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### In this edition...

This issue of the *Australasian Epidemiologist* brings together eight papers on a range of social epidemiology issues. They cover grand thinking to clinical pathway thinking. They cover measurement to advocacy. They cover issues in Australia, New Zealand and Thailand.

Kelly et al.<sup>1</sup> provide a fascinating overview of the nutrition transition in Thailand, and what this means for health inequalities. The chronology in Thailand is a compressed version of that in Australia and New Zealand perhaps, having occurred in the context of rapid economic growth and 'westernisation'. The story is one of change in cultural and societal norms and values about diet, flowing through to high fat and energy dense-diets initially for higher socioeconomic groups followed by a switch to lower socioeconomic groups. The diagram in Kelly et al.'s paper<sup>1</sup> is depressing, suggesting a state of permanently elevated levels of obesity and diet-related diseases among lower socioeconomic groups after higher socioeconomic groups have transitioned through a temporary aberration. This seems unduly pessimistic; a role of epidemiology is to articulate, explain and predict the societal determinants of health and health inequality, with the long term aim of influencing future health. The somewhat visible hand of the food industry and transnational corporations is evident in the analysis of Kelly et al.<sup>1</sup> and to any recent visitor to Thailand walking the streets and observing the influx of fast food retailers and energy-dense food alternatives. The role of trade, and trade agreements, in determining diet and health inequalities is also a major issue in the Pacific Islands. Civil society faces a challenge to make the food industry playing field tip towards healthy diets; Kelly et al.<sup>1</sup> recommend that 'fresh food markets for meeting the nutritional needs of lower socioeconomic groups can be supported by the Thai government and associated planning bodies.'

Friel<sup>2</sup> also focuses on macro-level processes, asking the question 'does government care?' Friel<sup>2</sup> does not answer her rhetorical question directly; we can only assume she has a bet each way. The current Australian Government (or at least its immediate predecessor of the previous term), has prepared many policy options and plans, including the National Preventative Health Taskforce (NPHT) that 'did move the dialogue beyond individual responsibility and spoke to matters to do with building healthy environments and settings and measures of market regulation and taxation.' Friel then raises a tricky issue: 'Encouragingly the NPHT made recommendations to close the health gap between Indigenous and non-Indigenous Australians and reduce health inequities by targeting disadvantaged groups. This is unfortunate given that a whole of population approach is considered a better way to reduce the social gradient in health risks and outcomes.' In the context of ethnic inequalities in health in New Zealand, particularly Māori non-Māori

inequalities in health, the debate of universalism versus targeting (or perhaps separate Māori by Māori for Māori services) has been close to the surface of academic and policy debate for some time. Some element of tailoring, if not targeting per se, is required to address the different health problems of different ethnic groups, as opposed to mainstream and universal services only.

Stevens and Murray<sup>3</sup> consider barriers to access to early diagnosis and best-practice treatment of lung cancer. This is a dive into the details and nuances in one potential contributor to ethnic inequalities in health – health services – for one particular disease – lung cancer. The other end of the spectrum from Kelly et al.<sup>1</sup> and Friel.<sup>2</sup> The role of health services in socioeconomic inequalities in health is debated, but with the growth of treatments that save lives and improve quality of life, and particularly in the case of ethnic inequalities in health, health services are a major domain for intervening to reduce health inequalities. For example, lung cancer survival for Māori is half that of non-Māori, a function of both later presentation and worse stage-specific survival.<sup>4</sup> Stevens and colleagues have considered treatment pathways and processes in New Zealand for lung cancer elsewhere<sup>5</sup>; here they present a review of the literature, interpreted in the context of Māori and Pacific people in New Zealand. Their review is a useful inventory of many descriptive studies, but – as they highlight – there is a paucity of evidence on the effectiveness of interventions within clinical care pathways and processes. Such future health services and epidemiological research is needed. It will not be a panacea for reducing health inequalities, as health inequalities largely stem from societal processes. But such evidence is addressing what are often inequities that the public and politicians all agree are unfair (e.g. differential receipt of treatments once diagnosed), and evidence on what works to reduce inequities in one disease, such as lung cancer, probably has application to other diseases too. One such example, as pointed to by Stevens and Murray<sup>3</sup>, is 'patient navigators' – but evidence on their actual effectiveness is required.

Ball and Dollman<sup>6</sup> also consider a discrete issue – that of resilience among socioeconomically deprived individuals to the obesity epidemic. However, they do not conceptualise resilience as just an attribute of individuals (which can very quickly lead to 'victim-blame' analyses as to the origin of health inequalities residing with the poor themselves), but also invoke resilience at the family and environmental levels. Which, as they note, starts to look a lot like a social ecological model of how inequalities are embodied. In so much as prevention of social inequalities in obesity cannot be solved 'only' by addressing trade, industry and obesogenic environments, modifiable resiliency factors may offer one additional entry point.

Callister<sup>7</sup> also considers individual-level risk, but goes one step further to consider clustering of individual-level risks among males. Callister<sup>7</sup> draws our attention to what appears to be an increasingly marginalised, but more common, group in New Zealand society, that is, unemployed and unpartnered young men, living away from any children they may have. Such a group is at risk of multiple 'social bads' (e.g. imprisonment), but Callister<sup>7</sup> also points to the evidence on unemployment and health that would also suggest this clustering is responsible for health inequalities (witness high – until recently – young male suicide rates in New Zealand). And poor health may be one factor that leads into such social exclusion. This socially marginalised group is under-researched in New Zealand.

Spencer et al.<sup>8</sup> describe socioeconomic inequalities in oral health in Australia, and point to evidence of widening in such inequalities. Oral health has 'canary in the mine' characteristics in public health and health inequalities. Good preventive programmes and good access to individual treatment should result in good overall oral health and low inequalities in oral health. It is also an example par excellence of population-wide approaches (e.g. fluoridation) complementing individual-level approaches (e.g. regular dental care). Both matter. As in New Zealand, Spencer et al.<sup>8</sup> point out that (adult) dental services are not covered by universal (health care insurance) programmes in Australia. Which bridges to the paper by Yiengprugsawan et al.<sup>9</sup> analysing the first ten years of universal health care insurance in Thailand – which includes dental care. In addition to rapid economic growth, Thailand's health system has been rapidly developing. Since 2001, the previously uninsured 30% of the population are covered by a Universal Coverage Scheme (UCS) which, as documented by Yiengprugsawan et al.,<sup>9</sup> has reduced the percentage of households falling below the poverty line due to out-of-pocket health expenditures from 1% in 2000 to 0.5% in 2004. The UCS has also improved health access for the elderly and ethnic minorities.

The final paper in this issue by Cunningham<sup>10</sup> is a telling tale of cross-cultural measurement misfit. There has been some interest in the MacArthur Scale, a ladder that participant's place themselves on to portray their self-perceived social status and (literally) standing. However, Cunningham<sup>10</sup> describes how it

worked poorly in a survey of Indigenous Australians. The idea for its application seems well-founded, that is, income and education may not differentiate socioeconomic position among Indigenous Australians, so maybe a self-perceived social status scale might. However, the paper bravely documents a series of cumulative problems: non-response, incorrect coding by interviewers that had to be 'recoded', and an apparent lack of cross-cultural applicability of a ladder and 'number of rungs up' as a marker of social prestige. Cunningham<sup>10</sup> concludes that 'more work is needed to determine whether, and in what circumstances, it can be used successfully to assess the subjective status of Indigenous people in Australia, as well as similar groups elsewhere.' I wonder if an alternative conclusion might be that investigative work on an alternative measure might be necessary, and perhaps one that captures Indigenous concepts such as holism and kinship connections rather than the more Westernised cultural norm of individual position and ranking.

Which brings us to the question, what is the role of (social) epidemiology in health inequalities? There are many examples of roles within the eight papers in this issue of the Australasian Epidemiologist, for example, measurement and analysis of policies as they unfold. Friel<sup>2</sup> argues that epidemiologists have a responsibility 'to provide timely and scientifically robust evidence that demonstrates inequities in health outcomes, inequities in social determinants, health care and proximal risk factors, and, importantly, evaluates the impact of policy and interventions on health equity.' I concur. And this is a wide remit. For example, defining equity (as opposed to 'just' inequalities in health) is no simple task.<sup>11-13</sup> Determining causal inference is at the heart of our enterprise, be we genetic, nutritional, social or 'Z' epidemiologists. Randomised trials are possible in the study of health inequalities, and would be welcomed by Stevens and Murray<sup>3</sup> for the evidence-lack they describe. But so too is the historical analysis demonstrated by Kelly et al.<sup>1</sup> These papers demonstrate the vast range of topics, methods and scales (time to measurement) that come under the scrutiny of social epidemiologists in Australasia and the region more widely. Enjoy!

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# Nutrition transition, food retailing and health equity in Thailand

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### Abstract

**Aim:** Here we examine the influence of changes in food retailing, the food supply and the associated nutrition transition on health equity in Thailand, a middle income country experiencing rapid economic development.

**Methods:** The dietary transition underway in Thailand is reviewed along with theories regarding convergence to a globalised energy-dense obesogenic diet and subsequent socio-economically-related dietary divergence along with the implications for health inequity.

**Results:** Thailand is part way through a dietary, nutrition and health transition. The food distribution and retailing system is now 50% controlled by modern supermarkets and convenience stores. The problem of increasing availability of calorie-dense foods is especially threatening because a substantial proportion of the adult population is short statured due to child malnutrition. Obesity is an emerging problem and for educated Thai women has already developed an inverse relationship to socio-economic status as found in high income countries.

**Conclusions:** Thailand has reached an important point in its nutrition transition. The challenge for the Thai government and population is to boost affordable healthy diets and to avoid the socio-economic inequity of nutritional outcomes observed in many rich countries.

**Table 1: Overweight/obesity prevalence in the Thai population**<sup>20,22,37</sup>

Year	Males with BMI >25 (%)	Females with BMI >25 (%)
1991	7.7	15.7
1996	13.2	25.0
2002	27.7	32.5
2005	27.9	35.2
2010	28.3	39.9

### The nutrition transition and inequity in Thailand: the role of food retailing

#### Dietary transitions and economic development

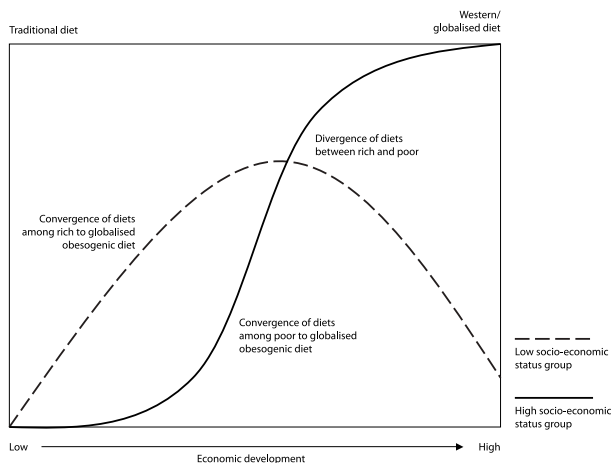
Nutrition is a critical determinant of human health across the entire life cycle. Accordingly, the study of nutritional dynamics and related changes in the production and distribution of food are important components of public health and this applies to populations afflicted by under-nutrition and by the more recent problem of prevalent over-nutrition. Nutritional problems are typically inequitably distributed in a population and the determinants of that inequity constitute the upstream drivers of the nutrition-associated population health outcomes.<sup>1</sup>

As countries develop economically their populations experience a 'nutrition transition' whereby, accompanied by rising incomes and urbanisation, traditional diets based on starchy staples are replaced by diets higher in animal protein, dairy products and processed and refined grains. This leads to a dietary 'convergence' towards a more westernised or more globalised diet.<sup>2,3</sup> Once such convergence has occurred further dietary changes arise reflecting socio-economic differences. For example, Hawkes has observed that in many Western or more economically developed nations globalisation of the diet was followed by a dietary 'divergence'. Comparatively well-off educated consumers become more aware of the adverse health effects of globalised diets and begin to demand and pay price premiums for more healthy foods, low in fat and salt and with high fruit, vegetable and fibre content.<sup>4</sup> Such socio-economic dietary divergence is leading to potential inequities in health outcomes as these more healthy diet options are not available to lower income groups.<sup>5,6</sup>

This 'divergence' pattern of food consumption in developed countries along with lifestyle and other issues are thought to be influencing the generally lower levels of obesity and other diet-related health problems found among higher socio-economic status groups in developed countries. In lower income developing countries the opposite has been found; higher socio-economic groups seem to be early adopters of Western dietary convergence and are also the group which displays the highest levels of obesity. As incomes rise, and countries develop economically, they have been found to move to a threshold where the relationship between obesity and socio-economic status reverses

which generally happens at lower income levels for women than for men.<sup>7</sup> There are many factors which seem to play a part in mediating the change including both the increased consumption of energy-dense 'obesogenic foods' and the decrease in physical activity associated with urbanised 'modern' lifestyles. Figure 1 outlines this process of dietary convergence followed by within country divergence and its association with obesity and diet-related disease.

**Figure 1: Economic development, dietary change and levels of diet-related disease among low and high income groups**



The role of modern retail formats in the changes in diet in transitional countries is noteworthy. Supermarket entry into the retail sector of developing countries may have both a positive and a negative impact on diet. The globalised food chains which supermarkets create undoubtedly increase the diversity of food available to consumers, leading to the potential for improvements in diet. But, these globalised food chains also have the largest comparative advantage in supplying processed, energy-dense, 'problem foods' which play a large part in the nutrition transition's negative impacts.<sup>3,6</sup> Supply chain efficiency and economies of scale are more effective in reducing the price of processed foods high in sugar, salt and oil rather than raw, unprocessed foods.<sup>8</sup> The process of divergence of diets whereby more well off consumers begin to demand more healthy diverse foods is catered for by supermarkets looking to capture all segments of the market. However, for poorer consumers dietary convergence towards a globalised obesogenic diet remains powerful because of cost constraints.

