

**Asian Health in Aotearoa:**  
**An analysis of the 2002/03 New Zealand Health Survey**

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by

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## FOREWORD

### Foreword

At the last census in 2001, Asian peoples comprised over 6% of the New Zealand population. This population is projected by Statistics New Zealand to grow to over 600,000 people by 2020. The contribution of Asian New Zealanders can be seen in all spheres of New Zealand life, from the increasing mainstream profile of celebrations such as Diwali and the Lantern Festival to the ever increasing exchange in trade and culture between New Zealand and Asia. The Asian population is diverse across language, religion, country of origin and settlement history in New Zealand, but all Asian New Zealanders share a determination to build and contribute to the land they reside in.

As these communities have matured, the diverse needs of Asian New Zealanders have started to be identified. This has been undertaken by the communities themselves, and also in partnership with government and other organisations. However, there remain large gaps in knowledge in many areas. Health is a crucial area where little information about the status of Asian communities is available, beyond small scale studies and anecdotal information.

To start addressing this issue, The Asian Network Incorporated (TANI) commissioned the following report to examine Asian health in New Zealand in March 2005. This report, "Asian Health in Aotearoa" aims to identify health issues experienced by Asian peoples in New Zealand by analysing data from the Ministry of Health's National Health Survey from 2002/2003.

This report builds on TANI's existing efforts to promote Asian public health as part of its mission to promote the health and well-being of Asian peoples in New Zealand. In 2003, TANI conducted a series of community consultations to identify public health needs of Asian people in Auckland, as part of the Asian Public Health Project. This was carried out in collaboration with the Ministry of Health, the Auckland Regional Public Health Service and the three District Health Boards in the greater Auckland region. One of the major issues identified from these consultations was the lack of available information on the health status of Asian communities. As such, TANI is proud to launch this report "Asian Health in Aotearoa" in response to this finding. This report builds on the excellent work of the Asian Public Health Project to continue increasing knowledge and raising the profile of Asian public health.

"Asian Health in Aotearoa" thus provides a bird's eye view of current health issues experienced by Asian people. Importantly, the report does not aim to compare Asian communities' health with other ethnic communities in New Zealand. Instead it aims to increase the understanding of health issues for Asian communities – as significant in their own right. This report should therefore be useful not just to Asian communities themselves, but also to organisations and individuals who work with Asian communities. It lays down foundation knowledge which can be used to form concrete strategies and actions.

I am grateful to all those who contributed to this important project. I would thus like to gratefully acknowledge Janet Chen & Dr. Wilson Young (Auckland Regional Public Health Service), Dr. Madhumati Chatterji (Ministry of Health), and Bruce Macdonald (Private consultant) who form the Advisory Group and took the time to develop and review the report. I would also like to thank the Ministry of Health for supplying the data for analysis and the Accident Compensation Corporation for their support of my role in this meaningful project. Most of all, I would like to commend the authors of this report, Associate Professor Robert Scragg and Aloka Maitra from the University of Auckland for their skill, devotion and hard work. I believe they have done a great service to Asian communities in New Zealand.

This report would also not have been possible without the hard work and dedication of the TANI Council and staff. With their enthusiasm and commitment, I know that we will be able to build on our achievements and embrace the challenges this report clearly identifies.

In closing, this report is just a beginning. It lays down a challenge to our communities, our health and social services agencies, our policymakers, and ourselves – to take action. TANI looks forward to continuing our collaboration with communities, government agencies, and service providers to continue increasing understanding and knowledge to improve the health and well-being of the Asian New Zealanders who are our constituency.

**Vivian Cheung**

Chairperson

The Asian Network Incorporated (TANI)

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## EXECUTIVE SUMMARY

### BACKGROUND

There is limited information on the health status of Asian people living in New Zealand. The current report aims to extend our understanding of Asian health status by systematically examining the data collected from over 1200 Asian participants in the 2002/03 National Health Survey funded by the Ministry of Health. This survey provides the opportunity, for the first time within New Zealand, to examine health status in a large representative sample of Asian people, and in particular to examine health status within the separate Asian communities – Chinese, South Asian, Korean and South-East Asian - who have made New Zealand their home.

### METHODS

The sample size of the four main ethnic groups analysed in this report are: Asian (n=1217), Maori (n=4093), Pacific (n=890), European (n=6275). The Asian sample comprised Chinese (n=494), South-Asian (Indian subcontinent including Sri Lankan, n=391), Korean (n=102), and South-East Asian (eg. Japanese, Indonesian, n=230).

The following information from the 2002/03 National Health Survey was analysed.

- *Socio-demographic*: gender, age, New Zealand born, housing, education, occupation and income
- *Lifestyle*: physical activity; consumption of fruit and vegetables, alcohol, tobacco, cannabis; gambling and anthropometry
- *Chronic disease*: including past history of cardiovascular disease, diabetes, lung disease, arthritis and cancer
- *Access to health care*: type of practitioner consulted, reasons for visiting general practitioner, level of satisfaction with general practitioner and use of help lines.

### RESULTS

#### Socio-demographic variables

##### 1. Age

- Asian people have a similar age-distribution to Maori and Pacific, but are younger (on average) than Europeans.
- South Asians are older (on average) than Chinese, South-East Asians and Koreans

##### 2. New Zealand Born

- Asian people are less likely to have been born in New Zealand compared with other New Zealanders, with nearly half arriving in New Zealand within the last 5 years.

### 3. *Housing*

- Nearly all Asian people (99%) live in urban areas.
- Asian people (31%) are more likely to live in most deprived (lowest NZDep2001 quintile) areas than Europeans (13%), although less likely than Maori (43%) and Pacific (66%).
- South Asians (38%) were more likely to live in the lowest NZDep01 quintile areas than other Asian people.

### 4. *Education, Occupation & Income*

- Asian people (35%) are more likely to have a university degree than all New Zealanders (15%).
- Asian people (47%) are less likely to have a paid job than all New Zealanders (65%).
- Asian people (25%) are less likely to receive government income support than all New Zealanders (38%).
- Asian people (20%) are more likely to live in a low income household (<\$15,000 annually) than other New Zealanders (12%).

## **Lifestyle**

### 1. *Physical activity*

- Asian people are less likely to be physically active than other New Zealanders.
- South Asian women are less likely to be physically active than other Asian women.

### 2. *Fruit and Vegetables*

- Asian people have a similar fruit and vegetable intake to Maori and Pacific, but lower than Europeans.

### 3. *Alcohol*

- Asian people are less likely to drink alcohol, and less likely to binge drink, than other New Zealanders.
- South-East Asian men are more likely to binge drink than other Asian men.

### 4. *Tobacco*

- Asian people are less likely to smoke tobacco than other New Zealanders.
- South-East Asians were more likely to allow smoking inside their homes than other Asian people.

### 5. *Cannabis*

- Asians people are less likely to use cannabis than other New Zealanders.
- South-East Asian men were more likely to use cannabis than other Asian men.

#### 6. *Gambling*

- Asian people were less likely to gamble than other New Zealanders.
- Chinese were more likely to gamble at a casino than other Asian people.

#### 7. *Obesity*

- Asian people are less likely to be overweight and obese than other New Zealanders
- South-Asians are more likely to be overweight and obese than other Asian people.

#### 8. *Lifestyle & Years in New Zealand*

- Increasing time living in New Zealand was associated with increased consumption of alcohol and cannabis among Asian people.

### **Chronic Disease**

#### 1. *Cardiovascular Disease & Diabetes*

- Asian people have a similar prevalence of treated high cholesterol compared to other New Zealanders, but reported a significantly lower prevalence of heart disease than other New Zealanders (5% v. 8%).
- The prevalence of diabetes was higher among Asians than Europeans (8% vs.3%).
- South Asians have a higher prevalence of treated high cholesterol (12%) and diabetes (14%) compared with other Asian people.

#### 2. *Other Chronic diseases*

- The prevalences of asthma (5% vs.14%), neck and back disorder (14% v. 24%), cancer (3% v. 6%) and other long term illness (17% v. 23%) were significantly lower among Asian people in comparison with the national prevalence.
- South Asians have a higher prevalence of asthma (16%) than other Asian people.
- Koreans have a lower prevalence of arthritis than other Asian people.

