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## **This Issue in the Journal**

### **Alcohol-related harm to others: a survey of physical and sexual assault in New Zealand**

Jennie Connor, Ryan You, Sally Casswell

A large survey of adults was carried out to see how many people have been physically assaulted or sexually assaulted in the past year in New Zealand, and to see how often alcohol was involved. About 1 of every 15 men and 1 of every 35 women had been physically assaulted. One in a 100 women and 1 in 200 men had been sexually assaulted. Many (about 45%) had been assaulted more than once. More than half of all physical and sexual assaults that were reported were carried out by people who had been drinking, and the chance of being a victim increased with increasing alcohol consumption as well. Physical and sexual assault are two forms of harm resulting from other people's drinking, and there are many other forms. These include other types of crime and disorder, abuse and neglect of children, car crash injuries, fires, and a range of physical and psychological effects on the lives of family members.

### **Alcohol and injury: a survey in primary care settings**

Rachael McLean, Jennie Connor

In this study we surveyed injured patients who presented to primary care facilities in Dunedin in 2008, and asked participants to report any alcohol use in the 6 hours before they were injured, and to identify the place where they had their last drink. 17% of those surveyed had consumed alcohol prior to their injury, and around two-thirds of those who had been drinking consumed more than the current ALAC guidelines recommend. Most drinkers had consumed their last drink in a house or a flat. The current review of the Sale of Liquor Act is timely and should consider restricting the availability of alcohol in on and off licensed premises in order to minimise hazardous drinking in a range of drinking locations.

### **In vivo interactions between BZP and TFMPP (party pill drugs)**

Ushatana Antia, Malcolm D Tingle, Bruce R Russell

Despite the prevalence of party pill formulations containing both BZP and TFMPP little is known about the effects of combining these drugs in humans. This study compared the plasma concentrations and metabolites of BZP and TFMPP following a combined dose of these drugs with existing data in single-drug studies. The metabolism and pharmacokinetics of both drugs were altered when taken in combination.

## **Unequal risks, unmet needs: the tobacco burden for Pacific peoples in New Zealand**

Tolotea Lanumata, George Thomson

We reviewed the situation of Pacific smokers and exposure to secondhand smoke (SHS) in New Zealand. In the last 10 years there has been considerable increase in smokefree Pacific homes and tobacco-free Pacific youth. However, Pacific people are at almost 50% greater risk of smoking compared to the whole population, and are significantly more likely to be exposed to SHS. We found no specific government plan to address these greater risks for the Pacific community in New Zealand.

## **Smokefree cars in New Zealand: rapid research among stakeholders on attitudes and future directions**

Dylan Tapp, George Thomson

A number of Australian, Canadian, and US states and provinces have banned smoking in cars with children. There is strong New Zealand public and smoker support for banning smoking in cars with children. Compared to some Australian states, there is strong political opposition in New Zealand to banning smoking in cars with children.

## **Smokefree outdoor areas without the smoke-police: the New Zealand local authority experience**

Brent Hyslop, George Thomson

Over a quarter of New Zealand (NZ) local authorities now have smokefree outdoor policies, at least for playgrounds (e.g. Waitakere, Manukau, and Christchurch). These policies use signs and media publicity to inform smokers and the public, and they are not legally enforceable. This move to smokefree parks and playgrounds has been with little or no central government help. The spread of smokefree outdoor policies in NZ will likely continue, and they may spread to cafes, beaches, and shopping streets.

## **Support by New Zealand smokers for new types of smokefree areas: national survey data**

Nick Wilson, Tony Blakely, Richard Edwards, Deepa Weerasekera, George Thomson

We aimed to describe smoker support for new smokefree laws covering cars and outdoor settings, in a national sample of New Zealand smokers. We found that most smokers supported three new smokefree areas. That is, only a minority agreed that smoking should be allowed: in cars with preschool children (3%), anywhere in outdoor eating areas (22%), and at council-owned playgrounds (32%). These attitudes were generally compatible with the findings that most of these smokers (87%) reported trying to minimise the amount that non-smokers were exposed to their cigarette smoke, and reported never smoking in a car with non-smokers (73%). Nevertheless, there were still domains where most smokers thought smoking should be allowed—e.g. on lifeguard-patrolled beaches (55%) and in at least some of the outdoor seating areas of restaurants/cafés (51%) and pubs (83%).

### **Survey of descriptors on cigarette packs: still misleading consumers?**

Jo Peace, Nick Wilson, Janet Hoek, Richard Edwards, George Thomson

This study involved an examination of 1208 street-collected discarded cigarette packs. It found that, despite a warning from the Commerce Commission around misleading descriptors (“light” and “mild”), almost half the packs found (42%) used a colour word (e.g. red, blue, gold) as a descriptor to indicate mildness or strength. A further 18% used other words that suggested mildness/strength (e.g. “subtle”, “mellow”). In conclusion, although the words “light” and “mild” have been largely removed from tobacco packaging in the New Zealand market, these words have been replaced with associated colours or other words that may continue to communicate “reduced harm” messages to consumers. Government-mandated generic (plain) packaging would remove the opportunity to communicate misleading claims and so would afford the highest level of consumer protection.



## If alcohol was a new drug

Doug Sellman

This issue of the *New Zealand Medical Journal* features drugs, party pills BZP and TFMPP,<sup>1</sup> tobacco,<sup>2-4</sup> and alcohol.<sup>5</sup> Yet, some readers may have viewed the Table of Contents as containing only one article about drugs, relegating the alcohol and tobacco articles to studies of behaviour such as diet and physical activity. This is understandable because these two licit drugs have been highly commercialised.

The alcohol and tobacco industries have used their immense power and influence to normalise and glamorise these two substances as far as they legally can through powerful marketing techniques. However, tobacco perceptions have changed quite remarkably from the 1950s and 1960s when doctors posed as models of success in tobacco commercials, while alcohol's status as a highly desirable ordinary commodity largely remains.

If alcohol was a new drug being examined by the ministerial Expert Advisory Committee on Drugs it would most likely receive a classification of Class B—i.e. a drug of high risk using the 2001 evidence-based criteria for determining risk to public health.<sup>6</sup> This would position it in the same category as other potentially harmful drugs such as morphine, dexamphetamine, and gamma-hydroxy butyrate (“Fantasy”).

The lethal dose of alcohol divided by a typical recreational dose (safety ratio) is 10, which places it closer to heroin (6), and GHB (8) in terms of danger from overdose, than MDMA (“Ecstasy” – 16), and considerably more dangerous than LSD (1000) or cannabis (>1000).<sup>7</sup>

Yet despite the scientific determination of high risk, alcohol has become a surprisingly cheap grocery commodity that is almost as accessible as bread and milk. It can be bought 24 hours a day at many supermarkets and convenience stores as well as at more than 10,000 liquor stores, bars, cafes, and restaurants that now exist in New Zealand.

It is hard to avoid alcohol in contemporary New Zealand. For instance, it is rare to attend a social event and not have alcohol served—even children's birthday parties commonly include alcohol for the adults. Air travel is also affected by the pervasive presence of alcohol with servings offered during short flights, when orange juice is not available but a quick chardonnay is.

However, it is even harder to avoid the omnipresent promotion and advertising of alcohol in New Zealand, which has been estimated to be in the region of a staggering \$200,000 per day when sponsorship is added to advertising and other marketing devices (B McDonald, personal communication, 2009).

Alcohol kills more than 1000 New Zealanders every year and because half of these deaths are injury related and concentrated in young people, this represents about 17,000 years of life lost every year.<sup>8</sup> A quarter of these deaths are attributable to some rarer cancers—mouth, pharynx, larynx, and oesophagus—but also to three of the most

common cancers in New Zealand: breast in women, prostate in men, and colorectum in both genders.<sup>9,10</sup>

Tobacco kills even more New Zealanders every year—5000, which includes over 400 innocent passive smokers.<sup>11</sup> It is appropriate therefore that Parliament has undertaken courageous steps in recent decades to curb the use of tobacco through smokefree legislation and banning most tobacco advertising and sponsorship. However, tobacco industry marketing in New Zealand continues to deceive and mislead consumers.

Peace and colleagues<sup>2</sup> outline how the use of colour associations linked with deceptive words such as “mild” or “light” have been introduced by the industry when good evidence exists that such tobacco products are no less dangerous than regular tobacco. There is also still along way to go to achieve a safer country for children in terms of passive inhaling of tobacco smoke and consuming tobacco toxins but legislating for smoke free private spaces such as motor vehicles in New Zealand has been found to be generally opposed even when the New Zealand government is obliged under the UN Convention on the Rights of the Child to prioritise children’s rights.<sup>3</sup>

Finally, there are subpopulations in New Zealand which lag in the decreases in tobacco use seen in the general population over the past 20 years and for which there do not appear to be any significant governmental strategies to bring about changes.<sup>4</sup> While the general population smoking rates have dropped from 28% in 1990 to 21% in 2006, Pacific rates have remained steady at around 32%. The infamous comment of a RJ Reynolds Tobacco Executive: *“We don't smoke that shit; we just reserve the right to sell it to the young, the poor, the black and the stupid”* illustrates the attitude of the tobacco industry towards targeted subpopulations.

It is therefore very concerning to learn that the same commercial forces behind Big Tobacco are also behind Big Booze in terms of maximising product profitability in the face of potential governmental regulation.<sup>12</sup> Both industries remain deathly quiet about any risks to the public health or safety of its customers from the consumption of its products and actively oppose any health warnings on packets or containers.

BZP is a relatively new drug used primarily by people under the age of 30. Despite the lack of any deaths directly associated with any of the hundreds of thousands of doses of the substance, and very little evidence of it being addictive, the public outcry about its use was so strong that the government subsequently intervened and relatively swiftly scheduled BZP as a Class C drug under the Misuse of Drugs Act (1989) in 2008.

The lack of a robust regulatory framework for recreational drugs in general was exposed in the process and without a viable legislative alternative BZP became a prohibited drug in New Zealand, while the continuing free market rolls on for two considerably more dangerous drugs –alcohol and tobacco.

One of the factors that led to governments around the world developing more courage to stand up to the tobacco industry and legislate for better control and protection of citizens was the scientific demonstration of the negative effects of passive smoking. Innocent non-smoking citizens were shown to suffer long-term health problems, including lung cancer, from breathing other people’s smoky air. Collateral damage from alcohol is most starkly seen in assaults by intoxicated assailants.



Connor and colleagues<sup>5</sup> have now quantified these assaults in New Zealand. They found that half of all physical and sexual assaults are committed by intoxicated perpetrators and that more than 62,000 physical assaults and about 10,000 sexual assaults involving an intoxicated perpetrator occur in New Zealand every year; a significant proportion of which require medical attention or involve the police. These data add to the already disturbing picture of the extensive personal and social damage that is caused by heavy alcohol use in contemporary New Zealand.

If alcohol was a new drug, a national alcohol crisis would be declared.

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## For public health doctors, alcohol is the new tobacco

Frank Frizelle

This issue of the *New Zealand Medical Journal* focuses on addiction, especially that of alcohol and tobacco. Over the last few years we have published numerous articles on the morbidity of cigarette smoking. Nowadays, compared with Europe and Asia, New Zealand is considerably better off in regard to the public attitude to smoking. However with the patterns of alcohol consumption in New Zealand there is increasing interest and concern about the damage done to individuals and society in general.

The problem is not new in New Zealand. In August 1971, Pat Cotter (a Christchurch surgeon) wrote to the then “Select Committee on Road Safety” about the issue of alcohol and motor vehicle accidents. In this submission he reported his findings of a small unpublished study he had undertaken. The study had four parts:

In the first part, a series of 100 consecutive accident patients admitted to the wards were interrogated and examined by Mr Cotter. He thought alcohol was involved in 45% of these admissions.

The second part of the study involved 200 consecutive traffic accident admissions assessed by junior medical staff (registrars and house surgeons). They thought that alcohol was involved in 31.5% of admissions

The third part of the study looked at the blood alcohol level of these “accident victims”; it was found that 74% had an elevated blood level and that the average level in these victims was 129 mgm%

A further study of another consecutive 259 accident victims revealed an elevated blood alcohol level in 82.6% of them.

The point Mr Cotter was trying to make then was that compulsory blood alcohol testing of accident victims was needed even if the doctor (or others) thought the patient had not been drinking. The interesting factor revealed now is the very high number of drunk drivers that were documented in the study.

Sadly the articles in this *Journal* document the continuation of the devastating damage caused by alcohol and tobacco in society today.

**Competing interests:** None known.

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## Alcohol-related harm to others: a survey of physical and sexual assault in New Zealand

Jennie Connor, Ryan You, Sally Casswell

### Abstract

**Aim** To describe the 12-month prevalence of physical and sexual assault, and the association of assault with drinking by the perpetrator.

**Methods** Population-based survey of 16,480 adult New Zealanders, using computer assisted telephone interviewing (CATI).

**Results** Nearly 7% of men and 3% of women reported having been physically assaulted in the previous year, with 44% of these people having suffered more than one assault. One percent of women and 0.4% of men reported sexual assault, with 45% assaulted more than once. More than half of all physical assaults and sexual assaults involved a perpetrator who was reported to have been drinking. Perpetrators who had been drinking at the time were more likely to be strangers or other people outside the respondent's family, rather than relatives, and the assaults were less likely to have occurred inside the respondent's home, compared with assaults where the perpetrator was not drinking. Physical and sexual assaults were also associated with usual drinking patterns of the victims.

**Conclusion** Alcohol use by someone other than the victim is involved in more than half of reported assaults. Our findings suggest that, in New Zealand, more than 62,000 physical assaults and 10,000 sexual assaults occur every year which involve a perpetrator who has been drinking. Of these, 10,500 incidents require medical attention and 17,000 involve police. This burden can be reduced using population-based strategies of demonstrated effectiveness.

Alcohol consumption often results in harm to people other than the drinker, and these 'externalities of drinking' tend to be an important focus of political concerns about alcohol use in communities. However, most quantitative studies of alcohol-related harm focus on the effects of drinking on the drinker alone, and particularly on their personal health.

Alcohol-related harms are commonly characterised as either health problems or social problems, but there is considerable overlap between these domains. This is exemplified by the contribution of alcohol to violence, whether within families or between strangers.

Research evidence demonstrates an increased risk of physical violence when the perpetrator is intoxicated.<sup>1,2</sup> The most obvious influences are pharmacological in nature (psychomotor, cognitive and perceptual) but others are the social beliefs or expectancies around the effect of alcohol on violent behaviour, the cultural symbolism involved,<sup>3</sup> and the setting in which the drinking occurs.<sup>4</sup> Homicide has been shown to increase when alcohol use increases.<sup>5-8</sup>

Analysis of longitudinal data from the Christchurch birth cohort study, which allowed for control of a number of confounding variables, demonstrated an association between alcohol use and violent crime.<sup>9</sup> Alcohol has also been linked specifically with family violence, and longitudinal studies of alcohol and marital aggression have suggested that a causal relationship exists.<sup>10</sup> There is evidence that family violence is also more severe when alcohol is present.<sup>11</sup>

The burden on the health system from alcohol-related violence is substantial. For instance, a study carried out in Auckland Hospital Emergency Department found that 79% of patients injured in a violent incident believed the perpetrator to have been affected by alcohol.<sup>12</sup>

Alcohol is also implicated in sexual assault, both in terms of intoxication of the perpetrator<sup>13</sup> and in terms of alcohol-facilitated sexual assault.<sup>14</sup> In Australia it has been estimated that as much as 20% of non-partner sexual violence against women takes place in licensed premises,<sup>15</sup> and there is US research indicating that alcohol-related rapes involve greater physical force by the offender and greater risk of victim injury.<sup>16,17</sup>

In New Zealand there are few population-level data describing the occurrence of assault and the involvement of alcohol. The aim of this study was to describe the prevalence of physical and sexual assault in the New Zealand adult population in a 12-month period, and the association of assault with drinking by the perpetrator, as well as alcohol use by the victim.

## Methods

**Study design**—The data presented in this paper were collected during the 2004 Health Behaviours Survey (HBS) – Alcohol Use and the 2003 Health Behaviours Survey – Drug Use. The sample was made up of 16,480 New Zealand adults, aged 18–65, living in private residential dwellings. Data were collected between September 2003 and August 2004 for the alcohol survey (n=8397) and from April 2003 to November 2003 for the drug survey (n=7083).

The methods used for these surveys have been described in detail previously.<sup>18,19</sup> Telephone interviews were conducted by trained interviewers using the in-house computer assisted telephone interviewing (CATI) system at the Centre for Social & Health Outcomes Research & Evaluation (SHORE) and Whariki.

A stratified sample design was used to reflect the geographic regions and level of urbanisation of the New Zealand population. A combination of three sample frames was used to achieve coverage of the population as well as a sufficiently large sample of Māori to achieve equal explanatory power in the analysis. These were random digit dialling (RDD), RDD with screening for Māori participants, and published telephone numbers matched to Māori electors on the electoral roll.

Within each household, respondents to be interviewed were randomly selected from those eligible. Each telephone number was tried at least 10 times in an effort to reach those seldom at home. The overall response rates were 59% for the alcohol survey and 68% for the drug survey.

**Measures**—The questionnaires were based on previous National New Zealand Alcohol Surveys 1995 & 2000.<sup>20</sup> The same questions were used in the Alcohol Use and Drug Use surveys to quantify experiences of physical and/or sexual assault by the respondents in the past 12 months and of alcohol involvement by the respondents and the perpetrators in these events.

These questions asked about the frequency of physical and sexual assault in the last 12 months, how many of the assaults involved a perpetrator affected by alcohol or drugs and, for each event, whether the respondent knew which drug or drugs had been used. The consequences of the assault, the location of the assault and the relationship of the respondent to the perpetrator were identified. Assaults involving drugs other than alcohol will be reported in a future paper.

Respondents supplied demographic information and details of their own alcohol consumption patterns. They were not asked if they had been drinking before the assault.

**Weighting**—Survey weights were used to adjust for differences in sampling probability due to household size and oversampling of people of Māori ethnicity. A scaling factor ( $\alpha$ ) was used to form new sample weights when combining data from the two surveys.

$$\alpha = 1 - \frac{DEFF(w_1)}{DEFF(w_1) + DEFF(w_2)}, \text{ where } DEFF(w) \text{ are the design effects.}$$

**Data analysis**—Logistic regression models were used to estimate the associations of physical and sexual assault with age, gender, ethnicity, marital status, educational achievement level, employment status, and two dimensions of alcohol consumption. The alcohol variables used were drinking frequency and amount of alcohol consumed on a typical drinking occasion. All logistic regression analyses were conducted in SAS (version 9.1) software.

Chi-squared tests were used for testing the differences between characteristics of physical and sexual assaults that did and did not involve a perpetrator who had been drinking (Fisher's Exact Test was used when the Chi-squared test was not valid). The Chi-square and Fisher's Test for weighted distributions were conducted in R (version 2.6.1) software.

## Results

**Survey participants**—The mean age of participants was 39.6 years, and 55% of the sample was female. In the weighted sample, 81.3% identified as European, 14.1% Māori, 4.9% Pacific, and 6.4% Asian in non-exclusive categories.

**Prevalence of physical and sexual assault**—Table 1 shows the prevalence of physical and sexual assault overall and by demographic characteristics, frequency of drinking alcohol and typical quantity of alcohol consumed on each drinking occasion. Overall, 3.0% of women and 6.8% of men reported a physical assault in the past 12 months, while 1% of women and 0.4% of men reported a sexual assault in the same period.

**Table 1. 12-month prevalence of physical and sexual assault in New Zealand 2003–4**

Variables	Physical assault			Sexual assault		
	n	%*	95% CI	n	%*	95% CI
<b>Overall</b>	803	4.7	4.4–5.0	119	0.8	0.6–0.9
<b>Age group</b>						
18–25	366	12.3	11.1–13.6	61	2.0	1.5–2.6
26–35	195	4.7	3.9–5.4	26	0.8	0.5–1.1
36–45	139	3.1	2.6–3.7	20	0.5	0.3–0.7
46–55	81	2.5	2.0–3.0	9	0.2	0–0.4
56–65	22	0.8	0.4–1.2	3	0.1	0–0.3
<b>Gender</b>						
Female	341	3.0	2.6–3.3	90	1.0	0.8–1.2
Male	462	6.8	6.2–7.4	29	0.4	0.2–0.5
<b>Ethnicity</b>						
European	502	4.5	4.2–4.9	77	0.7	0.6–0.9
Māori	463	6.8	5.8–7.9	61	1.0	0.6–1.4
Pacific peoples	45	7.0	5.2–8.8	8	1.5	0.6–2.4
Asian peoples	21	3.5	2.4–4.7	5	0.8	0.2–1.3

<b>Marital status</b>						
With partner	284	2.5	2.2–2.8	35	0.3	0.2–0.4
Separated	103	7.9	6.3–9.5	22	1.8	1.0–2.6
Single	404	9.8	8.9–10.7	60	1.6	1.2–2.0
<b>Employment</b>						
Full Time	443	4.5	4.1–4.9	53	0.7	0.5–0.8
Part Time	58	2.6	1.8–3.5	13	0.6	0.2–0.9
Student	137	9.3	7.8–10.8	21	1.3	0.7–1.9
Unemployed	62	9.2	6.8–11.7	12	1.2	0.2–2.1
Others	103	3.1	2.4–3.8	20	0.8	0.4–1.1
<b>Education level</b>						
No Qualification	149	4.7	3.9–5.5	23	0.8	0.4–1.2
Secondary Qualification	267	5.3	4.6–5.9	33	0.7	0.5–1.0
Diploma/Trade Cert	262	5.5	4.8–6.2	44	0.9	0.6–1.2
University/Prof Cert	125	3.2	2.7–3.7	19	0.5	0.3–0.8
<b>Alcohol frequency</b>						
Stop/non-drinker	97	3.3	2.6–4.0	17	0.4	0.1–0.6
< 1/month	56	3.0	2.1–3.9	6	0.5	0.1–0.8
1/month–1/week	123	3.9	3.2–4.7	17	0.8	0.4–1.1
1/week–3.5 times/week	263	4.9	4.2–5.5	42	0.9	0.7–1.2
3.5 times/week–1/day	142	5.1	4.3–5.9	20	0.8	0.4–1.1
> 1/day	122	7.9	6.7–9.2	17	0.9	0.5–1.4
<b>Alcohol per occasion</b>						
Stop/non-drinker	104	3.4	2.7–4.1	18	0.4	0.2–0.6
2 drinks (30ml)	89	2.1	1.7–2.5	13	0.4	0.2–0.5
4 drinks (60ml)	139	3.6	3.0–4.1	20	0.6	0.4–0.8
6 drinks (90ml)	105	5.8	4.7–6.8	16	0.9	0.5–1.4
> 6 drinks (90ml)	366	12.2	10.9–13.6	52	2.0	1.4–2.5

**Note:** All proportions are weighted for sampling design

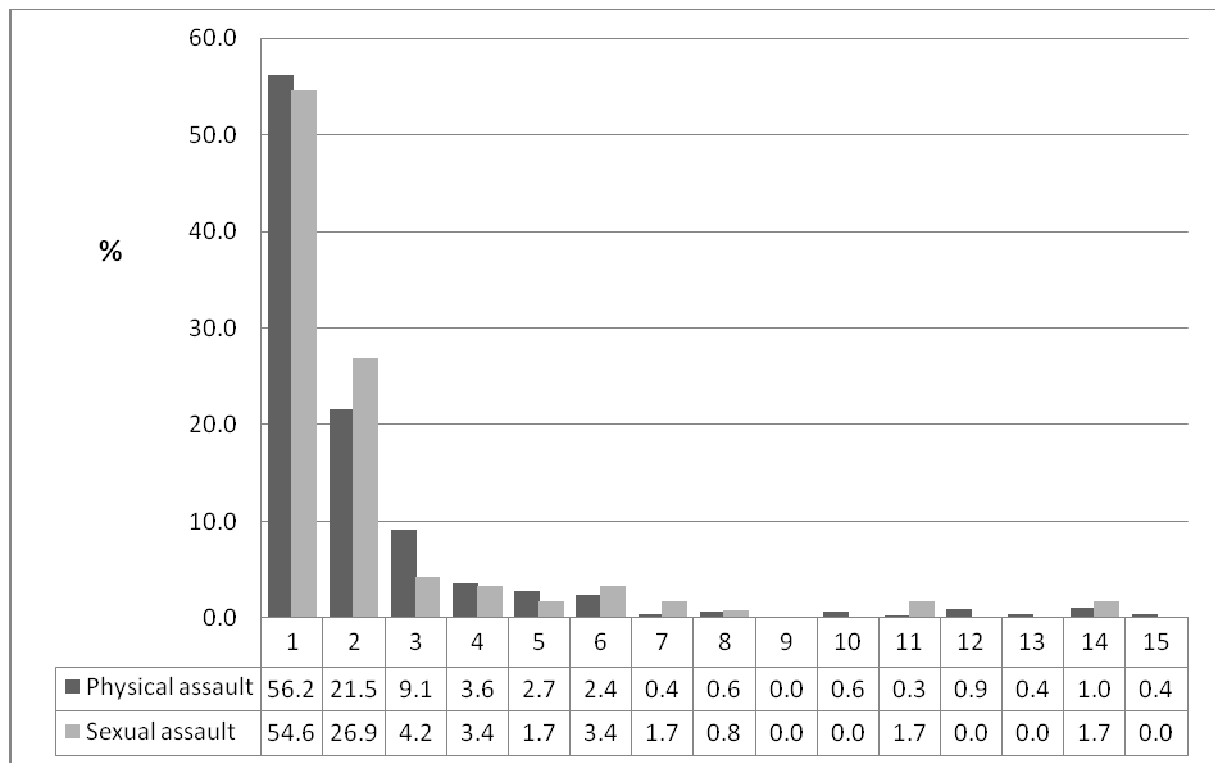
**Multiple assaults in the past 12 months**—Amongst respondents who reported having experienced physical assault in the last 12 months, 44% reported more than one assault. Similarly 45% of respondents reporting sexual assault reported more than one incident. The distribution of numbers of physical and sexual assaults amongst those reporting at least one incident is shown in Figure 1.

**Characteristics of those experiencing assault**—The associations of demographic characteristics and measures of alcohol consumption with physical and sexual assault, while adjusting for the others, are shown in Table 2.

Younger people were at increased risk of both outcomes, with a gradient of decreasing risk with age. Physical assault was also more common in men, in Māori, in separated or single people compared with those living with a partner, and in unemployed respondents, after adjustment for level of drinking. Asian ethnicity was associated with a lower rate of physical assault.

Apart from younger age, the experience of sexual assault was associated with being single or separated rather than living with a partner, and with being female. The number of these events limited further interpretation.

**Figure 1. Number of assaults in respondents reporting physical and sexual assaults in the last 12 months**



The risk of both physical and sexual assault in the past 12 months was associated with frequency of drinking and the amount of alcohol consumed on a typical occasion by the respondent. A gradient is seen for both outcomes and both dimensions of alcohol consumption. Compared with non-drinkers, the increased prevalence of assault was statistically significant amongst respondents who drank more than 6 drinks on a typical drinking occasion, and those who drank every second day or more (physical assault) or at least once a week (sexual assault).

**Drinking by the perpetrator**—In 54% of all physical assaults reported, the respondent thought that the perpetrator was affected by alcohol, including those where other drugs were thought to be involved as well. Victims of sexual assault reported drinking by the perpetrator in 57% of incidents.

In Table 3, characteristics of physical and sexual assaults where the respondent reported that the perpetrator was affected by alcohol are compared with assaults where the respondents felt that the perpetrator was not affected by alcohol or other drugs. These characteristics include the relationship between the perpetrator and respondent, the place of the assault, whether medical attention was sought as a result of the assault, and whether police were involved. These data are event-based, since some respondents had suffered more than one assault.