### Food and nutrition in Thailand

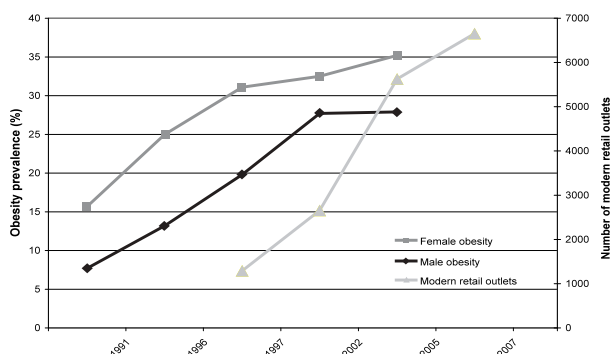
Thailand is a Southeast Asian nation which has experienced a rapid political, economic and lifestyle transition over the last few decades. This has included a period of sustained growth in Gross National Product since the late 1950s (though with a short period of stagnation following the Asian Crisis of 1997) accompanied by rising incomes and greatly diminished poverty

levels.<sup>9,10</sup> This economic transformation has also included a process of rapid urbanisation and transformation of the workforce from its agrarian roots to an industrial and service economy.<sup>11</sup> As Thailand's economy has grown, its population has become increasingly urbanised and overall poverty levels have fallen. But the benefits of this process have not been distributed equally throughout the Thai population. In fact between 1962 and 2000 (the period of most rapid growth in Thailand) income inequality as measured by the Gini coefficient rose from 0.410 to 0.525.<sup>12,13</sup> This income inequality has also manifested in inequity in the health and nutritional status of the Thai population, particularly between rural and urban groups. Lower income groups experience worse self-rated health,<sup>14</sup> higher levels of communicable diseases,<sup>15</sup> higher smoking rates,<sup>16</sup> higher injury rates,<sup>17</sup> lower attained adult heights<sup>18</sup> and more childhood malnutrition.<sup>19</sup>

Accompanying the Thai economic transformation has been a remarkable change in the food being consumed by the population and a rise in diet-related disease. Since the early 1980s sugar consumption has nearly tripled in Thailand along with large increases in the amounts of oils and animal protein and decreases in the amount of fruit and vegetables consumed.<sup>20,21</sup> Obesity and other diet-related diseases have been growing rapidly and have become increasingly important public health priorities,<sup>21,22</sup> with around one third of Thai adults now obese. Table 1 shows the rapid growth in obesity since 1991 with prevalence growing almost 4-fold in 20 years. Until recently the pattern of obesity has followed that found in other developing countries as described above with more well-off urban consumers who are early adopters of the dietary convergence offered by the expansion of globalised retail experiencing the greatest burden of obesity. Recent research however has shown that Thai women are approaching the tipping point where higher socio-economic status, and particularly higher education, are associated with lower body mass index (BMI).<sup>22,23</sup> In light of the above comments on dietary convergence (globalisation) being followed by (socio-economic) dietary divergence within countries as their economies develop we may conclude that more educated Thai women have developed a growing concern with healthier eating patterns and smaller body size.

Accompanying these changes in diet, nutrition and health in Thailand there has been a remarkable and rapid transformation in food retailing which has until recently been based on two institutions – the fresh food market and the traditional small family-run retail shops (Figure 2). The last few decades have seen these retail formats being joined by 'modern' retail, meaning supermarkets, convenience stores and hypermarkets. Hypermarkets are very large retail outlets with the full spectrum of consumer goods under one roof unlike supermarkets which concentrate on food products.<sup>24</sup>

**Figure 2: Prevalence of obesity in the Thai population and the number of modern retail outlets in Thailand**



Through the late 1990s and the beginning of the 2000s, modern retail began to gain a foothold in the Thai food retail sector led by transnational food corporations (TFCs) including United Kingdom-based Tesco and French-based Carrefour. The main growth occurred at the two opposing ends of the modern retail spectrum, hypermarkets and convenience stores at the expense of supermarkets and traditional retail.<sup>25</sup> As Thailand's development and transformation began to influence rural consumers more in the 1990s and 2000s, the expansion of modern retail extended into regional centres and then even into smaller regional towns as rural incomes rose and rural people became more accustomed to urban-style living. Table 2 outlines the rapid growth of the three main modern retail formats over the decade from 1997-2007 with perhaps the most striking growth being in the convenience store format expanding from 1180 stores to over 6000 in ten years.

**Table 2: Number of modern retail outlets in Thailand 1997-2007<sup>27</sup>**

Type of retail outlet	Number of Outlets		
	1997	2002	2007
Supermarket	50	110	166
Hypermarket	60	128	225
Convenience store	1180	2418	6263

Apart from store numbers growing, the share of modern formats in the food retail market in Thailand has also been growing rapidly. From only around 5% in the late 1980s, this share grew to 26% in 1997 before the large growth in foreign investment by TFCs in the late 1990s led to the rapid growth in the number of stores mentioned above. From there the share rapidly grew to 40% at the turn of the decade and now stands at around 50%, a doubling in less than 10 years (Table 3).<sup>26-28</sup>

**Table 3: Modern and traditional retail market share in Thailand<sup>26</sup>**

Year	Modern (%)	Traditional (%)
1999	35	65
2000	37	63
2001	40	60
2002	42	58
2003	44	56
2004	46	54
2005	48	52

At present, the modern retail proportion of food trade in Thailand is mainly made up of dry and processed foods; the traditional wet markets in Thailand continue to dominate the fresh food market.<sup>29</sup>

This rapid expansion in modern food retailing has been accompanied by a fall in the market share of traditional retail and a corresponding fall in the number of fresh markets and traditional retailers. For example, one investigative report in the Bangkok Post newspaper suggests that the number of fresh markets in Bangkok has fallen from 160 to 50 in the past decade.<sup>30</sup> Now, Thais who shop primarily at traditional retail formats are the lower socio-economic groups, older persons and those who value 'traditional, cultural' foods more highly.<sup>31</sup> Prices for fresh fruits and vegetables have also been shown to be consistently lower at traditional fresh markets in Thailand than in modern retail formats.<sup>24,28,32</sup> Thai hypermarkets sell processed products 12% cheaper, and fresh foods 10% dearer, than do traditional retailers. Hypermarkets also add non-price incentives (loyalty discounts and consumer credit via credit cards) as well as lines of cheap private label processed products again making processed foods more affordable than raw/fresh foods.<sup>6,33</sup>

The process of dietary convergence towards a globalised diet and subsequent divergence between the diets of high and low income groups is already underway and the simultaneous growth in income inequality means large proportions of the population will be affected by these changes with a risk of health inequities developing. Thailand has reached an important point in its nutrition transition. Energy-dense, processed, Westernised foods are now widely available and affordable throughout the country to all socio-economic groups through the agency of transnational food company investment. Higher income and educated consumers are beginning to demand more diverse and healthier diets just like their counterparts in more developed nations. The challenge for the Thai government and the population is to ensure that the affordable, healthy dietary choices offered by traditional fresh market retailing remain available despite the massive influx of modern retail. Furthermore, ideally the lower socio-economic groups should not follow the nutritional pathway noted in many developed countries leading to high levels of obesity and diet-related diseases connected to the increasingly affordable obesogenic foods.

The problem of inequity in nutrition outcomes and propensity to obesity is exacerbated in the Thai context by the rapid nature in which economic development has occurred. Members of the lower socioeconomic groups who now are at risk from the

changes in diet discussed above are individuals who only a few decades ago, as children, experienced high levels of malnutrition and often experienced low birth weights and small body size in early life. Individuals who begin their lives in these conditions and then experience high levels of calorie intake in later life are at an even higher risk of experiencing the negative health effects of over-nutrition including obesity and related diabetes and heart disease.<sup>34-36</sup>

### Policy implications and further research

There are several ways that these nutritional problems can be approached in settings such as Thailand today. The importance of fresh food markets for meeting the nutritional needs of lower socio-economic groups can be supported by the Thai government and associated planning bodies. As well, attention can be paid to consumer education and nutrition labeling. This is an important process but may differentially benefit educated, wealthier consumers and does not address the issue of comparative pricing and marketing of products.<sup>5</sup> Other approaches which have met with some success in other countries are restrictions on marketing of unhealthy foods and price manipulation. These ideas may even extend beyond the national level and extend to international governance as envisaged by the World Health Organisation which conceptualises using

international trade regimes to encourage a healthier globalisation using processes currently used to ensure food safety in the international food trade.<sup>8</sup>

To understand better the process underway in Thailand and to identify how it is affecting different segments of the population, epidemiological and sociological research is addressing this topic. Based at Sukhothai Thammathirat Open University in Bangkok and The Australian National University in Canberra, this work has involved accompanying a large national cohort of Thai adults since 2005 as they negotiate the changing food environment and experience associated health outcomes. Further details are available at: ([http://nceph.anu.edu.au/Thai\\_Cohort\\_Study/index.php](http://nceph.anu.edu.au/Thai_Cohort_Study/index.php)) and ([http://www.stoucohort.com/index\\_VEG.html](http://www.stoucohort.com/index_VEG.html)). It is anticipated that such multi-disciplinary research centred on the epidemiology of Thailand's nutrition transition will lead to health-promoting food policies.

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## Round Table

# Health inequity in Australia: does government care?

**Sharon Friel**

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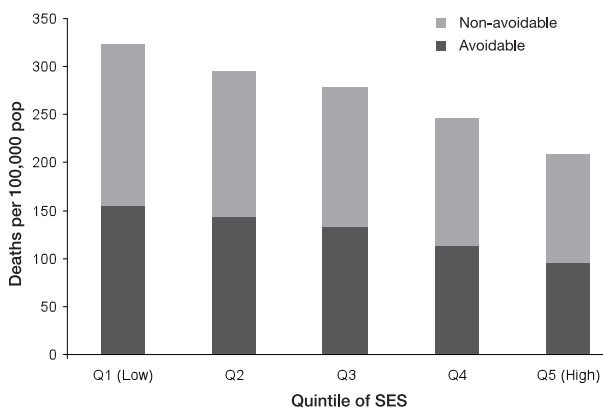
### Health inequities are on the global agenda

Health inequity is on the global policy agenda. The World Health Organisation Commission on Social Determinants of Health (CSDH) shone a global spotlight on the marked health inequities that exist between and within countries at the start of the 21st century and made recommendations for action in the social determinants of health.<sup>1</sup> The 2008 World Health Report revisited Alma Ata's 1978 ambitious vision of health systems based on equity through primary health care, universal access and social health protection.<sup>2</sup> Is health inequity an issue in Australia?

### The social distribution of health in Australia

Avoidable differences in health risks and outcomes exist along a number of social dimensions in Australia. For example, heart disease, diabetes, asthma, mental health conditions and obesity are each more prevalent in the lowest socio-economic quintile compared to the highest quintile.<sup>3</sup> There is an incredible gap of 12 years life expectancy at birth between Indigenous males compared to the average Australian male.<sup>4</sup> There are health gaps but there are also social gradients. As one moves down the socio-economic ladder the risk of shorter lives and higher levels of disease risk factors increases (Figure 1).<sup>3,5</sup>

**Figure 1: Age and sex-adjusted mortality rates, Australia, aged less than 75 years, 2002**



(From Korda RJ, Butler JRG, Clements MS, Kunitz SJ. Differential impacts of health care in Australia: trend analysis of socioeconomic inequalities in avoidable mortality. *Int J Epidemiol*. 2007; 36 (1): 157-165 by permission of Oxford University Press and the International Epidemiological Association).

### Some causes of health inequity

#### The health care system

Systems of disease control and health care can be both a determinant of health inequities and a powerful mechanism to reduce inequities. Inequities in health care are systematic differences in the use or receipt of primary, secondary and tertiary health-care services such as hospitalisations, diagnostic tests, surgical procedures, physician visits, medications, and health promotion programmes. Gender, education, income, ethnicity, disability and place of residence are all closely linked to access to, experiences of and benefits from health care. The inverse care law, in which the poor consistently gain less from health services than the better off, is visible in every country across the globe, including Australia.<sup>6</sup>

The cost of most doctor visits is subsidised in Australia through Medicare and there are provisions to limit out-of-pocket costs. Even still, for a given level of need, socioeconomically advantaged women are more likely to use specialist medical, allied health, alternative health and dental services than less advantaged women.<sup>7</sup> This is of particular concern when trying to prevent and treat chronic disease – the main health burden in Australia today – where optimal care requires use of multidisciplinary services.

#### Health-related behaviours

Modern day public health has given emphasis to the role of individuals and their behaviours.<sup>8</sup> Tobacco use, alcohol consumption, poor nutrition and inadequate physical activity are indeed among the top ten risk factors for Australia's non-communicable disease burden. Excess body weight tends to be more prevalent among people further down the social and economic scale.<sup>9</sup> Similarly, the prevalence of tobacco use decreases with increasing socioeconomic status. Alcohol use on the other hand shows an inverse social gradient.<sup>10</sup> However, health inequities are likely to persist between socioeconomic groups even if lifestyle behaviour factors were equalised.<sup>11</sup>

### A social determinants approach to health inequity

A social determinants approach suggests that health inequities are produced not by individual behaviour or the health care system but rather by policies, programmes and actions within sectors such as macroeconomics, transport, trade, agriculture, education and employment.

There is growing desire internationally to redefine notions of national progress, success and what we value as a society.<sup>12</sup> If we were to position health equity as a marker of societal success this would mean reframing development to be inclusive of both economic growth and societal living done in an environmentally sustainable manner. It would also mean a society where all people have the freedom to lead healthy and flourishing lives.<sup>13</sup>

Having the freedom to live healthy and flourishing lives is synonymous with empowerment –material, psychosocial and political empowerment of individuals, communities and nations. These dimensions of empowerment are interconnected. People need the basic material requisites for a decent life, they also need to have control over their lives, and they need voice and participation in decision-making processes.

Behind empowerment and its social distribution lie the social determinants – the economic and social policies that generate and distribute power, income, goods and services, at global, national and local levels, which in turn shape people's daily living conditions. The nature of these daily living conditions influence how different social groups live, work, play and age, with consequences for health equity.<sup>1</sup>

### Who cares?

Much of what is said in this paper is not new to many Australian researchers and advocates for health equity.<sup>14-18</sup> Do Australian politicians and policymakers care about these issues? Historically, public policy in Australia did much to address the social determinants of health and health inequity, and today in some States and Territories there are some progressive actions.<sup>19</sup> What about the Federal policy space?

### Health sector

There have been two recent major national initiatives within the health sector which are of note for health equity in Australia. In 2009 the National Preventative Health Taskforce (NPHT) made recommendations for how to make Australia the healthiest country by 2020.<sup>10</sup> While behaviour-related risk factors – obesity, alcohol and tobacco – were the primary focus, the NPHT did move the dialogue beyond individual responsibility and spoke of matters to do with building healthy environments and settings and measures of market regulation and taxation. However, the systematic evolution and continuation of the uneven distribution of obesity, tobacco and alcohol use suggests that there is something about the broader society that is affecting people's ability to pursue healthy behaviour, increasingly so with decreasing social status. Of particular relevance is the inequity in the physical and social experiences in early life; access to and quality of education, particularly that of females; how cities are planned and designed plus the livability of rural locations; and the financial, psychosocial and physical conditions of working life. Promoting health equity through healthy weight and limited alcohol and tobacco use also means tackling some of the structural issues that affect people's living conditions, daily practices and behaviour-related risks. That means dealing with matters of trade; market regulation; the nature of foreign direct investment and fiscal policy.<sup>20</sup> Encouragingly the NPHT made recommendations to close the health gap between Indigenous

and non-Indigenous Australians and reduce health inequities by targeting disadvantaged groups. This is unfortunate given that a whole of population approach is considered a better way to reduce the social gradient in health risks and outcomes.

