

BODE³ Research Group Position Statement on Health Inequality and Equity: How we Conduct Research and Report Results

Prepared by the BODE³ Research Group in April 2019 (albeit with plans to further update this document in the future)

Background

The Burden of Disease Epidemiology, Equity and Cost-Effectiveness Programme (BODE³) has as its aim: “To estimate health and wider societal gains, costs, cost-effectiveness and equity impacts of preventive interventions, and build capacity in modelling of preventive interventions.”

This suggests a need for a conceptual understanding and approach to health inequality, health equity, and how BODE³ conducts research and reports its results. This document serves the purpose of a Position Statement, albeit one we hope to regularly update.

Definitions of health inequality and health equity

First, it is important to differentiate (in)equality and (in)equity. “Inequality” is simply a statement of difference, eg, “male mortality rates are twice as high as female mortality rates”. It is sometimes akin to the terms “health differences” and “health disparities”. It can be used to describe any form of health inequality, be it by sex, age, ethnicity, socio-economic position, or region.

Health (in)equity is different. It incorporates considerations of *fairness* and *justice*. It requires considerations of philosophy, justice, and competing dimensions of equity. Regarding the latter, it is inevitable that there will be conflict between equity (however defined) on different dimensions. For example, New Zealand’s (NZ) programme of providing free fruit to schools in deprived areas (because of greater health need), can be simplistically regarded as competing with the (arguably naïve) expectation of equal provision of government-funded services to all citizens.

BODE³ recognises that there are a variety of definitions of health equity (eg, by Sen,¹ Whitehead,² and Braveman & Gruskin³). We accept that any analysis and reporting we do is only a partial picture of inequality and inequity aspects relating to the research that we undertake. Nevertheless, we are able to examine some aspects of inequality in the BODE³ Research Group, and to potentially discuss issues relating to inequities. The remainder of this Position Statement turns to the pragmatics of how we conduct research and how we report on it.

Considering inequalities for who?

Age: Owing to the nature of the research conducted within BODE³, we typically examine differential impacts by age and sex as a default (ie, virtually all results include at least some stratification by age and sex). We recognise that our use of quality-adjusted life-years (QALYs) has potentially problematic aspects with regard to age. That is, while gaining a QALY as a child from morbidity reduction interventions is much the same as that for the elderly (albeit with an adjustment for background morbidity), there is a marked difference in QALY gain between these groups when deaths are prevented. That is preventing the death of a 5-year-old may result in the gain of 80 QALYs whilst preventing the death of an 80-year-old may result in the gain of only 5 QALYs (when putting aside discounting). We recognise that there are no relevant NZ data (ie, surveys, citizen juries, or consultation via hui), that indicates if NZ society or communities within it, would agree with this approach (an important deficit in the NZ research literature). Nevertheless, we use this approach because QALYs are a widely used metric internationally and because it allows for improved decision-making via comparisons with the many other studies using this metric. Indeed, we have collated hundreds of these interventions already for comparison purposes (at least for Australia and NZ) in our online league table.⁴ We also use by default a 3% discount rate (albeit with a range from 0-6% in sensitivity analyses), that addresses time preferences from one perspective.

Sex: As referred to above, we nearly always examine differential impacts by sex (except for interventions focused only on preventing/treating diseases that are primarily sex-specific, such as breast cancer). We recognise that inequalities by sex are often important and should be discussed, particularly where they are related to preventable health burdens (eg, the readily preventable burden of alcohol-harm that is particularly borne by men, while the readily preventable burden of tobacco-related harm is particularly borne by Māori women). Of note is also the need to consider appropriate quality of life issues. Just because an intervention improves female life-expectancy, this may not necessarily mean an increase in *quality-adjusted life expectancy* (QALEs), due to high levels of background morbidity in older women compared to men.

Ethnicity: We believe that there is an ethical imperative to study and reduce both ethnic inequalities and inequities in health. Ethnic inequalities in health in Aotearoa New Zealand are large, inequitable, and (to a substantive degree) preventable. As a Research Group based in Aotearoa New Zealand, we recognise the strong obligation of the health sector and health researchers to examine impacts for Māori under the Treaty of Waitangi. As part of our Treaty obligations, the majority of the research we produce provides results for both Māori and non-Māori. Furthermore, we note that numerous causes of these health inequalities and inequities be readily prevented eg, by addressing the hazardous/obesogenic food environment, and other upstream determinants of socio-economic inequalities. Even the ongoing legacy of harm from colonisation can be partly addressed (eg, by just Treaty Settlements and the country better adhering to Treaty of Waitangi obligations). Ultimately we also aim to include other ethnic groups in our modelling work (eg, Pasifika and Asian).