### **Access to Health Care**

#### 1. *Type of practitioner consulted*

- Asian people (81%) were less likely to have visited a health practitioner (or service) when they were first unwell than other New Zealanders (93%).
- 12% of Asian people visited an alternative health care provider for their own health in the last 12 months.



- Among people with chronic disease, Asian people were less likely than Europeans to visit a health practitioner in the last 12 months.
- Asian women were less likely to have had a mammography or cervical screening test in the last three years than other New Zealand women.

## 2. *Reasons for visiting General Practitioner (GP)*

- Asian people most commonly visited their GP for a short term illness or a routine check up.
- Asian people were less likely to visit a family doctor for injury or poisoning, or for mental or emotional health reasons, than other New Zealanders.

## 3. *Level of satisfaction at last GP visit*

- Most Asian people were very satisfied (92%) with their last GP visit, similar to the proportion for all new Zealanders (93%).

## 4. *Use of Telephone Helplines*

- Asian people were less likely to use any type of telephone helpline in the last 12 months than all New Zealanders (6% v. 16%).
- Most common helpline used by Asian people was Plunketline (2%).

## 5. *Mental Health*

- 77% of Asian people felt happy all or most of the time in last 4 weeks, similar to the national figure of 78%.
- Feelings reflecting mental health status did not vary between the four Asian communities.

## **CONCLUSIONS**

1. Asian people in New Zealand are more highly educated than other New Zealanders, but are less likely to have jobs and less likely to receive government income support. These are important socio-economic determinants of health.

2. Asian people in New Zealand currently have lower prevalences of most chronic diseases, aside from diabetes, compared with other New Zealanders. However, the health status of Asian people needs to be monitored as disease rates are likely to change over time with acculturation. Already, South Asians have an increased prevalence of diabetes compared with other New Zealanders.
3. Asian people with chronic disease are not accessing health services, and Asian women are not having mammography or cervical screening tests, to the same degree as Europeans. The reasons for this need to be identified.
4. Asian people in New Zealand are not a single cultural entity, but made up of distinct communities, each with its own unique health needs. Culturally aware health services should be developed to meet these unique needs.

## **BACKGROUND**

This report has been commissioned by The Asian Network Incorporated (TANI). It builds on an earlier report from the Asian Public Health Project Team on the public health needs for the Asian population living in Auckland [1]. That report recommended that funders and researchers establish an ongoing research programme relating to Asian health status and gaps in services, which should focus on established priorities such as mental health and lifestyle factors that lead to heart disease and diabetes.

The recent 2002/03 New Zealand Health Survey [2], funded by the Ministry of Health, offers an opportunity to further document the health status of the Asian population living in New Zealand. This survey contains a nationally representative sample of over 1200 participants of Asian descent who were asked questions about their lifestyle, history of chronic disease and access to health services.

## LITERATURE REVIEW

The focus of the current report is on the Asian population of New Zealand regarding their demographic status, exposure to lifestyle risk factors of disease, prevalence of chronic disease and access to health care. The topics of this report are constrained by those measured in the 2002/03 New Zealand Health Survey. New Zealand publications and international reports relevant to these topics were identified using the search strategy described in Appendix 1.

About one in five New Zealanders, a high proportion by international standards, is foreign born [3]. Many of these form part of the Asian community, which comprises about 6.6 percent of the New Zealand population. At the time of the 2001 census, over 32% of the Asians had immigrated to New Zealand within the last 5 years, 17% 5-9 years ago, 14% 10-19 years ago and 5% had been here for 20 years or more. Among the New Zealand Asian community, Chinese are the largest ethnic group (44%), followed by South Asian (29%), South East Asian (13%), Korean (8%) and other Asian (6%). Unlike the European population, most Asian people are young or middle aged adults, with over half of Asian people in Auckland region aged between 25 and 65 years [1].

### **Immigration and Health**

The immigration process imposes many changes in the lifestyle of immigrants including establishing themselves in a new country. They have to adapt to the new environment in social, economic and cultural terms. Adaptation is a very crucial aspect of immigrant life as it facilitates integration into the host society. This can be very stressful and leads to physical and mental health problems. Thus, there is continuing interest in what happens to the health, and the perception about the health care system, of those who undergo this adaptation process. A survey of Auckland Chinese residents found that most did not mention major problems of adjustment to the new environment in New Zealand or regret having come to this country [4]. Factors significantly associated with major adjustment problems were young age (26-35 years), rejection from local people and having low proficiency in English.

### **Socioeconomic Status**

Asians are the most educated ethnic group in New Zealand. Almost 21% of the Asians in New Zealand have a Bachelor degree or higher compared to 10% Europeans, 3% Maori and 2% Pacific people [3]. It is significant that, although the percentage of Asians having higher qualification is highest, their median income is lowest, of all ethnic groups. The median personal income for those who answered ethnicity question in the 2001 census was \$19,800 for Europeans, \$14,800 for Maori and Pacific people and \$10,400 for Asians [3]. The lower income for Asians maybe due to their low proficiency in English.

Previous New Zealand census-based studies have shown an inverse association between mortality and socioeconomic status (SES) for the total population [5,6]. To date there are no reports of whether SES is related to mortality and morbidity among Asians living in New Zealand. However, this topic has been extensively studied in the United Kingdom. Early studies there observed no association between social class and coronary mortality among South Asians in the 1971 census [7], while in the 1980s there was no difference in the risk of coronary mortality between comparatively poor Bangladeshis and well off South Asian communities in London [8]. It is possible that an occupational measure of social class failed to capture the true social and economic status of South Asians in the United Kingdom at that time since socio-economic gradients are likely to emerge first in health behaviours and anthropometric risk factors before manifesting in chronic disease and mortality [9]. Consistent with this proposal, a more recent study carried out in Newcastle during the 1990s reported inverse associations between SES and cardiovascular risk among South Asians [10].

### **Physical Activity**

Physical activity is now considered one of the main protective factors against a wide range of diseases including cardiovascular, diabetes and some cancers [11]. The 2002/03 New Zealand Health Survey observed that Asians were significantly less physically active than their European or Maori counterparts but with similar activity levels as Pacific people [2]. This finding is consistent with a review of British studies, where levels of physical activity (light, moderate or vigorous) are lower among South Asians than the general population [12]. For example, the Newcastle study reported above found in men that 71% of Indians, 88% of Pakistanis and 87% of Bangladeshis did not meet current physical activity guidelines compared with 52% of Europeans [13]. Physical activity by Asians is associated with reduced serum insulin, body mass index (BMI) and triglycerides, and has a favourable effect on systolic and diastolic blood pressure [14].

**Diet**

It is widely accepted that healthy dietary intake is important to maintain health and prevent various diseases. There are major health benefits from fruit and vegetable intake. The Ministry of Health has estimated that 6% of deaths in New Zealand can be attributed to non-optimal fruit and vegetable intake (<600 g/day) [15]. Asian participants in the 2002/03 New Zealand Health Survey had a reduced vegetable intake, but similar intake of fruit, compared with Maori, Pacific and European participants [2]. This finding is consistent with an international review which found that average fruit and vegetable intake was low in South East Asia [16]. Low vegetable intake is associated with increased risk of colorectal carcinoma among Singaporeans [17]. The latter finding is particularly relevant to the Asian community in New Zealand, given the very high New Zealand rates of colorectal cancer [18] and the possibility that the Asian community will acculturate towards the lifestyle of the wider New Zealand population over time.

**Alcohol**

There is limited information on the patterns of alcohol consumption by the Asian community in New Zealand. A cross-sectional survey of about 2500 students at Auckland high schools, carried out in 1997-98, found that Asian students were least likely to have ever drunk alcohol (males 40%, female 44%) compared with Maori (males 82%, female 94%), European (males 86%, female 84%) and Pacific students (males 64%, female 60%) [19]. A similar ethnic pattern was found among adults in the 2002/03 New Zealand Health survey, with Asian participants being less likely to have consumed alcohol in the last year than Maori or European, and among drinkers being least likely to have engaged in hazardous drinking compared with all other ethnic groups [2].

