Bias and conclusions

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Any issue of a public health journal provides food for thought on issues of sampling, and this one is no exception. Three papers involve relatively unusual samples – houses and child occupants, classrooms and child occupants, shops and basic foods – but the largest category of papers is about populations. These populations are defined by locality (Busselton, Western Australia; Auckland, New Zealand), by occupation (New Zealand fire fighters), by health problem and locality (diabetes and New South Wales), by reason for health service contact and locality (pregnancy and Christchurch, birth and Victoria) and by age and locality (New South Wales, Perth). Readers need to know whether and how the people taking part in the study reflect the population being studied, and whether there are any systematic differences between them. If there are systematic differences, how do they modify the conclusions that the authors – or the readers – might draw? Do these results apply more generally to other groups of people? These are methodological considerations that need to be taken into account in all research articles.

Methodological issues III: bias, samples and conclusions

Four papers in this issue illuminate these questions about sample selection and conclusions.

The population of interest to Jill Cockburn and colleagues was 'community-dwelling adults in NSW'. The selection of the study group involved a random selection of households from the electronic NSW telephone directory, followed by a letter of information about the study and then a telephone contact. The next stage was to select one adult in the household – the person with the next birthday – to be interviewed, over the phone. This process resulted in a response fraction of 61.4%, adjusted for those able to be contacted to 75.4%. Only those who were 40 and over were interviewed about bowel cancer and bowel cancer screening, the focus of this article, and their characteristics were then compared with NSW Census data. On almost all criteria the study group was representative of the NSW population, the only exception being a higher participation in the study by women (60% compared with 52% in the Census) and a lower participation by men (39% compared with 48% in the Census).

Bess Fowler and colleagues sought to contact a random sample of men aged 65 to 83 years living in the metropolitan area of Perth, using the Western Australia State Electoral Roll to invite them to a vascular screening clinic. They refer to an earlier paper describing recruitment. The file of potentially eligible men was linked to a file of nursing home addresses to exclude men 'likely to have significant physical or cognitive impairments' and unlikely to benefit from the screening and subsequent surgical intervention. One letter of invitation and one reminder resulted in 62.4% of men attending for screening. The account of the non-participants is very helpful: 2,278/7,371 were ineligible through death (364), prolonged absence from Perth (236), having already had surgery for the condition (397) or having the condition (28), being housebound or too ill to attend (686), change of address and untraceable (567). The adjusted response fraction was 70.5%. Those excluded by the use of the electoral roll were residents who were not Australian citizens, something which is likely have a different degree of importance in different parts of Australia, but the participation rate of those invited was very high. The details about non-participants show the importance of major ill-health and increasing age as factors limiting participation.

The population of interest to Stephanie Brown and colleagues was women who gave birth in a defined time period (one week or two weeks) in Victoria, excluding those who had a stillbirth or a neonatal death. These women were mailed a questionnaire about their health six to nine months after birth and asked about their views and experiences of maternity care from early pregnancy onward. The questionnaires were mailed by maternity hospitals and homebirth practitioners to all their clients who had given birth in the defined time and returned to the researchers. This ensured anonymity and confidentiality, but it did cause some errors in the mailing, such as questionnaires being sent to women whose births occurred outside the study dates. The adjusted response fraction, after excluding the group outside the study dates, a few duplicates and those unable to be delivered at the mailing address held by the hospital, was 67%. One strength of this study is the availability of state-wide data from the Victorian Perinatal Data Collection Unit for the defined time period, which makes it possible to characterise differences between respondents and non-respondents with respect to both social and demographic factors and obstetric and reproductive factors. Obstetric and reproductive factors have little effect on responses but there are consistent social differences, predictable in postal surveys, that limit the conclusions which can be drawn about younger women, single women and women born outside Australia in countries where English is not the first language. These are presented and discussed in the paper.

The people of the Shire of Busselton have been active participants in mapping population health since 1966. Dallas English and colleagues describe a study that began there in 1978. The population attending to be measured, tested and to complete a comprehensive questionnaire on lifestyle comprised 4,006 people, 74% of the 5,415 registered on the electoral roll. Among this population of attendees, 3,230 were 25 to 79 years old and completed the questions about current smoking. They form the study cohort followed up until 1994 through records of hospital separations and death certificates. The question of how similar the study group of 3,230 is to the 5,415 does not apply here since the research questions are about the relationship between smoking measured in 1978 and subsequent hospital admission and death. This study is notable for its major success in verifying the vital status of all participants by linkage to the electoral roll, telephone directories, direct contact and through relatives, with only 2% lost to follow-up.