The report from the National Health and Hospitals Reform Commission (NHHRC) highlights inequities in healthcare in Australia including gaps in dental, public hospital and mental health services, and notes access and quality of services is poorer for remote and rural Australians and Aboriginal and Torres Strait Islanders.<sup>21</sup> The NHHRC articulates two ways to build healthier communities – by tackling health inequities, including access to health care, and through health promotion and disease prevention. Some of the proposals suggested by the NHHRC are to specifically address these health gaps and include the Denticare scheme; increased funding to reduce waiting times in public hospitals; top-up payments for remote/rural doctors; extra payments for rural patient's travel costs and accommodation. Other recommended measures that are potentially good for equity include investment in prevention, complex care co-ordination and comprehensive primary health care centres. However, the NHHRC did not directly acknowledge the marked socioeconomic gaps in health and access to services. Private health insurance (and subsidy of) is a great source of inequity and was not addressed at all. The Medicare Select proposal has the potential to increase inequity – more choice usually means more choice for the better off.

### Non-health sectors

As outlined previously, much of what affects health equity happens beyond the health sector. Australia introduced a new workplace relations system, through the introduction of Australian Fair Work Bill 2008.<sup>22</sup> The new system aspires to ensure a fair and comprehensive safety net of minimum employment conditions; a system that has at its heart bargaining at the collective/enterprise level; protections from unfair dismissal for all employees; protection for the low-paid; a balance between work and family life; and the right to be represented in the workplace. This has the potential, if done well, to reduce health inequities.

Around the time of the global financial collapse, the then Prime Minister, Kevin Rudd, asserted the role of central government in protecting society and being the provider of public goods, including health. While the specifics could be much better from a health equity perspective, as a rapid response to an acute situation the Australian stimulus package was to be commended. The government pledged 1% of gross domestic product to be spent on pension reforms, support payments for low and middle-income families, help for first-time home buyers, and the creation of new training places. By seeking to provide public goods and build strong resilient systems and societies, former Prime Minister Rudd suggested political values and a policy framework which could measure its success by improvements in the distribution of health in Australia.<sup>23</sup>

## Way forward

These are just a few examples of some policy areas where things are developing in a way that hold promise for health equity. But there is much more that can and must be done if Australia is to become the healthiest country by 2020 in a way that is fair. Climate change, not discussed in this paper, will increasingly exacerbate Australia's health inequities.<sup>24</sup> This must be in the mix of policy considerations for health equity.

Underpinning action on the determinants of health equity requires political will at the highest level, supported by an empowered public sector based on principles of justice, participation, and intersectoral collaboration. This means strong core functions of government and public institutions in relation to policy coherence, participatory governance, planning, regulation development and enforcement, and standard setting.

Since early September 2010 Australia has a new minority labour government with the support of three Independents and the Australian Greens. In the forthcoming weeks and months, as the real meaning of power sharing is actualised in 'negotiated' reform, legislation development and policy pledges, the Health Minister must be at the Cabinet table, powerfully making the case for action on the determinants of health equity. The

intersectoral nature of the determinants of health equity demands an intersectoral response and hopefully the Prime Minister and Minister for Health will ensure Ministers for Finance, Trade, Agriculture, Commerce, Education, Employment and the Environment each consider the impact of their decisions on the health and wellbeing of all Australians.

## What role for epidemiologists?

Does this have relevance for epidemiologists? I would argue that we have a responsibility to provide timely and scientifically robust evidence that demonstrates any inequities in health outcomes, inequities in social determinants, health care and proximal risk factors, and, importantly, evaluates the impact of policy and interventions on health equity.

No data, no problems, no action.<sup>25</sup>

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## Round Table

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# Barriers to the early diagnosis of lung cancer and recommended best practice solutions, with particular reference to Māori and Pacific peoples

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### Abstract

**Aims:** To identify the main barriers to the early diagnosis of lung cancer and the recommended solutions to these barriers, with particular reference to Māori and Pacific Peoples.

**Methods:** Search strategies were developed using Medical Subject Headings. Databases such as Medline, PubMed, Embase, Cinahl, PsycInfo, Cochrane Library, ScienceDirect and CancerLit, as well as subject-related sites, governmental sites and professional association sites were searched. Abstracts were read and relevant articles were retrieved and summarised.

**Results:** The barriers to access to timely and quality cancer care reported in the literature were numerous. These barriers were similar across many countries. Common barriers included financial, geographic and information barriers; poor integration of care; lack of evidence on best practice; outdated provider knowledge; lack of multidisciplinary care; lack of health system responsiveness; poor provider communication skills; and sub-optimal cultural competence. Whilst these barriers applied to all cancer patients, they had a disproportionate impact on disadvantaged groups. Whilst numerous interventions were recommended to reduce these barriers, little evidence was available to assess their effectiveness or cost.

**Conclusions:** Barriers to quality cancer care frequently coexisted, having a disproportionate impact on minority ethnic and socioeconomically disadvantaged groups, especially those in rural areas. The aggregate impact of multiple barriers on disadvantaged groups must be recognised if effective interventions are to be developed to improve cancer care and outcomes. New interventions should be monitored and evaluated to ensure effectiveness and optimal allocation of scarce health care resources.

### Introduction

Lung cancer is the leading cause of cancer deaths (~1500 deaths annually) in New Zealand (NZ)<sup>1</sup> and it places a heavy burden on the sufferer, their whanau/family and health services.<sup>2</sup> NZ has poorer lung cancer survival outcomes than many other developed countries, and within NZ there are major ethnic and regional inequalities in lung cancer incidence and outcomes. In particular, not only are Māori more likely to develop lung cancer, but once diagnosed, they are more likely to die from lung cancer than non-Māori. Whilst the age-standardised lung cancer incidence rate for Māori is two to three times higher than that

for non-Māori, their age standardised mortality rate is three and a half times higher.<sup>3</sup>

The overall poor survival outcomes from lung cancer are attributed to the high proportion of cases with advanced disease at diagnosis, which precludes curative treatment. Presentation to health care services early in the course of the disease and timely transit along the clinical pathway to treatment are considered important for optimal outcomes. Yet delays in seeking care and delays to diagnosis and treatment are common and vary across population subgroups.<sup>4,5</sup> Barriers may deter people from seeking care, potentially resulting in more advanced tumour stage at diagnosis or they may influence treatment acceptance. Therefore barriers may adversely impact on survival, and differences in barriers to access to optimal cancer care between different ethnic, geographic and socioeconomic groups contribute to disparities in cancer outcomes.<sup>4,6</sup> Such disparities are not only unacceptable, but they are considered a breach of rights under the Treaty of Waitangi.

This review sought to identify the main barriers to the early diagnosis of lung cancer and the recommended solutions to these barriers, with particular reference to Māori and Pacific peoples. Whilst barriers to quality cancer care may pertain to all cancer patients, they tend to be greatest for those from disadvantaged groups.<sup>4</sup> Many of the barriers and recommended interventions are not specific to lung cancer, but may apply to other cancers and other diseases.

### Methods

Search strategies were developed using search questions and key search terms (Medical Subject Headings: MeSH headings). Databases searched included Medline, PubMed, Embase, Cinahl, PsycInfo, Cochrane Library, ScienceDirect and CancerLit. Other subject-related sites and relevant governmental and professional association sites were also used. Internet searching using Google was performed to locate unpublished and grey literature. Abstracts were assessed, relevant articles were accessed, read and summarised. References in the retrieved literature were reviewed to identify further sources. All information was combined and condensed.

This review was performed as part of a larger research project.<sup>i</sup> Ethical approval for the project was obtained from the Northern X Ethics Committee.

## Results

### Potential Barriers

Disparities in access to quality health care between different ethnic, geographic and socioeconomic groups were well established in the literature.<sup>4, 7-14</sup> Utilisation of cancer services depended on the availability, accessibility, and acceptability of services and providers, and these varied for different population sub-groups.<sup>13, 15</sup> Inequalities of access were reflected not only in differences in the utilisation of health care services but also in the differential experience of the care received.<sup>4</sup>

Service quality was described as a multidimensional concept involving attributes such as accessibility, efficiency, safety and effectiveness, equity and patient-centeredness.<sup>16, 17</sup> These dimensions of quality provided a useful framework for categorising barriers to quality care. The most commonly reported barriers are summarised below.

### Barriers to accessible care

Financial barriers (including consultation costs, transport or travel costs), geographic barriers, service availability barriers, and information barriers were commonly reported to restrict access to health care.

Cost was cited as a major barrier to seeking care irrespective of medical necessity, especially for ethnic minority and socioeconomically disadvantaged groups. Financial barriers to primary health care in NZ have been reported as high by OECD standards,<sup>18</sup> although recent literature suggested that the introduction of Primary Health Organisation (PHOs) had reduced the cost of primary care consultations resulting in improved access, especially for Māori and Pacific peoples.<sup>19, 20</sup>

Financial barriers were not only related to the cost of consultations, investigations, prescriptions and treatment, but also to the costs associated with time off work, travel, accommodation and family expenses such as child minding.<sup>4, 7, 10</sup> Transport difficulties and costs were acknowledged as key barriers, especially for Māori and Pacific peoples.<sup>4, 21</sup> Although travel assistance may have been available, arrangements varied by region, and often reimbursement was only partial and required up-front payment.<sup>4</sup> The literature suggested that those most likely to benefit from financial support were often the least likely to obtain it.<sup>22</sup> In particular, Māori were less likely to access financial support than NZ Europeans with a similar level of need.<sup>23</sup>

Low utilisation of health care services and non-attendance at appointments by Māori were partially attributed to cost, as basic needs took precedence over health care.<sup>24</sup> A focus on day-to-day survival to the exclusion of seeking care and fatalistic attitudes toward cancer were also reported internationally for minority groups.<sup>6</sup> However, there was evidence that even when disadvantaged groups had access to free services, they still tended to under-use these services.<sup>20, 21</sup> Similarly there was evidence that after controlling for income, access tended to be significantly lower for Māori, suggesting the presence of other substantial barriers.<sup>9</sup> National and international evidence indicated that whilst removal of financial barriers was necessary for equitable access and improved cancer outcomes, it was insufficient and other barriers needed to be addressed.<sup>6, 9, 20</sup>

Geographic barriers were considered major barriers to health care access, with the potential to impact disproportionately on Māori, due to the geographic distribution of the Māori population.<sup>4</sup> Centralisation of cancer services, limited specialist services in rural areas, and rural health workforce shortages resulted in under-servicing of some rural communities.<sup>25</sup> Rural populations commonly suffered from a combination of factors which impacted on access, including long distances to health care services, socio-economic disadvantage, and difficulty taking time off work. Although the literature consistently reported access difficulties faced by rural communities, there was conflicting evidence regarding urban-rural disparities in tumour stage at diagnosis and survival outcomes.<sup>26</sup> Whilst numerous studies described an inverse relationship between distance and utilisation of health care services across various diseases, there was also evidence that patients would willingly travel long distances for care, provided they perceived the services to be worthwhile.<sup>7, 24</sup>

Lack of access to information was reported to delay the seeking of care, influence management decisions, and affect the acquisition of support. Information barriers related not only to lack of information but also to the way in which, and to whom, the information was provided.<sup>8</sup> The amount of information provided was shown to vary for different ethnic groups; and barriers tended to be greatest for those with language difficulties.<sup>8</sup> Language concordance between patients and providers was associated with improved self-reported health outcomes.<sup>27</sup> Lack of interpreter services resulted in poor comprehension and compliance, patient dissatisfaction and lower quality care.<sup>28</sup> The need for 'plain' language devoid of jargon was emphasised.<sup>24, 27</sup> Poor communication between health services and Māori patients and their whanau/family was considered to be a major barrier to effective care for Māori.<sup>4, 22, 24</sup> It was stated that whanau/family should be well informed as they were commonly active participants in the cancer journey and often played an important role in encouraging the seeking of care, in decision-making and in the provision of support.<sup>24, 29</sup> International literature also supported the provision of information to families and their involvement in consultations.

### Barriers to efficient care

Efficiency incorporates the concepts of care integration (i.e. communication, coordination and collaboration), comprehensiveness, continuity, and timeliness.<sup>16</sup>

The lung cancer pathway was described as typically involving a large number of clinicians, appointments and numerous consecutive investigations.<sup>4, 30</sup> Poor integration occurred between individual providers, between primary, secondary and tertiary services, and between mainstream and Māori services, and resulted in inefficiencies and delays. Whilst the effect of treatment delays on lung cancer survival outcomes is controversial, it would seem reasonable that potentially curable tumours at presentation could become incurable if diagnosis and treatment are delayed. Reduced waiting times to treatment were considered to be an important component of quality.<sup>16</sup>

Considerable literature identified the importance of a holistic approach to care, especially for Māori and Pacific peoples; yet mainstream services tended to lack a holistic approach, focussing

on the physical aspects of health.<sup>29, 31, 32</sup> General practitioners' knowledge of Māori health concepts and traditional practices was shown to be poor.<sup>33</sup>

#### **Barriers to safe and effective care**

Lack of available evidence on best practice, outdated knowledge of providers, and lack of multidisciplinary care were reported as barriers to safe and effective care. Considerable variation in specialist attitudes and in lung cancer treatment was shown to exist in NZ, with regional differences in care being widely reported.<sup>34</sup> This was associated with lack of multidisciplinary decision-making and lack of national guidelines.<sup>22, 24</sup>

#### **Barriers to equitable and patient-centred care**

Lack of health system responsiveness, poor provider communication skills and sub-optimal cultural competence were commonly reported barriers to quality care. A large body of literature suggested that minority groups often received lower quality health care, and were typically less satisfied with their care. Whether people used health care services depended on how comfortable they felt with the services and providers.<sup>10</sup> Factors, such as the physical health care environment and the organisation and orientation of services influenced the acceptability and experience of care. However, services tended to be oriented towards the majority of users and were commonly organised to suit the provider rather than the patient and their whanau/family. Mainstream services which lacked cultural appropriateness were reported to impact negatively on the use of health services by Māori, Pacific and other ethnic groups.<sup>35</sup> Lack of a whanau ora approach<sup>ii</sup> to care, lack of dedicated Kaupapa Māori<sup>iii</sup> cancer services and insufficient numbers of Māori providers were considered important barriers to cancer care for Māori.<sup>4, 29, 36, 37</sup>

Although good rapport and relationships between the patients and providers affected the quality of care for all patients, difficulties in provider-patient communication disproportionately affected vulnerable groups.<sup>38</sup> Difficulties in provider-patient interactions were commonly reported to stem from differences in culture, language, education levels, social class or gender.<sup>6, 7</sup> Lack of a shared background and shared understanding was thought to create a distance between the provider and patient which made it more difficult to establish effective communication.<sup>39</sup> Misunderstandings were reported to occur which could lead to the inappropriate use of health services, increased risk of incorrect diagnoses, reduced adherence to recommended management, reduced patient satisfaction and more demanding consultations for providers.<sup>40</sup> Some literature suggested that ethnic disparities in health care and in satisfaction were due to provider-patient differences in education levels and socio-economic factors rather than to ethnicity *per se*.<sup>41</sup>

Discrimination in health care settings was commonly associated with biases, stereotyping and communication difficulties. Unconscious bias and stereotyping had the potential to impact on care and to contribute to disparities in health outcomes.<sup>42, 43</sup> Patients, as well as providers, were thought to bring socio-cultural perspectives to the health care encounter which influenced the provider-patient interaction.<sup>43, 44</sup> Their beliefs, preferences, attitudes, education and health knowledge were

considered important determinants of health care behaviour,<sup>13</sup> and influenced expectations and satisfaction.<sup>20, 28</sup> Previous negative experiences engendered mistrust and low expectations which impaired use of services, and reduced satisfaction and acceptance of recommended management.<sup>6, 32</sup> Variations in the care experienced by different groups could reflect real differences in care or alternatively could result from differences in expectations and perceptions.<sup>45</sup>

#### **Recommended interventions**

Whilst the literature on barriers to quality health care was vast, considerably less literature existed on the interventions to address these barriers, and most was devoid of sufficient detail on effectiveness or cost to enable any evidence-based evaluation of their impact. Such deficiencies were also noted by other reviewers.<sup>4, 6-8</sup> The interventions commonly recommended in the literature are summarised below.