**Table 2. Association of physical and sexual assault with demographic variables and alcohol consumption**

Variables	Physical assault			Sexual assault		
	OR	95% CI	p	OR	95% CI	p
<b>Age group</b>						
18–25 (ref)	1			1		
26–35	0.46	0.37–0.58	<.0001	0.47	0.28–0.78	<.01
36–45	0.33	0.25–0.42	<.0001	0.31	0.18–0.56	<.0001
46–55	0.25	0.19–0.33	<.0001	0.13	0.06–0.30	<.0001
56–65	0.07	0.04–0.11	<.0001	0.05	0.01–0.21	<.0001
<b>Sex</b>						
Female (ref)	1			1		
Male	2.38	2.01–2.83	<.0001	0.33	0.21–0.51	<.0001
<b>Ethnicity</b>						
European (ref)	1			1		
Māori	1.35	1.11–1.64	<.01	0.99	0.61–1.63	0.98
Pacific peoples	1.01	0.74–1.37	0.96	1.33	0.71–2.52	0.38
Asian peoples	0.51	0.35–0.73	<.001	0.86	0.40–1.85	0.70
<b>Marital Status</b>						
With partner (ref)	1			1		
Separated	3.71	2.85–4.81	<.0001	5.96	3.36–10.55	<.0001
Single	1.98	1.61–2.42	<.0001	3.01	1.82–4.98	<.0001
<b>Education</b>						
No qualification	1.23	0.94–1.63	0.14	1.54	0.80–2.95	0.19
Secondary qualification	1.05	0.83–1.32	0.69	0.92	0.53–1.60	0.77
Diploma/Trade Cert	1.36	1.08–1.71	0.01	1.52	0.88–2.63	0.14
University/Prof Cert (ref)	1			1		
<b>Employment</b>						
Full time (ref)	1			1		
Part time	0.90	0.65–1.24	0.53	0.78	0.39–1.53	0.46
Student	1.08	0.85–1.36	0.53	0.64	0.36–1.13	0.12
Unemployed	1.47	1.05–2.06	0.02	0.90	0.38–2.13	0.82
Others	1.29	0.98–1.69	0.07	1.15	0.66–2.01	0.61
<b>Alcohol Frequency</b>						
Stop/non-drinker (ref)	1					
< 1/month	1.00	0.67–1.48	0.99	1.19	0.42–3.33	0.74
1/month to 1/week	1.06	0.77–1.44	0.74	1.98	0.89–4.44	0.10
1/week to 3.5 times/week	1.24	0.95–1.64	0.12	2.52	1.21–5.25	0.01
3.5 times/week to 1/day	1.46	1.09–1.97	0.01	2.66	1.19–5.95	0.02
> 1/day	2.62	1.94–3.55	<.0001	4.22	1.83–9.74	<.001
<b>Alcohol per occasion</b>						
Stop/non-drinker (ref)	1					
Up to 2 drinks (30ml)	0.81	0.59–1.11	0.20	1.24	0.54–2.84	0.61
2–4 drinks (60ml)	1.17	0.88–1.55	0.29	1.73	0.81–3.73	0.16
4–6 drinks (90ml)	1.30	0.96–1.77	0.09	2.21	0.98–4.98	0.06
> 6 drinks (90ml)	2.04	1.56–2.66	<.0001	4.15	1.99–8.66	.0001

**Note:** Odds Ratios (OR) and 95% confidence intervals from logistic regression models



**Table 3: Characteristics of physical and sexual assaults, by reported alcohol involvement**

Variables	Physical assault					Sexual assault				
	% *	(n)	% *	(n)	p **	% *	(n)	% *	(n)	p **
% of all assaults	54.2%	(443)	21.8%	(158)	<0.001	56.9%	70	13.7%	(18)	<0.001
<b>Person responsible</b>										
stranger	52%	(254)	48%	(73)		34%	(35)	28%	(8)	
spouse/partner	15%	(91)	24%	(41)		22%	(18)	29%	(4)	
parents	1%	(5)	1%	(3)		1%	(2)	0%		
child	3%	(10)	7%	(10)		3%	(1)	1%	(1)	
other relatives	4%	(30)	3%	(10)		5%	(4)	21%	(4)	
drug dealer/customer	1%	(3)	0%	(1)		1%	(1)	1%	(1)	
other person	25%	(131)	18%	(35)	0.016	34%	(33)	20%	(5)	0.21
<b>Place of assault</b>										
own home	19%	(130)	32%	(64)		23%	(18)	44%	(9)	
pub, bar or club	28%	(145)	12%	(17)		26%	(21)	12%	(2)	
workplace	6%	(26)	13%	(18)		10%	(6)	12%	(4)	
on the street	24%	(124)	20%	(35)		12%	(8)	1%	(1)	
other public place	8%	(45)	11%	(19)		3%	(3)	3%	(2)	
other	15%	(86)	12%	(18)	<0.001	26%	(22)	28%	(5)	0.26
<b>Medical attention</b>	15%	(72)	10%	(15)	0.17	9%	(5)	12.1%	(2)	0.58
<b>Police involvement</b>	26%	(133)	28%	(46)	0.70	4%	(4)	2%	(1)	0.98

\* All proportions are weighted for sampling design; \*\* P value for comparison of distributions ( $\chi^2$  or Fisher's exact test as appropriate)

About half of all physical assaults reported in the survey, whether or not they involved alcohol, were by a stranger. The distributions of “person responsible” differed by involvement of alcohol. In particular, where alcohol is not involved assaults were more likely to involve a member of the respondent’s family; 35% compared with 23% in the alcohol-involved group. As might be expected, alcohol-involved assaults were more likely to occur in a pub, bar or club, or on the street than assaults not involving alcohol, which more commonly occurred at the respondent’s home.

Medical attention was sought for 15% of physical assaults involving drinking by the assailant and 10% of those not involving drinking (p=0.17).

Police involvement was reported for similar proportions of assaults with and without drinking by the perpetrator (26% vs 28%; p=0.70).

Overall, a perpetrator affected by alcohol was involved in 53% of all physical assaults that required medical attention, and in 49% of all physical assaults that involved police.

## Discussion

**Main findings**—In this recent population-based survey of adult New Zealanders, 3% of women and nearly 7% of men reported having been physically assaulted in the previous year, with 44% of these people having suffered more than one assault.

One percent of women and 0.4% of men reported sexual assault, with 45% assaulted more than once. More than half of all physical assaults and sexual assaults involved a perpetrator who was reported to have been drinking. Perpetrators who had been drinking at the time were more likely to be strangers or other people outside the respondent's family, rather than relatives, and the assaults were less likely to have occurred inside the respondent's home, compared with assaults where the perpetrator was not drinking.

Physical and sexual assaults were also associated with usual drinking patterns of the victims, as has been found in other studies.<sup>21</sup> A gradient of risk for assault was seen with increasing frequency of drinking and amount drunk on a typical drinking occasion by respondents.

**Strengths and limitations**—These findings come from two large, nationally representative samples of the general public, so reported incidents are not restricted to those reported to police or coming to medical attention. However some self-selection of participants, reflected in the survey response rates, could affect the estimates reported here. As the studies were not primarily concerned with assault but with alcohol and drug use, it is likely that any bias from this source would cause the prevalence estimates to be conservative, with loss of participants from the groups most affected. Response bias would be less likely to affect the associations between study variables than the prevalence estimates.

Sexual assaults occur less often than “ordinary” physical assaults and the relatively small numbers of events in the sample precludes detailed analysis, although the distribution of these events in the population and the extent to which alcohol is involved is still clear.

Drinking by the perpetrator of the assault was attributed by the victim of the assault in this study, and there is clearly some potential misclassification of these data. While some victims will have been unaware that the person assaulting them had been drinking, others may have assumed that alcohol was involved when it was not.

**Comparison with other studies**—The NZ Crime and Safety Survey 2006 (NZCASS)<sup>22</sup> is the only other source of similar information from a general population sample of which we are aware. However, direct comparisons are difficult due to variation in data reporting.

For self-reported physical assaults and threats in a public place, NZCASS found 44% of victims said the offender was drinking and for half of these incidents the victim reported drinking as well. For those occurring in private places 34% were said to involve an offender who had been drinking but only a quarter of these involved the victim drinking.

The highest level of alcohol involvement in assault occurred in places of entertainment and overall about one-quarter of all assaults and threats occurred when

both parties had been drinking. More assaults in public places involved injury (57% in public places vs 46% in private places).

Recently published data from the New Zealand Police<sup>23</sup> summarise alcohol involvement in violent incidents dealt with by police. These data reflect part of the spectrum of assaults reported in the current study and also include homicide investigations.

Police report that one-third of violence offences committed in 2007/8 occurred where the offender had consumed alcohol prior to the offence. In homicides, 44% of suspects and 35% of victims were thought to be affected by alcohol, and more than 50% of incidents where tactical options were employed by police ('use of force') involved alcohol use by the suspect, victim or both. About a third of family violence incidents involved an offender who had been drinking and about 15% involved alcohol use by the victim.

In a study of alcohol involvement in injuries amongst patients attending Auckland hospital emergency department in December 2000,<sup>20</sup> 17% of injury cases were due to violence and alcohol was reported to be involved in 79% of these. This included drinking by the victim, perpetrator or both, as reported by the victim. Although the number of violent incidents in total was small, almost half involved a perpetrator that was unknown to the victim and about 40% occurred in a public place.

**Implications**—Overall, New Zealand research to date suggests that a substantial proportion of physical and sexual assault in New Zealand is associated with drinking alcohol. Alcohol-related assault is more likely to involve strangers and to occur in public places, but a significant amount of violence that occurs in private also involves drinking by the perpetrator.

If we extrapolate the figures from the current study to the adult population of New Zealand, 62,832 physical assaults occur every year which involve a perpetrator who has been drinking. Of these 9,551 incidents require medical attention and 16,588 involve police.

Similarly, an estimated 10,053 sexual assaults occur each year where the perpetrator of the assault has been drinking. Medical attention is required by 956, and 403 involve the police.

In addition to the impact that these assaults have on the victims and their families, and the effect this frequency of victimisation has on the way people feel about their communities, alcohol-related assaults clearly have important resource implications for the police, judicial system and healthcare system.

The association of one's own drinking pattern with risk of being a victim of assault is also seen in this study. This further underlines the need for population-wide strategies to reduce harmful patterns of drinking, in addition to providing adequate treatment opportunities for individuals identified as having drinking problems.

International evidence suggests that changes to alcohol policies could reduce the incidence of physical and sexual assault in New Zealand. Aggregate levels of alcohol-related assault have been shown to be affected by the price of alcohol in both the US<sup>24</sup> and the UK.<sup>25</sup> Previous ecological analyses of US data suggest that the price of alcohol influences levels of spousal violence,<sup>26</sup> that beer tax levels and other

regulatory measures impact on levels of violence against children,<sup>27,28</sup> and that alcohol availability is related to levels of child maltreatment.<sup>29</sup> There has been less research but some indication of an impact on violence against the elderly.<sup>30</sup>

Increased prices reduce consumption across the whole population and also amongst heavy drinkers.<sup>31</sup> The effect of price also tends to be stronger in the long term rather than the short term, as higher prices delay the onset of drinking in young people, slow the progression to drinking large amounts, and reduce the amount consumed per drinking occasion.<sup>32</sup>

Physical restrictions on alcohol availability, such as reducing hours and days of sale, have also been shown to reduce harm from alcohol, including assault.<sup>1,32,33</sup> All of these options should be considered as part of evidence-based policy to reduce harm from assault in New Zealand.

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## Alcohol and injury: a survey in primary care settings

Rachael McLean, Jennie Connor

### Abstract

**Aims** Several high profile events in Dunedin have focused attention on alcohol-related harm in the city. We sought to obtain local information regarding alcohol use and drinking location in order to better inform planning for local strategies to reduce alcohol-related harm in the future.

**Methods** A cross-sectional survey of first-presentation injury consultations for patients 16 years and older presenting to three primary care facilities was undertaken over a 2-month period. The anonymous survey provided information about the nature of the injury, alcohol use in the 6 hours prior to injury, and identification of the location where the 'last drink' was consumed.

**Results** 17% of people aged 16 and over presenting to the three practices had had an alcoholic drink in the 6 hours prior to injury. Of this group, 36% had had moderate intake of alcohol and 64% a hazardous intake according to the ALAC criteria for the maximum number of standard drinks on one drinking occasion of 4 for women and 6 for men. The mean number of standard drinks recalled by drinkers in this survey was 9. Tertiary students and young people were more likely to have been drinking than others, and a greater proportion of women (24%) had been drinking prior to injury than men (11%). The majority of drinkers (62%) had their last drink at a house or flat.

**Conclusions** These results provide new information with respect to the role of drinking location in alcohol-related harm, in particular the important role of drinking in private homes. It also demonstrates the association between alcohol and injury in primary care settings in New Zealand. The current review of the Sale of Liquor Act is timely and should consider restricting the availability of alcohol in on and off licensed premises in order to minimise hazardous drinking in a range of drinking locations.

The Law Commission is currently reviewing the 1989 Sale of Liquor Act, and has heralded the possibility of widespread changes in response to community wide concern about increasing alcohol-related harm in New Zealand.<sup>1,2</sup>

Among the issues up for review are the possibility of increased regulation of the density of liquor outlets, and types of off-licence outlet.<sup>1</sup> This reflects increased attention on the role of liquor outlets, both on and off licence, in relation to alcohol-related harm which is also the focus of the Sale and Supply of Liquor and Liquor Enforcement Bill currently in select committee. The Bill introduces the potential for Local Alcohol Plans which are able to restrict supply and sale of alcohol both in on-licensed and off-licensed premises.<sup>3</sup>

Alcohol is New Zealand's most commonly used recreational drug. The 2004 *New Zealand Health Behaviours Survey* (2007) estimated that overall, 81% of New Zealanders aged between 12 and 65 had consumed alcohol in the previous 12 months, while young New Zealanders (18–24 years) consumed alcohol less frequently than



older New Zealanders, but were more likely to consume large amounts of alcohol on a typical drinking occasion.<sup>4</sup>

Ethnic differences in alcohol consumption patterns have also been described, and show that while the proportion of Māori and Pacific people who drink alcohol is smaller than for non-Māori/non Pacific, Māori and Pacific drinkers consume larger amounts of alcohol per drinking occasion than non-Māori /non Pacific drinkers.<sup>5,6</sup>

Results of surveys of New Zealand university students have shown that, compared to their non-student peers, university students are more likely to drink hazardously.<sup>7</sup> Indeed, a survey of students at the University of Otago showed that the majority (70%) had consumed alcohol in the week preceding the survey and 87% of this was drunk in heavy episodes.<sup>8</sup> Moreover, surveys of New Zealand university students have reported a wide range of self-reported harms, including violence, law breaking, hangover and emotional outbursts, academic problems, risky sexual behaviour, and sexual assault.<sup>9-11</sup>

Several high profile events in Dunedin have focused attention on alcohol-related harm in the city. Following 'riots' in the North Dunedin student quarter following the 2007 *Undie 500* car rally, Dunedin Police asked the Dunedin City Council to extend the existing liquor ban area into the north Dunedin residential zone. The local public health unit (Public Health South) was consulted and recommended the Council conduct a Health Impact Assessment of the proposed extension of the current liquor ban area. As part of this process, a lack of local information about the role of drinking location on alcohol-related harm was identified.

This survey was undertaken in order to investigate the association between alcohol use, drinking location and injury in Dunedin in order to better inform initiatives to reduce alcohol-related harm at Public Health South. In particular we wanted to:

- Describe the prevalence of alcohol use among the injured in the Dunedin population presenting to primary care facilities.
- Quantify the amount of alcohol consumed in the 6 hours prior to injury.
- Identify the location of 'last drink' in the 6 hours prior to injury (in a similar way to the NZ police "last drinks survey"<sup>12</sup>).
- Pilot the feasibility of collecting information that links specific licensed premises to injury.

## Methods

A cross-sectional survey of first-presentation injury consultations for patients 16 years and older at three primary care facilities was undertaken from 10 March 2008 to 30 April 2008 (inclusive) in Dunedin. Participants included those eligible for Accident Compensation Corporation (ACC) funded care for their injury, and were excluded if their injury had occurred more than 3 months prior to presentation. They were also excluded if they were severely intoxicated at the time of consultation and judged unable to give consent to participate, or if they presented for gradual process claims.

Participants were identified by health centre staff and were asked to complete an anonymous survey at the same time as they were completing their ACC paperwork. The questionnaire contained questions about sociodemographic factors, type of injury, and asked whether participants had consumed alcohol in the 6 hours prior to injury. Drinkers were asked to list the drinks they had in the 6 hours prior to their injury and were asked to name the specific location where the last drink was consumed.



A description of their injury was self-reported by participants and later coded using the READ code system. If multiple injuries were listed, the first in the list was coded. The number of standard drinks consumed in the 6 hours prior to injury (a timeframe recommended in World Health Organization guidelines<sup>13</sup>) was estimated from the drinks described. The lowest estimate from what was reported was recorded.

Moderate alcohol intake was defined as having 4 or fewer standard drinks for women and 6 or fewer standard drinks for men, which is the upper limit of recommended drinks in any one drinking occasion identified by the Alcohol Advisory Council of New Zealand (ALAC).<sup>14</sup> More than this was classed as hazardous alcohol intake.

**Statistical analysis**—Chi-squared tests were conducted to determine the statistical significance of associations between having had a drink in the 6 hours prior to injury and employment status or sex. A t-test was conducted to test the hypothesis that there was no difference in age between those who had had a drink in the previous 6 hours, and those who had not. A Chi squared test was used to test the association between hazardous alcohol intake and ‘attributing your injury to your alcohol intake’, and hazardous alcohol intake and place of last drink.

The study was approved by the Lower South Regional Ethics Committee, and the University of Otago Ngāi Tahu Research Consultation Committee.

## Results

A total of 317 eligible survey responses were obtained. The overall response rate was 71%. The age range of respondents was 16–84 years, with a mean age of 32 years and median age of 26; 37% of respondents were female. Survey respondents self-identified predominantly with New Zealand European ethnicity (88%), 5.5% self-identified as Māori, 2% as Pacific, 2% as Asian, and 7% as ‘Other’. Participants were able to self identify with more than one ethnic group. Māori respondents were asked to identify iwi (tribal) affiliations. No analyses were undertaken by ethnicity due to low numbers. 54% of respondents reported being in paid employment, 5% were school students and 29% were tertiary students. Respondents self reported a wide range of injury types (see Table 1).

Seventeen percent of respondents had had an alcoholic drink in the 6 hours prior to injury (‘drinkers’). We compared drinkers with non-drinkers (those who had not had a drink in the previous 6 hours) and found that a greater proportion of women likely to be drinkers than men ( $p=0.005$ ). Tertiary students were significantly more likely to have be drinkers ( $p<0.001$ ). The mean age of drinkers was 21 years (95%CI 19.6–22.8 years), and of non-drinkers 35 years(95%CI 32.8–36.6 years). There was a statistically significant difference between the groups ( $p<0.0001$ ) with respect to age (Table 2).

Of the 53 people who had a drink in the past 6 hours, three specified type of drink but not amount, 4 did not specify either type or amount of alcohol, and 1 indicated 96 standard drinks, which was excluded as being unlikely. Of the remaining 45 responses, 16 people had moderate alcohol intake and 28 people had a hazardous intake of alcohol (Table 3).

The mean number of standard drinks was 8.9 (median 7.7, standard deviation 6.7). There was a significant association between hazardous intake and attributing one’s injury to alcohol with those with hazardous intake more likely to attribute their injury to their drinking ( $p=0.002$ ).

The majority of drinkers had their last drink at a house or flat (62%). While there appeared to be a greater proportion of those with hazardous intake that had their last

drink in a pub, bar, or nightclub, this association was not statistically significant. (p=0.122) Only 9 of the 16 people who had their last drink in a pub bar or nightclub named the premises on their survey form.

**Table 1. Respondent demographics, injury types, and prevalence of drinking prior to injury**

Total number eligible responses		Number 317	Percent
Place of presentation	Practice A	261	82.3
	Practice B	27	8.5
	Practice C	29	9.2
Sex	Female	99	37.2
	Male	167	62.8
Ethnicity*	New Zealand European	275	88.4
	Māori	17	5.5
	Pacific	7	2.3
	Asian	8	2.6
	Other	22	7.1
Age (years)	Range	16–84	–
	Mean	32	
	Median	26	
Employment status	In paid employment	166	54.2
	School student	15	4.9
	Tertiary student	90	29.4
	Other	35	11.4
Injury type	Fracture or dislocation	19	6.4
	Sprain or strain	114	38.5
	Open wound/ laceration	68	23.0
	Contusion or crush injury	61	20.6
	Burn	3	1.0
	Concussion	2	0.7
	Conjunctival foreign body	20	6.8
	Other	9	3.0
Alcoholic drink in the 6 hours prior to injury	Yes	53	16.9
	No	260	83.1

\* Participants were able to self identify with more than one ethnic group.

**Table 2. Characteristics of respondents and injuries, by drinking status**

Variables		Drink in previous 6 hours		Total	Significance P value
		Yes	No		
Sex	Female	24 (24%)	75	99	0.005†
	Male	18 (11%)	145	163	
Employment status	Paid employment	11 (8%)	128	139	<0.001†
	School student	2 (14%)	12	14	
	Tertiary Student	26 (38%)	42	68	
	Other	2 (7%)	29	31	

Age	Mean age	21.2 (19.6–22.8)*	34.7 (32.8–36.6)*	–	<0.0001‡
Injury type	Fracture or dislocation	2	17	19	–
	Sprain or strain	14	100	114	
	Open wound/ laceration	18	50	68	
	Contusion or crush injury	9	52	61	
	Burn	0	3	3	
	Concussion	1	1	2	
	Conjunctival foreign body	0	20	20	
	Other	3	6	9	

\* 95% confidence intervals.

†  $\chi^2$  test of association.

‡  $\chi^2$  test of association.

**Table 3. Comparison of people with moderate versus hazardous alcohol intake prior to injury**

Variables		Moderate intake	Hazardous intake	Total	Test of association( $\chi^2$ )
Sex	Female	10	10	20	–
	Male	3	12	15	
Attribute injury to alcohol	Yes	3	19	22	P=0.002
	No	13	9	21	
Place of last drink	Pub bar or nightclub	2	12	14	P=0.122
	House or flat	13	15	28	
	Other	1	2	3	
Total		16 (36.4%)	28 (63.6%)	44	–

## Discussion

To our knowledge this is the first evidence regarding the nature of alcohol-related harm presenting to primary care in New Zealand. The proportion of patients who had had a drink in the 6 hours prior to injury (drinkers) was 17%. While this proportion is lower than that in an Auckland Emergency Department survey where 33% of patients presenting with injury had consumed alcohol prior to injury,<sup>15</sup> this was to be expected for a number of reasons. Firstly, injuries presenting to primary care come from a wide variety of sources, and are likely to be less severe than those presenting to Emergency Departments. Secondly, the timing of the Emergency Department survey in December may have influenced their result as people may have been drinking more in the pre-Christmas period.

The timing of our survey in March and April did not include known events likely to increase alcohol consumption in the Dunedin community such as Orientation week. However the rate of 17% still represents a substantial proportion of the injuries presenting, and is consistent with international studies of injury presentations in Emergency Departments in Australia, the USA and Canada, the United Kingdom, and

Finland which report between 10–18% of attendees where alcohol has been involved.<sup>15</sup>

This survey also showed important differences in population groups with respect to the proportion of patients who had been drinking prior to injury. More men than women presented with injury, however a greater proportion of women (24%) were drinkers, compared to of men (11%), which represents a statistically significant difference. The reasons for this are unclear from this study, although it may be because men are more exposed to injury from other environments such as the workplace than women. \*\*

Department of Labour statistics show that males accounted for approximately three quarters of all work-related injury claims each year from 2002 and 2006.<sup>16</sup> It does suggest however that alcohol is an important contributor to injury, particularly for women. Differences were also shown in occupational groups with 38% of tertiary students drinking prior to injury compared with only 8% in paid employment. Once again, this may relate partly to exposure to work related and other injury environments. However these findings are consistent with other studies, which demonstrate a wide range of harms associated with hazardous drinking in New Zealand tertiary students.<sup>9</sup>

In this group of respondents, drinkers were younger than non-drinkers. This is consistent with other New Zealand findings which show that young New Zealanders drink more hazardously,<sup>4</sup> especially tertiary students.<sup>7</sup> We quantified the amount of alcohol consumed prior to injury, and showed that most drinkers (64%) had exceeded guidelines about number of standard drinks in a particular drinking occasion. Many exceeded the recommended limit by a considerable amount.

**Drinking location**—This survey provides new information about drinking location with respect to alcohol-related harm, which is relevant to the current discussion about the role of off-license premises. The ‘Last drinks survey’ has been used nationally by police to monitor the role of specific licensed premises in alcohol-related harm, particularly with respect to road safety initiatives and to fulfil their obligations under Sale of Liquor Act 1989.<sup>12</sup>

The Sale of Liquor Act’s requirement not serve intoxicated patrons can be tested in this way. However, the important role of drinking in private homes demonstrated by this study requires a more detailed review of off licences in alcohol-related harm. The *2004 New Zealand Health Behaviours Survey* found that the most common location for drinking large amounts of alcohol were private homes, although people aged 18–24 years were more likely than other age groups to have consumed large amounts of alcohol at pubs, hotels/taverns or nightclubs.<sup>4</sup>

The home environment is obviously less amenable to legislative intervention around alcohol drinking than licensed premises. However, a range of policy interventions to reduce hazardous drinking in homes are outlined in the recent Law Commission issues paper on the reform of New Zealand’s liquor laws.<sup>17</sup>

**Study strengths and limitations**—There are a number of limitations to this survey. Firstly, participants do not comprise a representative sample of the Dunedin population, or of all those presenting to primary care with injury. There are a number

of potential sources of bias. All information provided relies on the honesty of self report.

Whereas other studies have used breath alcohol levels to estimate blood alcohol concentrations of participants,<sup>15</sup> we used self-reported consumption which is likely to be less reliable. Although the response rate was reasonable at 71%, it is likely that other eligible participants were 'missed' if health centre staff did not ask them to participate. This illustrates the difficulty of conducting a survey in primary care where there is a need to rely on busy staff to remember to ask potential participants.

Different systems of recruitment were used in different locations, with reception staff approaching participants in one facility (Practice A), and health practitioners approaching participants in the other two practices, which may have biased results. Finally, the majority of responses were obtained from Practice A, however this group was more representative of the Dunedin population than the other two practices.

Although there are limits to the generalisability of results due to this not being a representative sample, this survey does provide important local data about the role of alcohol in injury. Responses reflected a range of people of different ages, and occupation, and a wide range of injuries was reported among both the drinkers and the non-drinkers, which suggests that participants were reasonably representative of the Dunedin community.

## Conclusions

These results provide new information with respect to the role of drinking location in alcohol-related harm, as well as association between alcohol and injury in primary care settings in New Zealand. Although only injury was examined in this survey, we know that hazardous drinking is associated with a wide range of harms, and so the degree of alcohol-related harm in the community is likely to be much greater than that described here. A comprehensive review of the Sale of Liquor Act is timely and should consider restricting the availability of alcohol in on and off licensed premises in order to minimise hazardous drinking in a range of drinking locations.

**Competing interests:** None known.

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## In vivo interactions between BZP and TFMPP (party pill drugs)

Ushtana Antia, Malcolm D Tingle, Bruce R Russell

### Abstract

**Aim** This study explores potential drug-drug interactions between BZP and TFMPP. This was achieved by comparing the metabolism and pharmacokinetics of BZP and TFMPP when taken together with previously published data on their individual metabolism and pharmacokinetics.

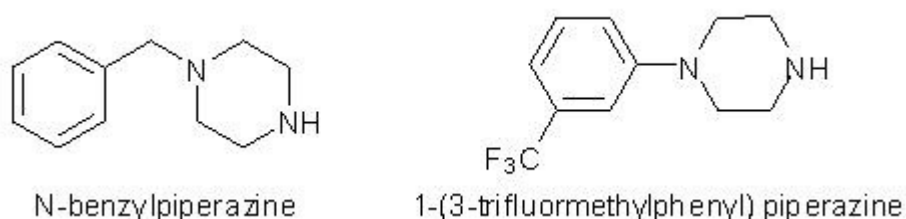
**Method** Blood and urine samples were collected from seven participants given a combined dose of BZP (100 mg) and TFMPP (30 mg) and analysed by LC-MS in order to quantify the concentrations of BZP, TFMPP, and their major hydroxylated metabolites 3-OH BZP, 4-OH BZP, and 4-OH TFMPP.

**Results** The metabolic profiles of both drugs were altered when co-administered. Both BZP and TFMPP lost one metabolite, 3-OH BZP and 4-OH TFMPP, respectively. Some differences in the pharmacokinetic properties of TFMPP were also noted.

**Conclusion** Metabolic interactions between BZP and TFMPP are clearly observed in this study along with some changes to the pharmacokinetics of TFMPP. As these drugs are often co-administered, the interactions between them are both relevant and concerning. Awareness of these interactions can assist clinicians in understanding toxicities relating to the co-administration of BZP and TFMPP or other party pill drugs.

Piperazine-based party pill drugs have become increasingly popular in New Zealand, and are used as a substitute for amphetamine-derived designer drugs. Benzyloperazine (BZP) and trifluoromethylphenylpiperazine (TFMPP) (Figure 1) are the most commonly encountered constituents of party pills and are often co-administered.