Socio-economic position: At the time of writing, we are still exploring adapting our modelling machinery to produce results by deprivation level ie, NZDep (a well-established small area measure of deprivation⁵). Incorporating socio-economic position into modelling introduces a wide range of challenges, not least due to changing socio-economic position over time, and is therefore highly resource demanding. Moving forwards, we will however, continue to prioritise examining inequalities by age, sex, and ethnicity.

Intergenerational aspects: Most models in BODE³ involve closed cohorts so intergenerational issues don't arise directly. Nevertheless, we are starting to capture one relevant aspect in our modelling: the amount that particular dietary and physical activity interventions may reduce greenhouse gases (which are relevant to climate disruption – both now and in the far distant future). We also recognise that ideal modelling work would give more focus to the intergenerational issues. Eg, how a tobacco control intervention at one point in time (a large tobacco tax increase on 1 January) – might have intergeneration impacts within the timeframe of only a year (ie, healthier infants as a result of reductions in the tobacco burden on women in the reproductive age-group). There are also potentially preventable intergenerational impacts on children when a parent dies prematurely or is burdened with a serious chronic condition.

When we do not report inequality analyses

We do not always report inequality analyses. For example, sometimes there is just too much missing data, or uncertainty, about relevant parameters eg, by ethnicity. For example, these data limitations around disease parameters and ethnicity occurred with a modelling study for screening for abdominal aortic aneurysm (Nair et al, in press, April 2019). Thus, we report only when the authors are confident that results have meaning and (reasonable) accuracy by the relevant social grouping. Differences in health cost impacts are also sometimes not reported by ethnicity by BODE³ because these can be too difficult to interpret (eg, are apparent cost differences reflecting culturally inappropriate service provision or issues around the burden of co-morbidities etc).

How do we report results of inequality analyses?

For ethnic inequalities (Māori/non-Māori) and for socio-economic inequalities we aim to routinely report age-standardised differences using the WHO standard since the age-structure of the relevant population groups differ (in addition to non-age-standardised differences). Of note is that when we present a metric (ie, QALYs gained, net costs) across a wide age range, this metric still has some merit without age-adjustment. Eg, it represents the *actual* QALYs we expect with current age-distributions in society.

For ethnic inequalities we also include “equity-adjusted” results whereby we use non-Māori background mortality and morbidity rates for Māori.^{1*} This allows for consideration of the results in the situation of there being no background health inequities – in a sense we are saying if Māori were not penalised by existing health inequities, what would the results be? More detail on this approach is in a publication by a Māori health expert and former BODE³ PhD candidate, Dr Melissa McLeod.⁶ Exact reporting around “equity-adjustment”, will however vary by project. Guidance is as follows:

- If the paper or publication has ethnic inequalities as a major focus, then equity-adjusted analyses should also be undertaken and reported in the main results and ideally the Abstract also. If ethnic inequalities is not the main focus, results should still be reported (eg, in a supplementary table).
- Equity-adjusted analyses may in time be presented in the BODE³ league table,⁴ under the “heterogeneity” option (which currently includes age, sex and unadjusted Māori vs non-Māori per capita health gains). But this is pending future development and user testing.
- Within projects, the reporting of results will typically be subject to Māori consultation eg, via having Māori health expert co-author/s or via established consultation processes used by BODE³ eg, Programme Advisory Group Review, Departmental colleagues etc.

Process and reporting issues

Health gain in QALYs is the main output we report. But we give consideration to also reporting incidence and mortality rates, and quality-adjusted life expectancy (QALEs).

Performing and reporting scenario analyses around intervention parameters may also be useful. For example, changing aspects of the intervention (eg, levels of coverage, age of eligibility) to identify impacts on QALYs per capita and changes in QALYs per capita from the default level. This approach can be taken to identify parameter changes (eg, in intervention reach, uptake or intensity) required to theoretically achieve equal per capita health gains for men and women or for Māori and non-Māori. Details around these types of options may be expanded in the future pending publications arising from Dr McLeod’s PhD (see the abstract of her 2018 thesis here⁷ with a complete version yet to be released).