**Tobacco**

Like alcohol, tobacco consumption is also low among the Asian community compared with other ethnic groups in New Zealand. The National Year 10 Survey, carried out annually by Action on Smoking and Health (ASH) since 1999, has consistently reported a decreased prevalence of tobacco smoking by Asian students compared with the other main ethnic groups [20]. Although Asian students living in Auckland have reported a consistently lower

propensity to smoke compared to other ethnic groups [21], the national Year 10 surveys have identified parental smoking as a significant risk factor for tobacco smoking among Asian adolescents in New Zealand [22]. Among adults, the 2002/02 New Zealand Health Survey found that Asian women are less likely to smoke compared with women of other ethnicities, while the prevalence of smoking by Asian men is lower than by Maori and Pacific men but similar to European [2].

### **Obesity**

The 2003/03 New Zealand Health Survey reported that Asian participants had a lower prevalence of obesity than all other ethnic groups [2]. This survey used the definitions of the World Health Organization (WHO) which, based on the risk of obesity related disease in Europeans, define 'overweight' as BMI being 25-29.9 kg/m<sup>2</sup> and 'obesity' as BMI greater or equal to 30 kg/m<sup>2</sup> [23]. However, Asian populations have a higher body fat percent for a given BMI compared to Europeans. A recent review concluded that the BMI of Asians was 3-4 units lower than that of Caucasians at the same body fat percent [24]. Based on risk factors and morbidity, the WHO made a provisional recommendation that the cut off points for Asians be changed to 23 kg/m<sup>2</sup> for 'overweight' and 25 kg/m<sup>2</sup> for 'obese' [25]. More recently, the WHO has concluded that there is no single cut-point for defining overweight and obesity in different Asian populations [26], and current expert opinion in New Zealand supports further research to define relevant cut-points [27]. Of relevance, a recent report from 33 cohorts in the Asia-Pacific region found no difference between Asian and Australasian Caucasian cohorts in the association between BMI and risk of cardiovascular disease [28].

### **Cardiovascular Risk Factors**

About half of the world's cardiovascular disease burden is predicted to occur in Asia Pacific region [29]. Cohorts from the Asia Pacific region have shown that blood pressure and serum cholesterol are positively associated with incidence of cardiovascular disease (CVD) in Asian populations [29,30]. However, risk of CVD varies between Asian populations, with a study in Singapore reporting that Indian males were at greater risk of coronary heart disease compared to Chinese and Malays [31].

Immigration is associated with an increased risk of CVD. A review has shown that diabetes prevalence is higher among Asians who migrate than those who remain in their homelands

[32], while studies from the United Kingdom have shown that South Asian immigrants have an increased mortality and morbidity from CVD compared with the native British population [33,34]. Duration of residence in Canada was associated with an increased risk of hypertension among Asian immigrants [35].

New Zealand studies show that Asians have an increased risk of CVD risk factors. A workforce survey in Auckland and Tokoroa during 1988-90 observed an increased risk of diabetes and hypertension among Asians compared with Europeans [36,37]. In contrast, serum cholesterol levels did not vary with ethnicity [38]. The prevalence of known diabetes in urban South Auckland region in 1999 was highest among South Asians and lower among Chinese [39]. The 2002/03 New Zealand Health Survey reported that the prevalence of diagnosed diabetes was elevated in Asian, Maori and Pacific participants compared with European, consistent with the above studies; but in contrast, found that Asians had the lowest diagnosed hypertension prevalence of all ethnic groups [2].

### **Mental Health**

A review of Australian and New Zealand research has concluded that people who migrate, overall, do not have increased rates of mental health disorders, although some subgroups, such as those who migrate at an advanced age, are at increased risk [40]. A study of Dunedin women found that the prevalence of mental disorders was the same for both local- and foreign-born Chinese women, as it was for European women [41]. A recent survey of Chinese migrants living in Auckland also found a similar prevalence of mental disorders as in the general population; although within this sample, experience of rejection by locals and low English proficiency increased the risk of having problems [42]. A further Auckland survey of Chinese migrants 55 years or older observed depressive symptoms in 26%, higher than the general population, suggesting they are at increased risk of clinical depression [43]. In contrast with the above findings for depression, the 2002/03 New Zealand Health Survey found reduced prevalences of serious mental health disorders – schizophrenia, bipolar disorder – in Asian participants compared with other ethnicities, and no ethnic differences in self-reported mental health status about feeling happy or depressed [2].

### **Access to Health Care**

A recurring theme in some of the studies reported above is the difficulty that Asian people in New Zealand have in accessing health services. Language barriers have been identified by a



number of authors as a key problem for accessing healthcare services. A 1996 study in Porirua found that the major unmet health need for the Cambodian and Vietnamese refugees was interpreting services [44]. Asians under-utilise mental health services, despite having similar a prevalence of mental health as other New Zealanders [41,42]. Low proficiency in English has also been identified as one of the factors decreasing the utilisation of mental health services by the Asian community – the others are limited information about health services, and lack of culturally-appropriate community support programmes [45]. The language barrier is one of the major factors decreasing access to appropriate health services for older Chinese people with dementia [46]. The 2002/03 New Zealand Health Survey reported that Asian participants were less likely to have a usual health practitioner, and to have visited a general practitioner in the last 12 months, than all other main ethnic groups; less likely than Europeans to have visited a specialist in the last 12 months; and among women less likely than Europeans to have had a mammogram, and less likely than Europeans and Maori to have had a cervical smear, in the last 3 years [2].

### **Summary**

The above discussion provides an overall picture about current knowledge of the health situation of the Asian community in New Zealand. The current report aims to extend our understanding of Asian health status by systematically examining the data collected from over 1200 Asian participants in the 2002/03 National Health Survey funded by the Ministry of Health. This survey provides the opportunity, for the first time within New Zealand, to examine health status in a large representative sample of Asian people, and in particular to examine health status within the separate Asian communities – Chinese, South Asian, Korean and South-East Asian - who have made New Zealand their home.

## METHODS

Full details of the methods used in 2002/03 New Zealand Health Survey have been published [2]. The target population for sampling into the survey was the New Zealand adult population aged 15 years and over usually resident in permanent private dwellings (about 2.6 million in the 2001 census). Interviews in this cross-sectional survey were carried out from September 2002 to January 2004. A stratified complex sampling method was used. Mesh blocks were the primary sampling units (PSUs) which were stratified by ethnicity (initially into 4 ethnic groups, but later into 2 groups – Maori and Other). PSUs in the Maori strata had  $\geq 70\%$  people of Maori ethnicity. For PSUs in the Other strata, over sampling of Maori, Pacific and Asian residents was carried out to ensure that the total planned sample size of 12,000 included 4000 Maori, 1000 Pacific and 1000 Asian participants. Multiple dwellings within each PSU were randomly sampled, and one person in each dwelling was randomly selected for interview. A total of 12,529 people were interviewed, with a response rate of 72%.

Face-to-face interviews (lasting 60 minutes on average) were carried out in the homes of participants, with interviewers and participants matched by language, ethnicity and sex., when required. Trained interviewers administered the questionnaire to participants. The questionnaire had 5 modules: chronic disease, health service use, lifestyle risk and protective factors, self-reported health status and socio-demographic status. In addition, weight and height of participants were measured using portable scales and stadiometers. The questionnaire is available from the Ministry of Health's website at [www.moh.govt.nz/phi](http://www.moh.govt.nz/phi)

Ethnicity of participants was recorded by self-identification using the standard census question, which allows a person to choose more than one ethnic group. The following priority system was used for this report:

- If any Asian ethnicities were recorded, the participant was assigned to 'Asian'.
- If Maori was recorded, the participant was assigned to 'Maori'.
- If any Pacific ethnicities were recorded, the participant was assigned to 'Pacific'.
- If European was recorded, the participant was assigned to 'European'.
- All remaining participants were assigned to 'Other'.

The sample size of the four main ethnic groups analysed in this report – Asian (n=1217), Maori (n=4093), Pacific (n=890), European (n=6275) – are shown in Table 1 (after excluding 54 participants of other ethnicities).

