# Indigenous health research: a critical review of outputs over time

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## ABSTRACT

**Objective:** To determine the number and nature of publications on Indigenous health in Australia, Canada, New Zealand and the United States) in 1987–1988, 1997–1998 and 2001–2003.

**Data sources:** MEDLINE and PsychLit databases were searched using the following terms: Aborigines or Aboriginal; Torres Strait Islander; Maori; American Indian; North American Indian, or Indian, North American; Alaska/an Native; Native Hawaiian; Native American; American Samoan; Eskimos or Inuit; Eskimos or Aleut; Metis; Indigenous.

**Study selection:** Publications were included if they were concerned with the health of Indigenous people of the relevant countries. 1763 Indigenous health publications were selected.

**Data extraction:** Publications were classified as either: original research; reviews; program descriptions; discussion papers or commentaries; or case reports. Research publications were further classified as either measurement, descriptive, or intervention. Intervention studies were then classified as either experimental or non-experimental.

**Data synthesis:** The total number of publications was highest in 1997–1998 for most countries. The most common type of publication across all time periods for all countries was research publications. In Australia only, the number of research publications was slightly higher in 2001–2003 compared with other time periods. For each country and at each time, research was predominantly descriptive (75%–92%), with very little measurement (0–11%) and intervention research (0–18%). Overall, of the 1131 research publications, 983 were descriptive, 72 measurement and 76 intervention research.

**Conclusions:** The dominance of descriptive research in Indigenous health is not ideal, and our findings should be carefully considered by research organisations and researchers when developing research policies.

MJA 2006; 184: 502–505

Improving the health of Indigenous populations is a stated priority in Australia, New Zealand, Canada and the United States[1-4] Health research can make a major contribution to our understanding of Indigenous health issues, and provide evidence to guide Indigenous health practices. The extent to which this is possible will depend on the quantity and quality of available evidence.[5,6]

There is no agreed mechanism to evaluate the contribution of research to improving health outcomes. The extent to which research results are translated into policy and practice or contribute to an improvement in health status are important indicators, but are difficult to measure accurately. Simpler and more commonly used measures include the amount of research resources allocated, number of publications, number of publications of particular research types and research quality.[7]

Defining the type of research that may contribute most to improving knowledge and practice in the Indigenous health field is conceptually and politically problematic. One classification of research output includes three categories: studies oriented to developing valid, reliable and culturally appropriate measures (measurement studies); descriptive studies that describe the size and nature of health and illness issues; and intervention studies that focus on the effectiveness and acceptability of interventions.[8,9]

The number of measurement, descriptive and intervention research publications in the Indigenous health field across time provides an indication of whether research efforts have progressed beyond describing Indigenous health issues to providing data on how to facilitate positive change.[1,5,10-12] Initially, it might be expected that there would be an emphasis on establishing robust and acceptable measurement tools that could be used in any research. The data obtained from descriptive work would be expected to generate hypotheses and correlational data about the relationship between variables, prevalence and high-risk populations. The highest quality of evidence for intervention effects comes from experimental studies and, collectively, this evidence can indicate causality.

Our article examines differences over time (1987–1988, 1997–1998 and 2001–2003) in the number and nature of Indigenous health publications in Australia, Canada, NZ and the US. We examined three hypotheses:

- That the total number of publications concerned with Indigenous health, and the number of original research publications would increase over time for each country.
- That the allocation of research publications to measurement, descriptive and intervention studies would differ between time periods, with larger numbers and proportions of intervention publications in 2001–2003, reflecting increasing efforts to examine the effectiveness of treatments.
- That intervention studies would predominantly use non-experimental designs, given the difficulties of undertaking experimental trials in this area.