In reporting our results we will also consider the public and media audience, and the potential value of using a simple descriptions of results such as “years of life gained” or “healthy days or months of life gained” rather than QALYs, so as to improve understanding of the model results.

^{1*} The same approach could be used for comparisons by socio-economic position (ie, using least deprived population’s mortality and morbidity rates for all socioeconomic strata). The case for using female morbidity and mortality for males is perhaps less compelling, as some of the sex difference is not socially determined.

In work with intervention modelling that has significant Māori health aspects we will consider the following (as appropriate to the topic):

1. Obtaining initial engagement (ie, a team leader or member) or design input from experts in the relevant aspects of Māori health (our BODE³ Programme Advisory Group has Māori health expertise, as does our Department, the Ministry of Health, and NGOs we work with eg, Hāpai). This can be at the initial idea stage or when formulating a draft application. This can ensure the correct framework or approach is used from the very beginning (eg, appropriate consideration of: (i) relevance to Māori; (ii) Māori as participants; and (iii) promoting the Māori voice).⁸
2. If a project does not appear to have initial relevance for Māori health – it can still be appropriate for a discussion section of a study to consider data gaps and how the inequality-reducing potential of an intervention might be better researched or achieved. If so, obtaining input from Māori health experts may again be relevant.
3. Liaising with our colleagues at Hāpai te Hauora around results dissemination (eg, media outputs that may be of interest to Māori media – as per our memorandum of understanding with Hāpai). For national level relevance it may also be necessary to liaise with the Māori health team at the Ministry of Health or with Te Puni Kōkiri.

As an example of the need for Māori health expertise to provide appropriate context are discussions around tax interventions to improve health. This is because it is relevant to consider both the benefits for reducing health inequalities but also risks around possible regressivity and financial harm (eg, for smokers who keep smoking as they need more support to be able to quit in an environment that lacks adequate tobacco control). Furthermore, in this case may be appropriate to argue that policy-makers need to do more to address the ethical problems of using tax as a health strategy when the revenue is used for general purposes and not for helping those with the health burden (eg, smokers).⁹

Conclusions

The BODE³ Research Group believes it is important to undertake research on inequalities: especially by age, sex, ethnicity and socio-economic status. In particular, we believe that there is an ethical imperative and Treaty of Waitangi obligation to study and reduce both ethnic inequalities and inequities in health in Aotearoa New Zealand. Care is needed to ensure appropriate research conduct and reporting of results in the scientific literature – hence our production of this document. But we plan to regularly update this Position Statement and so welcome feedback on it at any time and to any BODE³ Research Group member.

References

1. Anand S, Peter F, Sen A. Public health, ethics and equity. Oxford: Oxford University Press, 2004.

2. Whitehead M. The concepts and principles of equity and health. *Int J Health Serv* 1992;22:429-45.
3. Braveman P, Gruskin S. Defining equity in health. *J Epidemiol Community Health* 2003;57:254-8.
4. University of Otago & University of Melbourne. ANZ-HILT: Australia and New Zealand Health Intervention League Table (Vers 2.0) 2019 [Available from: <https://league-table.shinyapps.io/bode3/>].
5. Salmond C, Crampton P. Measuring socioeconomic position in New Zealand. *Journal of primary health care* 2012;4:271-80.
6. McLeod M, Blakely T, Kvizhinadze G, Harris R. Why equal treatment is not always equitable: The impact of existing ethnic health inequalities in cost effectiveness modelling. *Popul Health Metrics* 2014;12.
7. McLeod M. Making health equity count: Incorporating health equity for Māori into cost-utility analyses (Thesis, Doctor of Philosophy). University of Otago. 2018. Retrieved from <http://hdl.handle.net/10523/8737>.
8. Reid P, Paine SJ, Curtis E, Jones R, Anderson A, Willing E, Harwood M. Achieving health equity in Aotearoa: strengthening responsiveness to Maori in health research. *N Z Med J* 2017;130:96-103.
9. Wilson N, Thomson G. Tobacco taxation and public health: ethical problems, policy responses. *Soc Sci Med* 2005;61:649-59.