#### **Interventions to improve the accessibility of care**

##### *Financial and other support for patients and whanau/family*

Low cost primary care consultations, transport and accommodation assistance, more convenient location of services and readily accessible support services were considered essential to improve access. Some evidence suggested that transport assistance increased service utilisation,<sup>8</sup> although it was important that patients and their whanau/family were adequately informed about the assistance and that the claims process was streamlined.<sup>22</sup> Services close to rural populations, such as outreach specialist services, reduced the time and expense required for travel and afforded convenience,<sup>46</sup> however there was no evidence that they improved health outcomes. Improved telecommunications including telemedicine were recommended to reduce access barriers for rural communities.

#### **Information resources and access to professional interpreters**

Initiatives to improve awareness of the early warning signs of cancer, the services available and how and when to access the services were recommended.<sup>7, 47</sup> Provision of culturally appropriate information in 'plain' language at different points along the cancer pathway was suggested to ensure relevance and avoid information overload.<sup>48</sup> Face-to-face communication<sup>48, 49</sup> with supplementary written information, and decision support tools were suggested.<sup>7, 48</sup> Information resources targeted at underserved populations were considered more effective at reducing inequalities than non-targeted material.<sup>49</sup> The literature also acknowledged the need for professionally trained medical interpreters, even when only minor language barriers existed.<sup>50</sup> The use of trained interpreters was associated with improved communication, patient satisfaction and adherence with management.<sup>50</sup>

#### **Interventions to improve the efficiency of care**

##### *Improved coordination of services*

Clinical guidelines, optimal care pathways, multidisciplinary decision-making and a regional network approach were considered effective in improving the standard and consistency of care, streamlining and reducing fragmentation of care, improving resource use and efficiency. Optimal care pathways have been associated with more rapid referral, diagnosis and treatment, reduced hospital length of stay, reduced investigation,

and greater opportunities to support the patient.<sup>51</sup> Provision of a care plan to the patient at diagnosis to assist patients and whanau/family work through the cancer care process also facilitated care coordination. The literature identified the importance of a seamless cancer journey and proposed navigators or care coordinators as a way of facilitating the journey.<sup>4, 22, 29, 35, 49</sup> Assisting patients through the cancer journey empowered patients by improving understanding of the cancer journey and informing decision-making. Care coordination was considered particularly important for disadvantaged groups, such as Māori and Pacific peoples.<sup>35</sup> No consistent competencies or role descriptions existed for patient navigators. Various models of care coordination were used internationally; however there was no evidence to support any particular model.

#### **Interventions to improve the safety and effectiveness of care**

National frameworks of care, clinical guidelines and multidisciplinary decision-making were believed to improve the safety and effectiveness of care. Guidelines were thought to reduce inequalities in care by minimising the impact of bias and stereotyping.<sup>52</sup> However the extent to which they modified provider practice depended on how they were developed and implemented.

#### **Interventions to improve equitable and patient-centred care**

A common theme in the literature was the importance of services that were patient-centred and culturally sensitive.<sup>7</sup> Cultural acceptability was improved through friendly health care services in locations where people felt comfortable, improved cultural competence of staff, inclusion of whanau/family, acceptance of Māori perspectives and traditional practices, and by Māori workforce development.<sup>19, 20</sup> A diverse health care workforce with providers of the same ethnicity and language as the underserved population was considered essential to improve care.<sup>8, 43</sup> For Māori, the importance of a whānau ora approach to care and the need for more Māori providers was emphasised.<sup>29, 37</sup> Evidence for the effectiveness of diversifying the health care workforce and the value of ethnic-concordant providers was somewhat contradictory. Most of the literature supported the concept that trust in and satisfaction with health care services was higher when the patient and provider had a similar ethnic background, and that increasing the availability of such providers was an effective way of improving the quality of services.<sup>8, 29, 38</sup> However, there was some literature which suggested that personal similarity and the physicians' communication style (rather than ethnicity *per se*) were the important factors determining patients' trust, satisfaction, and compliance, and that not all patients wanted to see an ethnic-concordant physician.<sup>21, 29</sup> Few studies evaluated health outcomes associated with ethnic-concordance of the provider. Although some evaluated patient knowledge and adherence with management and found more favourable results with ethnic-concordant providers compared with ethnic-discordant providers.<sup>8</sup>

Cultural competence training of providers was considered essential. Literature relating to Māori cancer patients indicated the importance of the knowledge of tikanga (cultural practices),

and that observance of tikanga improved provider-patient communication.<sup>47, 51</sup> Improved cultural competence reduced bias and stereotyping and was associated with improved trust, greater patient and provider satisfaction, reduced delay in seeking care, improved utilisation of services and improved adherence to management.<sup>53</sup> However, cultural competence had not been evaluated with respect to health outcomes, and there was little evidence for best practice models or approaches, and little evaluation of cost-effectiveness.<sup>53</sup> There was a suggestion that the focus of provider training should be on general principles of good interpersonal communication skills and participatory decision-making styles, rather than on specific cultural competency training.<sup>53</sup>

Good communication was thought to require a 'two-way' strategy and whilst providers needed training in patient-centred communication and cultural competence, patients needed training in how best to communicate with providers during brief consultations.<sup>54</sup> Preparing patients for consultations was shown to improve patient participation in their treatment.<sup>54</sup>

Nationally and internationally numerous initiatives had been implemented with the aim of improving cancer care, however there was a paucity of evidence on their effectiveness or cost. New initiatives should therefore be monitored and evaluated to ensure optimal resource allocation.

#### **Conclusion**

Quality cancer care, which is accessible, efficient, safe and effective, equitable and patient-centered, should be available to all cancer patients. However, barriers to quality cancer care were commonly reported. Frequently these barriers coexisted, having a disproportionate impact on minority ethnic and socioeconomically disadvantaged groups, especially those in rural areas. The aggregate impact of multiple barriers on disadvantaged groups should be recognised if effective interventions are to be developed to improve cancer care and outcomes. In addition to developing interventions designed to improve care for all cancer patients, those targeted to disadvantaged groups are required if inequalities in cancer outcomes are to be reduced. Although many interventions to improve cancer care have been initiated nationally and internationally, to date, few have undergone rigorous outcomes evaluation.

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  - ii The whanau ora approach to care involves addressing the family's problems in a unified way (rather than dealing separately with problems of individuals within the family) according to Māori cultural values and it seeks to empower the family in decision-making.
  - iii Kaupapa Māori services are based on Māori philosophy and principles ('by Māori for Māori').

# Physical activity, healthy eating and obesity prevention: Understanding and promoting 'resilience' amongst socioeconomically disadvantaged groups

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The global obesity epidemic, and the contributions of both sedentary lifestyles and excessive energy intakes to this epidemic, are well-recognised. Within developed countries, certain population groups are at increased risk of both excess body weight, and of engaging in behaviours that heighten the risk of unhealthy weight gain and obesity, and hence of associated chronic disease. People experiencing socioeconomic disadvantage – whether through a low level of educational attainment, a manual or low-status occupation, a low income, or even through living in a neighbourhood which is socioeconomically disadvantaged – are more likely than others to partake regularly in sedentary behaviours such as television viewing<sup>1</sup>, less likely to be regularly physically active<sup>2</sup> or to eat according to health-related dietary recommendations<sup>3</sup>, and more likely to be overweight or obese<sup>4</sup>. While the graded associations of socioeconomic disadvantage with obesity and obesity-risk behaviours are now well-documented, much less is known about the mechanisms underlying these socioeconomic inequalities.

Typically, epidemiological studies investigating the aetiology of obesity have focused primarily on attempting to identify the predictors of risk of obesity or of obesity-related behaviours, for example by developing and evaluating the fit of multivariable models in which hypothesised risk factors are entered as predictor variables, with obesity as the outcome variable. The primary emphasis of such approaches is the prediction of adverse outcomes (i.e. obesity). The term 'risk' originates in epidemiology, and reflects the likelihood of adverse outcomes (e.g. morbidity, mortality) in response to exposure to stressors.<sup>5,6</sup> This risk-factor approach, however, often fails to consider that individuals also possess, or have access to, protective resources, which may also impact their likelihood of an adverse outcome, either directly, or via interactions with risk factors.

Not everyone experiencing socioeconomic disadvantage is obese. We have previously argued<sup>7</sup> that an alternative, potentially valuable yet less-utilised approach to understanding the increased rates of obesity amongst those who are socioeconomically disadvantaged involves investigation of the characteristics of those who are managing, despite the odds associated with their experience of socioeconomic disadvantage, to engage in obesity-protective behaviours, and to maintain a healthy weight. We suggest that this may represent a form of 'resilience'.

'Resilience' has been defined as a "dynamic process encompassing positive adaptation within the context of

significant adversity."<sup>8</sup> The concept was initially applied in investigations of the developmental outcomes of children born into poverty,<sup>9</sup> or facing parental mental illness<sup>10</sup> or broader socioeconomic disadvantage,<sup>11,12</sup> in which it was observed that a proportion of children defied the odds by developing into well-adjusted adults. More recently, resilience as a framework appears to have become increasingly popular in a range of fields of investigation, including applications to the study of outcomes of maltreatment,<sup>13</sup> adverse life events,<sup>14,15</sup> or even examining attributes of communities ('regional resilience') that assist in deflecting adverse outcomes associated with economic crises (e.g. see the themed special issue of the *Cambridge Journal of Regions, Economy and Society* on 'The Resilient Region', March 2010).

Resilience is concerned with individual variations in response to risk, and reflects the interaction between risk factors and protective resources.<sup>6,16</sup> The study of resilience provides information on why established risk factors do not always result in adverse outcomes. Individuals who demonstrate positive outcomes in the face of high risk are described as being resilient.<sup>17</sup> When applied to obesity, we posit that the term resilience may be used to refer to those who manage to maintain a healthy weight, despite exposure to circumstances that increase the risk of obesity. The characteristics that protect individuals of high socioeconomic position (SEP) from obesity may not be those same factors that are protective amongst individuals of low SEP, who face substantial additional barriers and exposure to obesity-promoting factors, both internal and external. It is also feasible that some factors are common across SEP groups but are more strongly associated with health and health behaviours among low SEP individuals. For example, parental support has been widely reported as a predictor of children's physical activity, but recent evidence suggests that low SEP children are more dependent on this source of support.<sup>18</sup> Investigating factors that foster the development of resilience to obesity in low SEP groups is thus a novel and potentially valuable research avenue.

Traditional resilience theories posit that the development of resilience is dependent on three sets of attributes: attributes of individuals themselves; aspects of the family environment; and aspects of the broader environment.<sup>8</sup> This notion is consistent with the premises of social ecological models<sup>19</sup> currently being applied to the study of obesity-related behaviours, physical activity and eating. Acknowledging some genetic contribution,

it is likely that resilience to obesity amongst socioeconomically disadvantaged individuals is largely determined by a combination of intrapersonal, behavioural, social and structural/ environmental factors, many of which may be modifiable via intervention or policy approaches.

We have initiated two programs of research which employ the resilience approach to investigate the determinants of resilience to obesity and obesity-risk behaviours amongst women and children. These research studies are described briefly below as an illustration of the application of the construct of resilience to the investigation of obesity and obesity-related behaviours.

### **Resilience for Eating and Activity Despite Inequality (READI)**

The Resilience for Eating and Activity Despite Inequality (READI) study comprises a 5-year mixed methods research program aimed at understanding and reducing the increased risk of obesity amongst women and children living in socioeconomically disadvantaged neighbourhoods. The program has involved the establishment of a cohort of 4,349 women and 636 5-12 year-old children, selected from one of 40 urban or 40 rural neighbourhoods. Detailed baseline questionnaire data have been collected from women, and matched to objectively-assessed environmental data collected from the 80 neighbourhoods.<sup>20-23</sup> This is supplemented by qualitative interview and focus group data from 'resilient' women and children.<sup>24</sup> Finally, informed by these observational studies, a suite of obesity prevention intervention approaches has been developed and is being trialled amongst disadvantaged communities in an attempt to foster 'resilience' to obesity or its determinant behaviours.

### **Resilience for Eating and Activity in Children (REACH)**

A current South Australian study (Resilience for Eating and Activity in Children; REACH) is exploring unique predictors of physical activity and dietary behaviours among low SEP 10-12 year olds, using a social ecological framework. An array of questionnaires is being administered to approximately 1500 children and their parents across the SEP spectrum. Interactions of SEP indicators and predictors will be modelled to identify the intrapersonal, interpersonal and environmental factors that are associated with positive health behaviours among low SEP children, thereby exposing underlying drivers of resilience in otherwise 'obesogenic' neighbourhoods. The final phase of this study will involve targeted in-home interviews with low SEP parents of children with healthy dietary and physical activity behaviours, to explore these 'resilient' attributes in more depth.

### **Conclusions**

We argue that the application of the theoretical construct of resilience represents a novel and promising approach for identifying modifiable determinants of obesity risk amongst high-risk target groups such as individuals experiencing socioeconomic disadvantage, and hence advancing epidemiological investigations of the determinants of socioeconomic inequalities in obesity and obesity-risk behaviours. This approach resonates with long-standing calls for more salutogenic approaches to health research. For instance, Antonovsky<sup>25</sup> argued more than 30 years ago for the importance of focusing on peoples' resources and capacity to create health, rather than the classic focus on risks, ill health,

and disease. Increased understanding of the factors promoting healthy behaviours and weight amongst those facing socioeconomic disadvantage can inform the development of obesity prevention strategies aimed at fostering resilience among others, and potentially reduce the disproportionate burden of obesity and associated health outcomes experienced by these groups.

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# Lost in transition: New Zealand's missing men

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### Introduction

In an address to the American Psychological Association in 2007, Roy Baumeister posed a somewhat provocative question, "Is there anything good about men?" In this talk he begins with the feminist critique of society which looks up and sees men everywhere. But Baumeister says this is a mistake. If one were to look downward to the bottom layers of society instead, it is mostly men there too. Men are over-represented amongst the homeless, the prison population, gangs, those killed in accidents, and those with little formal education.

As is common knowledge, women have historically faced many disadvantages relative to men. But on some measures, there have been dramatic changes. In terms of life expectancy and education women now outperform men in most industrialised nations. Mid-life women have also increased their participation in paid work, including moving into many traditional male professions. Through choice and, sometimes through circumstances beyond their control, women also live in increasingly diverse households. Reflecting this diversity, while some high earning women may now choose to raise children on their own, sole mothers also tend to be amongst the poorest members of society.