## METHODS

### Data sources

We searched the MEDLINE and PsychLit databases to locate publications concerning the health of Indigenous populations of Australia, Canada, NZ and the US during the periods 1 January 1987 to 31 December 1988, 1 January 1997 to 31 December 1998, and 1 November 2001 to 30 November 2003. Citations that included the following terms in either the title, abstract, article or MeSH heading were selected: Aborigines or Aboriginal; Torres Strait Islander; Maori; American Indian; North American Indian, or Indian, North American; Alaska/an Native; Native Hawaiian; Native American; American Samoan; Eskimos or Inuit; Eskimos or Aleut; Metis; Indigenous.

### Inclusion and exclusion criteria

Citations were used to select publications about Indigenous people of one or more of the countries in question, and that were related to health. Historical articles or genetics articles related to anthropology or evolution, rather than health, were excluded. Studies dealing with two or more countries were counted for each country.

The remaining health-related publications were included if: research participants were all or predominantly Indigenous (according to sample descriptions); and/or Indigenous and non-Indigenous groups were compared; and/or ethnicity was used as a predictor; and/or the research examined non-Indigenous participants' attitudes, knowledge, skills or behaviour with respect to Indigenous health issues. Studies that included Indigenous people but did not analyse the results for this group separately were excluded. Publications that did not report research results were retained if the primary topic related to Indigenous health, or if differences in health status between Indigenous and non-Indigenous people were a key component.

### Data extraction

One author coded all the publications, and 100 publications were randomly selected for classification by another author; there was at least 90% agreement between the authors on all categories used.

### Classification of publications

The publications were initially classified as:

- *Original research — data based:* Data or new analysis of existing data relating to health issues for Indigenous people.
- *Reviews:* Summaries or critical reviews of work in the field.
- *Program description:* Descriptions of methods or processes undertaken for an Indigenous health project. This category included articles that described an intervention or health initiative being applied, or that had the potential to be applied, but in which no data-based evaluation was reported.
- *Discussion papers or commentaries:* Editorials, comments, letters, news or interviews. These articles did not present original data or describe a specific research project or intervention. The category included general articles on Indigenous health, and recommendations of task forces or committees.
- *Case reports:* Articles in which the publication description indicated that it was a case report.

All research publications were then further classified into one of the following categories:

- *Measurement research:* Publications that developed or tested a measure for use in Indigenous populations, or a measure concerned with Indigenous health issues. This category included research examining the measurement qualities of a clinical screening or diagnostic tool, and questionnaires assessing variables such as health risk behaviours or attitudes.
- *Descriptive research:* This category included epidemiological studies where the primary aim was to explore the frequency or patterns of disease, risk factors, or variables that may be related to health (such as knowledge, attitudes or health care service use), at a community or population level. It also included studies where the aim was to explore the aetiology, mechanism of operation (including genetic mechanisms responsible for a disease), clinical manifestations or treatment patterns for a disease.
- *Intervention research:* This category included publications in which the aim was to test the effectiveness of a clinical or public health intervention among Indigenous people. Examples included trials of medications, immunisation, screening, or education programs. This category also included research where the aim was to examine the impact of interventions designed to alter health-related knowledge, attitudes or behaviours, or to improve health care delivery.

If a publication focused on both descriptive and intervention issues, it was classified as intervention research. If it focused on both measurement and descriptive issues, it was coded as measurement research.

Intervention articles were classified as randomised controlled trial; non-randomised controlled trial; cohort/longitudinal analytic study; case–control study; single-group design (either pre–post measurement or post intervention measurement only, no control group); and other. Randomised and non-randomised controlled trials were considered "controlled experimental designs", while all other designs were considered "non-experimental". As there were few intervention studies, data for the countries were combined.

## RESULTS

### Did the number of publications increase over time?

The Box shows the total number of Indigenous health publications, and the publications of different types, by country and time period. The number of publications was higher in 2001–2003 than in the previous time periods for the US only. When totalled across all time periods, research articles comprised the largest group (1131 of the 1731 publications), and discussion papers or commentaries the second largest (393). The number of published research articles was highest in 2001–2003 only in Australia; the number of research articles for Canada, NZ and the US was highest in 1997–1998.

