

# Health Expenditure, Income and Health Status Among Indigenous and Other Australians

M.C. Gray, B.H. Hunter and J. Taylor



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# Foreword

This monograph has its genesis in an approach made to the Centre for Aboriginal Economic Policy Research (CAEPR) by the Australian Institute of Health and Welfare (AIHW). CAEPR was asked to undertake an analysis of 1995 National Health Survey data as input to the AIHW's second report on expenditures on health services for Aboriginal and Torres Strait Islander people. This approach was made late in 1999, and agreement to undertake the work was completed early in 2000. The AIHW's report *Expenditures on Health Services for Aboriginal and Torres Strait Islander People, 1998–99* (AIHW cat. no. IHW 7) was published in 2001, but it did not include the CAEPR analysis. This delay was outside CAEPR's control and resulted from a series of unexpected delays in data acquisition and processing. This meant that CAEPR's analysis was only completed late in 2001; it was agreed by AIHW and the Office of Aboriginal and Torres Strait Islander Health in the Commonwealth Department of Health and Ageing that the CAEPR analysis should be published and widely disseminated as a late companion to the AIHW publication. The support of the Office of Aboriginal and Torres Strait Islander Health in facilitating this publication is gratefully acknowledged.

CAEPR's specific task was to analyse and report on health expenditures on Aboriginal and Torres Strait Islander people in comparison with expenditures on other Australians of similar socio-economic status. Two key relationships are explored—between expenditures and the distribution of equivalent family income, and between expenditures and health status. At one level, the findings extend the analysis in the report *Expenditures on Health Services for Aboriginal and Torres Strait Islander People* by J. Deeble, C. Mathers, L. Smith, J. Goss, R. Webb and V. Smith, published in 1998. In particular, access to 1995 National Health Survey (NHS) data provided an opportunity for more meaningful analysis of income relativities, with an added link to health status, because of the inclusion in the 1995 NHS of an Indigenous identifier for the first time.

This monograph is published in the CAEPR Research Monograph Series in part because it appears later than the second AIHW report, and in part because it utilises an established channel of publication which targets Indigenous interest groups, as well as the academic community and policy makers. Though written as a stand-alone document, its value is enhanced if read as a companion to the second AIHW report. As such, it reflects a positive outcome of collaboration between CAEPR and two government agencies (AIHW and the Office of Aboriginal and Torres Strait Islander Health in the Department of Health and Ageing), with important consultancy assistance also from the ABS.

I commend the monograph's authors, Matthew Gray, Boyd Hunter and John Taylor, for their perseverance and research commitment when faced by unanticipated hurdles, and believe this research outcome, while a little late, will be of great value in the general area of Indigenous health policy and research.

Professor Jon Altman  
Director, CAEPR  
August 2002



## Acknowledgments

Preparation of this report was commissioned by the Australian Institute of Health and Welfare (AIHW) and conducted under its guidance, as well as that of the 2nd Expenditure Report Steering Committee convened by the Office of Aboriginal and Torres Strait Islander Health (OATSIH) in the Department of Health and Ageing. Accordingly, considerable institutional input and assistance require acknowledgment. First of all, we are indebted to John Goss and Justine Boland of the AIHW for their interest and assistance in pursuing this analysis, and for perceptive comments on various drafts. Second, thanks are due to Helen Evans and Alison Killen of OATSIH for their sustained interest and for facilitating publication. Valuable comments on drafts from steering committee members were provided by the National Aboriginal Community Controlled Health Organisation, AIHW, and OATSIH. Others who provided helpful comment on the report included Beverly Sibthorpe and John Deeble from the National Centre for Epidemiology and Population Health, Steven Kennedy of the Australian Bureau of Statistics (ABS) and Roger Jones of the Centre for Aboriginal Economic Policy Research (CAEPR). Particular mention should also be made of the technical assistance provided by Stephen Carlton, Tenniel Guiver, Tony Lloyd, and Daniel Smith of the ABS in accessing unit record data from the 1995 National Health Survey. A draft of this paper was presented in the CAEPR seminar series, and again to the Economics and Indigenous Australian Health Workshop held at the University of Melbourne between 29 and 30 November 2001. Our sincere thanks to all the participants of those two forums. Any errors in the paper are the sole responsibility of the authors. Editorial assistance was kindly provided by Hilary Bek and Frances Morphy.