**Figure 1. BZP and TFMPP (party pill drugs)**





In vitro studies have reported interactions between BZP and TFMPP, both of which are substrates and inhibitors of hepatic isoenzymes CYP2D6, CYP1A2, and CYP3A4.<sup>1</sup>

Pharmacokinetic interactions have been demonstrated between related piperazines and other recreational drugs. For example, in a single case report in the Netherlands, a mixture containing cocaine and the piperazine analogue, mCPP, was reported to cause drastic reductions in the urinary concentrations of the major metabolite of mCPP, allegedly due to drug-drug interactions with cocaine, a known CYP2D6 inhibitor.<sup>2</sup>

In the 'party scene', it is known that piperazines are taken in combination with caffeine (a CYP1A2 substrate) in the form of energy drinks and sodas. It is known that elevated caffeine levels in the body can lead to caffeine intoxication; a range of symptoms including restlessness, nervousness, insomnia, flushing of the face, increased urination, gastrointestinal disturbance, muscle twitching, a rambling flow of thought and speech, irregular or rapid heartbeat and psychomotor agitation. Deaths resulting from extreme overdose of caffeine have been reported.<sup>3-5</sup>

Other recreational drugs have been shown to cause clinically important interactions with prescription medicines. For example, an episode of severe and prolonged effects following a small dose of MDMA by an individual under ritonavir and saquinavir treatment for HIV-1 infection has been reported.<sup>6</sup>

This effect was linked to P450 inhibition (specifically CYP2D6 and CYP3A4 inhibition) by the antiretroviral drugs, leading to reduced clearance of MDMA. Due to the similarities in the metabolism of MDMA and the piperazine-based drugs, similar adverse effects might be observed in cases where antiretroviral drugs or other potent P450 inhibitors are co-administered with 'party pill' drugs.

In addition to co-administration of piperazines with therapeutic or recreational drugs, it is common for BZP and TFMPP to be combined in the same preparation. The subjective effects produced by combining BZP and TFMPP are reported to be similar to those of MDMA. Additionally it has been reported that co-administration of BZP and TFMPP lead to dramatic increases in DA and 5-HT levels in the rat brain, and these increases are far greater than the sum of the individual effects of BZP or TFMPP.<sup>7</sup>

A recent study has reported symptoms of sympathomimetic toxicity in patients who had ingested what toxicological tests found to be a combination of BZP and TFMPP.<sup>8</sup>

This study explores the metabolic and pharmacokinetic interactions between these piperazines. Results from previous pharmacokinetic studies following a single oral dose of BZP (200 mg)<sup>9</sup> and TFMPP (60 mg),<sup>10</sup> were compared to results from a group of participants who were given a combined dose of BZP (100 mg) and TFMPP (30 mg).

## Method

**Study design**—Healthy human volunteers (n=7, males, 19–31 years, mean body mass index (BMI): 24.3) took part in this study. In order to minimise risk to participants, strict exclusion criteria were used i.e. history of drug allergies, liver disease, endocrine disorder, cardiovascular disease, drug or alcohol addiction, mental illness, or respiratory disease.

Ethical approval to carry out this research was granted by the Northern X Regional Ethics Committee of NZ (NTX06/07/080). Participants were fasted for 12 hours prior to drug administration, and were then provided with standardised meals 120 minutes and 400 minutes after drug ingestion; water was freely available during the course of the study.

A combined treatment of BZP hydrochloride (100 mg; Sigma Aldrich, New Zealand) plus TFMPP (30 mg; Sigma Aldrich, New Zealand) in gelatine capsules (Size 0CS; Capsugel, USA) was given as a single oral dose and 15 blood samples were collected over a 24-hour period. One blood sample was taken before drug administration ( $t=0$ ) and 14 additional samples were taken post-dose at  $t=15, 30, 45, 60, 75, 90, 105, 120, 180, 240, 300, 350, 480,$  and 1440 minutes. The total volume of urine excreted over the 24-hour test period was also collected for analysis.

4'-Hydroxyl benzylpiperazine (4-OH BZP) and 3'-hydroxyl benzylpiperazine (3-OH BZP) was custom synthesised by Sigma Aldrich (New Zealand), while 4'-Hydroxyl trifluoromethylphenylpiperazine (4-OH TFMPP) was custom synthesised by Dr. Brian Palmer at the Auckland Cancer Society Research Centre, and used to quantify the levels of these metabolites. The purity of all standards was verified by LCMS.

**Sample handling**—Blood samples (6 mL) were collected in heparinised tubes and allowed to stand at room temperature for thirty minutes prior to centrifugation at 3,000 rpm for 15 minutes to separate the plasma and red blood cell fractions. An aliquot of plasma (100  $\mu$ L) was deproteinised by adding  $\text{ZnSO}_4$  (20  $\mu$ L, 35%) and methanol (100  $\mu$ L). Samples were then vortex mixed for 1 minute, centrifuged for 10 minutes at 11,200 g and the clear supernatant was collected for analysis as described below.

An aliquot of urine (500  $\mu$ L) was incubated at 37 °C for 12 hours with a mixture (100  $\mu$ L, 100,000 Fishman units per mL) of beta-glucuronidase (EC 3.2.1.31, Sigma, USA) and aryl sulfatase (3.1.6.1, Sigma, USA) to hydrolyse any conjugates. The urine sample was centrifuged for 10 minutes at 11,200 g and the supernatant was analysed as described below.

A second aliquot (200  $\mu$ L) of urine was filtered (0.45  $\mu$ m RC-membrane syringe filter, Sartorius, Germany) and analysed directly as described below in order to determine the relative excretion of conjugated metabolites.

**Instrumental analysis**—Plasma and urine samples were analysed using a validated method<sup>10</sup> with an Agilent ChemStation liquid chromatography system coupled with mass spectrometry (LC-MS). BZP and its metabolites were resolved using an Agilent Zorbax Extend-C18 (4.6x150 mm, 5  $\mu$ m) column and eluted with a mobile phase of 10 mM ammonium formate buffer, pH 4.5 (solvent A) and acetonitrile (solvent B). A solvent gradient (0–2 min 5% B; 2–5 min 10% B; 5–10 min 10–55% B; 10–12 min 55–5% B; 12–5 min 5% B) was utilised for the separation with a flow rate of 1 mL.min<sup>-1</sup>.

Detection was carried out by mass spectrometry with electrospray ionisation (ESI). Spray chamber parameters were as follows: gas temperature 350°C (max 350°C), drying gas flow rate 12 L/min (max 13.0 L/min), nebuliser pressure 35 psig (max 60 psig), voltage cap (positive and negative) 3000V.

Single-ion monitoring for each mass ion was used for the analysis of BZP, TFMPP and their metabolites in blood and urine samples:  $m/z$  177 (BZP),  $m/z$  231 (TFMPP),  $m/z$  193 (3-OH BZ and 4-OH BZP),  $m/z$  247 (4-OH TFMPP). In addition to detection by SIM, a total ion chromatogram (TIC) using a single quadrupole MS-MS with a fragmentor voltage of 120 V, was also used in order to search for additional metabolites (mass range scanned: 50 to 550  $m/z$ ). Using this technique the presence of metabolites proposed by Staack<sup>11</sup> and Tsutsumi<sup>12,13</sup> were investigated. Quantification:

A standard curve of plasma samples spiked with BZP (50, 100, 150, 200, 250, and 500 ng/mL) was prepared and used to determine the concentration of BZP in the plasma samples. Further standard curves of 4-OH BZP and 3-OH BZP (5, 10, 15, 20, 25, and 50 ng/mL) were also created. The area under the curve (AUC) for peaks for each analyte was measured (using Agilent ChemStation software) and compared to the relevant standard curve. Similar standard curves were prepared for these three compounds in urine and purified by enzyme hydrolysis and microfiltration.

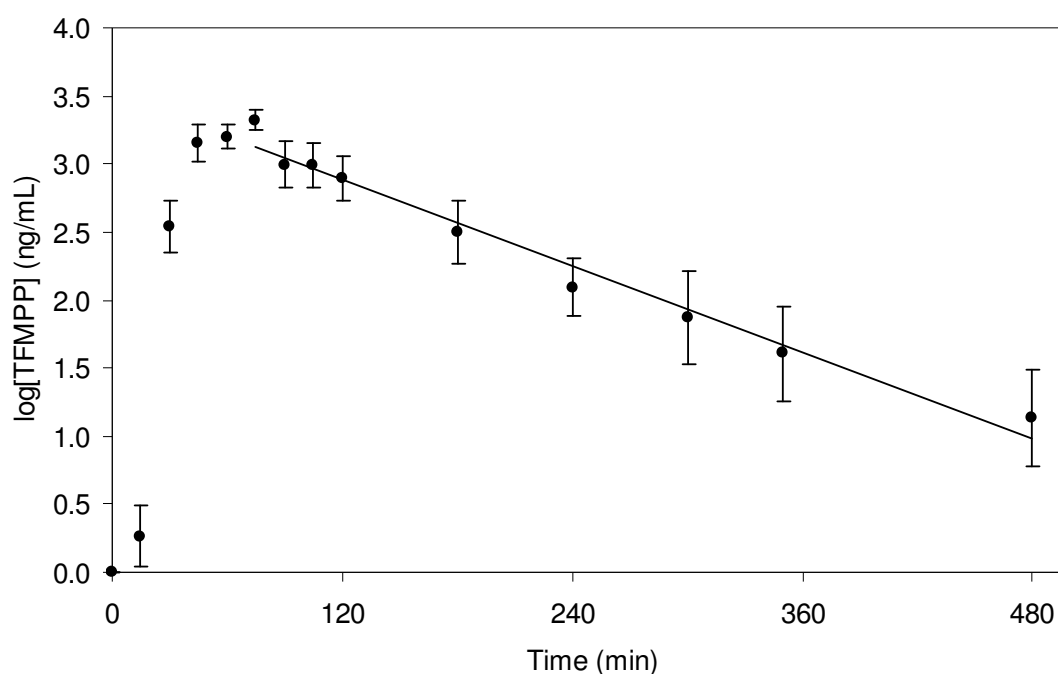
**Data analysis**—WinNonLin™ (Pharsight) software was used for modelling and analysing the pharmacokinetic parameters. A single compartment model displaying first order absorption and first order elimination was used for modelling the data.

## Results

**TFMPP pharmacokinetics in the presence of BZP**—The average concentration of TFMPP (n=7) in plasma was plotted over time (Figure 2). The peak plasma concentration (C<sub>max</sub>) of 28 ng/mL ( $\pm 3$  ng/mL) was reached 75 minutes (T<sub>max</sub>) post-dose. The absorption half-life was 13.3 minutes ( $\pm 1.9$  min). By the end of the 24-hour sampling period, TFMPP concentrations had decreased below the limit of quantification in all participants.

As demonstrated in Figure 2, the clearance phase was constant. The elimination half life (t<sub>1/2</sub>) of TFMPP was calculated and found to be 2.3 hours ( $\pm 0.3$  hours). No metabolites were detected in plasma.

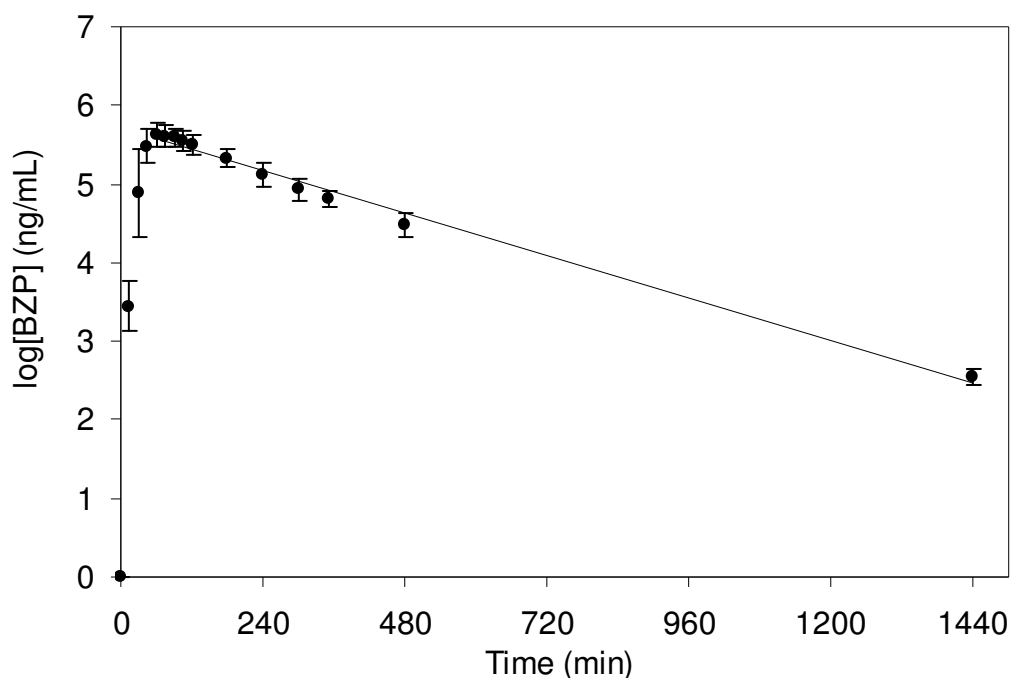
**Figure 2. Plasma concentrations of TFMPP (logarithmic scale) over 24 hours following a 30 mg oral dose with BZP**



**Note:** Values shown are mean  $\pm$  SEM for 7 individuals.

**BZP pharmacokinetics in the presence of TFMPP**—The average plasma concentration of BZP in the combined treatment group (n=7) was plotted (Figure 3). The peak plasma concentration (C<sub>max</sub>) of 295 ng/mL ( $\pm 42$  ng/mL) occurred 60 minutes (T<sub>max</sub>) post-dose. The absorption half-life was calculated as 6.0 minutes ( $\pm 1.9$  min). By the end of the 24-hour sampling period, BZP concentrations decreased to 12 ng/mL. The constant clearance phase can be clearly seen in Figure 3. The elimination half life (t<sub>1/2</sub>) of BZP was 4.3 hours ( $\pm 0.4$  hours).

**Figure 3. Plasma concentrations of BZP (logarithmic scale) over 24 hours following a 100 mg oral dose with TFMPP**



**Note:** Values shown are mean  $\pm$  SEM for 7 individuals.

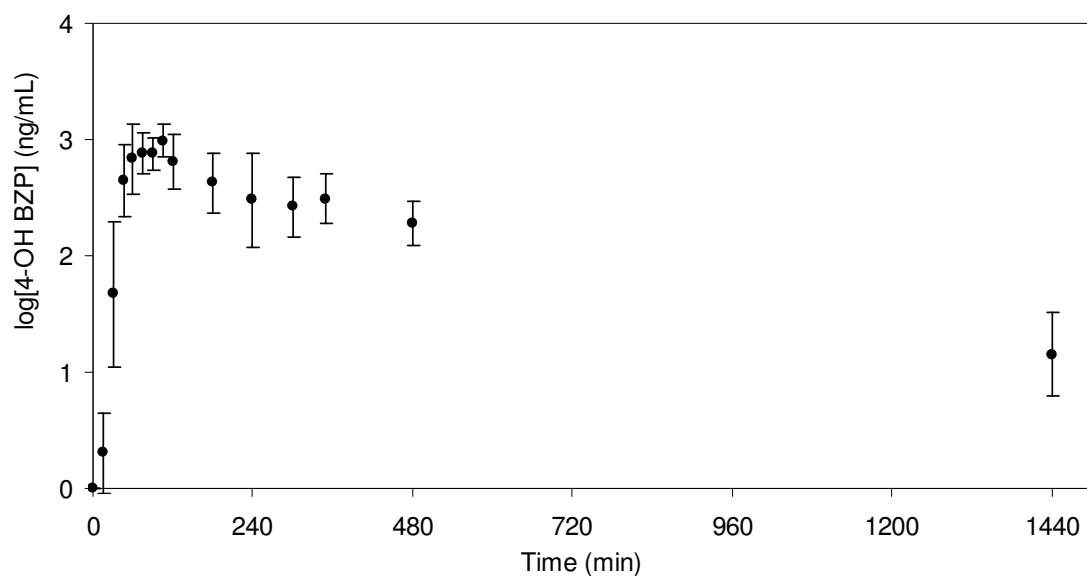
4-OH BZP was detected in the plasma of all participants. However, 3-OH BZP was not detected in the plasma of any participants. 4-OH BZP reached 20.0 ng/mL ( $\pm 4$  ng/mL) (C<sub>max</sub>) at 60 minutes post-dose (T<sub>max</sub>) and was detected in the plasma 24 hours after the dose ( $> 5$  ng/mL) (Figure 4).

**Urinary metabolites**—TFMPP was detected in the 24-hour urine samples of all participants (n=7) and it was determined that 0.58% of the dose was excreted renally, of which only 0.18% was excreted unchanged. The remaining 0.4% of the dose was excreted as an N glucuronide (Figure 5). 4-OH TFMPP was not detected in the urine of any participants.

BZP and 4-OH BZP were detected in the 24-hour urine sample of all participants and 3-OH BZP was absent. It was calculated that less than 5 % of the dose or 481.6 mcg mg ( $\pm 52.6$  mcg) was excreted in unconjugated form. 4-OH BZP was present at low concentrations, 0.12 % of the dose given.

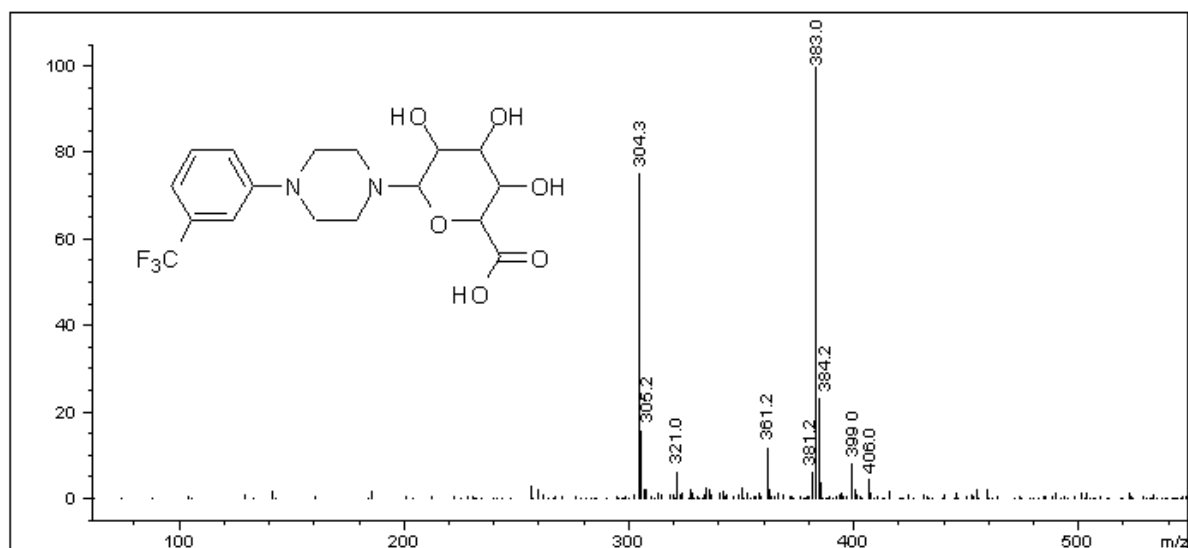
The presence of two putative metabolites, BZP O-sulfate BZP (Figure 6) and BZP N-sulfate (Figure 7) is proposed based on the presence of mass ions (272 m/z and 256 m/z, respectively).

**Figure 4. Plasma concentrations of 4-OH BZP (logarithmic scale) over 24 hours following a 100 mg oral dose with TFMPP**

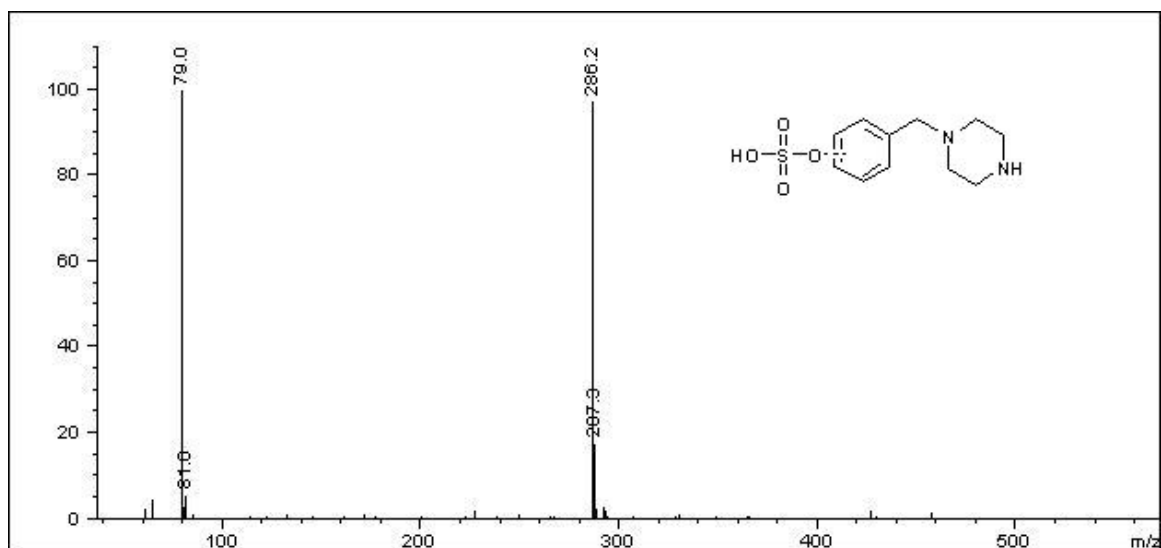


**Note:** Values shown are mean  $\pm$  SEM for 7 individuals.

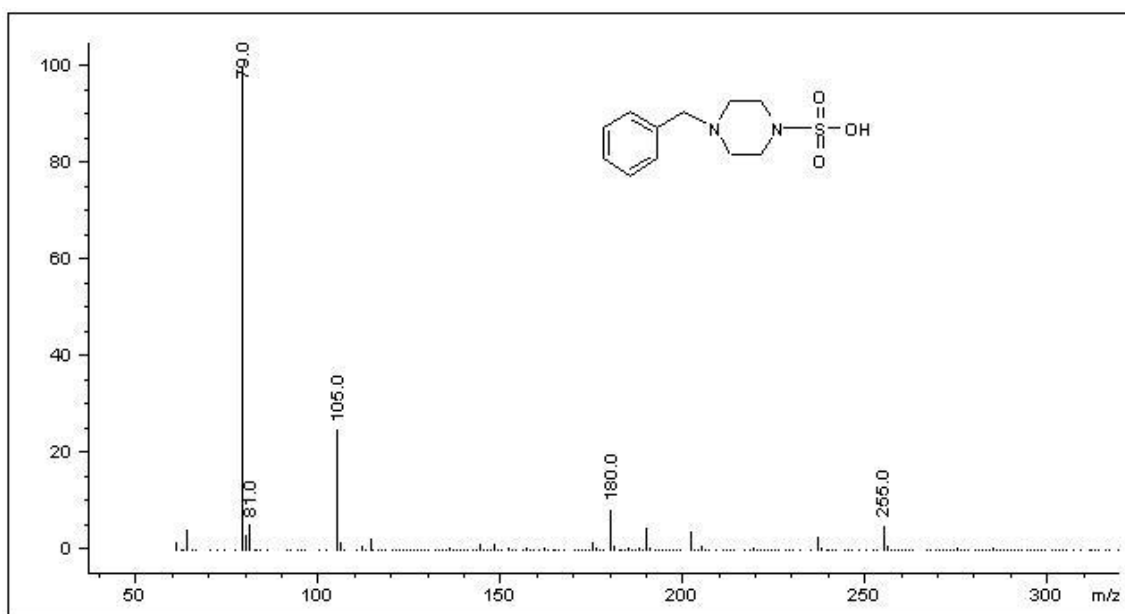
**Figure 5. Mass spectrum of urinary metabolite N-glucuronide TFMPP**



**Figure 6. Mass spectrum of urinary metabolite O-sulfate BZP**



**Figure 7. Mass spectrum of urinary metabolite N-sulfate BZP**



While the analysis of neat urine allows for the quantification of BZP and its unconjugated metabolites, the total BZP content is measurable following enzymatic hydrolysis. The total amount of BZP excreted was calculated by adding the total amount of BZP and hydroxylated metabolites detected in the urine following enzymatic hydrolysis and was found to be 13.3 % of the dose or 13.3 mg ( $\pm$  2.6 mg). From this data it was calculated that the N-sulfate and O-sulfate respectively made up 76.7 % and 19.7 % of excreted BZP.

## Discussion

Previous studies have reported that BZP and TFMPP inhibit each other's metabolism *in vitro*.<sup>1</sup> The results from this study also show compromised metabolism of BZP and TFMPP, specifically that the formation of the hydroxylated metabolites for BZP and TFMPP is inhibited when they are co-administered. A hydroxylated metabolite is lost (undetectable by the bioanalysis assay) by both BZP and TFMPP when these drugs are co-administered. It could be suggested that this is the result of CYP2D6 inhibition which is thought to catalyse the hydroxylation of both BZP and TFMPP.

However, it is important to note that these results are not reproduced in animal studies. When BZP and TFMPP were co-administered to Sprague-Dawley rats, there is no loss of metabolites observed.<sup>14</sup> This discrepancy may be explained by the differences in the enzymes that can metabolise BZP and TFMPP across different species.

For example, it is well known that metabolic activities differ between species, strain and gender<sup>15, 16</sup>. In the rat, CYP2D1, CYP2D2, CYP2D3 and CYP2D4 catalyse similar reactions as human CYP2D6, and rat P450 2D enzymes are inhibited by quinine, while human CYP2D6 is inhibited by quinidine.<sup>17</sup> BZP and TFMPP may indeed lead to inhibition of human CYP2D6, while neither drug inhibits any or all of the rat CYP2D counterparts.

One major impact of this interaction manifests in the elimination rates of TFMPP. When given alone TFMPP disposition can be split into two phases, distribution ( $t_{1/2}=2.19$  hrs) and elimination ( $t_{1/2}=7.6$  hrs)<sup>10</sup>, whereas in the combined dose TFMPP disposition appears to have a single disposition phase ( $t_{1/2}=2.29$  hrs). From this it can be concluded that the elimination of TFMPP is largely metabolic, as the removal of this pathway results in an apparent loss of the elimination phase. Conversely, the  $t_{1/2}$  of disposition of BZP when combined with TFMPP is not significantly different from the reported  $t_{1/2}$  of BZP alone.<sup>9</sup>

Interactions between BZP and TFMPP do not appear to affect the  $T_{max}$  and  $t_{1/2}$  of either drug but the difference in lag time of TFMPP between the single and combined doses is significant ( $P<0.001$ ). In the single dose of TFMPP a lag time of 30 minutes is observed<sup>10</sup>, however for the combined dose given in this study, a lag time is not evident. This indicates that BZP may have an effect on the absorption of TFMPP, for example, BZP (due to localised effects) stimulates stomach emptying and thus explains an absence of a lag time for TFMPP in the combined dose.

A limitation on the interpretation of the results of this study is the difference in dose between the single and combined treatments. Ideally, if the same doses of TFMPP were given for the single and combined treatments, the effect of inhibiting the elimination phase would be that the plasma concentrations of TFMPP would increase (i.e.  $C_{max}$  would be higher in the combined treatment).

This effect is suggested by the equivalence of  $C_{max}$  between the two groups, despite the combined treatment group taking only half the dose of TFMPP. While this is not as robust as a direct comparison at the same doses, it gives ethical justification for halving the dose used in combination. Using the same dose would almost certainly have resulted in an elevated  $C_{max}$  and potentially led to adverse events.



A relationship between the plasma concentration and subjective effects of these drugs has been reported<sup>18</sup>. Therefore, combining the doses should result in subjective effects that are no more than the sum of the individual effects of the drugs (additive effects), as the plasma C<sub>max</sub> for BZP and TFMPP are not changed in the combined dose. However, reports from animal studies<sup>7</sup> have indicated that the subjective effects of these drugs are synergised when they are co-administered and toxicities have been demonstrated in humans.<sup>8</sup> This suggests that the interaction resulting in synergism between these drugs occurs at a pharmacodynamic level.

This further suggests that by combining BZP and TFMPP, the doses of each can be reduced without compromising the effect of the drugs which may explain why, when these drugs are sold in combined drug preparations, the doses of each drug are routinely far less than in the single drug preparations.

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## Unequal risks, unmet needs: the tobacco burden for Pacific peoples in New Zealand

Tolotea Lanumata, George Thomson

### Abstract

**Aim** To review the available published literature and documentary material relevant to smoking by Pacific peoples in New Zealand.

**Methods** Electronic databases and websites were searched using a range of search words.

**Results** Over 30% of Pacific adults in New Zealand reporting being smokers in the 2006 Census, compared to 21% of the whole adult population. Smoking by Pacific women increased from 23% in 1996 to 27% in the 2006 census. Other survey data indicates some fall in the prevalence of *daily* smoking from 35% in 2002/3 to 26% in 2006/7. The prevalence of smoking by Pacific Year-10 students declined sharply during 1999–2007, from 29% to 16%. Smoking inside the homes of Pacific students has declined during 2001–7, from 35% to 26%. We found little government attention to smoking by Pacific peoples, and no specific central government plan for Pacific tobacco control.

**Conclusions** The threat to health from smoking and secondhand smoke exposure is higher for Pacific peoples and contributes to health inequalities in New Zealand. There is a need for tobacco control interventions specific to Pacific peoples, with some policy shortcomings needing to be urgently addressed. A central government plan for Pacific tobacco control is required. Some progress has occurred, particularly in the decrease of smoking by Pacific youth, and the increase in smokefree Pacific homes.