But change in lifecourse has not just been restricted to women. Outcomes for a group of mid-life males are also very different to what they would have been in earlier decades. They are less likely to be in paid work, to be partnered, and, partly reflecting the growth in sole motherhood, live with dependent children. Some of the change has been positive with an expansion of the possible work and living arrangements open to them. For example, gay men no longer need to try and mould themselves into traditional marriages and some fathers can choose to be 'house husbands'. But there have also been some very negative changes.

### Trends in employment and living arrangement for mid-life men

Focusing on 'mid-life' men aged between 30 to 44 years illustrates important changes in work and living arrangements. Considering employment on its own, from the mid 1970s male labour force participation rates (the employed plus the unemployed seeking work) began to decline. In 1976, almost 99% of men aged 30-44 years were participating in the labour markets. But by 2006 only 90% of men in the age group were participating in the labour force. The changes have been more dramatic for the low skilled. In the midst of the recent New Zealand recession (December 2009), the Household Labour

Force Survey showed that the employment rate for mid-life males with no formal qualifications was 77%. Yet back in 1986, the employment rate for this group was just over 90%.

Partnering rates have also been declining. As recently as 1986, over 80% of males in the 30-44 age group who lived in private dwellings were partnered. But by 2006 this had declined to under 70%. Again, in both New Zealand and Australia it is the poorly educated who are less likely to have a partner.

Associated with the trend for fewer mid-life men to be living in couples, a smaller proportion now live with dependent children. Bringing the three variables together, we can calculate the proportion of mid-life men who are not employed, not living in a couple, and not living with a dependent child. In doing so, data limitations mean there is a need to restrict calculations to those living in private dwellings. Given that non-private dwellings include psychiatric hospitals, night shelters and prisons, this is likely to lead to an underestimation of those on the margins. In 1986, just 1.4% of mid-life males were in this group. This rose strongly to 5% near the height of the late 1980s/early 1990s recession before dropping back to 4% by 2006, still representing over 16,000 men on the margins of work and family life. The fact that the percentage did not decline to 1986 levels is at first surprising given the very strong employment growth over the latter period.

The relationships between education, employment status and living arrangement for males are complex, but those with little formal education are over-represented on the margins of employment and family life. In New Zealand, Māori and Pacific men are over-represented amongst the excluded.

### Why are a group of men excluded from work and family life?

A range of factors have contributed to the increasing separation from work and family. These include:

- historically, social norms, public policy and economic growth lent some support to the male breadwinner model but long term social changes began to undermine this model;
- by the 1970s protection of male employment had become increasingly expensive, partly because of competition from emerging economies;
- both economic reform and longer term underlying changes in the structure of the economy reduced the number of low skilled jobs, but there was also some competition from women, and possibly some competition from older workers;

- withdrawal from the labour market made some men appear less attractive as partners;
- women had greater opportunities to support themselves, and children, on their own through better earning opportunities for one group and state income for another group;
- the absence of being partnered, and also being employed, deprived a group of men of important social support and constraints;
- particular policies and practices, notably imprisonment, reinforce some of these trends.

Although the size of the group is relatively small, the men we are concerned about are central to a number of difficult contemporary policy issues such as the rise in disability benefit receipt and incarceration.

### What has this got to do with health?

The relationships between health and other outcomes, including employment and partnering, can work in a range of complex ways. For example, health status may affect employment and partnering, while employment and partnered status may affect health outcomes. But while the associations can be clear, the causality is often less so. Researchers have been concerned about unemployment and those who have exited the labour force completely, often then moving onto sickness or invalid benefits. Labour force surveys have certainly shown a strong association between ill health and non-labour force participation in New Zealand, Australia and the United Kingdom.

In terms of the reduction in employment of prime age men, there are two health-related hypotheses. One is that there has been a deterioration in the health of a group of males, the other is that the labour market has become less accommodating for those with health problems.

The worsening health hypothesis is often discussed in the context of the adverse health effects of high levels of unemployment. It may be that non-employment and other types of poor health are linked in a vicious cycle where loss of employment causes ongoing poor health and this works against future employment. In late 2009/early 2010 there was a revival of interest in research on the links between unemployment and health outcomes. This research lends support to the hypothesis that unemployment will give rise to some poor health outcomes, especially if there are earlier life events that place the person at risk, for example substance abuse or depression.

Overall, the role of health in changes in male labour force participation is difficult to disentangle. However, the evidence to date suggests that in the long run men's health is, on most dimensions, not getting worse. Rather than health deterioration causing a decline in employment, it seems more likely that, for a variety of reasons, men in poor health or with disabilities have become less likely to be employed.

### Policy implications

Historically, low skilled males were a major focus of policy – the breadwinner model – which focussed on reinforcing the social expectation that men's role was in paid work and being married. Is there now a need for a renewed policy focus on males? This is a question currently being asked in relation to New Zealand health policy with a number of researchers arguing that male health needs some specific attention. On this issue, Australia and New Zealand have to date taken different approaches. In May 2010, the Australian government released its first National Male Health Policy. In contrast, in New Zealand there is on-going debate about the strengths and weaknesses of developing gender rather than needs based health policy. Whatever the outcome of this particular debate, policy makers need to better understand the increased heterogeneity of education, employment, living arrangement and health outcomes for males and develop effective ways of reducing the exclusion of those men who are the most disadvantaged.

### Acknowledgements

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# Socioeconomic inequality in oral health of the Australian population

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### Introduction

Oral health is integral to general health and is important to both physical and social function.<sup>1,2</sup> Although there have been gains in the oral health of populations globally, oral health inequalities are widely documented.<sup>3,4</sup> Countries report differences between generations, ethnoracial groups, Indigenous and non-Indigenous peoples, socioeconomic groups and between regions (e.g. rural vs metropolitan neighbourhoods).<sup>2,5</sup> Across the world, the greatest burden of oral diseases falls on underprivileged groups with the socially disadvantaged experiencing ill-health earlier and more severely than their better-off counterparts.<sup>6-8</sup> Even in high-income countries with advanced public oral health care, oral health inequalities persist.<sup>9</sup> For example, virtually all aspects of oral disease measured in Australia's National Survey of Adult Oral Health 2004-06 (NSAOH) were more frequent and more severe among people eligible for public dental care. Poorer oral health indicators were also found to disproportionately affect Indigenous Australians compared to the non-Indigenous population.<sup>10</sup>

Other Australian studies have pointed to social gradients in oral health-related quality of life, number of teeth, self-reported oral health and satisfaction with chewing ability.<sup>11</sup> Similarly, tooth loss (among the dentate and edentulous) was found to have a marked social gradient measured by income and area-level disadvantage.<sup>12</sup> Historically, however, it is dental caries and periodontal disease that have been considered the most important global oral health burdens.<sup>8</sup>

Dental caries is the most common oral disease of childhood and periodontal diseases are most prevalent among adults. Therefore, the aim of this manuscript is to describe dental caries inequalities among children and periodontal disease inequalities among adults.

### Oral health of children

Dental caries is the process by which tooth minerals are dissolved. Although fluorides can be used to reverse the disease process during its initial stages, once a cavity has formed the disease is irreversible and requires professional treatment to restore form and function. If left untreated, pain and more generalised infection may occur.

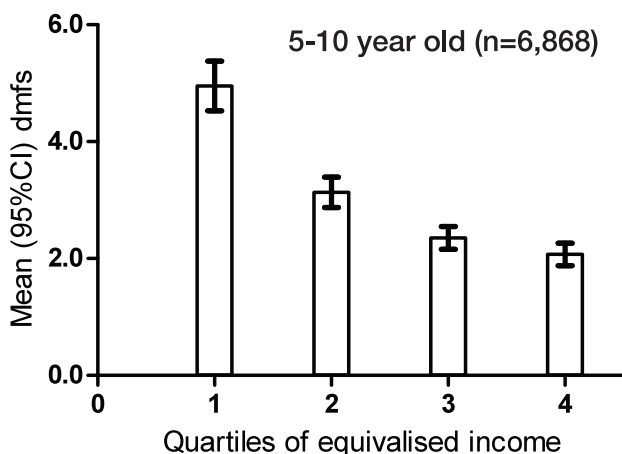
Dental caries has shown an increasing trend in developing countries where rates were historically low, and continues to be a major health problem in most industrialised countries, affecting 60-90% of school children.<sup>7</sup> For example, in Australia a declining trend was observed until the mid 1990s but since then decay experience in the deciduous and permanent teeth of children has increased.<sup>13</sup> For example, 6 year-old decayed, missing, and filled deciduous teeth due to caries (dmft) increased by 24 % from a mean of 1.58 in 1996 to 1.96 in 2002. Likewise, 12 year-old decayed, missing, and filled permanent teeth (DMFT) increased by almost 15% from a mean of 0.89 in 1998 to 1.02 in 2002.<sup>13</sup>

Although dental caries is highly prevalent in the population, a minority of Australian children experience a considerable burden of decay. For example, between the ages of 6 and 10 years, children with the highest 10% DMFT scores had mean scores between 6 and 10 times higher than for the entire age group population of children attending the School Dental Service.<sup>14</sup> Higher levels of decay experience in the deciduous dentition were found among those children living in lower socioeconomic areas – as indicated by the Socio-Economic Index For Areas (SEIFA), Index of Advantage score – than those from higher socioeconomic areas with national differences ranging between 24% and 97% and, although not always linear, permanent decay experience was also more prevalent in children from less advantaged areas.<sup>15</sup> However, inequalities may be somewhat attenuated among Australian children by dental care received from the school dental services.<sup>16</sup> In a historical cohort of South Australian children, those entering the school dental service at age 6 showed a greater social differential in deciduous decay experience than they showed in their permanent teeth seven years later at age 13.<sup>16</sup> Another factor that contributes to lessening social inequalities among Australian children is the effect of community water fluoridation.<sup>6</sup> Timely and frequent tooth brushing was found to attenuate the income-related gradient in dental caries experience in 5-year-old children.<sup>17</sup>

In Figures 1a and 1b we present age- and sex-adjusted income-related gradient in dental caries for the primary and permanent dentitions of Australian children. The data are derived from the Child Oral Health Study (COHS) conducted in four Australian states between 2002 and 2005. The COHS is a population-based study with multistage, stratified random study sample selection. Children attending school dental services were the target

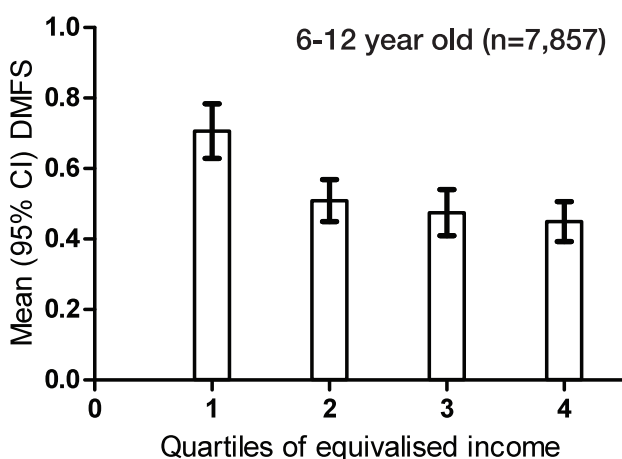
population.

**Figure 1a: Age- and sex-adjusted income-related gradient in caries experience of the primary dentition**



Household Income	Rate Ratio	RR 95% CI
1 (Lowest)	2.25	(2.03, 2.49)
2	1.46	(1.30, 1.62)
3	1.21	(1.08, 1.36)
4 (Highest)	1	

**Figure 1b: Age- and sex-adjusted income-related gradient in caries experience of the permanent dentition**



Household Income	Rate Ratio	RR 95% CI
1 (Lowest)	1.38	(1.23, 1.55)
2	1.24	(1.10, 1.39)
3	0.99	(0.87, 1.12)
4 (Highest)	1	

Caries was measured by the mean count of clinically detectable decayed, missing, and filled tooth surfaces, that is, mean dmfs score for the primary dentition and mean DMFS for the permanent dentition. This measure is commonly used not only as a measure of disease experience and dental care but also an indicator of severity with a higher score indicating a greater extent of disease. The mean primary caries (dmfs) was estimated for the 5–10 year-old group (n=6,868) while the permanent DMFS was estimated for the 6–15 year-old group (n=7,857). The dmfs and DMFS scores were adjusted for age and sex of the children in the analysis. Data were weighted to correct for difference in sampling ratios to make the estimates representative of the child population in the four states.

Household income was collected together with number of adults and children dependent on that income allowing for calculation of equivalised income. The equivalised income estimates were used to group the sample into time-specific quartiles using the most approximate values.

Rate ratios of caries experience measured by the dmfs or DMFS scores were estimated for the lower income quartiles against the highest quartile using the Poisson regression with robust standard error estimation.<sup>18</sup>

There was a clear income-related gradient in caries experience in both primary and permanent dentitions (Figures 1a and 1b). There was trend of lower caries experience associated with higher levels of household income. The income-related gradient is larger for the primary caries experience than that for the permanent dentition. The association between income and dental caries in children was not monotonically linear. For both dentitions, the inter-quartile difference was largest between the lowest quartile and the second lowest income quartile.

### Oral health of adults

Periodontitis is a bacterial infection that causes inflammation of the tissues that surround the teeth, affecting the gum, ligaments and bone. In severe forms, the disease causes bone loss that can ultimately lead to tooth loss. Although inequalities in clinical measures of adult oral disease have not been widely studied, recent analyses of periodontal data indicated considerable relative inequality in periodontitis in which higher household income groups showed a lower prevalence of disease than higher income groups.<sup>19</sup>

The prevalence of moderate to severe periodontitis in adults in Australia 2004-06 was 22.9% and was unfavourably related to older age, male sex, lower educational levels, eligibility for public dental care, dental visiting for a problem, and being uninsured.<sup>10</sup>

Social gradients in adult oral health and disease have been mostly studied in terms of self-reported oral health and tooth loss. Less attention has been paid to the social gradient in periodontitis

and to possible mediators of social inequality.

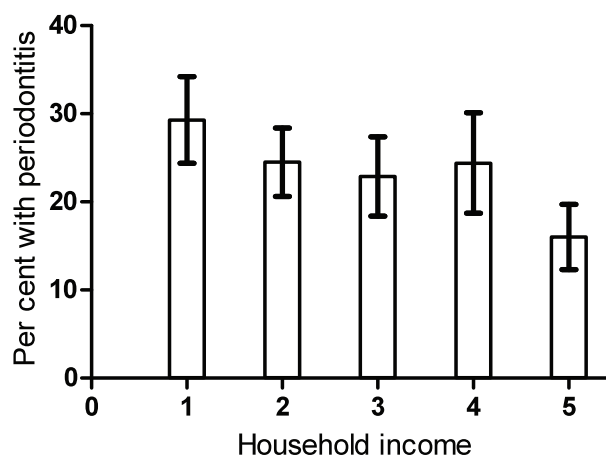
The present report draws on data from the same National Survey of Adult Oral Health (NSAOH), 2004-06. NSAOH used a three-stage stratified clustered sampling design to select people from the target population of Australian residents. One person aged 15 years or older per household within sampled postcodes was invited to participate in the survey. Subjects who completed the computer-assisted telephone interview (CATI), and who reported having one or more of their own natural teeth were invited to undergo a standardised oral examination. A total of 5505 adults underwent an oral examination. Unit record weights were computed for both the interview and the examination analytic data files.<sup>10</sup>

The measures of socio-economic position for the individual form part of the household income information gathered in the NSAOH CATI questionnaire. Household income was collected and used to divide the sample into five nearly equal in size groups. Data were weighted to adjust for stratified sampling procedures and different probability of selection to produce population representative estimates.