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# Abbreviations and acronyms

|        |  |
|--------|--|
| ABS    | Australian Bureau of Statistics                        |
| AIFS   | Australian Institute of Family Studies                 |
| AIHW   | Australian Institute of Health and Welfare             |
| AR–DRG | Australian Refined – diagnosis related group           |
| ATSIC  | Aboriginal and Torres Strait Islander Commission       |
| BEACH  | Bettering the Evaluation and Care of Health            |
| CAEPR  | Centre for Aboriginal Economic Policy Research         |
| CHINS  | Community Housing and Infrastructure Needs Survey      |
| CHIP   | Community Housing and Infrastructure Program           |
| DRG    | diagnosis related group                                |
| GP     | general practitioner                                   |
| HREOC  | Human Rights and Equal Opportunity Commission          |
| HIPP   | Health Infrastructure Priority Project                 |
| ICD    | International Classification of Diseases               |
| NAHS   | National Aboriginal Health Strategy                    |
| NATSIS | National Aboriginal and Torres Strait Islander Survey  |
| NCEPH  | National Centre for Epidemiology and Population Health |
| NHS    | National Health Survey                                 |
| OATSIH | Office of Aboriginal and Torres Strait Islander Health |
| OECD   | Organisation for Economic Cooperation and Development  |
| PBS    | Pharmaceutical Benefit Scheme                          |
| SLA    | statistical local area                                 |
| SRS    | simple random sampling                                 |
| SMR    | standardised morbidity ratio                           |



## Executive summary

Using data from the 1995 NHS this report asks the question—what is the relationship between income, health expenditure and health status for the Indigenous and non-Indigenous populations? The analysis seeks to measure differences in health expenditure and reported health status between the Indigenous and non-Indigenous populations holding income level constant. This is important to the extent that income is seen as an indicator of ability to address the need for health expenditure, and as a factor in influencing health status. A previous study of the relationship between income and expenditure on health found that Indigenous people were in receipt of expenditure equivalent to others in a similar economic position. As for the relationship between income and Indigenous health status, no previous analysis has ever been undertaken. The expectation, though, from the international literature is that income and health status are positively related.

The key findings from this study were as follows:

- The data refer to Indigenous and non-Indigenous populations in non-sparsely settled areas only. As such, they do not claim to be representative of the situation Australia-wide, especially in regard to the Indigenous population. They reflect the circumstances of the 82 per cent of the Indigenous population located in non-sparsely settled areas.
- Notwithstanding the above, use of 1995 NHS data enables direct comparison between Indigenous and non-Indigenous Australians with respect to the links between income status, health expenditure and health status for the first time.
- Previous studies have only managed to estimate the relationship between income status and expenditure. For this the Henderson measure of equivalent income was employed.
- The present study indicates the importance of developing a range of measures of equivalent income, as substantial differences in relative income distribution are evident depending on the measure used. In order to simplify the analysis, people are ranked by income and classified into quintiles (i.e. an income group with 20 per cent of the population).
- Per capita health expenditure on Indigenous people living in non-sparsely settled areas is estimated to be \$2734 in 1995 (i.e. only for the comparable areas of health expenditure examined). This is some \$500 higher than the estimate of \$2277 for non-Indigenous people.
- This expenditure gap between Indigenous and non-Indigenous people is not statistically significant. However, if spending on hospitals is excluded (due to unreliability), then Indigenous per capita expenditure is significantly lower (\$930 compared with \$1351).
- As found in other Western countries, non-Indigenous health expenditure is significantly higher for low-income or poorer families. In contrast, no significant relationship between income and per capita health expenditure was found for Indigenous people.