The Asian sample was further assigned, based on coding available from the Ministry of Health, to Chinese (n=494), South-Asian (Indian subcontinent including Sri Lankan, n=391), Korean (n=102), and South-East Asian (Japanese, Indonesian, and other ethnicities not specified, n=230) after assigning 10 participants with dual Asian ethnicity to one of the above four groups based on their country of birth (Table 1).

NZDep2001 is the main summary measure of socioeconomic status. This is an area-based index of deprivation for all houses in the mesh block that includes the participant's home address. The measures of deprivation are from the 2001 census and include income, access to a car, home ownership, and employment status. NZDep2001 can be categorized into 10 deciles, but in this report the deciles have been aggregated into quintiles (1=least deprived, 5=most deprived).

The weight and height of each participant was measured. Body mass index (BMI) was calculated according to the standard formula: weight (kg) / height (m)<sup>2</sup>. The WHO classifications for overweight (BMI 25.0-29.9) and obesity (BMI  $\geq$ 30.0) were applied to both Asian and European participants, given the current scientific uncertainty around appropriate cutoffs for Asian people (see Literature Review). For Maori and Pacific people, the classification of overweight was BMI 26.0-31.9 and of obesity BMI  $\geq$ 32.0.

Data were analysed using SUDAAN (version 9.0.1). The dataset provided by the Ministry of Health included survey weights to produce nationally representative estimates. Importantly, the dataset did not include a PSU cluster variable to correct for possible design effects from the complex survey design. Instead, replicate weights were included in the data set for use with the jack-knife statistical method to adjust standard errors for any design effects arising from the clustered sampling, where multiple dwellings were sampled within each selected PSU. The method recommended in the main report (page 31-32 of reference 2) for correcting standard errors cannot be used with the above software, but instead must be manually calculated. This was not possible with the time and resources available, so it is possible that standard errors have been under-estimated. Thus, p-values between 0.05 and 0.01 need to be interpreted with caution.

Table 1: Number of survey participants with questionnaire information and anthropometry measurements, by sex and ethnicity.

<b>Variable</b>	<b>Ethnicity</b>				<b>Total</b>
Total sample	Asian	Maori	Pacific	European	Total
Questionnaire					
Male	511	1422	329	2580	4842
Female	706	2671	561	3695	7633
Total	1217	4093	890	6275	12,475
Anthropometry					
Male	494	1285	311	2475	4565
Female	655	2233	480	3340	6708
Total	1149	3518	791	5815	11,273
<b>Asian sample</b>					
Asian sample	Chinese	South Asian	Korean	South-East Asian	Total
Questionnaire					
Male	204	184	33	90	511
Female	290	207	69	140	706
Total	494	391	102	230	1217
Anthropometry					
Male	196	177	33	88	494
Female	269	193	62	131	655
Total	465	370	95	219	1149

## RESULTS

The full dataset from the 2002/03 New Zealand Health Survey has been analysed, comparing the:

- four *main ethnic* groups - Asian, Maori, Pacific and European
- four *main Asian* groups – Chinese, South Asian (Indian subcontinent including Sri Lankan), Korean and South-East Asian.

Text, tables and figures are shown for each of the following sections:

- *Socio-demographic*: gender, age, New Zealand born, housing, education, occupation and income
- *Lifestyle*: physical activity; consumption of fruit and vegetables, alcohol, tobacco, cannabis; gambling and anthropometry
- *Chronic disease*: including past history of cardiovascular disease, diabetes, lung disease, arthritis and cancer
- *Access to health care*: type of practitioner consulted, reasons for visiting general practitioner, level of satisfaction with general practitioner and use of helplines.

Values shown are weighted to represent New Zealand population, unless otherwise states.

## SOCIO-DEMOGRAPHIC VARIABLES

### Gender, Age and NZ Born

*Main ethnic comparisons (Table 2a):* the Asian community has the highest proportion of women (54%), followed by Maori and Pacific (53% each) and European (52%). The age-distribution of the Asian community is similar to that of the Maori and Pacific, with all three being distributed more towards the younger age-groups than the European (Figure 1a) . The proportion born in New Zealand is lowest in the Asian community (8%), and highest in Maori (99%). Nearly half of the Asian community (46%) arrived in New Zealand within 5 years prior to the survey (Figure 2a).

*Asian comparisons (Table 2b):* the proportions of men and women did not differ between the four Asian communities ( $p=0.11$ ). However, there were variations in the age distribution, with South Asians less likely to be in the youngest age-group (15-24 years) and more likely to be in the 45-54 year middle age group than the other three Asian samples (Figure 1b). There were also variations in the time lived in New Zealand, with 70% of Koreans having lived here <5 years, compared to 50% of South Asians, 45% of Chinese and 36% of South-East Asians (Figure 2b).

### Housing

*Main ethnic comparisons (Table 3a):* the number of people in households is distributed the same among Asian people as for Maori, but Asians are more likely to live in large households with 6 or more people (14%) than Europeans (4%), although less likely than Pacific (41%). The Asian community is more likely to live in small 1-2 bedroom houses (28%) than all other main ethnic groups (Maori 17%, Pacific 13%, European 19%). The proportion of households with more than one person per bedroom is highest for Pacific people (74%), followed by Asian (60%), Maori (52%) and European (24%). The Asian community, like the Pacific, is very urbanised, with 99% living in urban areas, compared to 86% of all New Zealanders. Asian people are more likely to live in areas in the lowest quintile of NZDep2001 than Europeans (31% v. 13%), although less likely than Maori (43%) and Pacific (66%) (Figure 3a).

*Asian comparisons (Table 3b):* there were no differences in household size and urbanisation between the four Asian communities ( $p>0.05$ ). However, South Asians were more likely to live in the lowest NZDep2001 quintile areas (38%) than South-East Asians (30%), Chinese (26%), and Koreans (23%) (Figure 3b).

### **Education, Occupation and Income**

*Main ethnic comparisons (Table 4a):* the Asian community in New Zealand is highly educated, being more likely to have a University bachelor or post-graduate degree (35%) than Europeans (15%), Pacific (9%) or Maori (6%). Notwithstanding this, 26% of Asian people were currently studying more than 20 hours per week, compared with 12% of Maori and Pacific, and 7% of European. Asian people were more likely not to have a paid job (53%) compared with Pacific (44%), Maori (41%) and European (32%). Despite this, Asians were least likely to be receiving government income support or benefits (25%) compared with Europeans (37%), Pacific (45%) and Maori (50%) (Figure 4). Asian people were more likely to live in a low income (<\$15,000) household (20%) than Maori (17%), European (11%) and Pacific people (9%). About a third of Asians had health insurance, higher than for Maori (26%) and Pacific people (21%), but lower than for Europeans (43%).

*Asian comparisons (Table 4b):* South Asians were most likely to have a University bachelor or post-graduate degree, compared with the three other Asian communities, while Chinese and Koreans were most likely to be studying more than 20 hours a week. South-Asians were likely to have a current job than the three other Asian communities. South-Asians and Koreans had a higher income distribution than Chinese and South-East Asians. In contrast, there were no differences in the proportion receiving government support or having health insurance between the four Asian communities.