### Was there a change in the type of research publications over time?

The Box also shows the number and proportion of publications classified into measurement, descriptive and intervention subcategories, by country and time period. Overall, published research was predominantly descriptive (983 of the 1131 publications). There were 76 intervention research articles published over the four countries across all time periods; most of these came from the US and Australia (38 and 27, respectively).

$\chi^2$ Tests were used to examine associations between type of research (measurement, descriptive, intervention) and time (1987–1988, 1997–1998, 2001–2003), for each country. The distribution had not changed significantly over time for any country ($P < 0.05$).

### Did intervention studies use predominantly non-experimental research designs?

Of the nine intervention studies in 1987–1988, five were controlled experimental designs (two randomised controlled trials, three non-randomised controlled trials) and four were non-experimental designs (two single-group designs; two described only process variables or components of the intervention delivered rather than outcomes). Of the 36 intervention studies in 1997–1998, nine (25%) were controlled experimental designs (five randomised controlled trials, four non-randomised controlled trials) and 27 were non-experimental designs (four cohort or longitudinal studies, one case–control study, 22 single-group designs). Of the 31 intervention studies in 2001–2003, three were controlled experimental designs (randomised controlled trials) and 28 were non-experimental designs (15 longitudinal studies, two case–control studies, 11 single-group designs).

**Number of Indigenous health publications in 1987–1988,* 1997–1998† and 2001–2003‡ and number (%) in the measurement, descriptive and intervention subcategories of original research publications**

| | Original research | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | All | Measurement | Descriptive | Intervention | Review | Description of program | Discussion papers | Case report | Total |
| Australia | | | | | | | | | |
| 1987–1988 | 19 | 2 (11%) | 17 (89%) | 0 | 1 | 1 | 5 | 2 | **28** |
| 1997–1998 | 80 | 6 (7%) | 60 (75%) | 14 (18%) | 7 | 5 | 73 | 2 | **167** |
| 2001–2003 | 101 | 9 (9%) | 79 (78%) | 13 (13%) | 18 | 11 | 15 | 2 | **147** |
| Canada | | | | | | | | | |
| 1987–1988 | 53 | 2 (4%) | 49 (92%) | 2 (4%) | 7 | 5 | 38 | 4 | **107** |
| 1997–1998 | 65 | 0 | 61 (94%) | 4 (6%) | 0 | 2 | 24 | 1 | **92** |
| 2001–2003 | 51 | 5 (10%) | 45 (88%) | 1 (2%) | 12 | 6 | 12 | 1 | **82** |
| New Zealand | | | | | | | | | |
| 1987–1988 | 22 | 1 (5%) | 21 (95%) | 0 | 0 | 3 | 11 | 0 | **36** |
| 1997–1998 | 51 | 2 (4%) | 47 (92%) | 2 (4%) | 2 | 1 | 19 | 2 | **75** |
| 2001–2003 | 32 | 3 (9%) | 27 (84%) | 2 (7%) | 5 | 1 | 20 | 1 | **59** |
| United States | | | | | | | | | |
| 1987–1988 | 123 | 6 (5%) | 110 (89%) | 7 (4%) | 12 | 18 | 70 | 7 | **230** |
| 1997–1998 | 276 | 12 (4%) | 248 (90%) | 16 (6%) | 17 | 9 | 53 | 6 | **361** |
| 2001–2003 | 258 | 24 (9) | 219 (85%) | 15 (6%) | 30 | 30 | 53 | 7 | **379** |
| **Total** | **1131** | **72 (6%)** | **983 (87%)** | **76 (7%)** | **111** | **92** | **393** | **35** | **1763** |

* 1 January 1987 to 31 December 1988. † 1 January 1997 to 31 December 1998. ‡ 1 November 2001 to 30 November 2003.