An estimated 300,000 people of Pacific island ethnicity live in New Zealand, over 7% of the New Zealand population. The Pacific population is projected to reach 480,000 by 2026, growing at a much faster rate than the general population.<sup>1</sup>

About 8% of New Zealand smokers, (over 50,000 including youth) are of Pacific ethnicity.<sup>2</sup> There has long been researcher and policy analyst recommendations about the need to 'increase efforts at reducing smoking' among high smoking prevalence groups, including Pacific peoples.<sup>3</sup> Another study of the effects of New Zealand tobacco control efforts suggested government 'pay particular attention to ...ethnic minority groups' and that 'programmes should...remove cultural and social barriers experienced by disadvantaged population groups.'<sup>4</sup> Tobacco use contributes significantly to the health inequalities between Pacific and other New Zealanders,<sup>5,6</sup>

To help provide some of the background for considerations of Pacific tobacco control policy in New Zealand, we reviewed the available relevant published literature and documentary material.

We sought material on:

- Tobacco smoking, quitting, and secondhand smoke (SHS) exposure for Pacific peoples in New Zealand;
- Any strategic planning for Pacific tobacco control;
- Public statements and actions by New Zealand government politicians on smoking by Pacific peoples and relevant policies; and
- Relevant policy recommendations by researchers.

## Methods

The following databases were searched in March and April 2008 for the period since 1998: Medline (PubMed), Google Scholar, Index New Zealand, Ebsco, and ProQuest. Thesis searching was conducted through Index to Theses, and we searched the catalogues of the eight New Zealand universities. The Factiva media database was searched for the New Zealand region. Additional searches were made in the annual reports of the Health Sponsorship Council and the Quit Group, and in collections of government, District Health Board, and NGO documents.

The websites of the following organisations were searched: New Zealand Government (<http://www.beehive.govt.nz/> and <http://www.executive.govt.nz/96-99/index.html>) Ministry of Health, Ministry of Pacific Island Affairs, Statistics New Zealand, the 21 District Health Boards (DHBs), The Quit Group, Health Sponsorship Council, and Pacific Islands Heartbeat.

Search words from the following groups were used:

- Policy, policy making, policy maker(s), policymaker(s), politicians, politics, political, government, minister;
- smoke, smoking, smokefree, smoke-free, ban, tobacco;
- children, child, infant, youth, home;
- knowledge, attitude(s); and
- Pacific, Pasifika, Pacifica, communities, Polynesia, Polynesian, Zealand

## Results

### Tobacco smoking by Pacific peoples in New Zealand

The prevalence of smoking by Pacific adults appears to have remained static at around 32-33% between 1990 and 2005 (Table 1), with apparent variations of up to 4% up or down from year to year. The year-to-year variations in prevalence are likely to be due to the small numbers of Pacific peoples in most of the surveys used, which resulted in large confidence intervals around the figures.<sup>7</sup>

**Census data**—In the 2006 Census, 30.3% of Pacific people over 15 reported being smokers, compared to 20.7% of the general New Zealand population. The Pacific smoking prevalence was 28% in the 1996 Census, and 31.6% in the 1981 Census. The major change has been in the increase of smoking by Pacific women (from 22.6% in 1996 to 27.3% in 2006) whereas the prevalence for men has slightly dropped from 34.1% to 33.5%.<sup>3,8</sup>

The 2006 Census also reported that 8% of Pacific medical practitioners smoked, compared to less than 4% of all doctors in New Zealand. Eighteen percent of Pacific nurses and midwives smoked, compared to 14% of all nurses and midwives in New Zealand.<sup>9</sup>

**Table 1. Adult smoking prevalence by Pacific peoples in New Zealand (%), (15+ years), 1990–2006**

Group	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Pacific	32	30	33	33	34	34	32	34	33	30	34	31	35	33	29	33	30
Total population	28	26	27	27	27	27	26	26	25	26	25	25	25	25	23	23	21

**Source:** 2006 Census of Populations and Dwellings, Department of Statistics; ACNielsen (NZ) Ltd. The Table is largely from a government publication.<sup>7,8</sup>

In the 2006 Census, the smoking prevalence for particular Pacific ethnicities in New Zealand varied from 23% to 42%. The 2006 figures, with 1996 figures bracketed when available, were; Cook Island 38% [35%], Niueans 33% [31%], Samoans 28% [26%], Tokelauans 42% [40%], Tongans 29% [27%], Tuvaluans 23%.<sup>2, 10</sup> This variance across ethnicities partly reflects the variance in smoking prevalence between Pacific nations.<sup>11</sup>

**Augmented and specific survey data—**The only surveys we found that had an augmented Pacific sample (to enable greater accuracy for that population) were the 2006 New Zealand Tobacco Use Survey (NZTUS) and the New Zealand Health Surveys (NZHS). Even in these surveys the confidence intervals were wide. NZTUS reported a smoking prevalence for Pacific people aged 18–64 of 36% (95% CI: 31.3–41.1) with the prevalence for men at 39% and for women 33%.<sup>12</sup>

The 2006/7 NZHS reported that 27% of Pacific adults (15 or over) were current smokers (95% CI: 23.6–30.2)<sup>13</sup>—33% of men and 21% of women.<sup>14</sup> NZHS reported some decline in daily smoking by Pacific men from 1996–2006 (36% in 1996/7, 37% in 2002/3 and 31% in 2006/7) and a sharp rise and fall in daily smoking by Pacific women (21% in 1996/7, 33% in 2002/3 and 21% in 2006/7). This indicates an overall drop in daily smoking by Pacific adults from 35% to 26% during 2002/3 to 2006/7.<sup>15</sup>

The only relevant survey found that was specific to the Pacific population in New Zealand was the 2003 Pacific Drugs & Alcohol Consumption Survey, of over 1100 people aged 13–65.<sup>16</sup> This found a self-reported smoking prevalence (in last month) of 34% (males 38%, females 29%). There was an over 40% prevalence for both males and females in the 18–29 age group. Of those who had smoked in the last 12 months, 67% smoked 1–10 cigarettes a day, and 40% though they smoked too much. Of the whole sample (smokers and non-smokers) 69% agreed (70% of smokers) that people risked harming themselves through trying cigarettes once or twice.

The survey had sample sizes of at least 200 for four ethnic groups—Samoan, Cook Islands, Tongan, and Niuean (see Table 2 for ethnic group results). The group specific results included a 58% smoking prevalence (last month) for Cook Island women aged 13–29, compared to 43% for the whole sample of young women. As with the Year-10 survey data (see below) there was higher smoking by Cook Island females than all the male ethnic groups, except (in the 2003 survey) for Samoan males.

**Table 2. Data from the Pacific Drugs & Alcohol Consumption Survey 2003<sup>16</sup>**

Group	Smoking prevalence (last month) %	Smoking prevalence by gender (last 12 months) %	1-10 cigarettes per day/smoker (last 12 months) %	Smokers in previous 12 months who reported smoking 'too much' (%)	Belief in harm from trying cigarettes once or twice (%)
<b>Samoa</b>	34	M 44; F 29	64	43	70
<b>Cook Islands</b>	36	M 32; F 44	67	40	66
<b>Tongan</b>	26	M 39; F 24	69	35	73
<b>Niuean</b>	31	M 42; F 34	75	36	64
<b>Whole sample</b>	34 (29 female)	M 41; F 33	67	40	69

**Student survey data**—During 1999–2007, the prevalence of ‘regular’ (at least monthly) smoking by Pacific Year-10 students declined amongst girls from 33% to 18%, and amongst boys from 24% to 14%. However, the 1999–2007 decline in smoking for both girls and boys was significantly less than for European youth.<sup>17</sup> This meant that the relative risk of smoking for Pacific youth was increasing. For all students (both girls and boys), the Pacific ‘regular’ smoking prevalence was 16%, compared to 9% for European students.<sup>17</sup> In another sample, 23% of all those Year-10 Pacific students who had ever smoked had started before the age of 10.<sup>18</sup>

During 2004–2007, there were considerable ethnic and gender differences between groups of Pacific students in the daily smoking prevalences, with Cook Island girls (23%) smoking far more than Samoan (10%), Niuean (10%), and Tongan girls (13%). Niuean (14%) and Cook Island boys (13%) were smoking more than Tongan (11%) and Samoan boys (8%).<sup>17</sup>

**Type and amount of tobacco product used**—Seventy-one percent of Pacific smokers reported smoking ready-made (not roll-your-own) cigarettes, compared to 46% of European/other, and 36% of Māori smokers.<sup>7</sup> This pattern was repeated for year 10 students, where 56% of Pacific students who smoked usually smoked ready-made cigarettes, compared with 37% of all Year 10 students.<sup>18</sup> In 1996–97, 65% of Pacific smokers reported smoking 10 or less cigarettes per day, compared to 47% for Māori and 40% for European/Pākehā.<sup>19</sup>

**Smoking consequences**—There is some evidence for earlier deaths for Pacific peoples compared to non-Māori non-Pacific New Zealanders, due to smoking.<sup>6</sup> Lung cancer mortality rates for Pacific peoples are also relatively high (at over 2 times for men and 1.4 times for women), compared to non-Māori/non-Pacific.<sup>20</sup>

The higher smoking prevalence for Pacific women has consequences for their health and that of their children. In contrast to the decreasing incidence of strokes for European/Pākehā women and the static incidence for Māori, Pacific women are increasingly suffering from strokes.<sup>21</sup> Research indicates that there are ‘significant effects’ from maternal smoking, including low birth weights and problem behaviour among young Pacific children in New Zealand.<sup>22, 23</sup>

A Ministry of Health estimate put the spending by Pacific peoples on cigarettes in 2000 at around \$72 million.<sup>24</sup>



**Determinants of smoking**—Most New Zealand adult cigarette smokers started smoking during their teenage years.<sup>25</sup> The Pacific population is very young, with a median age of 21, compared to 35 years for the general population.<sup>26</sup> Scragg and colleagues suggest that parental behaviour is a key determinant of smoking by New Zealand adolescents, including Pacific youth.<sup>25,27</sup>

In particular, parental behaviour such as smoking, the amount of pocket money given to children and whether people smoke at home, appear to be the main determinants behind the high smoking prevalence's in Pacific and Māori adolescents. Their conclusions further suggested that maternal smoking has a greater effect on adolescent smoking uptake than paternal smoking for all ethnic groups, including Pacific.

Other, qualitative research which included Pacific students found that they could easily buy or obtain tobacco products from retailers, friends and 'social suppliers'.<sup>28</sup> Qualitative research which included Pacific parents who smoked has found some acceptance that their smoking increased the risk of their children starting smoking.<sup>29,30</sup> Such research also found that Pacific parents wanted schools to do more to educate children about smoking.<sup>29</sup>

For Pacific people (as with other ethnic groups) residence in more deprived socio-economic areas increases the likelihood that they will be smokers. This effect is particularly strong for men aged 25 years and over.<sup>31</sup>

**Smoking and motherhood**—Research indicates that pregnancy slightly reduces the prevalence of smoking for Pacific mothers, but those quitting during pregnancy tend to start again within a year.<sup>32</sup> This research found that in 2000, 32% of Pacific mothers reported smoking before pregnancy, 25% reported smoking during pregnancy and 25% were smokers 6 weeks after giving birth.

A follow-up study of the same mothers at 12 months found 30% of them smoked.<sup>33</sup> Being single, having a lower level of education, and greater exposure to Westernisation were significantly associated with higher smoking prevalence during pregnancy. Those who had been living in New Zealand for more than 10 years were more likely to smoke than newer migrants. Similarly, higher numbers of mothers fluent in English smoked during pregnancy, compared to mothers who were not fluent.<sup>32</sup>

Mothers aged 20 years and younger were 2.7 times more likely to smoke compared to those aged 40 years and over.<sup>33</sup>

**Knowledge of effects of smoking**—There appear to be very significant tobacco-related health hazard information needs for Pacific peoples in New Zealand. In 2000, less than a third of the Pacific mothers of infants surveyed were aware of the increased risk to babies of Sudden Infant Death Syndrome (SIDS) from prenatal and maternal smoking.<sup>34</sup> In 2006, 17% of Pacific peoples aged 15–64 said that secondhand smoke was definitely or probably not harmful, compared to 11% of all New Zealanders in that age group.<sup>12</sup>

In 2006, 10% of Pacific Year-10 students thought that smoking was definitely not harmful to health, compared to 3% of Māori students and 2% of New Zealand European/Pākehā students.<sup>18</sup>



Nine percent of Pacific students thought that everyone their age smoked at least daily; almost five times the figure for all students. Likewise, a smaller proportion of Pacific students (31%) were relatively accurate about the proportion of their age group who smoked, thinking a quarter smoked at least daily, compared to 51% of all students.<sup>18</sup> This perception may have been partly based on media exposure, as 34% of Pacific students 'reported seeing people smoking or cigarette brands on television *a lot* in the month prior to the survey, compared with 16% of New Zealand European/Pākehā students and 32% of Māori students.<sup>18</sup>

### **Quitting by Pacific peoples in New Zealand**

The 1996–1997 New Zealand Health Survey reported that Pacific smokers were more likely (51%) than European/Pākehā smokers (40%) to *not* be actively considering quitting smoking.<sup>19</sup> However, by 2006, 60% of Pacific smokers reported that they tried to quit in the last five years, (compared to 65% of all smokers).<sup>12</sup>

Research by the New Zealand Quit Group, on the changes in characteristics of callers to their service between 2001 and 2005, found a 54% increase in the proportion of Pacific people (from Samoan, Cook Island, Tongan, and Niuean ethnic groups) who used the Quitline service, from 2.8% of callers to 4.3%.<sup>35</sup>

The actual proportion of Pacific callers is likely to be slightly higher, as there would be callers from other Pacific ethnic groups. In the second half of 2006, the proportion of Quitline callers who were reported as Pacific continued to be significantly below the proportion of smokers who were of Pacific ethnicity.<sup>36</sup>

Qualitative research in 2004–5 for the Quit Group found, for a Samoan male sample, that messages to help quitting that could be effectively communicated included the danger and/or harm of smoking, the importance of being around for your family, and effects of secondhand smoking. Other qualitative research in this period found that 'Pacific smokers can also view [media] campaigns [on secondhand smoke] as ultimately having a cessation objective.'<sup>30</sup>

During 2002–3, it appears that interventions for Pacific peoples in primary care settings to discuss smoking occurred at less than half the level for others.<sup>37</sup>

### **Secondhand smoke exposure for Pacific peoples in New Zealand**

In 2006–7, Pacific non-smoking men and women were twice as likely to be exposed to secondhand smoke in their homes, compared to all non-smoking men and women in New Zealand, (16% compared to 7%).<sup>13</sup>

In 2007, 48% of Pacific Year-10 students had at least one parent who smoked (50% in 2001) compared to 39% for all students.<sup>17</sup> This research also indicates a decline in smoking in the homes of Pacific students during 2001–7, from 35% to 26%. However, the 2007 level of smoking in homes (26%) compared to 19% for European/Other students.<sup>17</sup> In 2006, 16% of all Pacific peoples aged 15–64 reported others smoking in the home, compared to 10% of all European/Others.<sup>12</sup>

In another more in-depth 2006 student survey, 40% of Pacific Year-10 students reported being exposed to others' smoke in their homes in the last week, compared to 28% of New Zealand European/Pākehā students.<sup>18</sup>

Thirty-nine percent of Pacific students reported being exposed to others' smoke in cars or vans in the previous 7 days, compared with 22% for New Zealand European/Pākehā.<sup>18</sup>

In 2006, 21% of Pacific peoples aged 15–64 reported being exposed to others' smoke in cars, compared to 15% of all New Zealanders.<sup>12</sup> In another survey in 2006–7, 13% of Pacific non-smoking men and 9% of Pacific non-smoking women were exposed to secondhand smoke in the car they usually travelled in, compared to 7% and 5% for all New Zealand non-smokers.<sup>14</sup> Twelve percent of Pacific workers were exposed to others' smoke at work, compared to 8% for all New Zealand workers.<sup>12</sup>

Little is known on what works in reducing SHS exposure for Pacific peoples. A report on qualitative research that included Pacific smokers found that 'Pacific (and Māori) smokers, whose cultures have a strong collective orientation, exhibit stronger sensitivity to how others will react to their smoking. They also exhibit a stronger disposition to being influenced by external views of their smoking behaviour, especially in the context of caring for children.'<sup>38</sup>

### **Strategic planning for Pacific tobacco control in New Zealand**

While there is some mention of Pacific smoking in central government strategic documents, we found no specific government plan for Pacific tobacco control at a national level. Planning for Pacific tobacco control by DHBs varies from being detailed and innovative, to only superficial mentions in general plans.

The *New Zealand Health Strategy* (2000) contained nothing specific about Pacific smoking, whereas the promotion of smoking cessation programmes for Māori was mentioned explicitly.<sup>39</sup>

The government *Pacific Health and Disability Action Plan* (2002) highlighted three critical areas for action on smoking:

- Explore the development of Pacific Quitline and smoking cessation programmes
- Encourage smokefree Pacific environments
- Improve the availability and delivery of tobacco control services to Pacific communities.<sup>40</sup>

In 2003, a report from two Pacific Tobacco Control fono (meetings) highlighted policy and service gaps. These included the lack of funding for Pacific tobacco control, the need for national Pacific tobacco control advocacy, and for Pacific health workers dedicated only to tobacco control work. In particular, there was no Pacific language or focused written or graphic material available for those wanting to quit smoking.<sup>41</sup>

The non-government *Pacific Peoples Tobacco Control Action Plan* was developed by Pacific peoples involved in Pacific tobacco control. This report noted the 'extremely limited' tobacco control services for Pacific peoples, the 'need for a Pacific voice for tobacco control', and the need for appropriate cessation services for Pacific peoples.<sup>42</sup>

The Ministry of Health document *Clearing the Smoke, the Tobacco Control Plan 2004–2009* stressed the importance of tobacco control for Pacific peoples, because

tobacco smoking contributes to or exacerbates conditions such as diabetes, asthma, and SIDS.<sup>24</sup> Moreover, the cost of tobacco products is a drain on Pacific peoples' incomes, and there is a financial burden to families from the costs associated with hospital treatment. This is exacerbated by the fact that the majority are on relatively low incomes.<sup>24</sup>

The 2008 Ministry of Health paper, *Pacific Child Health*, emphasised that secondhand smoke is a health risk for Pacific children. They are relatively vulnerable, compared to all children, due to the higher prevalences of maternal, parental, and adult smoking, and of smoking in the home in Pacific communities.<sup>43</sup>

Recommendations in the paper for future priorities for Pacific child health include youth smoking initiation prevention, reduced smoking in Pacific homes, and increased Pacific youth and adults cessation support.<sup>43</sup>

### **District Health Board plans and services**

The Pacific population is largely concentrated in the Auckland (67%) and Wellington regions (13%).<sup>44</sup> This may influence the level of focus on Pacific health by District Health Boards (DHBs). Some DHBs have a separate Pacific action plan, in addition to their DHB strategic plan. These Pacific plans usually include tobacco control sections (e.g. Counties-Manukau, Capital and Coast, Hutt Valley, and MidCentral).<sup>45-49</sup>

The tobacco control services to Pacific populations vary across the DHBs. Counties Manukau, in partnership with their communities, have developed Lotu Moui, a Pacific church initiative that targets the promotion of healthy lifestyles in the Pacific church environment.<sup>50</sup> This initiative has a smoking cessation education module that enables churches to actively participate not only in cessation training, but in developing their own smokefree policies. In particular, Lotu Moui plans to achieve smokefree Pacific church buildings and grounds in the Counties Manukau district by the year 2010.<sup>50</sup>

### **Statements and actions by policymakers on Pacific smoking in New Zealand**

In the period since 1998, we found little specific mention by politicians of Pacific smoking, and only one mention from before 2002.<sup>51</sup> While speeches by government ministers from 1998 mentioned interventions to reduce smoking by Māori,<sup>52</sup> and from 2000 major interventions for Māori smoking were announced,<sup>53</sup> no announcement by a Minister of planned government interventions on Pacific smoking was found until 2006.<sup>54</sup>

The first policymaker mention found of the specific impact on Pacific peoples from tobacco use was in 2002 by Associate Minister of Health Tariana Turia, who spoke of the 8% of Pacific female deaths and 19% of Pacific male deaths that were avoidable deaths from smoking.<sup>55</sup>

While the inequalities due to higher Pacific smoking prevalences were recognised by government from 2002 or before, the recognition was not accompanied in the statements by targeted interventions.<sup>56,57</sup> In a recent (2008) speech, Pacific Island Affairs Minister Winnie Laban acknowledged that tobacco smoking continues to be a major health priority for Pacific peoples.<sup>58</sup>

We found only three specific government tobacco control services in place for Pacific peoples at the national level. The Health Sponsorship Council has promoted smokefree messages directly to Pacific youth through the Pacifica Beats music competition. This has been in place since 1999 or before.<sup>59</sup> The Quit Group has had a number of Pacific staff as Quitline advisors, to assist Pacific smokers to quit smoking, since 1999.<sup>60</sup> In addition, in 2008, the Pacific Islands Heartbeat organisation was contracted by government to provide national Pacific tobacco control advocacy.

The National Heart Foundation (an NGO) has a *Pacific Islands Heartbeat* arm which runs smokefree services for the Pacific community in New Zealand, and which is supported by the Ministry of Health. In particular, it trains Pacific healthcare workers in smoking cessation, and promotes smokefree environments in Pacific churches and Pacific early childhood centres, and trains Pacific smokefree promotion workers.<sup>61</sup>

The 2006 announcement of planned government efforts to increase Pacific smoking cessation,<sup>54</sup> had been preceded earlier that year by the launch of the Quit media campaign which targeted Pacific smokers.<sup>62,63</sup> There is evidence that Pacific peoples respond to Quit Group media campaigns.<sup>64</sup>

There are currently (2008) four funded Pacific cessation programmes in New Zealand—one in Auckland, Hamilton, Wellington, and Christchurch, plus the Pacific team at Quitline.<sup>65</sup> Pacific Island Heartbeat is also contracted by the Ministry of Health to provide free smoking cessation training for health professionals who are working with Pacific peoples.<sup>66</sup> Apart from Quit Group reports on Quitline calls,<sup>35</sup> there appear to be no evaluation reports to date on these Pacific cessation programmes.

## **Policy recommendations from researchers**

A number of researchers who have looked at smoking in Pacific communities in New Zealand have also given policy recommendations. Fa'alau et al suggested that the relatively high prevalence of Pacific smoking could be addressed by improving the low socioeconomic status of Pacific peoples in New Zealand.<sup>67</sup>

Other researcher recommendations include:

- Cessation programmes designed specifically for Pacific women.<sup>32</sup>
- Reducing barriers to quitting smoking for Pacific women.<sup>33</sup>
- Further research on cultural environments that act as a protective barrier against smoking.<sup>33</sup>
- Further efforts to support parents in attempts to stop smoking.<sup>25,27</sup>
- More effective methods of getting information to Pacific Island mothers, as they might not be reached by present publicity campaigns.<sup>34</sup>
- Changes and greater investment in Quitline campaigns, to strengthen them and to reflect current research findings.<sup>35</sup>

A review of the evidence for population-level tobacco control interventions in New Zealand found that (due to the lack of Pacific-specific research) there was 'insufficient...evidence for specific interventions to reduce smoking initiation among...Pacific youth in New Zealand', and insufficient evidence on non-Quitline cessation programs for Pacific peoples.<sup>68</sup> This type of situation prompted the chief executive of the Ministry of Pacific Island Affairs (Dr Colin Tukuitonga) to suggest:

Ethnic, gender and age group differences in tobacco use require better information about similarities and differences that exist within Pacific populations to enable more effective interventions to be developed...

Continued reliance and adaptation of mainstream tobacco control interventions is unlikely to reduce tobacco use among Pacific Peoples in Aotearoa/New Zealand. More specific programmes for Pacific peoples are urgently needed, with particular focus on young men. Effective interventions to reduce tobacco-related deaths will substantially reduce health inequalities in the country. Pacific communities need to be resourced and supported to own and participate more effectively in the provision of tobacco control programmes.<sup>69</sup>

## **Discussion**

### **Major findings**

Our major findings include the continued disparities in smoking and SHS exposure (and thus health, social, and economic outcomes) between Pacific and other peoples in New Zealand. The significant smoking prevalence disparity has continued despite being reported in official documents for over 15 years. The disparity appears to have had relatively little specific government attention, as measured either by ministerial statements or actions. Nevertheless, there some favourable trends such as the decrease of smoking by Pacific youth, the increase in smokefree Pacific homes, and the use of smoking cessation services by Pacific peoples.

### **Policy implications**

There appears to be a considerable need and opportunity to productively increase tobacco control interventions specific to Pacific peoples. These include media campaigns (denormalisation, smokefree places, cessation, and others), and cessation help appropriate for Pacific peoples. Pacific children need to see more Pacific faces in tobacco control television advertisements.

Some shortcomings need to be urgently addressed. For instance, if primary care smoking cessation interventions for Pacific peoples are still so poor, government is clearly not providing sufficient controls and incentives for that sector. The greater exposure of Pacific workers to secondhand smoke needs government action to strengthen the enforcement of smokefree environment policies to better protect Pacific workers (action that would also help other vulnerable workers).

A further need is to move control of and resources for tobacco control activity for Pacific communities in New Zealand into Pacific hands. There is extensive evidence of the need to echo the call of 'by Māori, for Māori' with 'by Pacific, for Pacific'. A key direction for enabling this to happen is to ensure that there is sufficient capacity and capability by Pacific providers to deliver such services.

### **Limitations**

While efforts were made to gather data from the grey literature, the fragmentary nature of the research and policy documents, scattered across a number of government departments and other organisations, means that we are likely to have missed some relevant material. There may be relevant government or NGO research reports that are un-catalogued in the collections of such institutions, but these were largely beyond the scope of our research. Within the research literature, very little relevant qualitative

literature was found that used Pacific interviewees or groups, and the Pacific-specific findings from that material found was limited.

The findings are limited to the literature and documentary material, and interviews will add considerably to the overall picture of tobacco control policy for Pacific peoples. Work may be underway for which there is no public documentation. Another limitation is imposed by the lag effect for tobacco control interventions. For instance, Pacific smokers may have been helped by government activity, including the lead-up, introduction, and implementation of the Smoke-free Environments Amendment Act 2003, but the effect of this has not yet been measured for Pacific smokers.<sup>70</sup>

## **Implications for research**

There is a chronic need for sufficiently large Pacific samples within surveys, to ensure narrow confidence intervals and greater precision in the results. There are also very little published data on the smoking by ethnic groups within the Pacific community in New Zealand. It is therefore important that there is a smoking question in the 2011 census, and that larger Pacific samples be obtained in smoking surveys.

We found some disparity between Pacific smoking prevalence data from the 2006 census, and the NZTUS and NZHS surveys. This disparity indicates a need to investigate the varied responses from different survey methods.

There are large gaps in the relevant research, as noted by Tukuitonga. No published information was found on the long-term demographic impacts of tobacco use on Pacific peoples in New Zealand. This work has been reported for Māori.<sup>71</sup> Neither does there appear to have been any estimate of the economic costs for Pacific peoples.

The downstream financial costs from tobacco-related illness (including children's illness), lower productivity, and other consequences of smoking for Pacific peoples need to be known. Of particular interest is the amount of tobacco tax revenue collected from Pacific smokers, relative to the spending on tobacco control services for Pacific peoples.

The evidence of less roll-your-own use by Pacific smokers, the wide variance of smoking prevalence between Pacific ethnicities in New Zealand, and the possibility that Pacific smokers may be cushioned from price rise effects by a cultural tradition of tobacco sharing and giving, indicates that research is needed to find the effects of tobacco price changes for Pacific smokers in New Zealand.

Generally, there is a considerable need for Pacific specific qualitative research on smoking determinants, intervention effects and policy processes.

## **Conclusions**

The Pacific community in New Zealand suffers from an unequal burden from the effects of smoking and SHS exposure. Far better government policy solutions are greatly needed and some policy shortcomings also need to be urgently addressed. A central government plan for Pacific tobacco control is crucial.

**Competing interests:** GT has previously undertaken work for the Ministry of Health or non-governmental agencies working to improve tobacco control.



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## Smokefree cars in New Zealand: rapid research among stakeholders on attitudes and future directions

Dylan Tapp, George Thomson

### Abstract

**Aim** To conduct a rapid appraisal of the attitudes of New Zealand decision makers and tobacco control stakeholders on enacting a smokefree cars law.

**Methods** A media and document search was made for relevant official and other statements. In early 2008, nine semi-structured interviews were carried out involving three MPs, two officials of government health agencies and four members of NGOs with a stake in tobacco control. Interviews were audiotaped, transcribed, and analysed for themes.