Table 2a: Distribution of gender, age and New Zealand (NZ) birth, by Main ethnic group

Variable		Asian	Maori	Pacific	European	Total
		%	%	%	%	%
<b>Gender</b>						
	Male	46	47	47	48	48
	Female	54	53	53	52	52
<b>Age (years)</b>						
	15-24	28	27	26	15	17
	25-34	24	24	27	16	18
	35-44	20	22	19	20	20
	45-54	17	14	15	18	17
	55-64	5	8	7	13	12
	65-74	4	4	4	9	8
	75+	1	1	2	8	7
<b>NZ Born?</b>	<b>Years in NZ</b>					
No	<5	46	1	6	3	5
No	5-10	25	<1	11	2	4
No	11-20	17	<1	21	2	4
No	>20	5	<1	29	10	9
Yes	-	8	99	33	83	78



Table 2b: Distribution of gender, age and New Zealand (NZ) birth, by Asian ethnic group

Variable		Chinese	South Asian	Korean	South-East Asian	P-value
		%	%	%	%	
Gender						
	Male	44	53	31	45	0.11
	Female	56	47	69	55	
Age (years)						
	15-24	33	17	34	30	0.0047
	25-34	21	26	20	31	
	35-44	20	23	23	15	
	45-54	13	25	17	17	
	55-64	6	6	2	4	
	65-74	5	4	5	3	
	75+	2	1	0	0	
NZ Born?	Years in NZ					
No	<5	45	50	70	36	0.0000
No	5-10	28	14	26	33	
No	11-20	13	22	4	22	
No	>20	4	8	0	3	
Yes	-	10	7	<1	6	