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## DISCUSSION

We examined broad patterns of published research output related to Indigenous health over defined time periods. This approach has limitations. Using two health publication databases and discrete time frames, for reasons of feasibility, may have influenced the results. Work in the Indigenous health field may be published elsewhere. However, publishing in journals remains the most common method for disseminating research findings, and searching the scientific literature is often the first source for compilation of national and international evidence. Research published in the scientific literature is usually peer reviewed, increasing the probability that it will meet minimal scientific standards. The time frames we selected might reasonably allow for any changes in patterns of research methods and numbers of publications to be observed.

Our findings show a consistent pattern. There has been an increased volume of Indigenous health publications and original research publications for the time periods after 1987–1988. The number of research papers on Indigenous health varied across countries. Almost 300 were published in the US in 1997–1998 and 2001–2003. The most marked increase in total number of articles occurred in Australia. This may reflect calls for, and funding of, relevant Indigenous health research in Australia.[2,11] However, in contrast to NZ, Canada and the US, there has been no apparent improvement in life expectancy for the Indigenous population in Australia.[1,13]

While the number of intervention research publications was higher in 1997–1998 and 2001–2003 for all countries except Canada, the proportional allocation to this type of research can be argued to be small. Most of the publications were descriptive. Contrary to our second hypothesis, the proportion of intervention publications in 2001–2003 was not higher than in 1987–1988.

Funding agencies and researchers should reflect critically on this pattern. The need for descriptive research is clear,[14] but the continued predominance of descriptive research may not maximise potential research benefits.[2,10-12] In 2001–2003, there were only 35 intervention-focused studies on the health of Indigenous people from the four countries. Australia produced almost the same number of intervention studies as the US, despite our smaller research budget. While Indigenous health research in Australia appears to be moving towards more intervention-focused work, at least 78% of published studies in 2001–2003 were descriptive.

The small number of studies that addressed measurement issues in any of our three time periods is also concerning. Without methodologically robust and culturally acceptable measurement tools, the accuracy of research findings can be questioned. The failure to use standardised and accurate measurements also makes comparison across studies difficult.

Descriptive publications may dominate for a number of reasons. Such work may be easier and quicker to conceptualise, complete and publish than intervention research and, in some cases, than efforts to develop adequate measures. Descriptive research, which can involve the analysis of large datasets which are much easier for researchers to access and engage with than communities, may also cost less to complete and may be more likely to result in publication. Intervention studies that produce a negative result may be more difficult to publish. Additionally, there are political and pragmatic challenges associated with identifying and engaging Indigenous people and communities to collaborate in health interventions. It can also be argued that the use of experimental trials poses significant design, pragmatic, cost and ethical issues when attempting to undertake health-based interventions in Indigenous communities.[15-19] Substantial budgets are required when the interventions designed and trialled are multistrategic and applied to whole communities — a desirable approach when the objective is to change health-related outcomes at a population level. In Australia, scientific bodies, like the National Health and Medical Research Council's Aboriginal and Torres Strait Islander Research Agenda Working Group, have been involved in discussions with Indigenous communities to address the challenges associated with engaging Indigenous communities in health-related research and have set intervention research as a priority.[20]

The predominance of "researcher-driven" or "fundamental", rather than "strategic" or "development and evaluation", health research funding systems may also play a role in determining what type of research is conducted. It has been argued that strategic research, specifically designed to provide evidence-based data derived from intervention research, should guide health policy and practice.[5]

The need to improve the health outcomes of Indigenous populations has been acknowledged.[1] Our analysis indicates a consistent dominance of descriptive research in the Indigenous health field over time. While descriptive research provides valuable information on health patterns and determinants, it does not provide direct evidence on how to create change, and does not produce change as it occurs. Increased focus on intervention research may provide more direct assistance in both understanding how to produce change and in improving Indigenous health outcomes.

Changing long-standing research patterns will require both commitment and action from a range of stakeholders including researchers, research organisations (including universities), research funding agencies, governments, Aboriginal organisations and communities.

## ACKNOWLEDGEMENT

This research was supported by a grant from the National Health and Medical Research Council of Australia.

## COMPETING INTERESTS

None identified.

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*(Received 8 Sep 2005, accepted 23 Mar 2006)* ❑