**Results** In official statements, and amongst the interview sample, there was general opposition to giving smokefree car legislation a current high priority. Reasons given for opposition to such a law included the suboptimal use of advocacy capital compared with other initiatives (e.g. tobacco display bans), the perceived success of relevant health marketing campaigns, and concerns over the current political will to enact legislation that targets smoker freedoms.

**Conclusions** More information on the *extent* of current child exposure to tobacco smoke in New Zealand cars, and on the reach and effectiveness of the New Zealand smokefree cars media campaign would help advocates and policymakers. Wider dissemination to policymakers of New Zealand public and smoker support for banning smoking in cars, and of the progress overseas on smokefree car laws, appears to be essential.

Secondhand smoke (SHS) has been widely shown to be a significant health problem, with exposure causally associated with respiratory illness, cardiovascular disease, and cancer.<sup>1</sup> In 2001, deaths from SHS in New Zealand were estimated as between 174 and 490 per year, placing its mortality burden between traffic deaths (500) and melanoma (200).<sup>2,3</sup> Morbidity from SHS includes an estimated 500 hospital admissions per year for children under 2 years, for chest infections.<sup>4</sup> Māori, Pacific peoples and low socioeconomic groups in New Zealand are more likely to be exposed to SHS.<sup>5,6</sup>

The New Zealand Smoke-free Environments Amendment Act (2003) extended workplace smoking bans to encompass bars, restaurants and nearly all other workplaces. There has been high compliance and good public support.<sup>7</sup> There have also been smokefree homes and cars media campaigns running in New Zealand since 2004 and 2006, respectively.<sup>8,9</sup>

### Smokefree car policies and attitudes

Some overseas jurisdictions have banned smoking in cars carrying children, in North America and Australia. They include South Australia, Tasmania,<sup>10,11</sup> California,

Maine, Puerto Rico, Arkansas, and Louisiana,<sup>12-16</sup> Nova Scotia, Yukon, and Ontario.<sup>12-14</sup> Australia's New South Wales Government is in the process of passing a law.<sup>15</sup> The laws vary in the way that they specify the age of the children, or by defining children as those in child safety devices.

Support from large majorities (including of smokers) for banning smoking in cars with children has been found in a range of Australian and North American jurisdictions.<sup>16</sup> In South Australia a survey after the passing of the 2007 law there banning smoking in cars with children found 92% support (87% of smokers).<sup>17</sup>

A study of 296 media articles published around the time of the South Australian smokefree cars legislation found about 80% of them were supportive of the ban.<sup>18</sup> The study found that 'the protection of vulnerable children...was a powerful and persuasive theme.'<sup>18</sup>

There has been little New Zealand research on attitudes to smokefree car laws. In an 1988 survey of the public for the tobacco industry, 47% wanted no smoking in private cars, 31% agreed to 'leave it to the commonsense of the people concerned to choose' and 20% wanted no restriction at all.<sup>19</sup>

A 1997 Wellington area survey asked for reactions to the statement 'it should be made illegal for people to smoke in cars when there are passengers.' Over 50% of interviewees agreed, including 43% of smokers. Ninety four percent agreed that cars with children in them should be smokefree (86% of smokers).<sup>20</sup>

A 2004 New Zealand survey asked:

- Do you think people should be able to smoke anywhere they want, only in set areas, or not at all, in private cars?
- Its OK to smoke around non-smokers inside cars if the windows are open (agree/disagree).

Forty percent thought smoking should not be allowed in private cars (23% of smokers). But 76% of all respondents disagreed that it is "okay" to smoke around non-smokers inside cars even when there are windows down.<sup>5</sup>

However, new data published in November 2008, from a national survey of New Zealand smokers (n=1376), indicates that when asked 'Do you think smoking should be allowed in cars with pre-school children in them' 96% disagreed and only 3% agreed.<sup>21</sup>

## **Other considerations**

Local research has continued to highlight the dangers of SHS in cars. A 2005 study of 16,000 cars at intersections in Wellington showed that in cars where smoking was occurring, 24% contained other people.<sup>22</sup> Another New Zealand study showed that the levels of fine particulate matter in the air of a car while smoking is comparable to a smoky pub, even with the window partially or wholly down, and can be at least twice as hazardous with the window up.<sup>23</sup> The levels of fine particulate matter measured were many times the World Health Organization recommended guidelines.<sup>24</sup> This has been corroborated by overseas research.<sup>25</sup>



Support for legislation banning smoking in cars overseas has also been spurred by the incomplete effectiveness of education campaigns regarding secondhand smoking. The 2006 Canadian Tobacco Use Monitoring Survey found 25% of respondents had been exposed to SHS in a car in the last month.<sup>26</sup> This was despite an education campaign about smokefree homes and cars that had been running since 2005.<sup>27</sup>

In addition, there are data to suggest that those most in need of protection tend to fall into the gap between what can be achieved with education campaigns, and the higher rates of compliance with regulatory efforts.

Local and international studies have consistently shown that those who aren't reached by education campaigns are more likely to be economically disadvantaged, come from low education backgrounds and belong to an ethnic minority group.<sup>28,29</sup> For instance, in New Zealand a smokefree homes media campaign had been running since 2004. However, 33% of Year-10 students in a 2006 survey reported someone smoking around them at home at least once in the last 7 days. This exposure was despite only 20% reporting that the rules for smoking in their household allowed smoking in set areas or anywhere inside their home.

Māori (51% exposed to SHS at home) and Pacific students (40% exposed) were more likely than others to report someone smoking around them at home.<sup>30</sup>

This 2006 student survey was run just when the Health Sponsorship Council smokefree cars media campaign began. It found 27% had been exposed to cigarette smoke in a car or van in the last 7 days, with Māori, Pacific Islanders, and students from low-decile schools being exposed at a higher rate (43% of Māori, 39% of Pacific, and 37% of those in low decile schools).<sup>30</sup> Other relevant New Zealand data include a 2006 Ministry of Health study, which found 23% of adults and at least 35% of Māori and Pacific reported being exposed to others smoking in cars.<sup>31pp.35,36</sup>

For those adults in the most socioeconomically deprived quintile, at least 31% were exposed to others smoking in cars.<sup>31pp.37</sup> The gradient of SHS exposure by deprivation level was also reported in the 2005 observational study.<sup>22</sup>

There is some evidence for 'flow-on-effects' from smoking bans on smoking behaviour, as tobacco use continues to be de-normalised. A study in Britain, looking at smoking in cars before and after legislation banning smoking in public places, found an increase in the proportion of cars that were smokefree from 62% to 70%.<sup>32</sup> As with smokefree homes, the effect of restricting smoking elsewhere is to *decrease* smoking in other shared spaces, rather than *increase* it.<sup>33</sup>

Due to the continuing international interest in legislating against smoking in cars with children, this study made a preliminary assessment of opinions about enacting smokefree cars legislation in New Zealand. Our aim was to conduct a rapid appraisal of the attitudes of New Zealand decision makers and tobacco control stakeholders on enacting a smokefree cars law.

## Methods

The study was a rapid appraisal, undertaken through a media and document search, and a qualitative, semi-structured anonymous interview process. In anthropology and health fields the general intent of rapid appraisal is 'to generate timely, valid and cost-effective qualitative results',<sup>34</sup> and 'rapidity, pragmatism or cost-effectiveness'.<sup>35</sup>

A brief literature search was undertaken to gauge the extent of local and international research on the topic of smokefree cars, using Medline and Google Scholar. The principle data gathering was documentary—we looked at the political environment, official documents and media coverage of the issue overseas and in New Zealand. The databases Google and Factiva, and a number of websites were searched in March and April 2008.

The Factiva media database was searched for the New Zealand region for the period since January 1998. The websites explored included: the New Zealand Government (<http://www.beehive.govt.nz/>), Ministry of Health, and the New Zealand Parliamentary Debates (Hansard - <http://gphansard.knowledge-basket.co.nz/han/005-01.html>).

The material found was analysed to establish the context for possible policy change, and for relevant New Zealand official and other statements on smokefree cars. The material was then used to develop questions for the interviews, which were to add depth to the documentary material found. Different questionnaires were developed for MPs and others, so that only relevant questions were asked of each group. Ethics permission for the interviews was obtained from the University of Otago ethics process.

A broad list of possible interviewees was generated. This focused on those in tobacco control and child health NGOs, and government agencies with a stake in tobacco control. A list of MPs to contact was also made, focusing on a range of senior and/or relevant MPs, and not limited to those with specific health-sector involvement.

MPs being recruited by associated tobacco studies were eliminated from the list. The interviewing period was constrained by the time available, to the period 21 April to 12 May 2008, meaning that the interview recruitment was largely opportunistic. The interviews, by the first author, were audio-taped (with consent) and analysed for key themes.

Interviewees were informed beforehand that they would be asked about their 'thoughts and knowledge on smokefree cars policy' and about 'where we should be headed with research and policy' for smokefree cars. In the interviews, interviewees who did not know of overseas smokefree car laws were given information on them.

The questions for both the documentary material and interviews were focused around three key areas:

- How the role of the government in protecting children was perceived, and the policy impacts of that view;
- The role of education compared with the role of education in public health promotion; and
- Attitudes and knowledge on smokefree cars legislation here and overseas.

The analysis of the resulting material followed the question structure.

## Results

While there has been a New Zealand Government intention to reduce child exposure to SHS, the focus has been on smokefree homes, rather than cars, and on education rather than a consideration of legislation. The interviews also found a general opposition to any prioritisation of smokefree car legislation.

### Documentary material

Since 2004, there have been a number of mentions in government documents and by officials and government ministers, of intentions and work to increase the proportion of cars that are smokefree. However, the mentions have been few compared to the focus on smokefree homes.

In the government tobacco control plan for 2004–2009, there was the statement (p.26):

...Outcomes that could be achieved for children within the 5-year period include decreases in the: exposure to secondhand smoke in homes and cars<sup>36</sup>



The 2005 *Framework for Reducing Smoking Initiation in Aotearoa-New Zealand* (RSI) published by the government Health Sponsorship Council, includes an Objective 'Denormalising the use of tobacco'.<sup>37</sup> The means for this that were listed include increasing smokefree homes and cars.

The RSI states that the Ministry of Health 'will play a significant role in implementing the Framework' and 'will have a key role in facilitating the progress of the Framework'.<sup>37p.37</sup>

Official statements related to smokefree cars have emphasised the role-modelling aspect of smoking. In October 2006, Associate Minister of Health Damien O'Connor said:

...It is crucial that we continue to promote smokefree homes, cars and public places, as we know it sets a good example to children<sup>38</sup>

A 2007 Ministry of Health media release stated:

...The less often young people see smoking around them, the less normal it seems and the less likely they are to take up smoking themselves....parents can take positive steps like making their homes and cars smokefree.<sup>39</sup>

However, in 2006 and 2008 New Zealand media reports indicated mixed feelings on enacting smokefree car laws here,<sup>40</sup> with opposition from senior government officials. This opposition was on the basis of insufficient public support, and because of a preference for education rather than regulation.

In 2006 Health Sponsorship Council chief executive Iain Potter was reported as saying:

...The community has to be ready for that kind of law and I don't think they are yet<sup>40</sup>

The Ministry of Health chief adviser Dr Ashley Bloomfield was reported as saying:

...We can get there without legislation. Legislation is not being considered. The smokefree-homes campaign shows a good well-informed education campaign does pay dividends<sup>40</sup>

In November 2008, after the survey showing 96% smoker support for smokefree cars with preschool children, the then government minister responsible for tobacco control, Damien O'Connor, was reported as saying that 'there was no plans to ban smoking in cars'.<sup>41</sup>

In December 2008, the new Prime Minister stated in an interview:

...I saw some research .... [which had said] it was a good idea that the government should be banning smoking in cars. I've gotta tell you, that's not gonna be happening, because it will take years, it will distract the parliament and in the end you know we're a party of sort of reasonable choice, I'm not opposed to banning smoking in bars, because other New Zealanders are there and people work there, but if you want to smoke in your own car, don't be looking for a National Government to pass a law to tell you can't do it in the next three years<sup>42</sup>

## Interviews

Nine interviews were conducted. These were with three Members of Parliament (MPs), four officials from tobacco-control NGOs and two from government health agencies.

We contacted 27 MPs on our original contact list, with three more added later as our offer to participate was passed along within parties to MPs not on our original list. We were unable to secure interviews from any MPs who identified themselves

definitively as right-wing. Two MPs interviewed placed themselves on the left of the political spectrum and the other declined classification on the traditional left-to-right scale.

Some of the MPs were out of Wellington during the period available for interviews. Also, during the period available we were unable to secure interviews with anyone working in the road-safety field, or people working exclusively in child welfare.

### **Themes from the interviews**

The themes pursued were those from the question structure:

- Perceptions of the role of the government in protecting children;
- The role of education compared with the role of education in public health promotion;
- Attitudes and knowledge on smokefree cars legislation here and overseas.

**Child welfare and the role of the state**—All interviewees commented on the state's role in protecting children and the public policy implications. Both the MPs and other stakeholders felt that at least the current government has generally valued child welfare highly, and that this has impacted on their public health policy. A government official described this:

...I think this government would explain its role as being a social democratic government. So it would think it's more interventionist. So although it gets challenged quite heavily about the "nanny state", it does see that it has a role in either supporting or leading in a number of things to do with social well-being

There are policies made with children in mind, particularly those around the smokefree environments act... because it's a social state, it tends to do the greatest good for the greatest number, and children are part of that population

**Public health education and legislation**—There was a wide range of opinion about the relative value of education versus legislation in public health. No particular viewpoint was dominant across the interviews. Education was seen by one interviewee as being useful for "priming" the public for legislative change:

...Education is a way of getting public support, making people more knowledgeable. So if there is a need to intervene (and I'm thinking of seatbelts here) in a legislative or regulatory way, then people can better understand that and are less likely to feel imposed upon, and see why it's a good idea. So I think it's a necessary first step or component of any campaign

Others felt that education and legislation were useful in distinct situations:

...Education's important in changing attitudes, but there's some things that aren't a matter of attitudes. You can't educate your way out of them...I don't think you could have educated yourself into a situation where all indoor areas were smokefree...But there's some areas that can be done with education. And then there's lots of things where you could have a legislative response but is it the most important thing to invest your advocacy capital in?

And some felt ongoing education efforts regarding tobacco were fruitless:

...I think legislation is necessary right now. I think people have been educated to the point that there's very few New Zealanders who don't know that smoking is bad for them

No interviewees raised the argument that education can fail to reach those who are most in need. Nor did our interviewees express views about public health legislation invading on individual autonomy, although it was frequently mentioned that right-

wing political parties might see it in that light. Most interviewees made some mention of current political attitudes towards legislative involvement as being a key factor in choosing a target for advocacy.

The smokefree cars media campaigns were viewed favourably. All interviewees who were asked thought the key messages were clear and effective:

...The education campaign's fantastic. And it's given children the power to tell members of their family "You shouldn't smoke in here, I don't like it when you smoke"

However, one interviewee raised the issue of "preaching to the converted" with anti-tobacco messages and the smokefree cars campaign:

...I think the media campaigns are very effective for people who don't smoke

**Knowledge and attitudes about smokefree car policies**—Three interviewees had no knowledge of government smokefree policies overseas, one of whom was still in favour of actively pursuing a car smokefree ban here. One of the other participants, who had no knowledge of foreign regulation on smokefree cars, became more in favour of enacting similar legislation on learning of Australian policies:

...Well, if Australia's done it, God, we could!

The other six interviewees were aware of overseas regulatory moves around smokefree cars, but weren't necessarily aware of the legislative specifics:

...I'm aware that there are some policy initiatives - I'm not sure what regulatory form they take—that clearly discourage smoking in cars, particularly with children inside

Of the nine interviewees, only one thought smokefree car legislation was worth actively pursuing in the near future in New Zealand. Three others were equivocal about the issue and the other five thought it was definitively not worth pursuing. The argument against it was almost uniform across the interviews.

Interviewees didn't object to a smokefree car law per se, but rather thought it was an inopportune use of advocacy, and of political capital and time. The following responses were representative of the general tone of the thoughts amongst interviewees:

...It's not that I disagree with it. It's obviously snowballing in Australia and other places... In comparison to other messages like the [tobacco] display stuff, I don't see it as being as impactful. You can't work on everything and I think you can get larger, more significant benefits from the display bans. The other thing is that we are making significant progress with the educative approach [on smokefree cars]. So not to say that I don't think it's justifiable, or that I'm not supportive of it. It's more to do with lobbying capital and where you're going to spend it

No. I think to legislate around that at the moment is not a good idea. I think it's excellent to get New Zealanders to not smoke in cars, particularly with children on board. I don't think it's time to legislate at the moment and I say that because I would prefer legislation be enacted on a larger issue. To ask the NZ public to accept legislation on smokefree cars could weaken a proposal to, say, create a tobacco control authority—a bigger, more risky piece of legislation that would have a bigger impact

Smokefree cars isn't a bad thing to do, but with the nanny state "hoo-haa" that's going on, the political reality is that people are really reluctant to take a regulatory approach despite the rationale. And if we give [government] an easier option than [retail] displays [regulation], they may take it. I think we need to push for a measure that's possible, justifiable, rational, but a bit more important than smokefree cars

The issue of public and media perception of a move towards a smokefree car law was frequently mentioned. A number of interviewees mentioned public opinion as a key guiding factor in smoking legislation (for both practical and political reasons). The sensitivity around political moves that could be interpreted unfavourably as part of a perceived 'nanny-state' was often cited.

One interviewee mentioned the potential issue of cars being seen by the public as private space with which we should not interfere lightly. Seven of the other eight interviewees agreed, when prompted on the issue, that some political parties and members of the public may see the car as private space into which smokefree legislation should not venture:

...That's going to be hard because a car's deemed to be personal space like a home is...I can see that issue that we'd be going into private space and we'd be told "back off"

Two interviewees argued that bans similar to those enacted overseas (which ban smoking in vehicles while carrying children) could dilute key messages from the marketing campaign; smoking in vehicles is never a safe activity, due to toxins staying in the fabric of the vehicle:

...The other legislation that I've seen in other jurisdictions is about banning smoking in cars when kids are travelling. What we're trying to do is make sure that cars that carry kids at any time don't have smoking in them because the toxins linger. So potentially it's quite fraught legislation

Three interviewees mentioned concerns over the practical implementation of a smokefree car law, in that they saw it as being difficult to enforce or as criminalising people unfairly:

...The whole area of banning is a challenging one. In the end there will be... a lack of compliance where there's a lack of ability to enforce. And given that most of the cars are moving at a pace on the road, who will be implementing such a regulation. I think the educational approach we're taking is the best long-term one

I was fortunate enough to talk to some people from South Australia. They've already enacted legislation regarding smoking in cars with children on board. I asked them if it was actually being enforced – it had been in place about 12 months at that time. They'd had about six fines —they think it was one officer doing all the booking

The three who were equivocal about the legislation thought it may be a long-term goal. One thought that despite all the issues raised about implementing smokefree cars from a political standpoint, that if Australia successfully implemented such regulations, that would provide a strong incentive for New Zealand:

...As a long-term goal it will come, I know it'll come...And communities like Opotiki have suddenly clicked that smoking is killing children and they're talking about a bylaw banning smoking in public places. That's better when a community makes that realisation themselves, rather than government saying "next we're doing this then next we're doing that"

Smokefree cars legislation was generally considered a low priority, compared with other tobacco control initiatives. Out of those interviewees who were aware of current options for tobacco control, regulation of smokefree cars ranked as a lower priority for all interviewees compared to other tobacco control initiatives. Seven participants mentioned tobacco retail displays as being a current high priority with potential to have significant impact.

Four interviewees felt that the tobacco display initiative should be followed by discussion around either cigarette constituent control or tobacco supply regulation

with licensing for tobacco retailers. Three interviewees mentioned an ongoing process of tobacco taxation review and increases. One interviewee mentioned the idea of a tobacco control authority:

You come down to saying there's lots of ways of doing this [tobacco control], what do we think is the most feasible? Ultimately I see us going down the route where tobacco distribution is highly constrained and coupled with a strong cessation focus. So it's not just selling tobacco and saying "have a nice day"

## **Discussion**

### **The key result**

The key message from this study is that both official statements and current feeling amongst relevant policy players appear generally against legislative moves to ban smoking in cars. The main reasons cited were that would be a significant amount of advocacy effort for potentially little gain compared with other initiatives, and that the public are likely to be resistant to such legislation, given current concerns around the reach of government into personal autonomy.

### **The implications for advocacy, research and policy**

Considering the apparent feeling against current work on a smokefree car law, the question must be posed, what would we have to gain from the advocacy effort put into smokefree cars? The answer to this depends on the priority put on the protection of children, the level of current public support for laws for smokefree cars with children, and the actuality of the political difficulties involved. A subsidiary question is; how have eleven other jurisdictions decided on such laws (including three Australian states)? Research to date suggests that a focus on child protection is a key factor.<sup>18</sup>

At least one of these questions can now be answered with some confidence. Given the 96% disagreement by New Zealand *smokers* on allowing smoking in cars with pre-school children, and the high compliance with smokefree legislation in New Zealand, advocates and policymakers in New Zealand can now be largely assured of strong public support for the idea of protecting children in cars, and relatively few compliance issues.

We still need to know how effective education campaigns are at reducing SHS exposure in cars, for the children *currently* exposed (ie, what is the proportion of cars that are smokefree, with and without children, now, after the smokefree cars campaign). Specifically, we need to know if the exposure of students to smoke in vehicles has been reduced since 2006, and by how much. We would need to consider the gap between what has been achieved from education alone, and what may be achieved with legislation.

The argument can also be made that however effective education is, legislation may be more so. Furthermore, those children who are not being protected by an education campaign are those most in need of protection now.

While public opinion is important, there is of course a role for government in leading social change for the public good, despite wide opposition in some cases. Childhood SHS exposure raises the issue of the New Zealand Government's obligations under UN Convention on the Rights of the Child (UNCROC). This treaty stipulates that in

policy decisions, children's rights must be put first, as 'the best interests of the child shall be a primary consideration', and that government 'shall undertake all appropriate legislative, administrative, and other measures for the implementation of the rights'.<sup>43</sup>

Thus, government appears to be under an obligation to fully protect those Māori, Pacific and high deprivation children who are most likely not to be protected by education campaigns.

## **Methodological issues**

This research was conducted over a short period, and is intended only to start the exploration of the range of opinions on smokefree cars in New Zealand. The results illustrate the limitations of rapid assessment methods, and this study is not intended to replace the need for more in-depth research on the policy context for smokefree car laws. Such methods aim to increase the robustness of the findings by data triangulation from several data collection methods.

This project was limited to the use of media and official documents, and interviews with a range of groups in the policy community. However, there was concordance between the official media statements reported, and the interview findings.

As a qualitative study, there needs to be care in how the data are used. Such data are open to interpretational bias. In addition, the participant selection, while purposeful, was obviously non-random and largely opportunistic. This is a particular problem where MPs are concerned, due to the low participation rate when considering the original list of 27 MPs.

Securing interviewees posed a particular challenge in this study. The tight time frame was an issue as some interviewees were unable to accommodate us within our stated study period. One particular NGO we contacted had its own ethics approval process for staff to participate in studies, which we were not able to go through within our study period.

Seeking MPs for interviews was fraught for a number of reasons, including their time priorities, absence due to a parliamentary recess, and party policies on involvement in studies and questionnaires. An unfortunate consequence is that the views of the MPs in the study reflect centre and left perspectives. This is relevant as views of the role of the state in public health differ across the political spectrum, with those on the left traditionally more likely to favour state intervention.

The lack of interviewees from the transport-safety and law enforcement fields is another weakness in terms of participants. We found that those who were approached felt it was strictly a public health issue and declined involvement. However it would have been beneficial to explore whether the concerns that some participants had regarding the enforceability of smokefree cars was reflected by law and transport safety officials.

The New Zealand Government has banned the use of some mobile phones while driving.<sup>44</sup>



## Conclusions

Some policymakers and advocates are against a current campaign for a ban on smoking in cars carrying children in New Zealand, and in favour of pursuing other tobacco control initiatives that could be seen to have a broader impact. It is important that policymakers are made aware of New Zealand public and smoker support for banning smoking in cars, and of the progress overseas on smokefree car laws.

Despite any successes of the New Zealand smokefree cars education campaign, there will remain the issue of some children being exposed to SHS in cars. For that reason it is important that ongoing assessment of the possibility of smokefree cars continues. This needs to include the monitoring of child SHS exposure in New Zealand cars.

**Competing interests:** One of the authors (GT) has undertaken work for health sector agencies working in tobacco control.

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## Smokefree outdoor areas without the smoke-police: the New Zealand local authority experience

Brent Hyslop, George Thomson

### Abstract

**Aim** To investigate (i) the extent, nature, and effectiveness of smokefree outdoor area (SFOA) policies in New Zealand, (ii) incentives and motivations for, and barriers to creating these SFOA.

**Methods** Literature and media searches were conducted for relevant material to February 2009. Nine in-depth interviews were conducted in October 2008, with key informants from local government, health and related research areas.

**Results** Twenty-three of 73 local authorities have 'educative' (non-enforceable) SFOA policies for at least one playground. There has been an increasing trend of SFOA policy adoption since the first 'educative' policy in 2005. Motivations for policy adoption include child well-being, community leadership, and environmental and fire concerns. Barriers have included arguments about 'freedoms', over-regulation, park attendance, enforcement, media comment, and some local authority lack of focus on health. There appears to be increasing support nationally for at least SFOA for children's areas, including 66% support from smokers for smokefree playgrounds. There is some evidence of SFOA policy effectiveness, but considerable need for further evaluation of the policies.

**Conclusions** Councils have moved to create SFOA, in the absence of substantial central government efforts. It is likely that the adoption of SFOA will continue, and there is potential for an expansion of the policies to wider settings.

An important contemporary public health issue in some developed countries is the creation of smokefree outdoor areas (SFOA). Reasons for creating SFOA include: decreased negative role-modelling of smoking to children, decreased exposure to SHS, environmental benefits (litter, fire risk, butt ingestion),<sup>1</sup> and the 'de-normalisation' of smoking.<sup>2</sup> The example of adults smoking has been shown to be an important factor in the initiation of smoking by young people.<sup>3-6</sup> It is thought that de-normalising smoking will encourage and support people wanting to quit, as well as reducing smoking initiation.

Researchers and commentators recognise that knowledge about the harms of outdoor smoking is incomplete. There is, however, growing evidence that outdoor SHS can be inhaled in high enough concentrations to be harmful.<sup>7</sup> Indeed, the World Health Organization (WHO) states that 'there is no safe level of exposure to secondhand tobacco smoke'.<sup>8</sup> Other possible benefits remain uncertain, although the increasing prevalence of SFOA indicates that many policymakers consider that there is now sufficient evidence to act.

A review of the support for SFOA in Britain, New Zealand, and parts of Australia and the USA indicated that the support for smokefree outdoor areas related to children is high (72% to 91%).<sup>9</sup>

## **The extent of state and local authority smokefree outdoor areas**

SFOA exist across some of the developed world, to varying degrees. Queensland (Australia), supported by \$150 fines, prohibits smoking in children's playgrounds, beaches, commercial outdoor dining areas, major sports stadiums, and within 4 metres of public building entrances.<sup>10</sup> In New South Wales by May 2008, 46 of 152 councils (30%) had a SFOA policy, which usually covers all children's playgrounds and playing fields, and often also beaches, parks and alfresco dining.<sup>11</sup> Fines for smoking in these New South Wales areas occur,<sup>12</sup> although one council had only fined three persistent smokers in 4 years.<sup>13</sup> In practice councils prefer education to fines.<sup>14,15</sup>

SFOA policies are common in California and other US states, including some for beaches, parks, and restaurant patios.<sup>16</sup> Hong Kong, Japan, Korea, Thailand, and Singapore also have some outdoor smoking restrictions.<sup>1,17-19</sup>

Finland banned smoking in outdoor school grounds in 1995.<sup>20</sup> Since then, smokefree policies for outdoor school areas have increased internationally: in Canada, New Zealand,<sup>21</sup> and the US states of Vermont and Nevada from 2005 and 2006,<sup>22,23</sup> and the Flemish parliament (for part of Belgium) from 2008.<sup>24</sup> In Australia, most states use administrative policies to require smokefree school grounds.<sup>25</sup>

WHO recommends that for protecting populations from secondhand smoke, 'legislation that mandates smoke-free environments—not voluntary policies—is necessary.'<sup>8</sup> There appears to be no international guidelines on methods to reduce the example of smoking in public outside places, or of the type of policies on smoking needed for public outside places.

This article investigates the current situation of SFOA for areas controlled by local authorities in New Zealand, particularly the different approach to enforcement from much of the rest of the world. It examines incentives and motivations for, and barriers to creating these SFOA, and their effectiveness.

## **Methods**

Literature and media searching was conducted using search engines (prominently Factiva, Medline, and Google Scholar) and by following up literature references and informant suggestions. The material was limited to the activities of New Zealand local authorities, and up to February 2009. The Factiva database was searched for the New Zealand region, since 2000, using the search words 'smoking' 'smokefree' 'parks' 'playgrounds' 'council' and 'local authority'.

