was the result of random or systematic bias. Their conclusion is that the standard method of sampling is likely to be unsafe.

Ethics committees, too, are sometimes involved in setting limits to the way in which we access study participants. While the need to protect people from unjustifiable intrusion is not in question, there is a potential to introduce bias if we are not allowed to enter a setting, to assess the full extent of a problem and to decide on methods for selecting a sample. In contrast, a recent paper about researching the health and well-being of urban young people through the Victorian Aboriginal Health Service describes the development of modified processes that met the needs of the community and the health service, as well as the requirements of the Australian Health Ethics Committee, and contributed to a successful sampling strategy.<sup>1</sup>

Sample selection is a key decision. Here we deal with quantitative studies only; qualitative studies will be addressed in a later editorial.

Especially when it is impossible to select from a population in a systematic way, researchers need to address the extent to which their sample is representative of the population. In an example from this issue of the Journal, David Hill and colleagues studied smoking prevalence among Australian secondary school students. On survey day a number of children were absent from school. The researchers recognised this as a potential bias and developed a neat strategy for assessing the bias.

Sometimes, but unfortunately not very often, it is completely appropriate to carry out a population-based study restricted to volunteers. As reported in this issue, Dympna Leonard and colleagues recruited 50% of the whole population of Torres Strait Islanders aged from 15 to 87 within the Torres Strait and Northern Peninsula Area Health Service for screening. They were able to show that this sample was representative in terms of age and gender within the whole population of the district. They were also able to compare the diagnoses and cardiovascular risk factors in

the study sample with those from a national survey (AusDiab). In this instance, and in part because of the very marked differences between the study group and the national survey, 50% participation and a study group of volunteers was highly informative.

Another paper in this issues describes a study sample based on less than 50% of the population, but Philip Clarke and colleagues make this explicit in the title, 'Comparing health inequalities among men aged 18-65 ...' and provide a careful account of why women could not be included.

More on bias in future issues.

## In this issue ...

Every reader is likely to have experienced hot take-away chips, the sun, and a fall of some kind, and very few of us are likely to see them primarily as risks. The three papers that head this issue focus on the *Risks of everyday life*. Judith Morley-John and colleagues in Auckland describe the fat content of chips, the degradation of cooking fat, deep-frying practices and related attitudes in fast food outlets and conclude that practices could be improved, pointing out that 'even a small decrease in the mean fat content of chips would reduce the obesogenic impact of this popular food'.

In the second paper, Simone Harrison and colleagues describe a survey of doctors and nurses involved in the care of women after birth and babies in the first year of life to identify the advice they give about therapeutic sun exposure. This followed earlier work by the same authors that found risky beliefs and practices to do with sun exposure were described by one in five women with a new baby in Townsville. Indeed, doctors and nurses often shared women's views and provided inappropriate advice on the effectiveness and even necessity of sunlight. In the third paper, Catherine McCarty and colleagues show that cataracts, even without problems with visual acuity, increase the risk of falling and recommend attention to visual cataract status and visual acuity in programs to reduce falls.

In *Health inequalities*, we start with past contributions to present inequalities with Maggie Brady's sobering paper on the historical and cultural roots of tobacco use among Aboriginal and Torres Strait Islander people. This provides a context for the paper of Dympna Leonard and colleagues described above, showing a very high prevalence of preventable chronic disease and associated risk factors (including smoking) among Torres Strait Islander people and reminding us that there is a 'burgeoning epidemic' of obesity and diabetes among all Australians. The health inequalities related to teenage pregnancy start with socio-economic differences in the probability of becoming pregnant in this age group, continue through differences in the probability of continuing the pregnancy to the more adverse pregnancy outcomes of women under 20. Karin van der Klis and colleagues analyse the excellent data from South Australia back to 1970 to provide a comprehensive picture of teenage pregnancy for the past 30 years, placing Australia close to the UK and Canada in terms of patterns. Their data also allows them to comment on problems with the national data on teenage pregnancy. Mohammad Siahpush and colleagues

draw our attention to the high prevalence of smoking by lone mothers, pointing to the fact that it remains a strong factor after controlling for socio-economic variables, and proposing broader policies and interventions. Health inequalities in measures of physical health, using the SF36, turned out to be similar among men aged 18-65 in Australia and in England. You may find this surprising.

The third group of papers is all about measuring prevalence in difference settings and provides more examples of study group selection and description. David Hill and colleagues report smoking prevalence among Australian secondary school students in 1999, including the welcome news that the rise in prevalence in the 1990s seems to have stopped with a recent decline. This paper shows the benefits of long-term commitment to a research area with its capacity to describe trends since 1984. Carol Bower and colleagues describe trends in neural tube defects in Western Australia, relating them in time to folate promotion, periconceptional use of folic acid supplements and food fortification with folate. This paper shows how essential it is to have complete ascertainment of birth defects, including those where the pregnancy was terminated, to be able to comment on changes. Tracy Bessell and colleagues use questions from the 2000 South Australian Health Omnibus survey to describe the characteristics of those seeking online health information and what they did with it. Marie Pirotta's paper (discussed above) shows that GP waiting room surveys are likely to be problematic as a starting point. Lastly, Kate Brameld and colleagues outline the concept of 'active prevalence' of cancer, and go on to describe both the total prevalence and the active prevalence of cancer in Western Australia using a longitudinal analysis of linked cancer registrations, hospital separations and death registrations in 1990-98. The active prevalence of cancer – defined as the prevalence of patients requiring health care for active cancer now or in the future – increased from 5.1/1,000 population in 1990 to 7.4/1,000 in 1998.

This issue ends with a description by Susan Houghton and colleagues of the extent to which students completing one of the first undergraduate public health courses (Adelaide University) are now in the public health workforce and how they see their undergraduate education. Don't miss the letters: we especially enjoyed the mumps epidemic that wasn't.

## Reference

1. Holmes W, Stewart P, Garrow A, Anderson I, Thorpe L. Researching Aboriginal health: experience from a study of urban young people's health and well-being. *Soc Sci Med* 2002; 54: 1267-79.

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