Figure 1a: Distribution of Age, by Main ethnic group

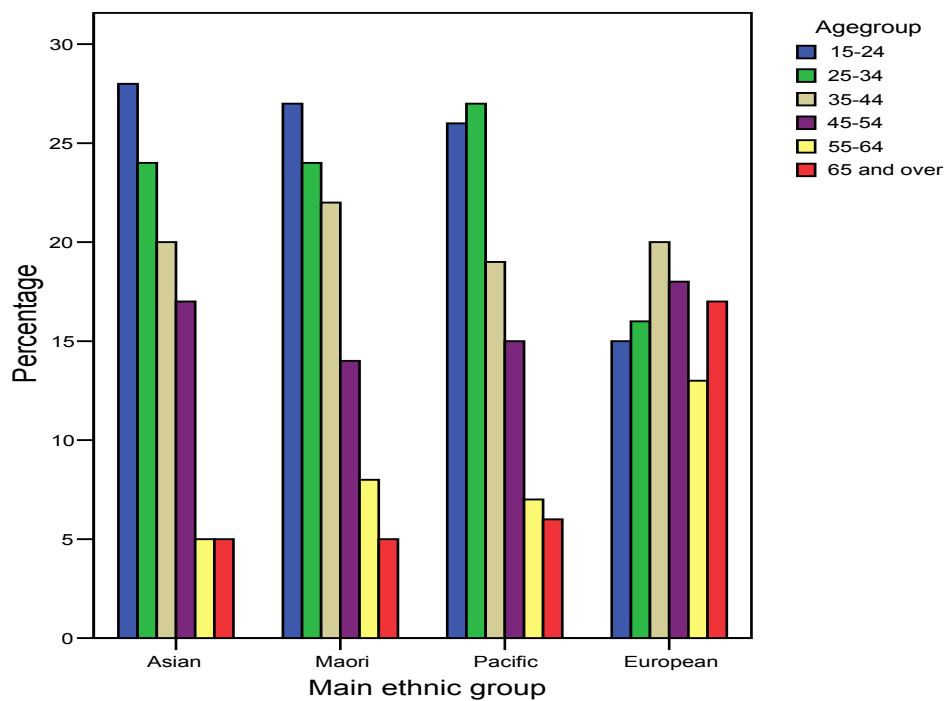


Figure 1b: Distribution of Age, by Asian ethnic group

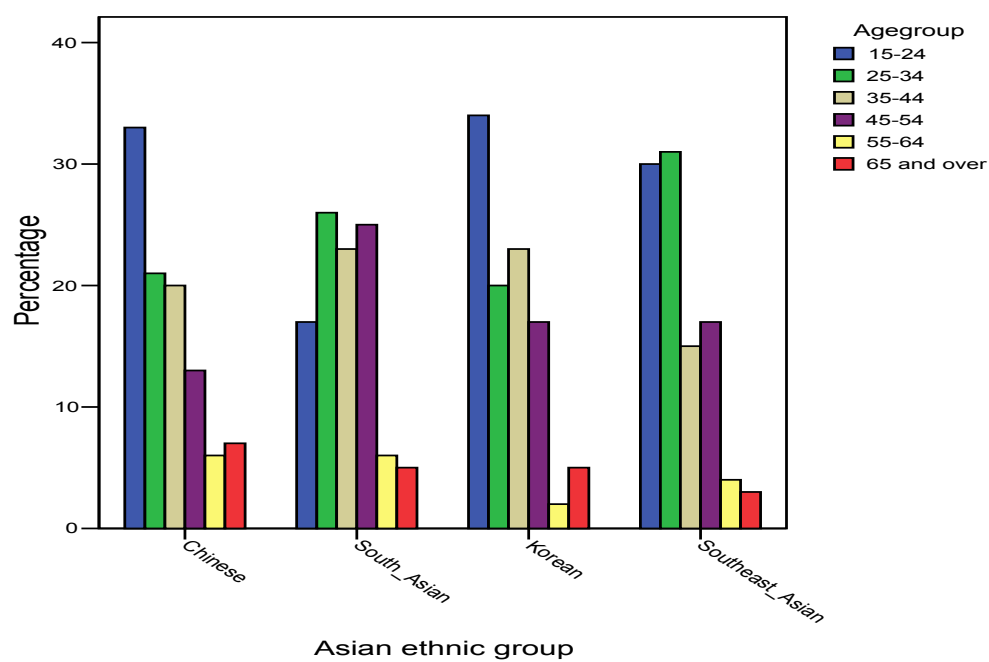


Figure 2a: Length of stay in New Zealand, by Main ethnic group

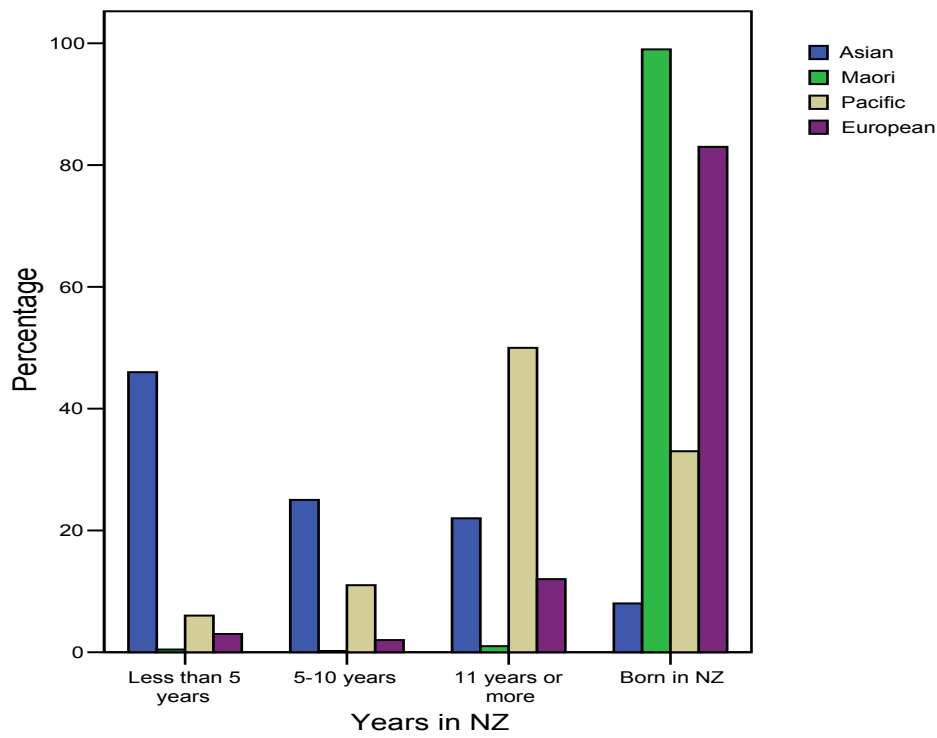


Figure 2b: Length of stay in New Zealand, by Asian ethnic group

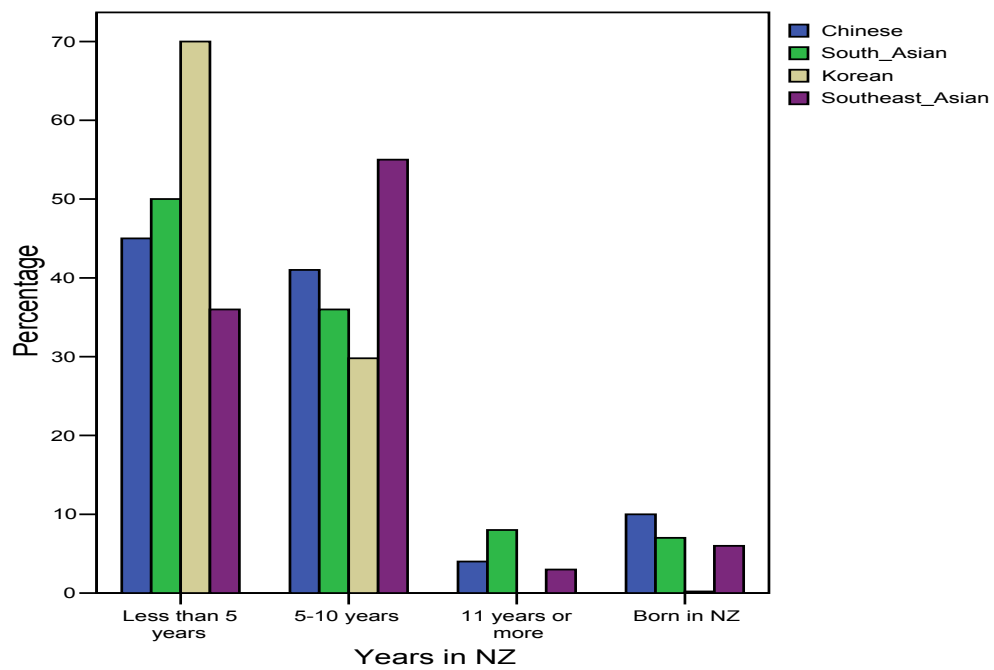


Table 3a: Distribution of housing variables, by Main ethnic group

<b>Variable</b>	<b>Asian</b>	<b>Maori</b>	<b>Pacific</b>	<b>European</b>	<b>Total</b>
	%	%	%	%	%
People living in house					
• 1	2	6	3	12	11
• 2	15	22	8	36	32
• 3	25	17	13	19	19
• 4	30	22	19	19	20
• 5	15	15	17	9	11
• 6+	14	17	41	4	8
Bedrooms in house					
• 1	5	4	3	3	3
• 2	23	13	10	16	16
• 3	40	55	50	48	49
• 4	23	22	26	24	24
• 5+	8	6	12	9	8
House hold has >1 person / bedroom	60	52	74	24	32
Live in urban area	99	85	98	84	86
NZDep2001 quintile					
• 1 & 2 (high)	13	6	2	22	19
• 3 & 4	16	10	5	22	19
• 5 & 6	19	15	8	22	20
• 7 & 8	22	27	19	21	22
• 9 & 10 (low)	31	43	66	13	20

Table 3b: Distribution of housing variables, by Asian ethnic group

<b>Variable</b>	<b>Chinese</b>	<b>South Asian</b>	<b>Korean</b>	<b>South-East Asian</b>	<b>P-value</b>
	%	%	%	%	
People living in house					
• 1	2	2	2	3	0.24
• 2	15	16	7	17	
• 3	26	23	22	23	
• 4	29	34	41	23	
• 5	16	13	17	14	
• 6+	12	12	10	20	
Bedrooms in house					
• 1	5	4	9	7	0.08
• 2	22	29	8	20	
• 3	38	37	54	44	
• 4	24	23	21	22	
• 5+	10	6	7	7	
House hold has >1 person / bedroom	58	61	65	61	0.80
Live in urban area	99	100	100	99	0.69
NZDep2001 quintile					
• 1 & 2 (high)	15	10	21	10	0.0108
• 3 & 4	21	13	21	9	
• 5 & 6	18	21	20	18	
• 7 & 8	20	18	15	33	
• 9 & 10 (low)	26	38	23	30	

Table 4a: Education, occupation &amp; income, by Main ethnic group

<b>Variable</b>	<b>Asian</b>	<b>Maori</b>	<b>Pacific</b>	<b>European</b>	<b>Total</b>
	%	%	%	%	%
Highest qualification					
• High school only	45	64	69	50	52
• Trade, certificate, etc	19	30	23	35	33
• Bachelor degree	20	3	5	8	8
• Post graduate degree	15	3	4	7	7
Studying >20 hours / week	26	12	12	7	9
Occupation					
• Manager	5	6	3	10	9
• Professional	11	6	5	12	11
• Technician, clerk	8	6	6	11	10
• Services & sales	12	10	14	12	12
• Manual	11	32	28	22	23
• No current paid job	53	41	44	32	35
Household income (\$ in last 12 months)					
• ≤15,000	20	17	9	11	12
• 15,001-25,000	17	16	18	14	14
• 25,001-40,000	22	24	29	18	20
• 40,001-70,000	25	25	30	27	26
• >70,000	15	18	15	30	27
Receive government income support	25	50	45	37	38
Have health or medical insurance	32	26	21	43	39

Table 4b: Education, occupation &amp; income, by Asian ethnic group

Variable	Chinese	South Asian	Korean	South-East Asian	P-value
	%	%	%	%	
Highest qualification					
• High school only	51	38	56	41	0.0068
• Trade, certificate, etc	18	20	5	24	
• Bachelor degree	20	16	31	23	
• Post graduate degree	11	26	8	12	
Studying >20 hours / week	35	15	30	21	0.0009
Occupation					
• Manager	3	8	2	5	0.0000
• Professional	10	15	20	5	
• Technician, clerk	6	10	5	9	
• Services & sales	12	14	14	9	
• Manual	7	15	2	16	
• No current paid job	61	39	57	56	
Household income (\$ in last 12 months)					
• ≤15,000	24	11	12	26	0.0005
• 15,001-25,000	21	16	11	12	
• 25,001-40,000	16	24	40	26	
• 40,001-70,000	23	31	19	25	
• >70,000	16	17	17	11	
Receive government income support	22	23	23	32	0.32
Have health or medical insurance	37	30	31	27	0.33