To provide more in-depth material, nine semi-structured telephone interviews were conducted during October 2008, each between 10 and 20 minutes duration. Written notes only were taken. Possible interviewees were identified from literature searching and informant suggestions, as likely to be information-rich on the topic. Twelve were emailed, with follow-up phone calls, and three (two council staff members and one public health worker) could not be readily contacted.

Five of the interviewees were from local government (three councillors, one manager, and one mayor); all five were from councils with at least some SFOA policy. The four other interviewees were from the health or research sectors (two NGO staff, one public health worker, and one social wellbeing researcher).

Interview questions related to smokefree outdoor environments, as well as local government and public health. The types of questions asked varied depending on individuals' role and expertise. Ethics consent was granted by the University of Otago ethics process (19 August 2008).

## **Results**

### **The extent and nature of smokefree outdoor areas controlled by local government**

Except for one policy for a semi-enclosed street, SFOA for areas controlled by local government in New Zealand are 'educative'. This means that they promote non-smoking behaviour in particular areas, with the principal enforcement by public pressure. The process uses signs for the parks, playgrounds and other areas concerned, and media publicity to inform the public. The policies are not legally enforceable.

This approach was adopted in 2005 by the first local authority (South Taranaki District Council) to introduce a SFOA for parks and playgrounds,<sup>26</sup> and appears to have been copied by subsequent councils. By January 2009, 23 of the 73 district and city councils in New Zealand had an operating SFOA policy for at least one playground (29%) (see Table 1). This includes 5 of 16 city councils. Over 1 million people now live in these local authority areas.

There has been an increasing trend of adoption since 2005; two councils passed a SFOA policy in 2005, four in 2006, four in 2007, and eleven adopted a policy in 2008. The policies usually cover playgrounds and at least some parks, and often also swimming pools and reserves (e.g. forested areas). Opotiki District Council's policy is the broadest, including all council-owned parks, playgrounds, gardens, reserves, and beaches; it also applies to all council events.

The majority of councils have introduced SFOA following submissions from non-government community and health groups, and/or health organisations such as District Health Boards.

Some other councils have policies for some outdoor areas where people are seated closely together, such as stadia. There include Hamilton City Council (from 2002),<sup>30</sup> and the Auckland Regional Authority (from 2007).<sup>31</sup>

In November 2002, the Wellington City Council was the first council in New Zealand to create a SFOA. It established a bylaw prohibiting smoking in the area 'Cable Car Lane' (a semi-enclosed small street), with a \$500 fine for offenders.<sup>32-34</sup> This remains the only council-enforced SFOA in New Zealand.

### **Incentives, motivations, and contributing factors for adopting SFOA**

In the media coverage and in the interviews, New Zealand councillors and council staff have given a number of reasons for supporting and introducing SFOA policies in their territories.

**Table 1. New Zealand local authorities with smokefree outdoor area policies\***  
(by order of policy adoption date)

Name	Population <sup>27</sup>	Extent of policy	Date implemented#
South Taranaki District Council	26,040	All Council owned swimming pools and outdoor surrounds, playgrounds and parks.	August 2005
Gisborne District Council	44,556	Council-run and sponsored events, patrolled beaches and council lands / reserves during children's sports and activities.	November 2005
Upper Hutt City Council	38,916	All parks, reserves, playgrounds and sports fields	May 2006
South Wairarapa District Council	9006	All playgrounds	April 2006
Queenstown Lakes District Council	32,592	All playgrounds and swimming pools.	Late 2007
Wanganui District Council	43,719	All playgrounds, sports fields and open reserves	May 2007
Wairoa District Council	8631	All council-owned sports fields, playgrounds and open-spaced reserves.	May 2008
Central Hawke's Bay District Council	12,948	All playgrounds and sports grounds	May 2008
Hastings District Council	72,693	All parks, playgrounds and sports grounds.	May 2008
New Plymouth District Council	69,729	All council-owned parks, playgrounds, sports grounds and walkways.	August 2007 (Signs as they are upgraded or replaced)
Carterton District Council	7191	All parks and playgrounds	September 2007
Ashburton District Council	27,693	All playgrounds	October 2008
Opotiki District Council	9021	All council-owned public places (beaches, parks, playgrounds, sports fields, reserves, etc.) and events.	March 2008
Rotorua District Council	70,737	All playgrounds and in Council-owned Tokorangi Triangle in the Whakarewarewa Forest.	December 2008
Invercargill City Council	51,021	All playgrounds	October 2008
Kaipara District Council	18,429	All playgrounds	November 2008
Napier City Council	57,210	All playgrounds and sports grounds	2009
Chatham Islands District Council	645	All playgrounds and sports grounds	October 2008
Kapiti Coast District Council	46,455	All playgrounds and sports grounds	December 2008
Tararua District Council	17,538	Swimming pools (inside and outside), council-owned public spaces (e.g. halls), parks, sports grounds and playgrounds smokefree.	October 2008
Waitakere City Council	186,318	Playgrounds, skate parks and half courts, sports fields and facilities (e.g. courts) and event areas.	April 2009
Manukau City Council	329,814	Playgrounds, skate parks, stadiums and courts, sports fields and public events.	March 2009
Grey District Council	14,052	Playground of Dixon Park	February 2009 <sup>28</sup>

\* Unless otherwise referenced, the information is from the Smokefree Councils website.<sup>29</sup>

# The dates should be taken as approximate, as the implementation by many councils was gradual.



**Health and children's wellbeing**—Councils have declared that SFOA are 'all about the kids'.<sup>35,36</sup> Other documented quotes from council officials include: 'young children and unborn children should be able to breathe fresh air, and not smoke',<sup>37</sup>; that SFOA are 'where kids are',<sup>38</sup>; and that they are about 'looking after children'.<sup>39</sup> One council interviewee said: 'If you want to smoke later [in life], fine, but don't expose kids'.

Interviewees focused on health, the effects of SHS on children and babies, and on role-modelling towards children. Documents indicate that some council staff also supported SFOA as a way of addressing high rates of smoking or poor health in their communities.<sup>40</sup>

**Leadership**—Another common motivation found was that SFOA gave councils an opportunity to provide leadership and set a positive example in their community. This theme of leadership was expressed in varying ways: 'setting a positive example' (council interviewee); 'leading by example',<sup>41</sup>; 'a way of showing community leadership',<sup>42</sup>; 'being a [community] role-model' (interviewee).

**Community focus**—Two of the five council staff interviewed mentioned council's stated 'community outcomes' [CO] as a motivation, but not a major one. Of the three non-council interviewees asked about local government motivation for SFOA, two specifically mentioned meeting CO – one saying CO are 'a huge influencing factor for councils', and that council staff become interested when they see that SFOA help them meet CO.

**Environment and fire**—A major motivation for Rotorua District Council introducing a SFOA policy was to address smoking in a popular forest area.<sup>43</sup> Fire risk was also a motivator in the Hawke's Bay (along with reduced litter),<sup>44</sup> and 'periods of extreme fire danger' would reportedly cause Wellington City Council to consider introducing a widespread smoking ban.<sup>45</sup> Some of the initial motivation for SFOA in Ashburton appears to have been driven by litter concern.<sup>42</sup>

**External influences**—Central government smokefree policy has had some influence. One council interviewee stated that the example of national policy (specifically banning smoking in bars and pubs) gave motivation to 'follow on' and introduce SFOA. Another councillor said their council 'saw the benefits' of national legislation, and that this gave support for introducing SFOA.

The precedent set by other New Zealand councils also provides support for councils introducing SFOA. One non-council interviewee thought a key reason for councils introducing SFOA was 'copy-cattin' and a 'snowballing effect'. Sporting clubs have been influential in setting a precedent and supporting SFOA, especially in Upper Hutt, Gisborne, and Northland.

**Political factors**—The desire to provide positive leadership (mentioned above) may have political incentives, as may the desire to support and please community groups. When Christchurch introduced smokefree parks, a councillor remarked: 'We are supporting and encouraging a group hoping to change behaviour'.<sup>38</sup> One interviewed councillor said that she thought other council members, who weren't particularly interested in SFOA, supported the policy because they wanted to be 'seen to be doing the right thing'.

**The role of lobbying and support groups**—Lobbying and community submissions/proposals clearly play a large part in the introduction of SFOA in New Zealand, although no interviewees mentioned it as a motivating factor. Petitions have been presented to councils.<sup>46,47</sup>

Council interviewees often described support from other organisations as helpful in introducing smokefree areas. One said ‘good on the District Health Board and Cancer Society for their support...they helped to get this done’. Another described NGOs as ‘very helpful...they provided advice and direction’ and that they ‘increased the credibility’ of the SFOA initiative.

## **Barriers to SFOA**

The barriers and arguments faced when introducing smokefree policy include:

**Arguments about personal freedom**—A Timaru District councillor described SFOA policy as ‘an infringement of smokers’ rights’.<sup>48</sup> Other New Zealand councillors have said: ‘People should have the freedom of choice to smoke outside’, and that SFOA are a sign of ‘a Big Brother mentality’.<sup>49</sup> The policy was also described as ‘draconian’, being ‘so absurd we’d be open to ridicule’.<sup>50</sup>

A survey of councillors in the Wellington region reported the following as opposition: ‘smoking outdoors is a matter of choice for the individual’; and ‘limiting smoking marginalises smokers’ human rights’.<sup>51</sup>

One newspaper editor described SFOA as ‘an infringement of smokers’ rights’ and ‘a civil rights issue’.<sup>52</sup> In an article title ‘Big Brother is watching’, a journalist wrote that SFOA involved ‘the persecution of smokers’ and that ‘it smacks of Big Brother and the ‘I know what’s good for you’ mentality...creeping into our society’.<sup>53</sup> Civil liberty and tobacco company spokespeople also supported these views in the media,<sup>54</sup> as have ‘letters to the editor.’

**Over-regulation**—A similar idea is that society is becoming over-regulated with too many rules and restrictions. One Timaru councillor said that there are ‘already too many rules and regulations, particularly in parks and reserves’.<sup>55</sup> In another area, the policy was described by a council official as ‘a step too far...It’s bad enough that the State wants to continually intervene in the private lives of New Zealanders’.<sup>56</sup> Another comment was: ‘Why should it be the council’s role to become Big Brother? Do we have to legislate for everything?’<sup>57</sup>

**Park attendance**—A genuine concern of council staff has been that if smoking restrictions are introduced in parks and at sports fields, fewer parents will take their children to parks and attend sport matches. Six councils with SFOA policies have made only playgrounds smokefree, often because of concerns about sport attendance.

This concern was first seen in South Wairarapa: ‘I would rather have some kid out there playing sport and dad standing on the sideline with his cigarette rather than not taking his children down to support him’.<sup>58</sup> A Wanganui councillor was concerned that ‘young [smoking] parents would be deterred from taking their children to these playgrounds’.<sup>40</sup> while an Invercargill councillor was worried that ‘if parks were declared smokefree some parents would not to take their children’.<sup>59</sup>

**Enforcement problems**—One councillor interviewed said that the reason their council had not made parks smokefree was because ‘parks are not enforceable and not monitorable’, whereas they considered that smokefree playgrounds were both. Documented comments against SFOA have included: ‘If it is not enforced, what’s the point?...we like our signs to mean something’<sup>36</sup>; ‘an outdoor ban would be hard to enforce’<sup>60</sup>; ‘totally unenforceable’<sup>56</sup>; ‘it is just unpractical’<sup>36</sup>; and ‘what [is] the sense of it if nothing [will] be done [to enforce it]’.<sup>48</sup>

**Cost and signs**—No council interviewee mentioned cost as a barrier. The cost of signage for councils has often been offset by contributions from various organisations. In the documentary evidence, one councillor ‘expressed concern at the cost to the ratepayer’,<sup>40</sup> while another comment was that SFOA would be ‘another cost to council’.<sup>36</sup> There has also been concern about ‘the proliferation of signage in parks’<sup>61</sup> and that erecting smokefree signs is ‘just changing one form of pollution for another’.<sup>48</sup>

**The effect of strong and vocal opposition**—The strength and articulation of opposition may have acted as a barrier to smokefree policy. In conducting this research, some relationship between opposition media comment and SFOA not being introduced was seen. The media was perhaps influential in Timaru and Palmerston North, which had the strongest opposing media comments.<sup>52,53</sup>

**Priorities and lack of motivation**—Some councillors have little motivation for health issues and SFOA, because they feel these issues aren’t an important part of a local council’s role. A councillor ‘did not think [creating SFOA] was the Council’s role’<sup>40</sup>, while another council comment was: ‘If smoking is bad enough, the Government should ban it altogether. It starts at the top.’<sup>36</sup> As this last comment shows, some people think public health issues like SFOA should be addressed by central government.

The barriers identified in this report were mirrored by a New South Wales survey into SFOA. In this survey councils also identified barriers of: mixed reactions from sporting clubs; park ranger opposition; community business concern; geographical challenges (large urban and rural areas); and the issue falling between departments.<sup>11</sup>

## **The effectiveness of and support for local authority SFOA**

Two New Zealand studies have assessed compliance with outdoor smokefree policies. A study of the effectiveness of Upper Hutt City Council’s SFOA, at over a year after the policy introduction, showed that 23% of smokers said they still smoked in parks, (17% of smokers who knew about the policy and 32% of those who didn’t know). Sixty three percent of park users knew about the council policy, the majority first finding out about it from signage. Smoking behaviour was also observed and cigarette butts were collected. The authors concluded that although the policy was well supported, there was ‘an appreciable degree of non-compliance’, as well as inadequate signage and promotion.<sup>62,63</sup>

A study aiming to assess the impact of SFOA on smoking in Opatiki found limited change.<sup>64</sup> Before the policy in January 2008, 1199 cigarette butts were collected in five smokefree parks/ areas. After the policy was introduced in May/ June 2008, the same collection pattern found 915 butts. Possible confounding factors include

seasonal difference and the increased use of some parks for winter sports. Awareness of the policy increased from 31% to 74% - most knew about the policy from the local newspaper.

This study asked also respondents if they had seen people smoking in the designated smokefree areas. 54% had seen smokers in playgrounds, and 77% had seen smokers on beaches. There appeared to be a general consensus (supported by interviewees) that SFOA have decreased smoking in designated areas, but considerable non-compliance remained.

### **Public support for council smokefree areas**

One national survey has found majority public support for smokefree outdoor areas that children use (66%), and 70% agreed that local council events should be totally smokefree.<sup>65</sup> Another survey series found increased opinion that it was 'not at all acceptable' to smoke at sports fields or courts (35% in 2003, 51% in 2007) or at outdoor children's playgrounds (76% in 2007).<sup>66</sup> A national survey of smokers in 2007–2008 found that 66% disagreed with the statement 'smoking should be allowed at council-owned playgrounds.'<sup>67</sup>

The Upper Hutt study found that 83% agreed with the policy, with 9% disagreeing (the remainder were unsure). Of the smokers interviewed, 73% (109/149) agreed with the policy.<sup>62,63</sup>

In both the Opotiki before and after surveys, 69% of respondents thought the policy was a good idea. Perceptions about the acceptability of smoking in different areas changed between the surveys. The question 'do you think place people should be able to smoke in the following places?' was asked.

The percentage answering 'No' increased: for children's playgrounds 94% (from 79%); for sports fields or courts 77% (from 53%); parks or reserves 62% (from 41%); and beaches 43% (from 36%). Other local surveys include one in Rotorua that found 85% approved of the new SFOA policy there, with 7% disagreeing and 8% unsure (33% of the sample were smokers).<sup>68</sup>

### **Discussion**

These results raise some key points. One is the accelerating creation of SFOA in New Zealand, which is likely to continue. This appears to be partly due to the work of health lobbyists and organisations, as well as to a greater general understanding of the issues involved (health, role-modelling, environment) and changing societal perceptions. The high level of public support for SFOA is well substantiated. It is likely (and is already seen) that support will increase with time, as with indoor restrictions.<sup>69</sup>

### **The contrast between voluntary and legal SFOA policies**

A second point is that New Zealand appears to have differed from the policies used for smokefree outdoor areas in much of the rest of the world, in having educative rather than legally enforceable policies. There may be a variety of cultural and political causes particular to New Zealand for this difference, or it may be largely due to the example of the first council smokefree parks policy (South Taranaki in 2005).

However, underlying the emergence of voluntary SFOA policies is also the different motivations, compared to those for indoor smokefree policies. The immediate danger from secondhand smoke outside is usually seen as less of a danger than when inside. Also, the example of smoking as a danger to children tends to emerge more clearly as a prime factor for an outside smokefree policy. These different motivations may suggest different solutions.

The *consequences* of using voluntary policies rather than legal force are likely to include different implementation methods, possibly different effectiveness, and different responses from smokers. Wide and effective publicity, explaining the rationale behind the need for smokefree outdoor areas, is even more important in getting compliance with voluntary policies.

In situations where there are educative policies, the people who are most likely to be in contact with smokers, in seeking to stop smoking in New Zealand council SFOA, are not council or other mandated officials. They are parents, sports club officials and members, and the general public, who feel sufficiently strongly about smoking, and its risks and costs (example, fire, litter, etc), to say something to those who flout SFOA policies.

The monitoring of effectiveness is perhaps even more important for voluntary compared to legal policies, as enforcement officials are not available to supply information. Effective implementation may be slower, as public awareness of the policies, and the ability to confront smokers, may take longer to be effective compared to a punitive legal policy. On the other hand, smokers may react differently to a mother with small children who objects to smoking in a playground, compared to their reaction to a council official who is 'just doing their job'.

There will remain commonalities and convergence between voluntary and legal SFOA policies. They include the underlying driver of perceived or actual public pressure on smokers, and the unwillingness of local authorities in many jurisdictions to *use* legal means to stop smoking (when they have the power).

The present New Zealand council SFOA policies may lead to either council bylaws, or eventual legislative action by central government.<sup>70</sup> The New Zealand Government may also extend its smokefree health promotion from its focus on homes and cars,<sup>71,72</sup> to encouraging smokefree outdoor public areas where there are children.

### **The libertarian resistance to public SFOA**

The idea that SFOA represent a threat to personal freedom or autonomy is one that has widespread, and at times passionate, support. This theme of an over-regulated 'nanny state' is a common reaction to public health interventions to deal with tobacco, alcohol, obesity and other problems.<sup>73,74</sup> Proponents of New Zealand council SFOA point out that the smokefree policies are educative only, not enforced by law.

SFOA are, therefore, not a complete restriction, but are an encouragement and reminder not to smoke in these places. This issue requires ethical consideration, and councils will reach varying outcomes. While excessive regulation is a genuine and reasonable concern of many people, it does not appear to be a major influencing concern for most council members regarding SFOA.

## Other concerns

Concerns about park attendance and the inability to enforce SFOA have probably been more influential for councils than libertarian ideas. The feared decreased attendance does not seem to be occurring, although there is no objective evidence on this. Concerns about the inability to enforce policy are perhaps unabated, given the 'appreciable degree of non-compliance'.<sup>62</sup> Questions must be asked about the effectiveness of an education-only approach, but further time and investigation is required to assess compliance. Equally, there are questions about the present sustainability of a legally enforced approach to SFOA in New Zealand, without significant promotion of the arguments for such an approach.

Although evidence on the effectiveness of SFOA is lacking, some believe that the biggest impact of SFOA will be long term, as part of an overall tobacco control strategy, rather than as a single measure. The impact of SFOA on societal perceptions and attitudes towards smoking may be greater than their direct effectiveness. In this case, the effectiveness of SFOA is extremely difficult to quantify.

## Limitations for this research

The interviewees could all be described as supporters of SFOA, which could lead to a restricted view of the topic. Similarly, much of the literature reviewed was produced by tobacco control advocates. Media reports and some literature found, however, provided opposing views.

## Conclusions

Overall, local councils are warranted in creating SFOA, and they have picked up a major health challenge in the absence of much central government activity on public outdoor smoking. There are high levels of public support, reasonable evidence for the harms of outdoor smoking, national and international precedents, and some evidence for the effectiveness of SFOA. No major problems with SFOA have been identified, and they have little apparent cost to councils. Further research is needed, however, particularly regarding the effectiveness of SFOA.

The final decision on creating New Zealand SFOA for council controlled areas currently remains that of individual councils, which at present may be appropriate. It is unclear if, or when, smokefree outdoor environments will become a central government issue, or when a legal basis for them will be considered. Except for the outdoor areas of hospitality venues and building entrances, there is currently little identifiable activity to put the SFOA issue on the New Zealand Government's agenda.

It is likely that, given the current situation and knowledge, SFOA will continue to increase in New Zealand. There is potential for the expansion of SFOA into new settings, including streets, beaches, cemeteries/wahi tapu, and events. It appears SFOA will significantly contribute to tobacco control in New Zealand and internationally.

**Competing interests:** One of the authors (GT) has undertaken work for health sector agencies working in tobacco control.

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## Support by New Zealand smokers for new types of smokefree areas: national survey data

Nick Wilson, Tony Blakely, Richard Edwards, Deepa Weerasekera, George Thomson

### Abstract

**Aims** To describe smoker support for new smokefree laws covering cars and outdoor settings, in a national sample of New Zealand (NZ) smokers.

**Methods** The NZ arm of the International Tobacco Control Policy Evaluation Survey (ITC Project) uses as its sampling frame the NZ Health Survey (a nationally-representative sample interviewed face-to-face). From this sample we surveyed by telephone adult smokers (n=1376). Along with adjustment for the complex sample design, there was weighting of the results to attempt to adjust for the non-response at various points (i.e. there was an overall response rate of 33%).

**Results** A majority of this national sample of smokers supported three new smokefree areas (albeit with some potential for response bias not adequately addressed by the weighting process). That is, only a minority agreed that smoking should be *allowed*: in cars with pre-school children (3%), anywhere in outdoor eating areas (22%), and at council-owned playgrounds (32%) (with a more equivocal minority for “within five metres of the entrance to public buildings” (48%)). These attitudes were generally compatible with the findings that most of these smokers (87%) reported trying to minimise the amount that non-smokers were exposed to their cigarette smoke, and reported never smoking in a car with non-smokers (73%). Nevertheless, there were still domains where most smokers thought smoking should be allowed—e.g. on lifeguard-patrolled beaches (55%) and in at least some of the outdoor seating areas of restaurants/café (51%) and pubs (83%).

**Conclusions** There was majority support by these New Zealand smokers for three new types of smokefree areas not covered by current smokefree legislation (including in cars and some outdoor areas). These findings suggest it is a reasonable option for central government and local government authorities to further study and consider new smokefree laws.

In 1990, New Zealand passed a smokefree law that focused mainly on indoor workplaces and partial restrictions in restaurants.<sup>1</sup> Amended legislation in 2003 extended smokefree areas to all restaurants, bars, and other indoor workplaces. It also prohibited smoking in schools and early childhood centres, casinos, and in gaming machine venues. The available evidence indicates that the 2003 law has reduced exposure to secondhand smoke (SHS) in various settings<sup>2,3</sup> along with other pro-health changes in smoking behaviour.<sup>4,5</sup>

The evidence also strongly indicates majority public support for and compliance with this 2003 law.<sup>4,6</sup> There was also an increase in support among *smokers* for the right to work in a smokefree environment, from 83% in 2003, to 92% in 2006.<sup>6</sup>

New Zealand has also been expanding outdoor smokefree areas. The 2003 legislation prohibited smoking in the grounds of all schools. The grounds of some hospitals, some stadiums, and the campuses of various tertiary educational institutions have also been made smokefree. The Wellington City Council has made one semi-enclosed street smokefree.

“Educative” smokefree parks policies that use social pressure have been adopted by a quarter (20/73) of the city and district councils as at the end of 2008.<sup>7</sup> These are policies which rely on signage, media coverage and public pressure to limit smoking, rather than having a legal status.

However, New Zealand smokefree policies that restrict smoking near entranceways appear to be rare (some airports and tertiary education institutions) and there are no smokefree beaches or unenclosed streets. New Zealand has not restricted smoking in the outdoor areas of cafes and pubs, as has occurred in other jurisdictions such as Queensland.<sup>8</sup>

There is still fairly limited evidence around public support for such outdoor smokefree areas in New Zealand. One local survey found that 83% of adult park users (73% for smokers) supported the “smokefree parks policy”.<sup>9</sup> A national survey found that a majority of respondents reported that smoking was “not at all acceptable” in outdoor children’s playgrounds (76%), in outdoor sports fields or courts (51%), town or city squares (38%), and on beaches (33%).<sup>10</sup>

Attitudes to smokefree cars have also been studied in New Zealand. In 1988 a tobacco industry-funded survey found that 47% of adults in a national sample wanted no smoking in private cars (though for smokers the figure was only 18%).<sup>11</sup> Three subsequent national surveys by a research company for the Health Sponsorship Council found variable levels of support for smokefree private cars (ranging from 23% to 41%<sup>12</sup>).

But when survey questions mentioned non-smokers in the car, the results indicated higher levels of support for smokefree cars. For example, a Wellington area survey in 1997 found that 94% of respondents agreed that cars with children in them should be smokefree (and 86% of smokers agreed).<sup>13</sup> There was also majority support in a 2004 New Zealand-wide survey, where 76% of respondents *disagreed* that it is “okay” to smoke around non-smokers inside cars even when there are windows down.<sup>14</sup>

Given that smokefree areas are one of the major tobacco control interventions used in New Zealand<sup>15</sup> and internationally,<sup>16</sup> there is potential for considering this issue further. Here we explore New Zealand smokers’ attitudes in 2007 and early 2008, towards additional settings being smokefree.

## Methods

**The ITC Project**—The International Tobacco Control Policy Evaluation Survey (the ITC Project) is a multi-country study on tobacco use epidemiology and tobacco control policy evaluation. A full description of the ITC Project conceptual framework and methods have been published elsewhere.<sup>17,18</sup> The New Zealand arm of the ITC Project survey differs somewhat from the other ITC Project countries in that the smokers involved are from the sample frame of New Zealand Health Survey (NZHS) participants (with this survey being conducted in 2006/2007).

Methods of the NZHS are detailed more fully in the report on the key results<sup>19</sup> and a detailed methods report.<sup>20</sup> Respondents were selected by a complex sample design, which included systematic boosted-



sampling of the Māori, Pacific, and Asian populations. Interviews were conducted face-to-face in respondents' homes by trained interviewers (on contract to the Ministry of Health) and resulted in a total of 11,924 interviews with respondents aged 18 and over. The overall response rate was 67.9%. Other issues around the NZHS response rate as it relates to the ITC project are detailed in an online *Methods Report*.<sup>21</sup>

**Participants**—From the NZHS sample we had an additional sampling frame of adult smokers who were 18 years or older and who were willing to participate in further research when asked this at the end of the NZHS interview (this was 85.2% of the adult smokers in the NZHS). Out of 2438 potential respondents who met these criteria, a total of 1376 completed the NZ ITC Project Wave 1 questionnaire giving a response rate of 56.4%. But, if this response rate is considered in terms of the NZHS and willingness to further participate, then the overall response rate is reduced further to 32.6% (see an online *Methods Report*<sup>21</sup> for more detail).

**Procedures and measures**—Surveying of these participants was carried out using a computer-assisted telephone survey (sub-contracted to Roy Morgan Research). The first wave of participants were all interviewed between March 2007 and February 2008, usually 3-4 months after their NZHS interview. The study protocol was cleared by the Multi-Region Ethics Committee in New Zealand (MEC/06/07/071) and by the Office of Research Ethics, University of Waterloo, Waterloo, Canada (ORE #13547).

The questions on attitudes to new smokefree areas are detailed in Table 1. Other questions explored behaviours relating to protecting others from SHS exposure (last three rows of Table 1).

**Weighting and statistical analyses**—Weighting of the results was necessary given the sampling design (e.g. boosted sampling of three ethnic groups in the NZHS) and non-response for the NZHS and ITC Project survey. A full description of the weighting process is detailed in an online report.<sup>22</sup> All analyses were conducted in Stata software (version 10, Stata-Corp, TX) and (as well as being weighted) were adjusted for the complex sample design of the NZHS to make the results reflect the demographic and geographic distribution (including for age, gender, ethnicity and district health board area) of the national population of New Zealand smokers.

## Results

**Sample characteristics**—All the results presented below have been weighted to reflect the national population of smokers in New Zealand. This process attempted to adjust for the fact that our final sample of interviewed smokers was somewhat dominated by women smokers (61.6%) and older smokers (64.7% of the sample were aged 35 years and over), and that the booster sampling used in the NZHS resulted in our final sample having disproportionately higher percentages of Māori (44.1%), Pacific (6.5%) and Asian (4.3%) respondents (with the rest being “European/Other” at 45.1%).

In the several months since participating in the NZHS, 12% of the sample had reported quitting smoking. They were still included in the sample where appropriate (e.g. but not in the smoking behaviours section of Table 1) in line with standard ITC Project procedures.