The severity of periodontal disease is measured through the loss of tooth support. The loss of attachment between the tooth and its surrounding tissues results in the formation of pathological pockets and gingival recession, which can be clinically measured to indicate the severity of the disease process. In the current analysis, the case definition for periodontal disease was defined using the United States Centre for Disease Control and Prevention (CDC/AAP) case definition.<sup>20</sup> The CDC/AAP defines periodontitis as the presence of either two sites between adjacent teeth where the gum has lost its attachment to the tooth for 4mm or more, or at least two such sites that have pockets of 5mm or more.

Figure 2 shows the age- and sex-adjusted income-related gradient in the prevalence of periodontal disease in Australian adults. There was a trend of higher income groups having lower prevalence of periodontitis. Relative to the highest income group, all the other groups had significantly higher prevalence of periodontitis. The lowest income group had over 80% higher the prevalence of periodontitis compared with the highest income group. The shape of the association is not monotonic. The inter-group difference in the prevalence of periodontitis was larger between the lowest and the second lowest income groups and between the second highest and the highest groups.

**Figure 2: Age- and sex-adjusted income-related gradient prevalence of periodontitis in the Australian adults**



Age/sex adjusted RII = -0.68 (95% CI: -1.03, -0.33)

Household Income	Prevalence Ratio	95% CI
<\$20,000	1.83	(1.40, 2.41)
\$20-<\$40,000	1.54	(1.17, 2.01)
\$40-<\$60,000	1.43	(1.05, 1.96)
\$60-<\$80,000	1.53	(1.09, 2.14)
\$80,000+	1	

## Discussion

For the most part the markers of dental disease are permanent, unaffected by receipt of professional dental care. Moreover, a large proportion of the general population does not receive needed dental care – in itself a substantial inequality problem. For example, 31.7% of 12 year old children and 25.5% of Australian adults present untreated dental decay.<sup>10,15</sup> It is clear that dental treatment alone will not prevent dental disease. A greater emphasis on population-wide disease prevention and preventive services is required. Prevention has largely focused on individual approaches, such as identifying individuals considered to be at high risk of disease. Arguments have been made against this individualist approach to prevention indicating that population-wide prevention could help prevent more disease and contribute more effectively to reducing oral health inequalities.<sup>6,21</sup> An example of a successful population approach to disease prevention and reduction of inequalities in dental caries is the introduction of community water fluoridation. Management of periodontal disease has its main focus on an individual and clinical approach to prevention and treatment with the exception of anti-smoking activities.

Socioeconomic status was measured as levels of individual income, which reasonably correlated with other socioeconomic factors such as education and residential location. We did not control for these other factors in our analysis. Individual income can also indicate purchasing power with which individuals afford their access to preventive and therapeutic dental services. Unlike medical services, dental services in Australia are not covered by the universal health insurance. Approximately half of the population has coverage by private dental insurance but this is strongly income-related.

Dental caries in children is a predictor of oral health in adulthood. We have recently reported a widening trend of income-related inequality in child oral health in Australia.<sup>22</sup> In order to improve overall population oral health, this widening trend must be addressed and reversed.

Periodontitis is socially-patterned with a considerable relative inequality, even after adjustments for age and sex. Dental visiting pattern was found to explain about a third of relative inequality

in periodontitis in the Australian adult population.<sup>19</sup> Hence, visiting pattern has a mediating effect on the link between income and periodontal health. However, a substantial relative inequality in periodontitis remained unexplained.

To summarise, similar to those reported for other health conditions, there are considerable socioeconomic inequalities in oral health of both children and adults in Australia. There is a strong need in understanding the effect of these inequalities on the overall population oral health.

## Acknowledgements

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## Round Table

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# The first 10 years of the Universal Coverage Scheme in Thailand: review of its impact on health inequalities and lessons learnt for middle-income countries

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### Abstract

**Aims:** We aim to assess the impacts of Thailand Universal Coverage Scheme (UCS) of health insurance on health service use and healthcare finance in the past 10 years.

**Methods:** We review the impacts of the UCS on preventive and health promotion including dental care and reproductive health as well as on vulnerable population subgroups.

**Results:** Three decades after the implementation of low income health insurance in the 1970s, Thailand finally introduced a UCS in 2001. It has brought under its umbrella the uninsured 30% of the Thai population. Many empirical studies of illness expenditure confirm that the Thai UCS substantially reduced the financial burden of healthcare among the poor. The Thai UCS mechanism boosts use of primary healthcare facilities and has substantially reduced catastrophic medical payments and consequent impoverishment.

**Conclusions:** The UCS relies on a solid primary healthcare foundation. Continued investment into primary healthcare resources will help to ensure sustainable development of the UCS and reduced health inequity. The UCS development in Thailand can provide some valuable lessons for middle income countries pursuing the goal of equity in health and healthcare.

### Background

For the past few decades, many countries have been working toward 'health for all' and improving equity in access to healthcare and equitable healthcare financing through conceptualising and implementing universal health coverage.<sup>1,2</sup> Such is the case for middle-income Thailand with a goal of equity in health and health care being an integral part of its development strategies over many decades. This article provides background and reviews the impacts of the Thai Universal Coverage Scheme (UCS) on health service use, healthcare financing, and vulnerable population subgroups. The evidence from Thailand provides some lessons for other countries particularly those in middle-income settings.

Thailand is a developing country in Southeast Asia which has gone through rapid economic growth (1950-1997), economic crisis (1997-2000) and steady economic recovery (2001 onward). Like many developing countries it faces the accompanying challenge of widening inequality. The UCS was introduced in 2001 following collaboration by many stakeholders, both within and outside the health system.<sup>3,4</sup> This was in response to section 52 of the 1997 Constitution which stated that "All Thai people have an equal right to access quality health services", and aimed to provide Thais with health services that were both accessible and equitable. The UCS was an extension of existing public health insurance provisions, which were expanded to cover uninsured individuals. It replaced two previous public insurance schemes: the public-financed free care for the poor (Medical Welfare Scheme) initiated in 1975, and a subsidised public voluntary insurance program (Voluntary Health Card Scheme) that had operated since 1983.

The UCS brought under its umbrella the uninsured 30 percent of the population who fell outside the two previous schemes. After 2001, two types of universal coverage provision emerged: the UCS with fee exemption and the UCS with 30 Baht copayment (30 Baht ~ 0.75 USD). Then, from 2006, the government abolished the copayment. Policymakers use capitation payments for purchasing ambulatory care and Diagnosis Related Groups – a patient classification system for inpatients that has been used as a healthcare finance mechanism and National List of Essential Drug was adopted as the basis of pharmaceutical benefits. UCS policy requires scheme members to be registered at a primary healthcare facility, and except in an emergency to first access the healthcare system where registered. The primary care network, contracted units for primary care, acts as gatekeeper to higher level hospitals.

### Impacts of the UCS on health service use and healthcare financing

The UCS consists of three main benefit packages: a curative package covering most common diagnoses and treatments, a high-cost care package, and a preventive package. Overall, the

system has been working well and no informal under-the-table payments have emerged.<sup>5</sup> Since the implementation of the UCS, several Thai studies have reported increased overall use of health services.<sup>6-9</sup> After the UCS in 2003, the rate of ambulatory care was 4.93 episodes per capita per year, 20.1% higher than that before UCS.<sup>10</sup> The implementation of the UCS also changed patterns of health services use, particularly for rural people and the urban poor, by placing greater emphasis on primary healthcare.<sup>11</sup>

Other dimensions of inequalities have also been improved including a major reduction of healthcare costs, substantial reduction of catastrophic payments, as well as great reduction of impoverishment due to medical care costs. Benefit incidence analysis has indicated that public subsidies for healthcare benefited the poor more than the rich when compared to the situation before the UCS.<sup>12</sup> Households using inpatient care experienced catastrophic expenditures most often (31.0% in 2000, compared with 15.1% and 14.6% in 2002 and 2004, respectively).<sup>13</sup> Use of certain services not covered by the UCS benefit packages (e.g. cosmetic surgery) or bypassing designated providers (prohibited under the capitation contract model without proper referrals) are the major causes of the small number of Thais still experiencing catastrophic medical expenditure and consequent impoverishment.

Overall we now know that the UCS not only prevented households from incurring liability for catastrophic health payments, but also protected them from becoming impoverished. Estimates revealed that 1.01% of Thai households fell below the Thai poverty line due to out-of-pocket payments for healthcare in 2000 before the UCS; the corresponding proportions after the UCS were 0.62% and 0.49% in 2002 and 2004, respectively.<sup>14</sup>

### **Impacts of the UCS on population subgroups**

Initially antiretroviral treatment for HIV/AIDS and renal dialysis therapy were excluded from the UCS benefits, but due to strong social movements these were included in October 2003 and January 2008, respectively.<sup>15, 16</sup> The UCS preventive package covers immunisations, annual check-up, dental healthcare,<sup>17</sup> as well as antenatal care and other reproductive health services.<sup>18</sup> In addition, a most important complementary program for the preventive aspect of the UCS was established in 2001 – the Thai Health Promotion Foundation. The Foundation is a health promotion funding mechanism that draws upon a 2% surcharge levied on alcohol and tobacco excise tax, approximately USD \$50-60 million a year to promote healthy living at school, in workplaces and within the community.<sup>19</sup>

The UCS also attempts to reach specific population group targets. For the elderly, the UCS and healthcare delivery appears to provide relatively equitable access to health care, but issues of inadequate hospital access for rural residents due to geographical barriers still persist.<sup>20</sup> Access to inpatient care was inequitable, most likely due to problems of physical access and travel costs for these rural residents. The UCS not only includes Thai citizens,

but also covers registered foreign workers via a health insurance program.<sup>21</sup> The results show that the UCS also plays a major role in improving the use of health care for ethnic groups, especially for Thai ethnic minorities. However, a gap still existed in health service use in 2004 among ethnic minorities, migrants and Thais. Better coverage of minorities and foreign workers is still needed.

### **Lessons learnt and ways forward**

The Thai UCS relies on a solid primary healthcare foundation.<sup>22, 23</sup> The necessary infrastructure was largely set in place during the 2-3 decades preceding its implementation, but it is important that these infrastructures are constantly monitored. Lessons learned from other countries include the need for a nationally agreed package of prioritised and phased primary health care that all stakeholders are committed to implementing, management systems at district level and consistent investment in primary healthcare resources.<sup>24</sup> Effective and efficient primary health care can be assisted by community and village health volunteers.<sup>25</sup> Nurses are also key providers of primary care services, particularly in remote areas and play an important role in improving the health and well-being of the Thai community.<sup>26</sup> Primary healthcare resources have also improved in parallel to the UCS. For example, health centre workers now accept information technology freely with widespread use of computerised records and internet reporting and feedback systems.<sup>27</sup> These results are similar in all of the country's geographic regions.

### **Conclusions**

Internationally and in Thailand, many empirical studies of illness expenditure confirm that a UCS system of finance substantially reduces the financial burden of health care among the poor. Because the UCS mechanism focuses on health promotion and disease prevention through community health volunteers, and boosts use of primary healthcare facilities such as health centres and community hospitals, strengthening of these human resources and health facilities is vital to sustainable development of the UCS. As use of health services is determined by their availability in an area, the geographic distribution of health resources among rural areas and among regions will be a vital part of the overall and long term plan to address inequalities in the health system.

### **Acknowledgements**

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# Measuring subjective social status in urban Indigenous Australian adults: The DRUID Study experience

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### Abstract

**Aims:** To describe our experiences in using the MacArthur Scale of Subjective Social Status among Indigenous Australians in an urban setting, and to provide information that may be useful to other researchers who are considering using this instrument in similar settings.

**Methods:** Analysis was based on a subset of 110 participants in the DRUID Study, a study of the health of Aboriginal and Torres Strait Islander adults living in an urban area in northern Australia. Respondents self-completed both the community ladder and the socioeconomic status (SES) ladder components of the MacArthur Scale.

**Results:** Key issues identified included high item non-response and a relatively high rate of interviewer coding error. Comments made by participants suggested that the conceptual underpinning of the ladders was problematic, with many people indicating that these particular questions were not acceptable, not answerable and/or not relevant. Scores for both ladders tended to be clustered in the middle of the range, and the pattern of relationships with objective SES variables was more consistent for the community ladder than for the SES ladder.

**Conclusions:** More work is needed to determine the usefulness of this instrument in the Indigenous Australian population and in similar groups elsewhere.

### Introduction

It has been recognised that commonly used uni-dimensional measures of socioeconomic status (SES), such as employment, education and income, do not adequately characterise socioeconomic position, especially in some groups such as women and socially and economically marginalised people.<sup>1,2</sup> The MacArthur Scale of Subjective Social Status (hereafter referred to as the MacArthur Scale) was developed in an attempt to integrate multiple dimensions of SES into a single measure and to capture people's perceptions of their place in two potentially salient social hierarchies.<sup>3</sup> This instrument consists of pictures of two ladders, an SES ladder and a community ladder, each of which has ten rungs. The instructions for the SES ladder make reference to the traditional SES indicators of income/wealth, education and employment, with participants asked to rate themselves against others in their country. The community ladder refers to one's standing in his or her community

(as defined by the individual respondent) with indication of the criteria on which this should be judged.<sup>3</sup> A score is then assigned based on the rung marked by the respondent, with 10 representing the highest rung of the ladder and 1 representing the bottom rung of the ladder. The SES ladder has been used in several studies examining the relationship between subjective social status and health,<sup>4-9</sup> but relatively few studies have used the community ladder.<sup>3</sup>

It has been suggested that the community ladder may be of particular interest in poorer populations, in which there may be relatively limited variability on traditional SES measures but a legitimate social hierarchy in which individuals have greater or lesser power, prestige or influence.<sup>3</sup> Thus the MacArthur Scale would seem potentially well-suited for use in the Australian Indigenous population.

As part of a study of the health of urban Indigenous Australians,<sup>10</sup> data on subjective social status were collected from a subset of participants using both the community and SES ladders of the MacArthur Scale. To our knowledge, this instrument had not previously been used in Australia (although it has been used at least once subsequently<sup>11</sup>), and we found no published data on other indigenous groups at the time our study commenced. This paper describes our experiences in using the MacArthur Scale among Indigenous Australians in an urban setting, and provides information that may be useful to other researchers who are considering using this instrument in similar settings.