Figure 3a: Distribution of NZDep2001, by Main ethnic group

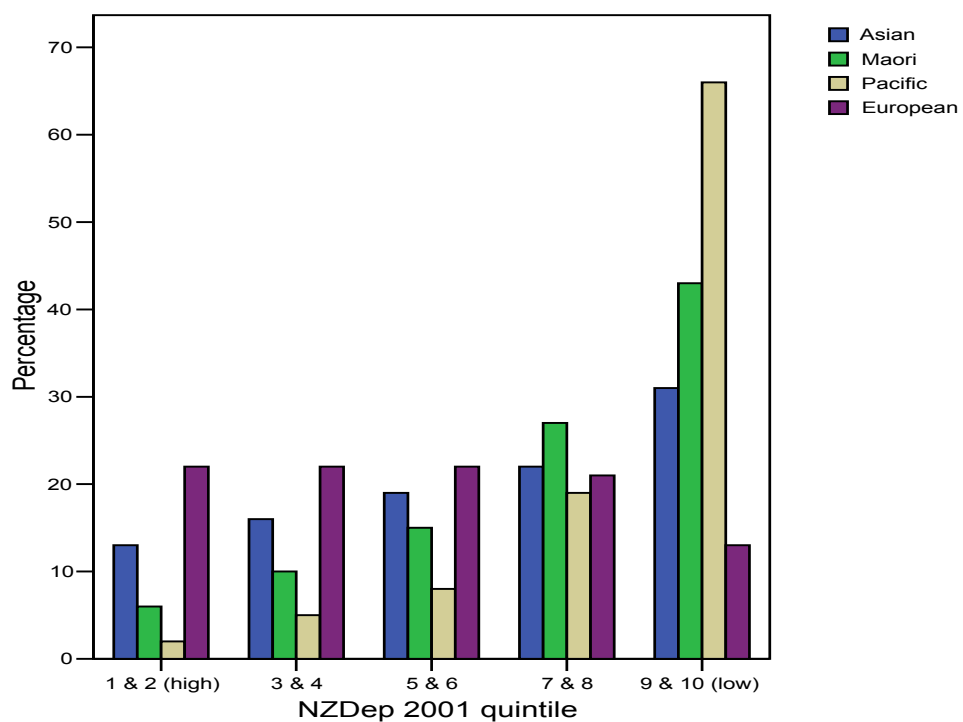


Figure 3b: Distribution of NZDep2001, by Asian ethnic group

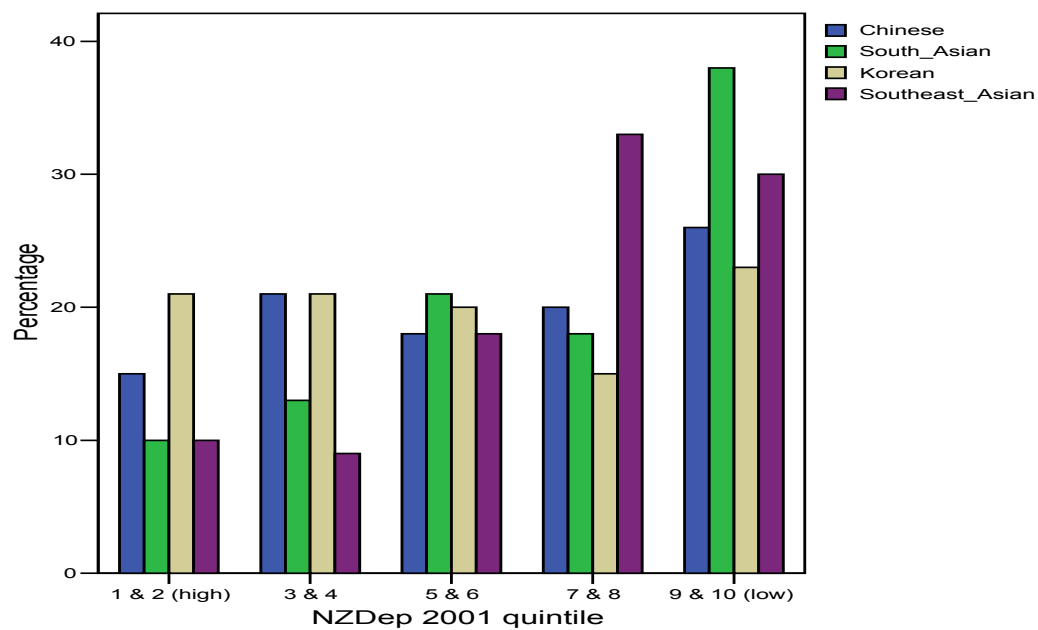
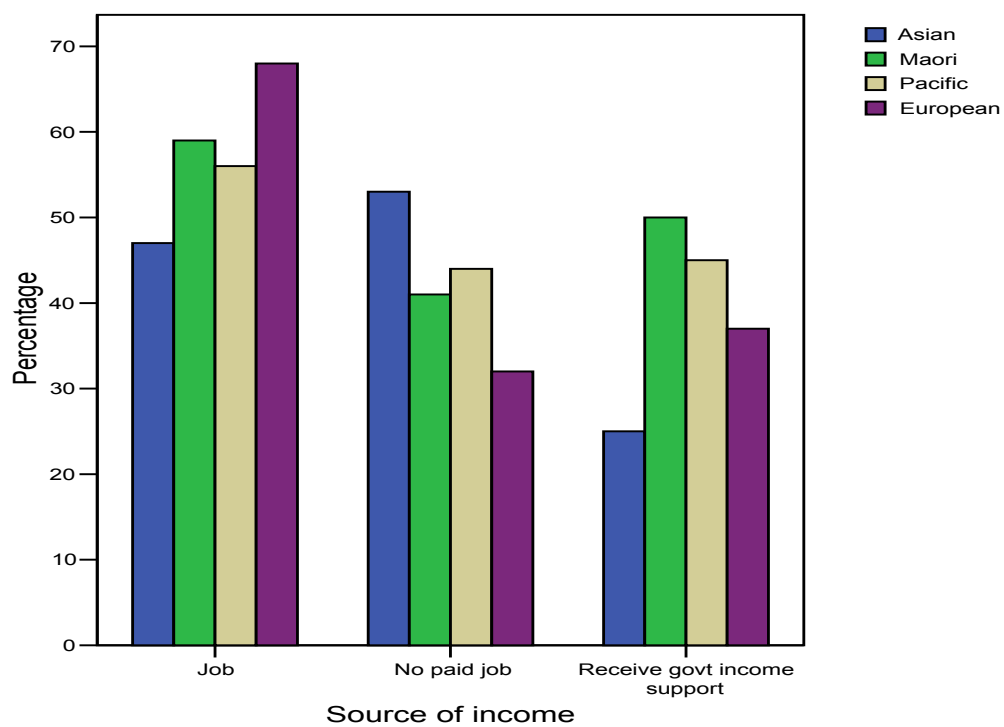




Figure 4: Source of income, by Main ethnic group



## LIFESTYLE

### Physical Activity

*Main ethnic comparisons (Table 5a)* the Asian community has the lowest activity levels of the four main ethnic groups. Vigorous activity was defined as activities like heavy lifting, digging, aerobics and fast bicycling. Among men, 46% of Asians engaged in vigorous physical activity during the last seven days compared with 60% of Maori, 59% of Pacific people and 49% of Europeans; while for women, the values for the four ethnic groups were 19%, 33%, 38% and 31% respectively (Table 5a). The relative risk of doing vigorous activity was about 30% lower for Asian people compared with each of the three other ethnic groups adjusting for age and sex (data not shown).

Physical inactivity was defined as less than 30 minutes of any physical activity (walking, moderate and vigorous) in the last seven days. Asian and Pacific women were more likely to be physically inactive (27%, 24%, respectively) than European (14%) and Maori (13%) (Figure 5a). However, inactivity did not vary with ethnicity among men (Table 5a,  $p=0.31$ ). Asian women were less likely to do brisk walking in the last seven days (50%) compared with women in the other ethnic groups (Maori 56%, European 62%, Pacific 63%;  $p=0.0010$ ); while the proportion of men doing brisk walking did not vary with ethnicity (Asian 55%, Maori 53%, Pacific 57%, European 58%;  $p=0.45$ ).

*Asian comparisons (Table 5b):* the proportions of men doing vigorous activity, and no physical activity, did not differ between the four Asian communities (Table 5b). However, physical activity varied with Asian ethnicity among women, with only 9% of South-Asians doing vigorous physical in the last seven days compared with South-East Asians (16%), Chinese (22%) and Koreans (46%). South-East Asian and South-Asian women were more likely to be physically inactive (35% and 30%, respectively) compared with Chinese (24%) and Korean (10%) (Figure 5b). The proportion doing brisk walking in the last seven days did not vary between the Asian samples for women or men (data not shown).

### Fruit and Vegetables

*Main ethnic comparisons (Tables 6a):* 57% of Asian men and women ate fruit two or more times a day, similar to Pacific (54%) and European (56%), but higher than for Maori (46%). In contrast, the proportion eating vegetables three or more times a day was lower for Asian

people (45%) than for Maori (64%) and European (73%), although similar to the proportion for Pacific (45%). The proportion eating 5 or more serves a day of fruit and vegetables was lower for Asians (41%), Maori (43%) and Pacific (38%) compared with Europeans (56%) (Figure 6a). The higher fruit intake by Asians compared with Maori, and lower vegetable intake by Asians compared with both Maori and Europeans, remained after adjusting for age and sex (data not shown).

*Asian comparisons (Table 6b):* consumption of fruit two or more time a day was lowest among South-Asians (50%) and South-East Asians (51%) compared with Chinese (64%) and Koreans (67%) for both sexes. These ethnic differences occurred in men ( $p=0.021$ ) but not in women ( $p=0.29$ ). Vegetable consumption did not vary between the Asian communities in either men or women ( $p>0.05$ ); and neither did the proportion eating five or more serves of fruit and vegetables a day (Figure 6b).