- According to the NHS measure of health service utilisation (whether used a health service in the previous two weeks), Indigenous people were found to use health services much less than other Australians despite experiencing higher rates of morbidity and mortality.
- In line with expectation, the NHS data reveal a significantly positive relationship between non-Indigenous income and reported health status.
- While Indigenous people were more likely to report being in poor or fair health than other Australians for each income group, more striking was the lack of significant difference in self-reported health status between low and high-income Indigenous families.
- This lack of relationship remained even after adjusting for age difference between the low and high-income Indigenous families.

### **Equity issues: comparing like with like**

A good deal of attention is devoted in this report to establishing appropriate measures of income for the purpose of comparing Indigenous and non-Indigenous outcomes. Because the family circumstances of Indigenous Australians are so different from that of other Australians, simply comparing families with similar income is misleading. For example, if spending (either in health or other expenditure) enhances the well-being of all family members, then expenditure can be said to provide ‘public goods’ within the family. Alternatively, expenditure may provide purely private benefits for a particular family member, depending on whom (or even on what) the money was spent. The approach adopted is to use several measures of equivalent income which cover the range of possible assumptions about family circumstances from all expenditure being on public goods (raw income) to the other extreme where all expenditure is on private goods (per capita income). As with previous analysis of Indigenous health expenditure, the Henderson measure of equivalent income is also used.

Examination of the overall distribution of Indigenous income illustrates why it is important to consider alternative definitions of income. While Indigenous people are over-represented in the 20 per cent of Australian families with the lowest income (the bottom quintile), there are large differences between the alternative measures of income. For example, over one-half of Indigenous families are in the bottom quintile of per capita income compared with less than 30 per cent in the bottom quintile of raw family income. Furthermore a detailed analysis of Indigenous income indicates that there is substantial re-ranking within income quintiles, with as many as one-third of families changing income group when different income measures are used.

## **Estimating per capita health expenditure by income—method and data issues**

In principle, the best way to obtain estimates of per capita health expenditure by income is to collect individual-level information on the usage and associated costs of health services, income, Indigenous origin, age and gender. Unfortunately no such Australian data exist, and we are therefore forced to combine estimates of utilisation rates of health services (for each income and demographic group) from the 1995 NHS with the average costs of medical services estimated from a variety of administrative and survey data sources. The following health services are included in the estimates of per capita health expenditure by equivalent income:

- out-of-hospital visits to general practitioners or medical specialists;
- other health professional services;
- admitted hospital patient services;
- non-admitted hospital patient services;
- prescription medications; and
- over-the-counter medications.

The 1995 NHS contains information on 53 751 Australians of all ages and is representative of those living in all areas. It is important to note, however, that due to concerns about the quality of some of the responses from Indigenous participants who do not speak English at home, the estimates in this report exclude Indigenous and non-Indigenous people living in sparsely settled areas. In total, 539 records from survey participants in such areas were excluded, of which 461 were Indigenous. Thus, the final Indigenous sample upon which all NHS data contained in this report are based amounted to the 1753 respondents in non-sparsely settled areas. The estimates show that the Indigenous sample was representative of 82 per cent of the Australia-wide Indigenous population.

One drawback of the 1995 NHS is its inability to separate health expenditure into private and public components. Unlike the 1989 NHS which asked about hospital utilisation in the previous twelve months, the 1995 NHS asked about hospital utilisation in the previous two weeks. As a consequence, there were insufficient reported visits to hospitals to provide for the estimation of private and public hospital utilisation rates by equivalent income. Furthermore the 1995 hospital data were found to be unreliable, being based on a handful of respondents, especially for the high-income Indigenous population.

Another important caveat is that, by estimating health expenditure via the utilisation of health services recorded in the NHS, an important element of public health expenditure is excluded from the analysis—spending on the provision of environmental health infrastructure.