### Methods

Data were collected as part of the DRUID Study, a study of the health of over 1,000 urban Indigenous adults aged 15 years and over living in and around Darwin, Northern Territory. The study has been described in detail elsewhere.<sup>10</sup> Briefly, eligible participants who gave consent underwent a health examination involving clinical and anthropometric assessments and completed questionnaires on a range of topics. The DRUID Study was approved by the joint Human Research Ethics Committee of the Northern Territory Department of Health and Community Services and the Menzies School of Health Research. Participants in the first six months of the study received two questionnaires, while subsequent participants received a single shortened questionnaire. Questionnaires were initially administered by a DRUID staff member due to

**Figure 1: Subjective social status questions used in the DRUID Study.**

Source: MacArthur Research Network on SES and Health,<sup>3</sup> amended for Australia and used with permission.

**Question 1.**

**Community comparison of social standing**

Think of a ladder as representing where people stand in your community. People with the most money, the most education, and the most respected jobs are at the top of the ladder. At the bottom of the ladder are the people with the least money, least education, and the least respected jobs or no job. The height of the ladder is the social standing in your community. The higher up the ladder you stand, the closer you are to being at the very top. The lower you stand, the closer you are to being at the very bottom.

Where would you place yourself on this ladder, compared to others in your community? Please place a single X on the ladder, where you think you stand.



**Top of the ladder = highest standing in your community**  
**Bottom of the ladder = lowest standing in your community**

concerns about literacy levels in the target population. However, early respondents indicated a strong preference for self-completion of the forms, and this became the default, with interviewer administration available on request. Both the community and SES ladders (in this case, a specifically Australian-based SES ladder) of the MacArthur Scale were included in the initial set of questionnaires (see Figure 1), but they were not part of the revised single questionnaire. Participants could choose not to take part in some aspects of the study, and not all participants completed the questionnaire(s).

Data included in this analysis relate to DRUID participants who were recruited between 16 December 2003 and 19 March 2004. This is the period during which: a) the MacArthur Scale was included as part of the questionnaire; and b) self-administered forms were available.

Responses from self-administered forms were transcribed onto coding sheets to allow for scanning as the means of data entry, but the forms completed by the participants were retained. During post-survey processing, it was discovered that errors had been made by interviewers in transcribing the data from the ladders (as marked by the participants) to the coding sheets. The vast majority of these errors involved using the inverse of the correct scale (i.e. using 1 rather than 10 as the highest score). The ladders, coding sheets and electronic data were compared, and corrections were made as necessary to ensure that the final dataset reflected what participants had indicated on the ladders.

**Question 2.**

**Individual comparison of social standing status**

Think of this ladder as representing where you stand in Australia. At the TOP of the ladder are the people who are the best off – those who have the most money, the most education, and the most respected jobs. At the BOTTOM of the ladder are the people who are the worst off – who have the least money, least education, and the least respected jobs or no job. The height of the ladder is the social standing in the population. The higher up the ladder you stand, the closer you are to being at the very top. The lower you stand, the closer you are to being at the very bottom.

Where would you place yourself on this ladder, compared to all the other people in Australia? Please place a single X on the ladder, where you think you stand.



**Top of the ladder = best off – most money, most education, most respected jobs**  
**Bottom of the ladder = worst off – least money, least education, least respected jobs or no job**

**Results**

A total of 157 participants were eligible for inclusion in this analysis. Of these, 33 people (21%) did not complete the relevant questionnaire, and 12 (8%) were not self-administered. Another two participants were recorded as having a self-administered form, but only the coding sheet was found; that is, the original sheets marked by the participant were not found in the relevant file.

Of the remaining 110 participants, 24 (22%) left the two questions relating to the MacArthur Scale blank. Most of them (22/24; 92%) had completed all or most of the rest of the questionnaire. Non-response was significantly more common among those whose household income was missing or not stated (38%) and significantly less common among those in the highest income category (4%) ( $\chi^2$   $p=0.019$ ), but no significant differences were observed by sex, 20-year age group, home ownership, employment status, or post-school educational qualifications. Four participants wrote comments on their questionnaires indicating that the questions were not applicable to them, or that they did not wish to, or were unable to, answer the questions; another two respondents drew lines through the ladders. In team meetings, interviewers indicated that the ladder did not appear to be a commonly used or understood metaphor among participants, and that many people appeared to object to the notion of putting themselves 'above' other people.

The community ladder question was completed by 86 participants, 84 of whom also completed the SES ladder question. About a third of responses (35% of community ladder scores and 33% of SES ladder scores) were identified during post-survey processing as having been incorrectly coded; these errors were corrected prior to further analysis.

Responses on both the community ladder and the SES ladder ranged from 1 to 10, with a median of 6 for the former, and 5.5 for the latter. The majority of participants who provided a response used the middle of the range, with 69% (community) and 62% (SES) selecting the rungs corresponding to 4, 5, 6 or 7 on a scale of 1-10. Scores on the two ladders were significantly correlated, although the degree of correlation was relatively modest (Spearman's  $\rho = 0.36$ ,  $p < 0.001$ ).

Among the 84 participants with data for both ladders, 31 participants (37%) gave the same response for both ladders, 39 (46%) were higher on the community ladder than the SES ladder, and 14 (17%) were higher on the SES than the community ladder. The mean difference for the community ladder compared with the SES ladder was 0.74. Differences ranged from -9 to +8, but the majority of participants (64%) had a difference of 0, 1 or 2 rungs. Males had a greater range than females with respect to difference (-9 to +8 versus -5 to +6, respectively) and their mean difference was greater (1.55 versus 0.26).

In linear regression models, mean score on the community ladder increased significantly with age ( $p=0.02$ ). No other results were statistically significant for either ladder, although community ladder scores were generally consistent with a pattern of higher scores among those better off with respect to objective SES measures such as home ownership, health insurance, post-school qualifications, full-time employment, and household income; patterns for the SES ladder were not consistent across these same measures.

## Discussion

The use of the MacArthur Scale was not without problems in this study of the health of urban Indigenous Australians. The major issues identified were high item non-response and a relatively high rate of interviewer coding errors. In part because of these issues, the use of the MacArthur Scale was discontinued part-way through the study, and it was not possible to undertake the type of analysis initially envisioned, that is, exploring relationships between subjective social status and various measures of health in the entire study sample.

The relatively high level of item non-response for the two ladder items appeared to be selective; most respondents who skipped these questions answered most or all of the other questions on the relevant questionnaire, although non-response was related to non-response on the household income question. Comments made by participants, both those written on the questionnaire and those expressed to interviewers, suggested that the conceptual underpinning of the ladders was problematic, with many people indicating that these particular questions were not acceptable, not answerable and/or not relevant. These issues were somewhat unexpected, as they had not arisen during the testing

of the questionnaires prior to commencement of the study. Ladders were not a commonly used metaphor in Australia, at least at the time of the study, and this may have been a factor. Also potentially relevant was the cultural phenomenon of the 'Tall Poppy Syndrome', which appears to remain reasonably robust in Australia today, and which may explain participants' reluctance to put themselves 'above' others. With the exception of income, the demographic factors examined were not associated with non-response for the two ladder items, although this may be a function of the relatively small sample size. More work is needed to understand the characteristics of people who feel unable or unwilling to respond to these questions.

We also identified an important practical problem, which probably could have been avoided in hindsight. A substantial number of responses (about a third) were miscoded when they were transcribed from the ladders marked by participants to the scannable data entry sheet; this usually involved using the inverse of the correct scoring scheme, and occurred despite specific written instructions. Unfortunately, it was not possible to check for coding errors for all participants who responded to these questions. In particular, it appears that participants whose questionnaires were interviewer-administered (and who therefore were not included in this analysis) usually pointed to a rung of the ladder rather than actually marking a form. This information was then recorded by the interviewer on the coding sheet. As a result, original sheets marked by these participants did not actually exist, and therefore could not be used to check for errors. In addition to careful training of interviewers/coders (and possibly the use of a single coder throughout the study), it is highly recommended that all participants be asked to place a mark on a form showing the ladder(s), and that all original forms marked by participants be retained and used to check for coding/data entry errors.

The small sample size precluded detailed analysis, but some findings were worth highlighting for consideration in future work. Among those who provided a response to both ladders, participants were more likely to rate themselves higher on the community ladder than the SES ladder; this appears to be consistent with the relative socioeconomic disadvantage of Indigenous Australians.<sup>12</sup> However, scores tended to be clustered in the middle of the range, with about 2 out of every 3 respondents rating themselves between 4 and 7. Correlation between the two sets of scores was modest, which suggests that the two ladders were measuring different aspects of subjective social status, as intended. The small sample size limited our power to detect relationships with other socio-demographic measures, but it is interesting to note that the pattern of relationships with objective SES variables was more consistent for the community ladder than for the SES ladder. While this result may not be robust, it is contrary to expectations and raises some concerns about the performance of the measures in this group.

It must be noted that participants included in this analysis were not necessarily representative of all DRUID Study participants, and DRUID participants were not necessarily representative of the source population. In addition, as noted above, the number of participants included in this analysis was small. Thus it is not

clear to what extent the issues identified in this study reflect what would be observed in other groups of participants from the same population. Despite these limitations, the issues raised are worth considering by those who wish to explore subjective social status in Indigenous Australians.

Although the MacArthur Scale remains a potentially promising tool, more work is needed to determine whether, and in what circumstances, it can be used successfully to assess the subjective social status of Indigenous people in Australia, as well as similar groups elsewhere.

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# Geographies of Obesity

## Environmental Understandings of the Obesity Epidemic

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The application of geography to the field of public health is not a modern phenomenon. The mapping by Dr John Snow of cholera cases in London in 1854, and the linking of the transmission of cholera to contaminated water from the Broad Street pump was a milestone in the history of epidemiology. 'Geographies of Obesity' is novel however, in its examination from a geographical perspective of the modern epidemic of obesity, as many textbooks on obesity have focused on clinical aspects and individual determinants of obesity. It is evident that a multidisciplinary approach is required to combat obesity at a population level. This book reflects this by the broad range of research fields from which expertise is drawn; geography, transport and land-use planning, epidemiology, marketing, public health, nutrition, medicine, physical activity, economics and sociology. This book is aimed at researchers, policy-makers and practitioners in these and related disciplines, but is informative also for readers with a general interest in obesity.

The book is clearly written and well-structured. Introductory chapters in Part 1 describe the prevalence and upward trends of obesity in developed and developing nations. A comprehensive history of the obesity epidemic is presented, and key drivers are discussed. These include greater availability of energy-dense foods and the increasingly sedentary nature of work and recreational pursuits compared with several decades ago. Potential environmental drivers of energy intake and expenditure are introduced, as well as conceptual frameworks for the examination of related pathways.

Part 2, 'Food Environment and Obesity', and Part 3, 'Physical Activity, Environment and Obesity', focus respectively on the 'energy in' and 'energy out' sides of the energy balance equation. Taking an ecological approach, the authors highlight that an imbalance of this equation resulting in obesity is not due solely to individual factors. Part 2 demonstrates that dietary intake may be influenced not only by individual preferences, but also by economics and government food production subsidies,

advertising, marketing and access to supermarkets and fast food outlets. With regard to childhood obesity, the influence of the school environment is discussed. Part 3 focuses on the role of the built environment in providing opportunities for physical activity. The literature is reviewed and physical environmental variables (e.g. land-use mix, connectivity of streets) and social environmental variables (e.g. social disorder, personal safety) are discussed in relation to neighbourhoods that are supportive of physical activity.

Part 4, 'Obesogenic Environments and Policy Responses', describes and suggests policies that aim to combat obesity (e.g. restrictions on advertising of energy-dense foods to children; urban planning policy that promotes active transport). Part 5, 'Future Research Challenges', begins by describing the measurement of causality in epidemiology, and the challenges of measuring this in observational epidemiology. Study designs are discussed as well as advances in methodology aimed at estimating causal effects in observational studies, and advances in technology including Geographical Information Systems (GIS) for objectively measuring physical environments.

An important conclusion is that research on environmental drivers of obesity is at an early evolutionary stage, with inconsistent findings across existing studies. As such there is much to inspire researchers in this expanding field of critical importance to global health.

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**Geographies of Obesity. Environmental Understandings of the Obesity Epidemic, Eds Jamie Pearce and Karen Witten**  
Ashgate Publishing Ltd, Surrey, UK.  
(2010), ISBN 978-0-7546-7619-5.

# Life Members

Life membership is awarded to individuals who meet two or three of the following criteria. The candidate will have:

- been a member of the Association for 15 or more years;
- served as a committee member for a minimum of 4 years;
- contributed significantly through research or other involvement in epidemiology either to the international reputation of Australasian epidemiology or to public health advancement in Australasia.

All nominees for life membership are nominated and seconded by members of the Association, and nominations must address the criteria. The following AEA member was awarded Life Membership at the 2010 Annual Scientific Meeting in Sydney in September. Extracts from the two letters of nomination are reproduced below.

### Professor Robert Cumming

#### Nomination 1

"I make this recommendation on the basis of Professor Cumming's service to the AEA and its membership through his work for the Association, and his lifetime of excellence and innovation in the teaching and conduct of epidemiology.

Professor Cumming completed his medical degree in 1979 and, after four years in clinical medicine, trained as an epidemiologist in Sydney and New York. Robert has been an active member of the Association for more than 20 years. Moreover, he has performed key leadership roles within the Association, including Council Secretary 1996-2001 and co-convenor of the highly successful 2001 AEA Annual Scientific meeting. Professor Cumming has an outstanding record of excellence in teaching within the University of Sydney Masters of Public Health Program, and he has supervised numerous PhD and Masters by research students to completion. Robert has a reputation for excellence in epidemiological methods and he is an inspirational educator. He was also Head of the School of Public Health at the University of Sydney in 2000-2001.

The theme of Professor Cumming's research career is improving the health of older people by studying chronic disease and ageing. In particular, Robert has an international reputation for his research on osteoporosis, falls and fractures, the epidemiology of ageing, and more recently non-communicable disease control in Africa. Through this work Robert has made significant contributions to both the international reputation of Australasian epidemiology and public health advancement in Australia. He has led several large-scale epidemiological studies that have involved cross-disciplinary collaborations and community participation, including the Concord Health and Ageing in Men Project, the Blue Mountains Eye Study and the Fracture Risk Epidemiology in the Elderly study. Professor Cumming has published over 180 peer-reviewed papers. In 2002 he was appointed Professor of Epidemiology and Geriatric Medicine in the University of Sydney and he now heads the Master of International Health program at the University of Sydney.

In summary, Professor Cumming has an exceptional track record of service dedicated to the activities and membership of the AEA."

#### Nomination 2

"Professor Bob Cumming helped set up the Masters of Clinical Epidemiology Program at the University of Sydney and he is now in charge of their Masters of International Public Health program. He has had extensive involvement in medical student teaching: he used to run the original clinical epidemiology course for the medical students and then when the medical program was changed to post-graduate he did most of the teaching for Evidence Based Medicine. He also was in charge of the community and doctor theme, now called population medicine.