The importance of bias in qualitative research will be taken up in the next issue

In this issue …

The Environment includes three very different articles. Andrew Lindsay and colleagues, using the whole population of Auckland, describe the pattern of meningococcal disease in Auckland from 1992 to 1998, with an analysis of local meteorological variables over the same years. In a paper that should be subtitled 'Floors zero, Children 14,033', Rick Speare and colleagues demonstrate the size of the head lice problem and show that head lice are not found on floors in primary school classrooms. The public health importance of the finding has to do with the choice of effective strategies, at home as well as at school. The paper also provides an illuminating account of the methods used to collect and count the lice on carpets and heads. France Boreland and colleagues identify the continuing importance of lead dust in a study that combines complex sampling of houses within a regional city, careful measurement of lead flux (the amount of lead falling on a surface over a defined time period) and findings about ways in which the exposures can be reduced.

Smoking is not gone and must not be forgotten. Bess Fowler and colleagues show the persistence of an excess risk of arterial disease in former smokers, in contrast to the relationship of earlier smoking to coronary disease and stroke. Dallas English and colleagues report the contribution that smoking makes to hospital admissions and bed-days from their Busselton cohort, concluding that earlier estimates need to be doubled. Philip Schluter and colleagues use cotinine measures in blood collected during pregnancy to assess whether local campaigns in Christchurch have altered the proportion of women smoking in pregnancy. They conclude that there has been a small reduction.

The question that heads the next section, *'Why Do Community Surveys?',* is answered succinctly by Jill Cockburn and colleagues as 'To estimate the extent and modality of screening for colorectal screening in NSW among community-dwelling adults' and by Stephanie Brown and colleagues as 'To investigate changing patterns of maternity care in Victoria based on data collected in three state-wide surveys conducted in 1989, 1994 and 2000'.

Methodology in this issue is about record linkage. Christopher Kelman and colleagues outline a protocol for facilitating access to administrative data for the purposes of health services research, in ways that protect privacy. This is an important follow-up to articles published in *ANZJPH* in October last year. Jackie Fawcett and colleagues propose a sequential strategy for follow-up of retrospective cohorts in New Zealand.

In *Social Disadvantage,* Jane Overland and colleagues identify people with diabetes in NSW using a Medicare item for which reimbursement depends on the presence of established diabetes, then go on to compare their medical service usage by quintiles of social disadvantage. Amanda Lee and colleagues describe food availability and cost in relation to 'remoteness' in Queensland. Sonia Grover and colleagues use a newly available data system to show that sterilisation of girls and young women, for other than very clear major health indications, is now very uncommon in Victoria but it is still happening.

A classic series of papers about how to read journals once commented that sometimes the letters were reason enough to read journals regularly, given their mixture of strong feelings, thoughtful reflection, idiosyncratic opinions, accumulated wisdom and brevity. Letters to the Editor also provide the opportunity for a brief research report and this issue's letters begin with Jane Gunn and colleagues describing a randomised trial that compared two strategies for recruiting general practitioners to take part in a program developed by PapScreen Victoria. Very few GPs (2.1%) responded to either approach. Niyi Awofeso provides a thoughtful commentary on planning multicultural health services in Australia's prisons, drawing our attention to the contradictions inherent in combining deprivation with rehabilitation. John Glover and Sarah Tennant question the use of single-year data for analyses of deaths in small areas. Pat Palmer doubts whether reducing particulate air pollution could really reduce hospital admissions in Christchurch. Theo Vos and colleagues provide additional detail about the Victorian Burden of Disease Study and the way it is used for planning and policy context. Rowena Ivers argues that addiction to nicotine among Aborigines was unlikely to have been widespread before the distribution of regular rations of tobacco as payment for labour. She also draws attention to the use of tobacco by public health practitioners as an inducement to take part in research as recently as the 1970s. Heath Kelly and Kerri-Anne Brussen provide an update on surveillance for Australia's certification as free of circulating wild poliovirus.

The dedication of our remarkable book editor, Vivian Lin, has delivered a steady stream of critical reviews of both authored and edited books, written by well-informed colleagues. This has allowed us to make a special feature of book reviews. In this issue there are four books on ethics, ranging from a comprehensive workbook to books addressing the ethics of medical research and a textbook for medical students and doctors-in-training. This set concludes with the sobering historical account of ethical violations by doctors in the US military. Ethical issues are also raised by the next two books, but the focus is on the role of social values in economic decision-making and on the way in which the medical profession has come to tyrannise people about health risks. The next group raises issues of gender as a common theme. The first addresses the interplay between gender, health and healing; in the second, a strong theme of gender runs through a series of critical analyses of technologies related to health; and the last addresses the experience of women in the drug-dealing economy.

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