## **Per capita health expenditure by income and Indigenous origin**

Our estimate of per capita health expenditure for Indigenous people living in non-sparsely settled areas is \$2734, which is around \$500 higher than the estimate of \$2277 for non-Indigenous people. However, the estimates of per capita health expenditure are quite variable, and this difference between Indigenous and other Australians is not significant. When the unreliable hospital data are excluded, per capita health expenditure on Indigenous people is estimated to be significantly lower than the non-Indigenous average (\$930 and \$1351 respectively).

The expenditure for each income group reveals a similar pattern, with Indigenous expenditure being higher, albeit insignificantly higher, before hospital data are excluded. This pattern is reversed when the focus is on non-hospital related expenses, with Indigenous expenditure being significantly lower irrespective of family income.

Consistent with the international literature, non-Indigenous health expenditure is, on the whole, significantly higher for low-income or poorer families. In contrast, there is no significant relationship between income and per capita health expenditure for Indigenous people.

In order to test whether this apparent anomaly is due to the reliability of aggregate estimates of per capita expenditure, the utilisation of health services is estimated for each income group. The same story is replicated with no significant relationship between income and utilisation for the Indigenous population, except perhaps when the per capita income measure is used. For the non-Indigenous population, there is a significant relationship for most measures of income (except the Henderson measure) with lower-income families being slightly more likely to have used a health service in the previous two weeks. On average, the levels of utilisation reveal that, whatever the family income, Indigenous people use health services much less than other Australians, despite experiencing higher mortality and morbidity.

## **Health status by equivalent income**

In line with expectations, the NHS data reveal a significantly positive relationship between non-Indigenous income and reported health status. While Indigenous people were more likely to report being in poor or fair health than other Australians for each income group, the more interesting finding was the lack of significant difference in self-reported health status between low and high-income Indigenous families. Why should there be a different relationship between the Indigenous and non-Indigenous populations? One possibility is that there is a difference in the patterns of self-assessed health status between Indigenous and non-Indigenous Australians, although this runs counter to research findings to date for populations in non-remote areas. Another possibility is that differences in self-reported health status may be partly explained by difference in age structure between the two populations, given that health status generally declines for older people. To test for this, the data are age-standardised. This involves adjusting the Indigenous statistics using the

age distribution of the non-Indigenous population as weights. When this is done, there is still no relationship evident between income and health status for the Indigenous population, except when the measure of raw income is used.

## **Discussion**

Difference in the relationship between health expenditure and income for Indigenous and other Australians is at least partially attributable to the more uniform poor health status of the former across income groups. While the lack of any association between income and Indigenous health status may simply reflect poor data quality, both in terms of income and self-assessed health status, there are two other possible explanations for the results: the Barker and social exclusion hypotheses.

The Barker hypothesis refers to the idea that adult mortality and morbidity may be related to foetal and infant life. In particular, it is proposed that diseases such as coronary heart, type 2 diabetes, central obesity and hypertension (all highly prevalent among Indigenous adults) originate through adaptations that the foetus makes to under-nutrition. Given the trajectory of Indigenous economic development since the 1960s, it is arguable that the present generation of Indigenous people in the upper income quintiles are far more likely than their non-Indigenous counterparts to have been exposed to the trifecta of low birthweight, poor nutrition and childhood disease that can reap such havoc in later life.

An alternative explanation to the Barker hypothesis is that current income is probably a poor proxy for socio-economic status among Indigenous people because they have been, and continue to be, socially excluded from mainstream society, irrespective of income. The main implication of both the Barker and social exclusion hypotheses (albeit for different reasons) is that it will take a long time to address the health deficits among Indigenous Australians. While the Barker hypothesis implies that there is a need to concentrate health expenditure on mothers and babies, the social exclusion hypothesis emphasises the need for ongoing support from both the community and governments across the entire lifecycle.