**Overall attitudes to new smokefree areas**—There was fairly clear majority support for restrictions on smoking in three domains. Only a minority agreed that smoking should be *allowed*: in cars with pre-school children (3%), anywhere in outdoor eating areas (22%), and at council-owned playgrounds (32%) (with a more equivocal minority for “within five metres of the entrance to public buildings” (48%)) (Table 1 and Figure 1).



**Table 1. Smoker attitudes to new smokefree areas and behaviours around secondhand smoke exposure to others**

Variables / Questions	Responses (%)	95% CIs
Attitudes to new smokefree areas (n=1376) “Do you think smoking should be allowed...”		
<i>Cars</i> : “... in cars with pre-school children in them?”	3.0 (yes)*	1.9–4.0
<i>Playgrounds</i> : “... at council-owned playgrounds?”	31.9 (yes)*	28.6–35.2
<i>Entranceways</i> : “... within 5 metres of the entrance to public buildings?”	48.2 (yes)	44.6–51.7
<i>Beaches</i> : “... on lifeguard-patrolled beaches?”	54.8 (yes)	51.2–58.3
<i>Outdoors at pubs</i> : “... in some of the outdoor seating areas of pubs?”	82.6 (yes)	79.8–85.3
<i>Outdoor eating areas</i> : “And now thinking about the outdoor eating areas of restaurants and cafes. Do you think that smoking should be allowed in ALL outdoor eating areas, in some outdoor eating areas, or not allowed in outdoor eating areas at all?”	22.3 (yes-all) 51.3 (yes-some) 25.4 (no)	19.4–25.2 47.8–54.9 22.4–28.3
Behaviours around protecting others from SHS (n=1236)**		
<i>Reducing SHS exposure</i> : “How much, if at all, do you try to minimise the amount that non-smokers are exposed to your cigarette smoke?” 1= a lot; 2=somewhat; 3 = not at all	61.0 (a lot) 26.1 (somewhat) 12.3 (not at all)	57.3–64.8 22.7–29.5 9.8–14.9
<i>Home</i> : “Which of the following best describes smoking inside your home: ‘Smoking is allowed anywhere in your home’; ‘Smoking is never allowed anywhere in your home’; ‘Something in between’?”	12.6 (anywhere) 61.6 (never) 25.7 (in between)	10.2–14.9 58.2–65.1 22.6–28.9
<i>Cars</i> : “When you are in a car or other private vehicle with non-smokers, do you...smoke as you normally smoke; never smoke; something in between?”	4.6 (normally) 73.1 (never) 22.1 (in between)	2.9–6.3 69.7–76.5 18.9–25.3

**Table notes:**

All results weighted and adjusted for complex sample design so as to reflect the demographic and geographic distribution of the national population of New Zealand smokers.

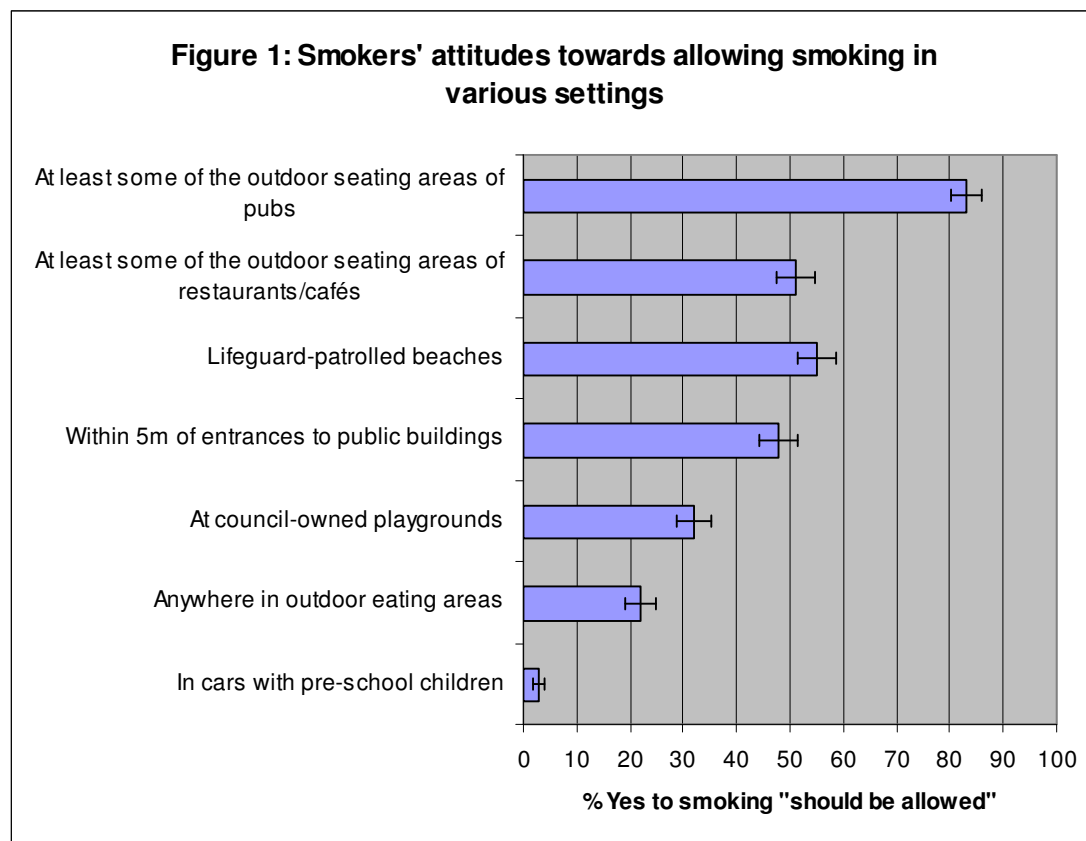
\* These single results for smokefree cars and playgrounds have been reported previously.<sup>23 24</sup>

\*\* Excludes those who had recently quit (in the months since the NZ Health Survey).

In contrast, there was majority support for allowing smoking on lifeguard-patrolled beaches (55%), and in at least some of the outdoor seating areas of restaurants/cafés (51%) and pubs (83%). When considering all these six areas collectively, 59% supported at least three new completely smokefree areas and only 2% of respondents favoured smoking being allowed in all these settings.

**SHS-related behaviours**—Most smokers (87%) reported trying to minimise the amount that non-smokers were exposed to their cigarette smoke (Table 1). More specifically a majority (73%) reported never smoking in a car with non-smokers, and a majority (62%) stated that smoking is never allowed anywhere in their home.

**Figure 1. Smokers' attitudes towards allowing smoking in various settings**



## Discussion

**Main findings and interpretation**—The main finding from this study is that a clear majority of this sample of smokers supported new smokefree areas in three domains (i.e. cars with preschool children, at least part of outdoor eating areas, at council-owned playgrounds), with approximately half supporting banning smoking within five metres of the entrance to public buildings. Indeed, a majority of the smokers (59%) supported at least three of the six smokefree areas described.

This level of support, along with the evidence that New Zealand smokers are complying at high levels with the recent law against smoking in pubs and restaurants,<sup>3,4,6</sup> suggests high levels of compliance by smokers is possible for these three new smoking restrictions.

The stated attitudes of smokers towards new smokefree areas appears to be fairly compatible with their self-reported behaviour concerning minimising SHS exposed to others in general, in the home environment, and in cars (Table 1). Furthermore, the majority support for smokefree restrictions found in this study is consistent with evidence of growing public and smoker support for smokefree car laws in a range of

jurisdictions internationally.<sup>25</sup> It is also consistent with majority support by smokers for smokefree playgrounds in other jurisdictions.<sup>26</sup>

This support in New Zealand may reflect smoker responses to societal-wide shifts in smoking and SHS denormalisation that have followed the 2003 smokefree legislation, and responses to the media campaigns that preceded and followed its introduction.

Many smokers will also have become aware of the outdoor smoking restrictions and policies that have already been introduced in stadiums, around hospitals and in a rapidly expanding number of council-owned parks.

**Limitations of this study**—New Zealand smokers might display some social desirability bias in their responses to surveys, and hence the results may exaggerate the true level of support for smokefree areas among smokers. This is because smoking is probably becoming increasingly denormalised in this society, as suggested by reductions in socially-cued smoking with the recent expansion of smokefree environment laws.<sup>4</sup>

Potential selection bias among survey participants, towards smokers who are more positively inclined to tobacco control measures, is also a potential limitation, especially in light of the 33% response rate compared to those eligible for inclusion in the parent Health Survey from which the ITC study was selected. That is, smokers who support smokefree policies may be more likely to take part in the NZHS and then in the ITC survey. However, such selection bias would have to be reasonably large to overturn the majority support found in this study.

For example, there was an observed 31.9% support for smoking in playgrounds (Table 1) among the estimated third of all smokers first approached for interview in the NZHS that actually participated in the ITC study (i.e.  $\text{third} \approx 32.6\% = 67.9\% [\text{NZHS response rate}] \times 85.2\% [\text{NZHS consent to ITC follow up}] \times 56.4\% [\text{successful ITC Project survey re-contact rate}]$ ). This would have to be offset by an unobserved 58.8% support for smoking in playgrounds among the two-thirds of eligible NZHS survey smokers not included in the ITC Project study for the “true” support to be 50%.

Whilst not impossible, it seems unlikely that this unobserved support might be 58.8% among non-participants compared to 31.9% among participants. By extension, it seems even more unlikely that the observed very low support for smoking in cars (3.0%) could be consistent with 50% support for smoking in this setting among all eligible smokers.

**Research and policy implications**—We are currently undertaking more research on the socio-demographic and smoking-related variables associated with smoker support for new smokefree areas. Even so, other New Zealand research would help clarify various issues around smokefree areas in particular settings. For example, we have suggested elsewhere that the adult modelling of smoking in front of children is an argument for certain outdoor smoking bans.<sup>27</sup> It would be desirable to know the extent to which role modelling from public smoking influences smoking-related behaviours of children, and also the degree to which this issue is given credence by the public and policymakers in New Zealand.

Further research could expand on preliminary New Zealand work,<sup>28</sup> to clarify the health hazard posed by the drift of SHS from outdoor smoking areas into adjacent indoor areas (particularly during summer), and to hospitality workers who service open or semi-enclosed outdoor areas (as undertaken in the USA<sup>29</sup>).

From a policy perspective, one option would be for central government to pass a smokefree law to cover all cars with children. This action would be supported by the evidence of highly hazardous air quality in cars where smoking is occurring,<sup>30 31</sup> and would be in line with similar measures in other jurisdictions.<sup>32</sup>

Expanding outdoor smokefree areas may require more detailed considerations of the benefits and costs but could potentially focus initially on covering:

- Those settings where children are commonly present (such as playgrounds);
- Where significant levels of SHS drift from outside to inside;
- Where SHS in crowded settings can be a significant nuisance or health hazard (such as stadiums and outdoor eating areas); and
- Where workers are regularly exposed to SHS in outdoor areas.

The experience of other jurisdictions with the feasibility of defining such areas, and with enforcement, could be considered by policymakers who wish to explore these options.

However, central government's processes can be slow and unpredictable, and some New Zealand politicians can be susceptible to misleading tobacco industry funded or disseminated versions of research on SHS.<sup>33</sup> Also a central government response to these issues may have an opportunity cost, if it distracts official efforts away from more fundamental solutions to the tobacco problem such as restructuring the tobacco market to meet public health objectives (e.g. as proposed by others<sup>34,35</sup>). Therefore an alternative approach is that local councils do not wait for central government, and that they decide to continue their efforts to expand smokefree parks and other smokefree areas.

This approach may ensure more immediate progress for some areas, and may enhance the evidence-base around compliance and public acceptability. The example of the use of available local government powers to progress council-required alcohol-free zones could potentially be followed for smokefree outdoor hospitality settings within council jurisdictions.

To facilitate all such progress towards smokefree areas, government at all levels could also intensify mass media campaigns that deal with SHS hazards. Central government could also mandate additional graphic warnings on tobacco packaging that cover SHS hazards and the danger of smokers' example to children (see Figure 2 for a Canadian Government example). Such additional graphic pack warnings might be considered by some to have the advantage of coming at no cost to tax-payers.

**Figure 2. Canadian cigarette pack health warning that focuses on adult modelling of smoking<sup>36</sup>**



**Competing interests:** Some of the authors (NW, TB, GT, RE) have previously undertaken work for agencies working on tobacco control.

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## Survey of descriptors on cigarette packs: still misleading consumers?

Jo Peace, Nick Wilson, Janet Hoek, Richard Edwards, George Thomson

### Abstract

**Aim** In September 2008, the New Zealand (NZ) Commerce Commission issued a warning to the major tobacco companies to remove “light” and “mild” descriptors from cigarette packaging. Despite published evidence that suggested tobacco companies had started colour-coding their packs in anticipation of the Commission’s decision, the investigation did not consider more general misleading packaging. This study explored changes in tobacco packaging that had been introduced to the New Zealand market, by surveying descriptors used on cigarette packs after the Commerce Commission’s warning.

**Method** A convenience sample of discarded cigarette packs were collected in four cities and six towns/rural areas between November 2008 and January 2009. The majority of packs (93%) were collected in the capital city (Wellington). Information on the descriptors and pack colours was analysed.

**Results** Four percent of the 1208 packs collected still included the terms “light” and “mild”. Almost half the packs (42%) used a colour word (e.g. red, blue, gold) as a descriptor to indicate mildness or strength. A further 18% used other words that suggested mildness/strength (e.g. “subtle”, “mellow”). A quarter of packs used a descriptor that did not connote either mildness or strength; however, the majority of these packs still appeared to be colour-coded.

**Conclusion** Although the words “light” and “mild” have been largely removed from tobacco packaging in the New Zealand market, these words have been replaced with associated colours or other words that may continue to communicate “reduced harm” messages to consumers. Further research to test how smokers interpret the new words and colours, and how these influence their behaviour, is desirable. However, government-mandated generic (plain) packaging would remove the opportunity to communicate misleading claims and so would afford the highest level of consumer protection.

Several studies have concluded that smokers who consume “light” or “mild” cigarettes are at no less risk of harmful diseases than those who smoke “regular” cigarettes.<sup>1–3</sup> Yet despite this evidence, many smokers still believe “light” or “mild” cigarettes reduce the risk they would otherwise face.<sup>4–7</sup> Evidence from New Zealand and Australia lends further support to these conclusions.<sup>8–10</sup>

In July 2006, the New Zealand Smokefree Coalition lodged a complaint with the New Zealand Commerce Commission. The complaint alleged that tobacco companies used the descriptors “light” and “mild” to deliberately misrepresent *“that these products have health benefits over what are known as regular or “higher yield” tobacco products.”*<sup>11</sup>

The Commerce Commission agreed to investigate and, in September 2008, found that that the descriptors “light” and “mild” risked “breaching the Fair Trading Act.”<sup>12</sup> As a result, the Commission issued warnings to the major New Zealand tobacco companies.

However, the Commission had taken a narrow view of its investigation and declined to examine other potentially misleading elements of tobacco packaging, despite published New Zealand work that suggested a *prima facie* case existed.<sup>13</sup> When other countries banned the use of “light” and “mild” as tobacco descriptors, the tobacco industry introduced other descriptors and signifiers, such as tobacco pack colours.<sup>14</sup>

Our earlier work identified this emerging pattern and noted the beginning of colour-coded packs in New Zealand as early as July 2007.<sup>15</sup> These industry initiatives suggest deception will continue to occur, albeit under a different guise, and highlight the need for on-going monitoring of how tobacco companies respond to regulatory changes.

This study surveyed the descriptors on cigarette packs following the Commerce Commission’s warning, and explored any changes in tobacco packaging that had been introduced.

## Method

As part of a larger project on cigarette pack graphic warnings and foreign packs,<sup>16</sup> we collected discarded cigarette packs in four cities and six New Zealand towns/rural locations between November 2008 and January 2009. The sampling was a convenience sample with a majority of packs (93%) collected in Wellington but the other cities were: Whanganui, Palmerston North, and North Shore City (Auckland).

Towns and rural locations involved were: Taranaki, Patea, Masterton, Wairakei, Lake Tutira, and Bulls. Collection was by the authors (n=4), medical school and other colleagues (n=4) and a paid student. All packs seen in the street were collected, no matter how damaged these were. Following exclusion of foreign packs and old New Zealand packs (those without the new graphic warnings required in all stock sold by the end of August 2008), the sample included 1208 packs.

Descriptor words were defined as words that featured prominently on the pack front, in a font size secondary only to the brand name. These were classified according to whether they used colour words or words that positioned the variant as either light/mild or full strength/regular cigarettes. The colour word categorisation was informed by previous work that investigated the colours associated with “light” and “regular” brands in the New Zealand market.<sup>15</sup>

This work concluded that by April 2007, red was associated with “regular” cigarettes; white, silver, blue, brown and gold with “light” and “mild” variants; and green with menthol cigarettes. We classified other descriptors using the Oxford English Dictionary<sup>17</sup> to assess whether their usage was close to or synonymous with light/mild or full strength/regular.

In some cases, we used our judgement and the colour of the pack (as per our previous work reported above) to make an assessment; for example, our classification of “full flavour”/“premier”/“Virginia” suggesting “full strength/regular”.

## Results

Table 1 presents the distribution of descriptor words found on the packs. Only 4% of the packs still included the words “light” or mild”. However, almost half the packs (42%) used a colour word to suggest mildness/strength and another 7% used a colour word to indicate menthol. Just under a fifth (18%) used a word other than “light” or “mild” to suggest mildness/strength.

**Table 1. Descriptors on street-collected cigarette packs**

Descriptor	Number of packs	Percentage of total packs (%) <sup>g</sup>
<b>Actual words “light” or “mild” still used<sup>a</sup></b>	42	3.5
<b>Colour words:</b>		
Colour words indicating “light” or “mild” <sup>b</sup>	90	7.5
Colour words indicating full strength/regular <sup>c</sup>	414	34.3
Colour words indicating menthol (green and dark green)	82	6.8
<b>Words other than “light” or “mild” that may suggest relative mildness/strength:</b>		
Words suggestive of mildness <sup>d</sup>	28	2.3
Words suggestive of full strength/regular <sup>c</sup>	194	16.1
<b>Actual word “menthol”</b>	48	4.0
<b>Other words (not readily classifiable in above categories)<sup>f</sup></b>	310	25.7
<b>Total</b>	1208	

**Notes:**

- a “menthol lights”, “lights”, “mild”, “super mild”
- b “blue”, “white”, “gold”, “original silver”, “sphere blue”
- c “red”, “original red”, “orange”
- d “mellow”, “refined”, “subtle” (with these considered in the context of dictionary meanings and pack colouring)
- e “classic”, “full flavour”, “original”, “premier”, “Virginia” (with these considered in the context of dictionary meanings and pack colouring)
- f “distinct”, “essence”, “fine cut”, “chilled”, “futura”, “king size”, “filter”, “rich”
- g Percentages were rounded up to one decimal place

All of the packs with descriptors that were classified as a “word suggestive of mildness” (mellow, refined, and subtle) were either coloured blue or had a stripe of blue alongside the descriptor.

Packs with less easily classified descriptors typically still used colour-coding to indicate strength. For example, Dunhill’s “distinct” and “fine cut” variants are coloured light blue and white respectively. “Essence”, “king size” and “filter” cigarettes were predominately found in packs with red colouring, which suggests they are “full strength/regular” products. Dunhill’s “chilled” pack is turquoise green and is a menthol variant.

## Discussion

This study found that 4% of sampled packs still included the words “light” or “mild”. All these packs were either Marlboro or Longbeach brands made by Philip Morris. This finding reflects the fact that although the other companies agreed to remove these descriptors immediately, Philip Morris agreed to do the same only by 17 October 2008 (as a result, residual stock is likely to have been for sale during the collection period).

When “light” and “mild” descriptors were banned in other countries, tobacco companies did not remove these variants from the market, but instead developed new descriptor labels, using alternative words (e.g. “smooth” and “fine”). In addition, their

pre-emptive development of colour differentiation assisted smokers to identify variants formerly labelled “light” or “mild”.<sup>14</sup>

Our research shows the same practices have been employed in New Zealand, as is evident in Figure 1. In these examples, aside from removing the “light” and “mild” descriptor from the pack, and replacing it with either “blue” or “mellow”, the pack branding remained identical.

**Figure 1. Photo of packs before (left-side) and after (right-side) the warning from the Commerce Commission on “light” and “mild” descriptors**



The results are cause for concern, as many consumers interpret colours such as white, silver or blue on cigarette packs as signifying “milder” and therefore “safer” cigarettes.<sup>18</sup> Almost half of the packs collected used a colour descriptor to indicate strength, and almost a fifth used words other than “light” or “mild” to suggest mildness/strength, and paired these with colour-coded packs.

Although these new words may not suggest a risk reduction as explicitly as “mild”, “extra mild”, and “super mild”, their juxtaposition with visual imagery previously paired with “light” and “mild” suggests an attempt to develop replacement words that are likely to have the same misleading effect as “light” and “mild”.<sup>14</sup>

Substituting misleading descriptors with colours they have previously been paired with, or words they are synonymous with, is unlikely to reduce consumer deception.

Further research is desirable to test how smokers, especially young smokers, interpret these new words. Previous work has shown that young smokers are just as confused with words such as “smooth” as they are with the terms “light” and “mild”.<sup>8</sup>

Respondent conditioning theory explains how consistent pairing of two stimuli will lead consumers to associate them, even though they may have no logical or empirical link.<sup>19</sup> Continued pairing teaches consumers to associate descriptive stimuli with attributes and so perpetuates the deception originally conveyed using the words “light” and “mild”.

Article 11 of the World Health Organization Framework Convention on Tobacco Control (FCTC) requires that:

“tobacco product packaging and labelling do not promote a tobacco product by any means that are false, misleading, deceptive or likely to create an erroneous impression about its characteristics, health effects, hazards or emissions, including any term, descriptor, trademark, figurative or any other sign that directly or indirectly creates a false impression that a particular tobacco product is less harmful than other tobacco products.”<sup>20</sup>

This study has shown that the intent of the FCTC is not being met in New Zealand. It is very likely that learned “reduced risk” associations between alternate words and colours will continue to suggest variants featuring these words or colours are less harmful than regular cigarettes. Furthermore, established associations between colours and specific attributes means even newly recruited smokers may be deceived, even though words such as “light” and “mild” no longer feature on cigarette packaging.

Therefore, to protect public health, promote FCTC compliance, and safeguard consumer rights, misleading colours and descriptors should be eliminated from all elements of tobacco packaging. While regulation could limit the use of descriptors and colours, the tobacco industry’s ability to develop and exploit regulatory loopholes suggests a more comprehensive solution is required.

We propose policymakers move to require plain packaging, where the brand name appears in a standard font featured against a standardised blandly coloured background, with no accompanying images, descriptors or colours (beside the graphic warning labels).

**Competing interests:** The last four authors have all undertaken work for health sector organisations involved in advancing tobacco control.

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## Alcohol cardio-protection has been talked up

Doug Sellman, Jennie Connor, Geoffrey Robinson, Rod Jackson

### Abstract

Doctors have been promoting alcohol as a health tonic for a very long time. The last 30 years has seen the accumulation of a considerable medical literature investigating the potential role of alcohol use as a protection against coronary heart disease. When viewed through the lens of two major early reviews in the mid-1980s, Sir Richard Doll's contributions of the mid-1990s, two large meta-analyses of 10 years ago and two most recent overviews, the health-giving properties of alcohol use become increasingly debatable.

The influence of the alcohol industry is raised as a factor in the exaggeration of alcohol use as a health intervention, in similar fashion to activities of pharmaceutical companies. The status of alcohol as a potentially dangerous recreational drug is emphasised as a warning against talking up alcohol as a cardio-protection manoeuvre by anyone.

*"Aqua vitae...it prolongs life, clears away ill-humors, revives the heart, and maintains youth"*  
*Amaldus of Villanova, Professor of Medicine (14th Century)*

Doctors nowadays are more circumspect about promoting alcohol as a health tonic than they were 700 years ago, but are perhaps just as circumspect about discussing alcohol misuse in their patients.

Alcohol has been found to be a more sensitive topic for clinical discussion than smoking, overeating, or lack of exercise.<sup>1</sup> However, doctors remain very interested in the potential health benefits of alcohol judging by the number of peer-reviewed publications that exist on the subject of alcohol cardio-protection in the medical literature.

An electronic search using Medline in the 30 years, 1979–2009, reveals 4409 articles, even when confined to the two keywords "heart" and "alcohol" and constrained to human studies reported in the English language.

When this alcohol cardio-protection literature is viewed through the lens of two major early reviews, Sir Richard Doll's contributions, two recent meta-analyses, and two recent overviews, it is clear the positive relationship between alcohol use and cardiovascular health is debatable.

The two early major reviews in this vast literature came to opposite conclusions about the cardio-protective effect of alcohol in coronary heart disease (CHD). Eichner et al<sup>2</sup> contended that the epidemiological data suggested alcohol is not protective against CHD—in contrast to exercise. Moore & Pearson,<sup>3</sup> on the other hand, concluded that there is a potentially protective level of alcohol consumption somewhere between abstinence and 3 to 4 drinks per day; a U-shaped curve.

Sir Richard Doll (1912–2005), a pre-eminent champion of the U-shaped curve, described the cardio-protective nature of “small or moderate amounts of alcohol” in a series of papers<sup>4,5</sup> based on data from his famous male British doctors sample of 34,000 practitioners who initially returned a self-report questionnaire in 1951. In fact, Sir Richard in his final paper on the matter asserts that the inverse relationship between ischaemic heart disease and the consumption of small or moderate amounts of alcohol is virtually proved.<sup>6</sup>

Two influential meta-analyses of the relationship between alcohol use and CHD, as with the two early reviews, also came to somewhat different conclusions. Rimm and colleagues combined the results of 42 studies examining changes in biological markers in relation to alcohol use and concluded that alcohol intake reduces the risk of coronary heart disease through changes in lipids and haemostatic factors.<sup>7</sup> However, Corrao and colleagues’ conclusions were much more cautious.<sup>8</sup> They combined the findings of 51 studies and found a J-shaped CHD risk curve with a nadir at 20g of alcohol per day.

However, they had several pertinent concerns about the data:

- The degree of protection from high-quality studies was smaller than the findings from all studies;
- High intake of alcohol is well-known to be related to increased risks of cardiovascular disease;
- The venue of the study and gender both modified the effect; for instance, the major protective effect for women occurred at less than one drink per day; and
- There was a publication bias, in that there were fewer small studies reporting harmful effects of alcohol than small studies reporting protective effects.

They concluded that the degree of cardio-protection from moderate doses of alcohol should be reconsidered and suggested that further research investigating the effect of drinking patterns on the risk of CHD should be undertaken.

Finally, two overviews of the debate have shone further scepticism on alcohol cardio-protection. In the first, a Lancet editorial (RJ, JC),<sup>9</sup> the authors contend that the benefits of light drinking may have been overestimated by “believers” but “non-believers” may have underestimated a real coronary-protective effect of heavier drinking. They point out that results of non-randomised studies run the risk of overestimating the apparent benefits of light-to-moderate alcohol use on the risk of CHD, which would only be revealed in randomised controlled trials.

People who regularly consume only light-to-moderate amounts of alcohol over long periods of time also tend to be light-to-moderate in many other ways, and generally have healthier cardio-protective lifestyles than those who are more at the extremes of non-drinking or heavy drinking.

So the apparent benefits of light-to-moderate alcohol consumption may not be real. They do however accept that the evidence points to a cardio-protective effect of heavier drinking, but by the time the cardio-protective effect “kicks in” any benefits are likely to be outweighed by the many well documented alcohol-related harms – *“probably no free lunch”*.

Even people drinking 2–3 standard units per day (25g/day) are at increased risk of raised blood pressure (relative risk 1.4) and haemorrhagic stroke (relative risk 1.2)<sup>10</sup> and the risk of breast cancer is increased about 9% for every additional standard drink consumed each day, with no identifiable safe threshold.<sup>11</sup>

In the second overview,<sup>12</sup> the authors elaborate three further issues that support renewed scepticism about advocating alcohol use as a cardio-protection health strategy:

- Re-analysis has revived earlier concerns about misclassification errors in the various drinking histories found in “abstainers”;
- Problems of self-report underestimation, recall bias, and the changing nature of individuals’ drinking patterns are continuing to ‘muddy the waters’; and
- The complex issue of drinking patterns not adequately captured in most epidemiological studies, which could be critical as a binge-type pattern might be particularly detrimental to cardiac health .

So, if alcohol cardio-protection has been talked up, who has done the talking? Ideological, political, and economic interests have been noted to play important roles in the way alcohol is studied and its effects reported.<sup>13</sup>

It would be a perfect scenario if the very drug that many New Zealanders enjoy using is also preventing such a common serious health problem as coronary heart disease is, estimated to affect 35% of men and 28% of women in their lifetimes.<sup>14</sup> Doctors would be delighted their favourite drug<sup>15</sup> is also improving public health (at the right dose) and the liquor industry would be more than pleased they have a powerful health lobby on side, informally marketing their product at the bedside and clinic.