In addition to Professor Cumming's great teaching style and research expertise, he is inspiring because of how approachable and genuine he is. People who have been fortunate enough to have had Bob as their PhD supervisor comment that he always seems to be able to achieve the right balance between giving guidance when needed, but also encouraging them to explore and develop ideas on their own, thus fostering the development of critical thinking skills and helping them to develop self confidence. Junior academics and PhD students also comment that whenever they have asked Bob for advice about their future, they have always trusted that he's had their best interests at heart.

Bob's commitment to the epidemiology of ageing and ageing-related diseases was recently recognised in the form of a successful ARC Centre of Excellence grant on population ageing, on which he is a Chief Investigator. He is also passionate about research in sub-Saharan Africa, particularly non-communicable disease control and the impact of HIV/AIDS on older people. His work in this area extends beyond epidemiology and Bob can often be seen and heard playing in a band to raise funds for the health needs of these people!

In summary, I support the nomination of Professor Bob Cumming for AEA Life Membership for his dedicated service to the AEA, to epidemiology in general, and his mentorship of more junior epidemiologists."

# Student Report

AEA would like to congratulate the following recipients for being awarded a 2010 AEA Top Introductory Epidemiology Student Prize. The prize of a one year's complimentary student membership of the AEA was awarded in recognition of exemplary scholastic performance in an introductory epidemiology syllabus of either an undergraduate or a postgraduate degree in their institution.

Name	Institution
Ali Radomiljac	The University of Western Australia
Antonia Shand	The University of Sydney
Arif Mohamed	The University of Otago, Christchurch
Bianca Benassi	The University of Adelaide
Erin Penno	The University of Otago, Dunedin
Heather Gilbert	The University of New South Wales
Jennifer Girschik	The University of Western Australia
Jennifer Marks	Deakin University
Rachel Foster	The University of Otago, Wellington
Richard Duncan	James Cook University
Sonia McCarthy	Australian National University
Susan Cook	Massey University
Zoe McQuilten	Monash University

I would like to thank everyone for the opportunity of being the AEA Student Representative over the last 12 months. It has been a great experience. Rosanne Freak-Poli from Monash University has now taken over the job as Student Representative. Please read below for an introduction from Rosanne.

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## Frances Garden

AEA Student Representative 2009-2010

I would like to take this opportunity to thank Frances Garden and her predecessor, Fiona Clay, for having been so diligent with this role. From the files that I was given, they have been hard at work ensuring that the descriptions for prizes and awards are now clear. Fortunately this means that the student role is now a less complicated and effortful task for myself and future representatives.

A bit about myself: Currently I am studying a PhD through the Department of Epidemiology and Preventive Medicine, Monash University. My connection to the AEA started in 2005 when I received a student travel bursary to attend the Newcastle conference. I then undertook the role of Executive Officer for two years between June 2006 and September 2008. I plan on holding the AEA student representative role for one year, until September 2011, as I will be in the write-up phase of my PhD at that stage. If you think you may be interested in the AEA student representative role after this time, please let me know.

Congratulations to AEA 2010 Conference Awardees: Recipients of the AEA Early Career Awards were Mikaela Jorgensen and Amina Khambalia. The recipient of the NZ Travel Award was Jess Micklejohn. Recipients of the AEA Student Conference Awards were Anne Baldwin, Kerry Cheung, Beverley Curry, Terry Boyle, James Harrison, Diana Lau, Erin Mathieu, Shamshad Karatela, Thathya Ariyaratne, Helen Bailey, Marine Corbin, Amanda Eng, Danielle Herbert, Hannah Moore, Simon Firestone, Kylie Smith, Rosanne Freak-Poli, Jennifer Girschik, Frances Garden and Tania King.

AEA 2011 Conference: The preparations for the 2011 AEA conference are underway. The main student activity at the conference is the student workshop – which provides an opportunity for students to present their current research. The AEA council is keen for all students to benefit from attending the conference.

If you have any ideas for the student workshop, any ideas for the conference in general, or any other comments or suggestions please feel free to contact me via email:  
rosanne.freak-poli@monash.edu

I hope to be able to represent the views of student members of AEA to the AEA council.

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## Rosanne Freak-Poli

AEA Student Representative

# Konrad Jamrozik

Konrad Jamrozik died in Adelaide on 24th March, 2010 at the age of 54. With his untimely death, the public health community has lost an outstanding and passionate advocate, researcher, teacher and mentor, and a unique individual.

Konrad was born in Leigh Creek, South Australia in 1955, son of Adam Jamrozik, a Polish immigrant, and his wife Ruth. He was immensely proud of his Polish heritage. He graduated in Medicine from the University of Tasmania in 1979 and won a Nuffield Dominions Scholarship to Oxford University where he completed a D. Phil. Following a brief period as Lecturer in Community Medicine at the University of Papua New Guinea, in 1984 he began at the University of Western Australia as a Research Fellow in the Unit of Clinical Epidemiology. He was on the academic staff in Public Health at UWA for 16 years, being promoted to Professor of Public Health in 2000. He subsequently held professorial appointments at Imperial College in London University, the University of Queensland and the University of Adelaide.

Konrad's research contribution is remarkable in its quality, quantity, breadth and depth. It is notable also for the wide network of clinical collaborators that he established. He systematically built on lines of enquiry that contributed to both public health knowledge and clinical practice, always with an eye to practical applications in improving health, at a population level and for individual patients.

He had remarkable success in gaining research grants, and his research output was prodigious. He published over 280 research papers in refereed journals, as well as numerous book chapters, editorials and opinion pieces.

His most significant research has been in the epidemiology and prevention of cardiovascular disease. His comprehensive research programme included studies in coronary heart disease, stroke, peripheral vascular and aortic disease, capped off by several community surveys of the classical coronary heart disease risk factors. It encompassed the full gamut of research designs including descriptive studies, large cohort studies and randomised controlled trials. A significant example of his work is the Perth Community Stroke Study, which demonstrated for the first time that the lifestyle factors known to increase the risk of heart disease also applied to stroke. Tobacco smoking was a continuing theme of his research, beginning with his DPhil at Oxford on smoking cessation in general practice.

In later years Konrad led the design and conduct of a number of randomised trials of clinical procedures, including screening for Abdominal Aortic Aneurysm, a study that has evolved into a large longitudinal study of the health of older men. With his concern for the practical application of research findings, he also studied how the results of clinical trials affected patient management, especially in cancer.

Konrad has a national and international reputation for his research. The centrepiece of his international work was his role in the World Health Organisation's MONICA program, which has monitored cardiovascular disease and its risk factors in 22 countries. His first appointment at the University of Western Australia in 1984 was to the MONICA study and he continued to make a significant contribution until shortly before his death.

As a researcher, Konrad stood for scientific rigour, ethical research behaviour, attention to detail, and building research skills. He showed respect for all, whatever their status; all members of the team were made aware of the importance of their contribution. His passion and commitment to do the right thing, however challenging, were an inspiration.

His own grants and research publications don't tell the whole story of Konrad's involvement in research. He was passionate about the whole research enterprise. He assessed grant applications for numerous organisations and reviewed research papers for many journals, as well as being Associate Editor or on the Editorial Board of several. He was renowned as a fast and effective reviewer and a writer of succinct and incisive editorials. Konrad's ability to make an argument clearly and concisely, and in straightforward language appropriate to the audience, was a feature of all his work and a key to his effectiveness in so many areas. Of course, it was his great intellect and his capacity for clear thinking that underpinned his writing.

Konrad was a skilled and enthusiastic teacher. In all his academic posts, even with his heavy research commitments, his passion for teaching and innovative curriculum development stood out. He related well to students; they knew that, under his gruff exterior, he really cared about them. They loved his slightly offbeat approach and were inspired by his enthusiasm, his passion and his exuberance. He was universally known as Konrad (no last name needed); that probably applies to Public Health across Australia and beyond.

It was as a supervisor and mentor that Konrad probably had his most profound and lasting influence in academia. He was an exacting taskmaster to his postgraduate students, expecting and supporting them to reach high standards, encouraging them to 'dig deep'. Many of his research students have gone on to senior posts in academia and research organisations and had become lifelong friends.

His mentoring was more than simply advice and moral support; it was more like capacity building. He encouraged junior staff, including those with clerical roles, to develop their research skills and to present at meetings. He often collaborated with clinicians whose research experience was limited, generously assisting them to develop their ideas and apply for grants, using his track record as support. A number of these have become distinguished researchers in their own right.

Konrad was a strong advocate for Public Health as a discipline and he worked tirelessly in the University and the wider scientific community to build an understanding and recognition of Public Health. His own research record spoke for itself in enhancing the credibility of Public Health in the universities where he worked.

Konrad's broader public advocacy focussed primarily on tobacco. He was passionate about tobacco control, beginning with his doctoral research, and continued this commitment as clinician, researcher and advocate for over 30 years. He had an international reputation and impact; in 2009 he was awarded the Nigel Gray Medal for a lifetime contribution to tobacco control. Fittingly, the 2010 Royal College of Physicians Report on Smoking and Health (the third to which he had contributed) was launched on the day that he died; Konrad's research is cited in the first line of the Preface.

He understood the need for a comprehensive approach to tobacco control, the importance of pressing governments to act, and the need to expose the work of the tobacco industry and oppose its activities. As part of this advocacy, he was willing to devote considerable time to work, such as calculations of the impact of smoking, which might not gain citations or research funding, but would be useful in influencing media or decision-makers.

In tobacco control Konrad played a key role in presenting research in a way that would have an impact on policy. He was a lead figure in the National Health and Medical Research Council work on active and passive smoking, and his work on passive smoking was typical of his approach. He worked with his colleagues on the committee to produce a strong report and, when that was challenged by the tobacco industry, he spent untold amounts of his own time in countering the criticisms, recognising how important this was. Because Konrad was so meticulous, and had such high standing among his peers, his work stood up to these attacks, which he relished as evidence of impact.

Konrad was a leader in the tobacco control initiatives of organisations such as the Australian Council on Smoking and Health and the National Heart Foundation, and was always ready with good ideas and new ways of keeping the need for tobacco control in the public eye.

In the midst of all these activities, Konrad was unwavering in his commitment to his weekly Oncology clinic and to his regular blood donations.

It is impossible to do justice to all Konrad's contributions and achievements. He was active in so many diverse areas, but gave each so much of his attention, that many of the people working with him had no idea of the scope of his commitments. It is only when it is all put together that one can appreciate his magnificent contribution in so many areas of Public Health.

This tribute would not be complete without reflections on the unique person that Konrad was. His friends and colleagues will have their own memories of Konrad, of his brilliant intellect, of his enthusiasm and optimism, of his wicked sense of humour and his quick wit, of his generosity of spirit. He was a man of contradictions who could be both gruff and compassionate, lovable and exasperating. He was always upfront and open, sometimes to his detriment, and he expected others to be the same.

Konrad was a big man in every way, a commanding presence; some might say 'larger than life'. He has been described as walking like a bushranger coming into town! He is remembered fondly for his characteristic style, including his style of dress in the earlier years (the Akubra hat, the shorts, the long socks) and his cycling in all weathers and at all hours of the day or night, a measure of his commitment to the environment.

This remarkable man will be sadly missed. His legacy will live on in the results of his advocacy, in his research contributions and in the work of all those he trained so thoroughly.

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**Judith Straton and Michael Hobbs**

University of Western Australia

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## Editors' Corner

### News from the Editors

We recently announced in the AEA Bulletin a new section of Australasian Epidemiologist specifically designed for literature reviews. This is intended as a forum for dissemination without peer review of high-quality literature reviews that are narrative in nature (that is, not formal systematic reviews or meta-analyses). We continue to welcome submissions for the peer-review section of the journal including reports of original research including studies of statistical or methodological issues at any time. This is an exciting opportunity to publish your research in Australasian Epidemiologist with peer-review! Articles in both of these categories do not have to relate to the theme or the deadline for submission of the Round Table, and these submissions are welcome at any time.

This is our last issue as Co-editors of Australasian Epidemiologist and we would like to take the opportunity to thank the AEA and the Council for the opportunity to be involved with AEA in this way. We would like to thank each of the guest editors (Professors Alison Venn, John Lynch, Tony Worsley and Tony Blakely) who have participated in the Round Table Themes and provided thoughtful and engaging editorials. We have enjoyed working with researchers and practitioners to produce each edition of the AE and it has been a pleasure to read the fantastic and diverse work being conducted throughout Australasia. We wish the new editors the best of luck and look forward to future editions of the Australasian Epidemiologist.

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**Verity Cleland and Sarah McNaughton**

Co-Editors

## AEA Membership

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The Australasian Epidemiological Association was founded in 1987.

Membership is open to anyone with an interest in epidemiology.

AEA is governed by a seven member council elected from the membership.

Five members of Council form the Executive, namely the President, New Zealand Branch President, Vice President, Treasurer and Secretary. At least one member of the Council must be based in New Zealand.

Other roles within the Council include the coordination of local chapters and management of the membership. The Council co-opts a member to undertake duties related to student matters, the journal and conference planning.

As of 2006, AEA also appoints an Executive Officer one day per week.

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### THE ASSOCIATION'S AIMS:

**To develop and promote the discipline of epidemiology in Australasia through:**

- promoting excellence in the practice of epidemiological methods
- communication
- advocating for funding, capacity building and policy development
- strategic alliances with related organisations to maintain high standards of public health practice, teaching and research in Australasia.

**This will be achieved through being an organisation committed to:**

- excellence in governance
- a strong member focus.

### BENEFITS OF MEMBERSHIP

#### Australasian Epidemiologist

The Association produces the journal Australasian Epidemiologist to keep you up to date with events and issues affecting epidemiology in Australia and New Zealand.

#### AEA Annual Scientific Meeting

The annual AEA scientific meeting provides a forum where issues of importance to epidemiology and biostatistics can be discussed and where members may present scientific papers.

#### AEA in New Zealand

The AEA includes a New Zealand member on Council and the New Zealand branch of the AEA organises a workshop every two years.

New Zealand residents should contact:

Lianne Parkin

Preventive & Social Medicine, Health Sciences,  
Dunedin School of Medicine, University of Otago  
PO Box 913, Dunedin 9054, New Zealand

Tel: +64 3 479 8425

Fax: 64 3 479 5200

Email: [lianne.parkin@stonebow.otago.ac.nz](mailto:lianne.parkin@stonebow.otago.ac.nz)

### Chapters

The AEA encourages the establishment of local epidemiology interest groups, which will be supported by the Association to undertake ongoing education and training courses. These local chapters which organise social events, talks and conferences have been established in several States and Territories: Perth Epidemiology Group (PEG), Darwin Epidemiological Group (DREG), Queensland Epidemiological Group (QEG), Victorian-Tasmanian Epidemiology Group (VTEG) and NSW Epidemiology Group.

### Student membership

The AEA encourages student participation. It organises student workshops at the annual scientific meeting and offers travel bursaries for conference attendance. There is also an email discussion list for students.

### ANNUAL FEES

<b>Australia</b>	A\$95 ordinary member A\$60 full-time student
<b>New Zealand</b>	NZ\$95 ordinary member NZ\$60 full-time student

### MEMBERSHIP FORM

The membership form can be downloaded from our website at [www.aea.asn.au](http://www.aea.asn.au) or requested from:

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