Unfortunately, as outlined above, the scientific basis for such a scenario appears to be ill-founded. However, such a scenario does not necessarily need science to be subtly promoted.

It is intriguing to note in the literature highlights described above that those studies which reported more enthusiastically about the potential cardio-protective nature of moderate alcohol use received funding from the liquor industry<sup>3,6,7</sup> and those which did not receive such funding reported the more cautious findings.<sup>2,8</sup> However, it would be wrong to conclude there is a conspiracy.

The vast majority of pro cardio-protection researchers genuinely believe their data and are not overtly or covertly working for the liquor industry.

The influence of the liquor industry is subtle and exists just as much behind closed doors as it does in public view.<sup>16</sup> It is likely that the industry indirectly funds and supports researchers who have positive alcohol results to present by supporting the meetings and conferences they attend, using the same methods as pharmaceutical companies to market their medicines.

Not surprisingly the liquor industry has talked up the alcohol cardio-protective story—that is business. But alcohol is a potentially dangerous drug, which can cause a vast range of acute and chronic health problems,<sup>17,18</sup> so should not be promoted by anyone as a health tonic.

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## Phenytoin toxicity and thyroid dysfunction

Tobias Betteridge, John Fink

### Abstract

A 48-year-old woman with known epilepsy presented to the Emergency Department with a 1-day history of decreasing coordination, impaired speech, and recurrent falls. Phenytoin levels were measured and found to be grossly elevated at 170 mmol/L. A diagnosis of phenytoin toxicity was made and she was treated by withdrawing the medication. During admission she was found to be profoundly hypothyroid despite being on adequate thyroid replacement therapy. Normalisation of phenytoin levels was associated with return of euthyroidism. The interaction between phenytoin, thyroid function, and thyroid replacement therapy is discussed.

### Case report

A 48-year-old woman presented to the ED with a 1-day history of dysarthria, visual disturbance, incoordination, and difficulty in mobilising. She was known to have epilepsy for 27 years for which she was taking phenytoin 400 mg/day and carbamazepine 500 mg bd. There was no history of recent seizure. She was compliant with all of her medications.

She had attended the ED 6 days previously with a fall. Blood taken during that event had noted an elevated phenytoin level 140 mmol/L. No alterations to her medications had been made on that occasion.

She had been diagnosed with hypothyroidism in 1982. She had been on a stable daily dose of 250 micrograms of thyroxine for 4 years. Six weeks prior to her admission, the dose was reduced to 200 mcg daily by her general practitioner. There was no other significant past history.

Examination revealed dysarthria, horizontal nystagmus, diplopia in all fields of vision, bilateral past-pointing, dysdiadochokinesia, lower limb incoordination, and an ataxic gait. Tone, power, and sensation were intact. Plantars were flexor bilaterally. There was slow relaxation of tendon reflexes, but no other signs of hypothyroidism. Examination of her cardiovascular, respiratory and abdominal systems was unremarkable.

Blood results revealed phenytoin level of 170 mmol/L (normal: 40–80), carbamazepine level 29 mmol/L (16–50), MCV 101 fL (76–96), Free T4 <5 pmol/L (10–24), TSH 139.72 mIU/L (0.4–4.0). Other relevant haematology and biochemistry were within normal limits. Urinalysis was unremarkable. A diagnosis of phenytoin toxicity with hypothyroidism was made. She was treated with temporary withdrawal of her phenytoin. Carbamazepine was unchanged.

Lamotrigine was introduced gradually with a plan that this would eventually replace phenytoin treatment. Thyroid treatment was continued at 200 mcg/day initially and reduced to 100 mcg/day after phenytoin levels had corrected to the therapeutic range.

She was discharged after 12 days. Phenytoin level was 46 micromol/L. Discharge medications were thyroxine 100 mcg/day, lamotrigine 25 mg bd, carbamazepine 500 mg bd, phenytoin 300 mg once daily.

At follow-up 3 weeks post-discharge she had recovered completely with resolution of all neurological signs and clinical euthyroidism. Blood tests at that time revealed Free T4 17 pmol/L, TSH 1.42 mIU/L, phenytoin 71 mmol/L, carbamazepine 49 mmol/L, all within their accepted ranges.

## Discussion

Phenytoin toxicity is a known problem. This is in part due to its narrow therapeutic range and its effects on hepatic metabolism, primarily enzyme induction leading to interaction with several other medications.

Several short communications have been published illustrating the interaction between phenytoin and hypothyroidism.<sup>1-5</sup> It has been shown that hypothyroid patients who are receiving phenytoin have lower levels of serum thyroxine (T4), free T4, triiodothyronine (T3), free T3, and reverse T3.<sup>5,6</sup>

In 1961 Oppenheimer proposed that thyroid hormones are displaced from plasma protein binding sites by phenytoin.<sup>7</sup> Larsen found that thyroxine clearance was accelerated during phenytoin administration. They proposed this to be mediated by induction of hepatic mono-oxygenase.<sup>8</sup>

Sarich and Wright proposed a cycle of interaction of the two mechanisms above leading to the clinical manifestations phenytoin toxicity with concurrent hypothyroidism.<sup>2</sup> In their proposed 'vicious circle' induction of hepatic mono-oxygenase by phenytoin acts to decrease levels of free T4, which leads to a decrease in activity of enzymes involved in the hydroxylation (and inactivation) of phenytoin; thus resulting in increased levels of phenytoin and further T4 metabolism. However, definitive proof is lacking.

In the case reports published to date, most authors have reported clinically euthyroid patients with normal values of TSH despite low fT4.<sup>7,9,10</sup> Others report patients with clinical hypothyroidism that reversed with correction of phenytoin toxicity, similar to our patient.<sup>1,3,5</sup>

## Conclusions

There is clearly complex interaction between these conditions and their respective treatments. We therefore propose that in patients with known concurrent hypothyroidism and epilepsy regular monitoring of levels of enzyme-inducing drugs and thyroid function should be performed in order to maximise treatment efficacy and maintain patient safety.

Phenytoin should probably not be a first-line anticonvulsant choice for patients with hypothyroidism.

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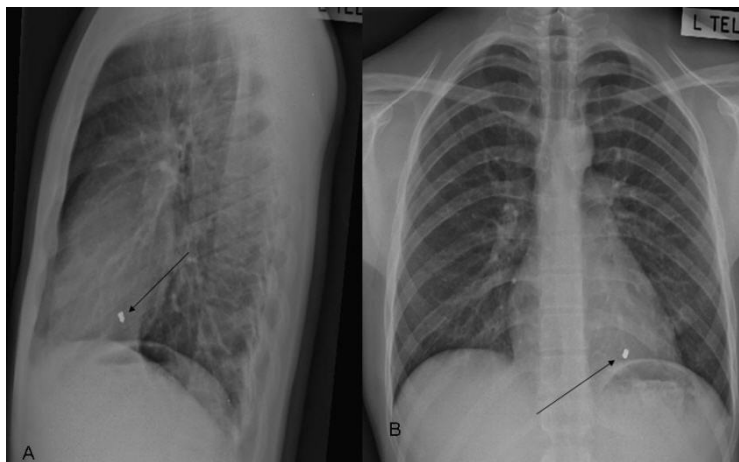


## Intracardiac slug

W Y Wandy Chan, Richard W Troughton, Harsh Singh

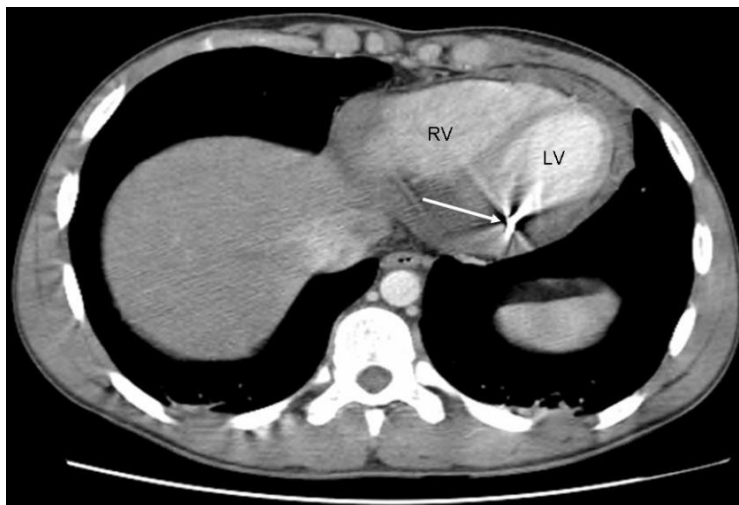
A 20-year-old man was accidentally shot at close range by an air rifle. He reported left shoulder tip pain and mild discomfort from the entry site in the left axilla but was otherwise asymptomatic and haemodynamically stable. Chest X-ray (Figure 1A and 1B) confirmed the pellet within the cardiac shadow.

**Figure 1A. Left lateral chest X-ray (CXR). 1B: Postero-anterior CXR**



**Note:** Black arrow marks the pellet in the cardiac shadow.

**Figure 2. Computed tomography chest scan**

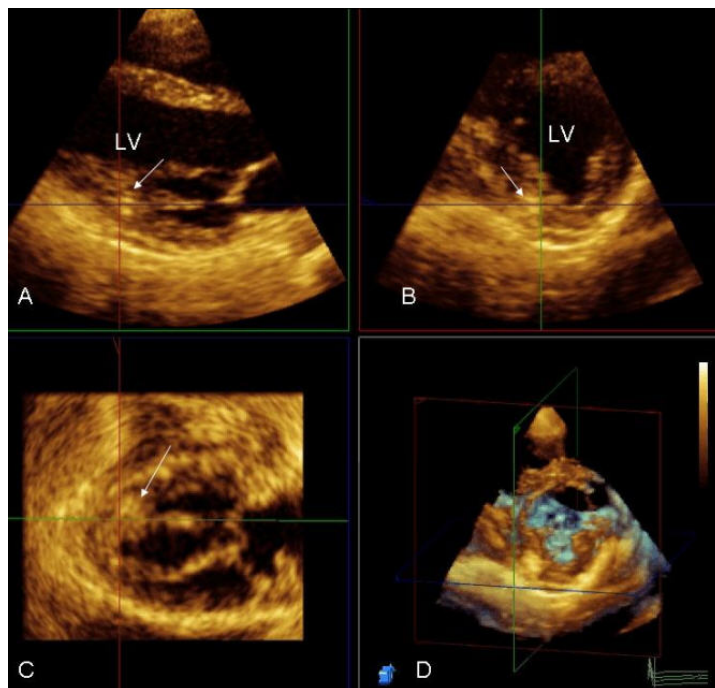


**Note:** LV, left ventricle; RV, right ventricle; White arrow, pellet.

Subsequent 16-slice computed tomography chest scan (Figure 2) localised the pellet to the left ventricle (LV). The patient was transferred to a tertiary referral hospital and underwent echocardiography to confirm the exact location of the pellet and its impact on cardiac function.

Real-time three-dimensional transthoracic and transesophageal imaging showed the pellet was firmly embedded in the inferoposterior left ventricular wall just below and sparing the posteromedial papillary muscle (Figure 3).

**Figure 3. Real time transthoracic echocardiogram 3D motion images demonstrating that the pellet was embedded in the myocardium and did not protrude into either the pericardial space or LV cavity—See <http://www.nzma.org.nz/journal/122-1303/3811/clip.avi>**



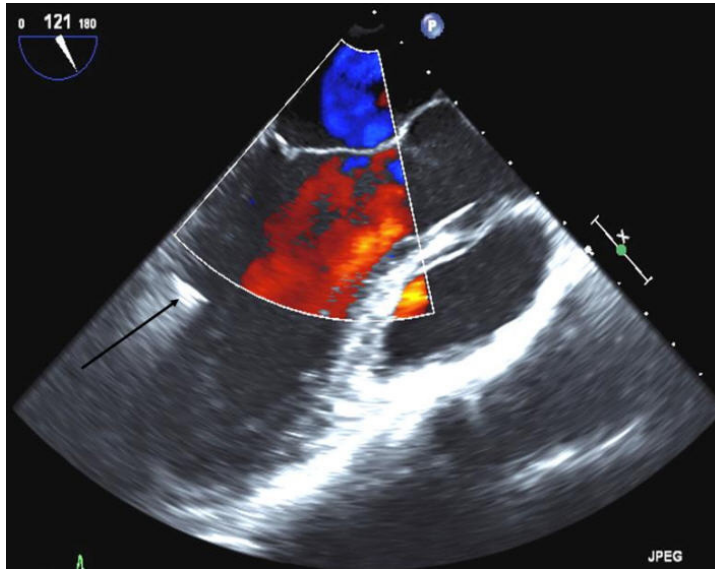
A: Long axis; B: Short axis; C: transverse long axis plane; D: 3D reconstruction.

Regional LV wall motion and mitral valve function were normal without any significant mitral regurgitation (Figure 4). There was a small pericardial effusion without tamponade. Based on these findings, careful observation without surgical intervention was recommended. A repeat transthoracic echocardiogram after 1 month confirmed no migration of the pellet.

In this case, open heart surgery was avoided as real-time three-dimensional echocardiography had accurately located the pellet and demonstrated important cardiac structures were spared.



**Figure 4. Long axis transesophageal echocardiogram in systole showed no significant mitral regurgitation. Black arrow, pellet in posterior wall**



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## Notes of a case of perineorrhaphy during labour

By Dr TC Moore, Napier. Read before the Hawke's Bay Division of NZ Branch of BMA and published in NZMJ 1909;8(32):24–6.

Mr. Chairman and Gentlemen,— The paper I have the honour to read before you this evening, is a very short one. I merely wish to record an operation I performed in June last year, during labour, for the repair of an old laceration of the perineum. This laceration occurred during a first confinement on September 22nd, 1901, and I repaired it after the third child was born on June 30th, 1908. I did not attend Mrs. — at her first confinement, but was told it was a very long and difficult one. I first saw her when she was pregnant with her second child, and as she was suffering greatly from a want of support.

I recommended an operation two or three months after the birth of the child. This was arranged, but she put it off until too late, and I did not see her again till she was pregnant for the third time. She told me that she was always suffering from bearing down and backache, tired on the slightest exertion, and unable to walk any distance. Feeling sure, however, that she would never face the operation if I put it off, I determined to have everything ready and do Lawson Tait's V-shaped flap splitting operation when I attended her again.

As far as I know no case of repair of an old laceration of the perineum during a subsequent labour has been recorded. I believe it is a common practice now to insert sutures after the completion of the second stage when waiting for the placenta, and I can recommend this in cases where the tear is not a severe and complicated one. Now it occurred to me that to make an old laceration raw with two bold scissor-cuts was only going one step farther.

The main thing in doing this small operation is to cut deep enough and boldly enough. The point of the scissors should be entered in the middle line where skin joins mucous membrane, at least  $\frac{3}{4}$ -inch deep (a finger in the rectum ensures its safety), a cut is made upwards to a point just inside the lower end of the right labium minus and a similar cut on the other side; sometimes two or three vessels require forcipressure or torsion, but not always, and anyway all bleeding ceases as soon as the sutures are tightened, which is done after the delivery of the placenta; four or five fishing-gut ligatures inserted as Lawson Tait directed inside the skin margin or just outside it complete the operation. I have tried both ways, and in this case followed the latter procedure. A jet of very hot water is played on the wound during the operation, and if everything is at hand it ought not to take more than 10 minutes.

With regard to the result of the operation, I wrote to my patient and received the following reply, dated June 30th, 1909 :—“Dear Dr. Moore—if think if you saw me now you would not be in much doubt as to the relief the operation has given me. I feel like a new creature, and can do what I haven't been able to do for years. I often bless you when I am tramping along, for I could never walk before. It certainly has been a huge success.”

How far any given operation is capable of restoring the parts to their original condition is a point that has given rise to numberless controversies during the last 20 years. Lawson Tait maintained that all denuding operations were wrong in principal. The object of the surgeon ought to be in every instance to reproduce the original perineal tear, and if he does that successfully I believe he will always get a satisfactory result.



## **Antibiotic treatment of acute otitis media in very young children**

The authors of this paper point out that guidelines recommend prescription of antibiotics in children with severe acute otitis media and in those under 2 years of age with bilateral acute otitis media or acute otorrhoea. For most other children with acute otitis media, initial observation is recommended. Such prescribing may shorten the course of the illness but may tend to over treatment. Their prospective trial involved 168 children aged 6 months to 2 years with acute otitis media in 53 general practices in the Netherlands. Half were treated with amoxicillin 40 mg/kg/day and the other half with placebo.

After 3.5 years they found that acute otitis recurred in 63% of the amoxicillin-treated group and 43% in the placebo group. Subsequent referral for secondary care was necessary in 30% of both groups. Their conclusion was that antibiotics are overused in such patients and should be used more judiciously.

BMJ 2009;338:b2525doi.10.1136/bmj.b2525.

## **Do radiologists still need to report chest X-rays?**

Apparently radiologists are in short supply in the UK and some departments have difficulty in providing reports on chest X-rays (CXR) within 24 hours. Consequently CXRs are often viewed and acted upon by non-radiologists. In this study 60 clinicians of different grades and from different specialties were randomly recruited to interpret 15 CXRs within 30 minutes. Five CXR were normal and the other 10 demonstrated common emergencies—pneumonia, pneumothorax, heart failure, etc. The results were as expected—senior doctors (consultants) and registrars were better than junior doctors. And specialists (consultants and registrars in radiology and chest physicians) were better than non-specialist senior doctors.

So they recommend that “to improve patient care we suggest that all chest X-rays should be reviewed at an early stage during a patient’s hospital admission by a senior clinician and reported by a radiologist at the earliest opportunity.” Can’t argue with that. I believe that this is standard practise in New Zealand—certainly is in my experience. An editorial commends the study and points out that regular clinician and radiologist meetings are very useful—both in achieving a timely accurate reports and educating junior doctors.

Postgraduate Medical Journal 2009;85:339–41 & 337–8.

## **The squeaking hip**

Total hip replacement is a commonly performed and usually successful procedure. A major hazard of the metal-on-polyethylene bearing prosthesis is that wear and tear and osteolysis may result in instability and/or breakage. Hence the development of ceramic-on-ceramic total hip arthroplasty implants. Apparently they produce excellent

clinical and radiographic results and do not fall apart as the earlier prostheses may. However, it has been reported that such “hard-on-hard” bearings may squeak. This paper reports on a cohort of patients equipped with ceramic-on-ceramic hip arthroplasties.

Fourteen (10.7%) of 131 patients described an audible squeak during normal activities. Only one of them had spontaneously complained about the squeak. Does it matter? Maybe—one squeaking prosthesis dislocated and needed replacing. However, two non-squeaking prostheses suffered the same fate. A matched cohort of metal-on-polythene showed no evidence of squeaking.

J Bone Joint Surg Am 2009;91:1344–9.

### **Prolonged PR interval in the ECG—a harmless variation?**

Most clinicians would probably regard a first-degree heart block to be benign. However, this follow up from the famous Framingham Heart Study may change our views. After excluding those with obvious cardiac problems, e.g. in atrial fibrillation, on digoxin, pacemaker in situ, etc. they were left with a cohort of 7575 subjects (mean age 47 years, 54% female). This group had been recruited into the study between 1968 and 1974 and at baseline 124 had prolonged PR intervals in their ECG. When compared with the rest, this subset (i.e. prolonged PR intervals initially) had a two fold risk for atrial fibrillation, a three-fold risk for pacemaker implantation and a 1.4 increase risk of all-cause mortality.

JAMA 2009;301:2571–7.

### **Diagnosis of acute myocardial infarction—a new test—the Sensitive Troponin I (TNI) Assay**

Acute chest pain with a normal ECG—a common problem. The current troponin assay may be bedevilled as it may take several hours to become elevated, it may be only slightly elevated, or it may be chronically elevated. Two groups have reported on their experience with the sensitive TNI in comparison with other myocardial injury markers (conventional TNI, TNT, creatine kinaseMB and myoglobin).

Both papers report that the sensitive TNI assay produces substantially better diagnostic information at an earlier time—as early as 3 hours after the acute chest pain. I note that myoglobin also appears to be a good early indicator of myocardial damage—much more so than the other compared tests. An editorial commentator is impressed with the results. He also points out that small elevations in troponin may not diagnose infarction but do have prognostic value—double the risk of recurrent ischaemia.

NEJM 2009;361:858–67, 868–77, 913–15.



## New Zealand Government response to climate change: largely fogged up?

Climate change is a critical challenge to international health, as recently outlined in major medical journals.<sup>1,2</sup> There is also an ethical obligation on developed countries,<sup>3</sup> who have generated most of the existing greenhouse gases, to show clear leadership on this issue. This is especially so when it is clear that time is running out for the international community to avoid warming of 2°C above pre-industrial levels,<sup>4</sup> the guardrail for dangerous climate change.

New Zealand in particular should also be concerned about its environmental reputation, given its dependence on tourism and exporting primary products. With these issues in mind and considering the upcoming international negotiations in Copenhagen, we briefly review the actions of the new Government of New Zealand (Table 1).

The actions are ordered by the extent to which they represent forward progress on emission reduction ('direction of change').

**Table 1. A brief assessment of the progress the current New Zealand Government has been making towards mitigating climate change (since election in late 2008 to 20 September 2009)**

Actual or potential intervention	Overall direction of change	Comments
<i>Economic measures</i>		
Government subsidies to stimulate improvements in home insulation	Continued progress	The government showed a bi-partisan approach by adopting this policy even though it was developed by the previous administration.
Government plans for investment in broadband (which may reduce travel requirements)	Continued progress	These plans are proceeding (albeit with some criticisms around under-funding and fragmentation <sup>5</sup> ) and will probably bring educational, social and economic co-benefits.
Allowing local government to apply local fuel taxes	Possibly backwards	This law was reversed, hence reducing a revenue source for improving public transport, walkways and cycleways, although similar revenue will now be raised via national petrol tax adjustments.
Replacing vehicle biofuel sales obligation with grants	Probably backwards	The removal of this obligation added 1 million tonnes to NZ's projected emissions in the first Kyoto commitment period, <sup>6</sup> but a modest biofuel grants programme was announced in the 2009 Budget.
Pricing signals such as an emissions trading scheme (ETS) or taxes to discourage greenhouse gas emissions and promote reforestation	Backwards	Commentators have pointed out the numerous design limitations of the proposed modified ETS <sup>7,8</sup> which suggest the modifications will increase emissions. The current proposed version is significantly weaker than the one introduced to law by the previous administration.
Additional investment in the roading network	Backwards	Increased road investment supports the continued private vehicle dominance of the transport system, in contrast to directly investing in public transport.

Actual or potential intervention	Overall direction of change	Comments
<i>Regulatory measures</i>		
Tightening regulations for home insulation (new houses & for renovations)	No progress	Given the low quality of NZ housing, <sup>9</sup> this is an area with major scope for achieving health benefits <sup>10</sup> and is highly cost-beneficial. <sup>11</sup>
Tightening regulations for consumer information on vehicle fuel efficiency and emissions	No progress	Further developments have been suggested based on NZ-specific research on vehicle advertisements <sup>12</sup> with the European Union providing a model.
Regulations to increase plant protein and low-meat meals (e.g. in institutional meals such as in hospitals)	No progress	This is an approach being taken in the UK (e.g. by the National Health Service <sup>13</sup> ). It is an area with co-benefits for health, <sup>14</sup> and cost savings in the NZ setting. <sup>15</sup>
Removing the moratorium on new thermal power stations	Backwards	The result of repealing this moratorium is that thermal (fossil fuel fired) power stations are more likely to be built, increasing emissions, especially if the price on carbon under the ETS is low, as appears likely following changes to the ETS.
Fuel efficiency standards for imported motor vehicles	Backwards	This development, started by the previous administration was halted. <sup>16</sup> Hence an opportunity was lost to improve vehicle fleet efficiency, reduce greenhouse gases, reduce urban air pollution, and save consumers costs in the long term.
Tightening regulations for energy efficiency standards and labelling of appliances	Backwards	The government dropped the phase-out of energy inefficient light bulbs and consideration of further promoting efficient shower heads. Long-term consumer cost savings and water savings would have been co-benefits.
Requirements for government departments to move towards carbon neutrality	Backwards	This “Carbon Neutral Public Service initiative” (developed by the previous administration) was dropped. <sup>17</sup>
<i>Research</i>		
Tax credits for renewable energy research	No progress	This would potentially encourage market innovation in this area (and is especially relevant given wind power potential in NZ).
Establishing a specific science and health research funding stream around climate change mitigation and adaptation	No progress	Although some research funders do support relevant research, there is no separate funding stream dedicated to this topic.

This analysis is very brief and does not consider many additional interventions used in other OECD countries to promote energy efficiency and reduce greenhouse gas emissions. Nevertheless, our analysis suggests relatively few areas of clear progress, and many areas of either “no progress” or where government response has gone backwards (Table 1).

This picture suggests it is likely that New Zealand emissions will not decline significantly, as they need to if we are to cut emissions significantly by 2020 as the Intergovernmental Panel on Climate Change (IPCC) recommends. Indeed, the situation raises doubts as to the claim that this country acts as a responsible member of the international community or that it is much concerned with its “clean and



green” reputation. Fortunately, as a small dynamic country this pattern could readily be reversed and the past provides examples of such international leadership—e.g. giving women the vote, developing social welfare systems and opposition to nuclear weapons.

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## **What is degeneration? The misuse of an ambiguous word**

In reporting for a large number of Accident Compensation Corporation (ACC) reviews and appeals of disputed ACC decisions I have had serious concerns about the misuse of the word “degeneration.”

This imprecise word can be quite misleading. With disregard of logic there is a common assumption of a relation to age and then a further jump in “logic” to conclude that age is the major cause. ACC then respond with cessation of entitlements and treatment as in this case of a spinal injury:

...your current condition is no longer the result of your personal injury. The medical evidence concludes that your current symptoms and inability to work are attributable to the underlying degenerative changes in your lumbar spine rather than your accident related covered injury

It is often stated that single or multiple injuries or a gradual process injury from chronic overload and a number of other possible causes are aggravating but not causative factors of an underlying degenerative condition. These factors may in fact be the predominant and continuing causes. This creates major difficulties for those with osteoarthritis, disc disease, and tendinopathy when age is not the cause or has at most a minor role. Other risk factors should always be considered in assessing the multivariate causation of all musculoskeletal conditions.

The presence of so-called degenerative changes on X-ray does not exclude injuries such as disc disruption and or herniation.

The word degenerative is frequently used by radiologists and repeated by clinicians, to describe conditions which would more accurately be described as:

- Osteoarthritis for the synovial joints
- Spondylosis for the spine
- Tendinopathy for the tendons

These labels are preferable as they do not imply causation.

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## **ICMJE seeking two new member journals: extended deadline for applications**

Due to the small number of applicants and the ICMJE's recent awareness that many journals interested in applying had not seen the initial announcement that was posted in late June 2009, the ICMJE has decided to extend the deadline for applications to November 30, 2009 (see below for details of application process).

The International Committee of Medical Journal Editors (ICMJE) is seeking 2 new member journals to be represented by their editors-in-chief. Information about the ICMJE is available at [www.icmje.org](http://www.icmje.org).

Candidate journals should meet the following criteria:

- peer reviewed, general medical journal
- represent geographic areas (Latin America, Asia, Africa) or publication models (open access) not well represented by current ICMJE members
- editor who is knowledgeable about publication ethics
- editor who expects to be in the position for at least 3 years

To apply, editors-in-chief of interested journals should send electronic copies of the following to the ICMJE secretariat (Christine Laine at [claine@acponline.org](mailto:claine@acponline.org)) by November 30, 2009:

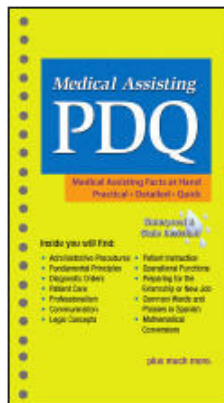
- brief curriculum vitae
- description of journal (age, sponsor/publisher, publishing model (subscription model, author pays, open access, etc...), target audience, circulation, number of manuscript submissions/year, description of peer review process used to select material for publication, acceptance rate, bibliographical databases where indexed, web site address if applicable, copy of guidelines for authors)
- statement on why the journal/editor wants to be an ICMJE member (should not exceed 1000 words in length)
- contact information

International Committee of Medical Journal Editors (ICMJE)



## Medical Assisting PDQ: Practical, Detailed, Quick (JH Zonderman, T Fuqua)

Jon H Zonderman and Tracie Fuqua. Published by [WB Saunders Elsevier](#), Nov 2008.  
ISBN 9781416061069. Price AU\$43.20



The pocket book is for physician assistants in the US and outlines how they should do their job.

A lot of the contents in the book has little to do with the New Zealand situation, however some of the general sections are useful for staff, especially in the private sector with information on how to deal with insurance companies, how to deal with rejected claims, and telephone skills, correspondence, book keeping and banking procedures.

In think overall, however, it will have a very limited market in New Zealand