### **Alcohol**

*Main ethnic comparisons (Tables 7a, 7b):* the frequency of alcohol consumption in the last year was lowest among Asian men and women, compared with the total population (Figure 7), with only 8% drinking alcohol weekly or more often, similar to the proportion for Pacific (8%), but lower than for Maori (18%) and Europeans (42%). The proportion who had no alcohol in the last year was highest in Asian men and women (50%), followed by Pacific (45%), Maori (19%) and Europeans (12%). Asian men and women who drank alcohol in the last year were more likely to have only 1-2 drinks (75%), and least likely to have 10 or more drinks (3%), on a typical day, than any other ethnic group (Table 7b).

*Asian comparisons (Tables 7c, 7d):* the frequency of alcohol consumption in the last year did not differ between the Asian communities ( $p>0.05$ , Table 7c). However, the South-East Asian men were more likely to binge drink (eg. 10 or more drinks in a typical day) compared with the other Asian men (Table 7d).

### **Tobacco**

*Main ethnic comparisons (Tables 8a, 8c):* tobacco consumption was lowest among Asian men and women, with 79% never having smoked, compared with 47% Pacific, 53% European and 28% Maori (Table 8a, Figure 8). The proportion of homes with people

smoking inside every day or most days (Table 8c) was lower in the Asian (15%) and European (16%) communities compared with Pacific (32%) and Maori (39%).

*Asian comparisons (Tables 8b, 8c):* the frequency of tobacco consumption did not vary between the Asian communities (Table 8b). However, smoking inside the home (Table 8c) was most common in South-East Asian homes (23%), intermediate in Korean (18%) and Chinese (17%), and lowest in South-Asian homes (6%).

### **Cannabis**

*Main ethnic comparisons (Table 9a):* Asian men and women had a lower consumption of cannabis, with 93% being never users, compared with Pacific (72%), European (61%) and Maori (37%).

*Asian comparisons (Table 9b):* within the Asian community, South-East Asians were most likely to be users, particularly for men, with 14% having used cannabis in the last year, compared with 2% of South-Asian, and 1% of Korean and Chinese. Cannabis use did not vary between Asian women ( $p=0.68$ ).

### **Gambling**

*Main ethnic comparisons (Table 10a, Figure 9a):* a higher proportion of Asian men and women had not gambled in the last 12 months (59%), compared with Pacific (46%), European (28%) and Maori (26%). In contrast with community-wide perceptions, Asian people were no more likely to have gambled at a casino than other ethnic groups ( $p=0.58$ ). Asian man and women were less likely to have participated in most types of gambling, compared with the other ethnic groups. The most common type of gambling by Asians was Lotto, with 35% buying Lotto in the last 12 months. The proportion of gamblers who spent more than \$30 in a week was highest for Pacific (26%), followed by Maori (22%), Asian (18%) and Europeans (12%).

*Asian comparisons (Table 10b, Figure 9b):* the proportion not gambling in the last 12 months did not vary between the Asian communities ( $p=0.31$ ). However, the type of gambling did vary, with Chinese more likely to use a casino (11%), and internet gambling (3%), than other Asian ethnic groups, while Koreans were least likely to use the TAB.

### **Anthropometry (including obesity)**

*Main ethnic comparisons (Tables 11a, 11b, Figure 10a):* the mean values of all anthropometry measures – height, weight, waist circumference and body mass index (BMI) – were significantly lower in Asian men and women compared to each of the other three ethnic groups (Table 11a). The Asian sample had a lower prevalence of both obesity (BMI $\geq$ 30) and overweight (BMI 25.0-29.9), compared with other ethnic groups, so that 74% of Asian men and women had normal weight (BMI<25) compared with European 43%, Maori 39% and Pacific 17% (Table 11b).

*Asian comparisons (Tables 11c, 11d, Figure 10b):* mean height in men did not vary between the four Asian ethnic groups (p=0.40), but was lower in women for South-East Asians (155.4 cm) and South Asians (156.7 cm) compared with Chinese (159.8 cm, Table 11c). Mean weight also did not vary between men (p=0.24), but again was higher in South Asian women compared with Chinese; while mean waist circumference was higher in both male and female South Asians compared with Chinese (Table 11c). South Asian and South-East Asian men and women had higher mean BMI levels than Chinese, mainly due to higher values in women. The prevalence of obesity and overweight combined was highest in South Asians (45%), followed by South-East Asians (24%), and lowest in Chinese (14%) and Koreans (18%) (Table 11d).

### **Lifestyle and Years in New Zealand**

*Asian comparisons (Table 12, Figure 11):* The association between the number of years living in New Zealand and selected key lifestyle factors was examined in Asian participants to determine if any of the latter were related to increasing length of exposure to the New Zealand lifestyle. Consumption of alcohol and cannabis increased with the numbers of years lived in New Zealand (p<0.05). There was also a trend for the prevalence of obesity and overweight to increase with the number of years lived in New Zealand, although the variation in this variable over time was not statistically significant (p=0.08). In contrast, the prevalences of sedentary activity (ie. no physical activity), consumption of fruit and vegetables 5+ a day, and cigarette smoking did not vary with length of time living in New Zealand.

Table 5a: Prevalence of physical activity in the last 7 days, by Main ethnic group

<b>Variable</b>	<b>Asian</b>	<b>Maori</b>	<b>Pacific</b>	<b>European</b>	<b>P-value</b>
	%	%	%	%	
<b>Vigorous activity</b>					
Both sexes	32	46	43	40	0.0000
Male	46	60	59	49	0.0012
Female	19	33	38	31	0.0001
<b>No physical activity</b>					
Both sexes	21	12	17	12	0.0003
Male	15	11	10	11	0.31
Female	27	13	23	14	0.0001

Table 5b: Prevalence of physical activity in the last 7 days, by Asian ethnic group

<b>Variable</b>	<b>Chinese</b>	<b>South Asian</b>	<b>Korean</b>	<b>South-East Asian</b>	<b>P-value</b>
	%	%	%	%	
<b>Vigorous activity</b>					
Both sexes	33	24	43	35	0.075
Male	47	37	37	59	0.12
Female	22	9	46	16	0.0012
<b>No physical activity</b>					
Both sexes	20	24	13	23	0.29
Male	15	18	19	8	0.23
Female	24	30	10	35	0.031

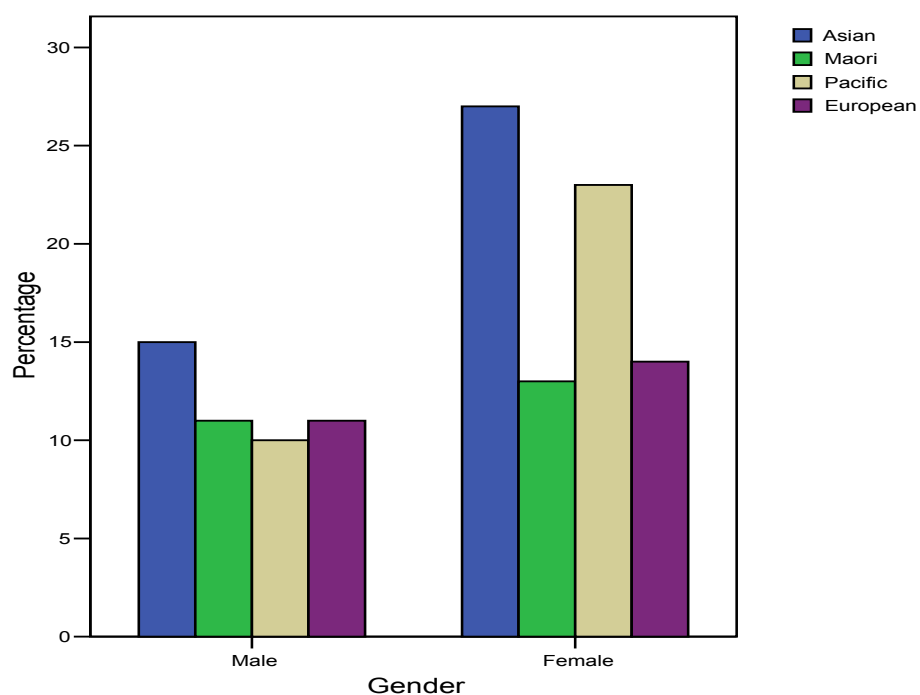
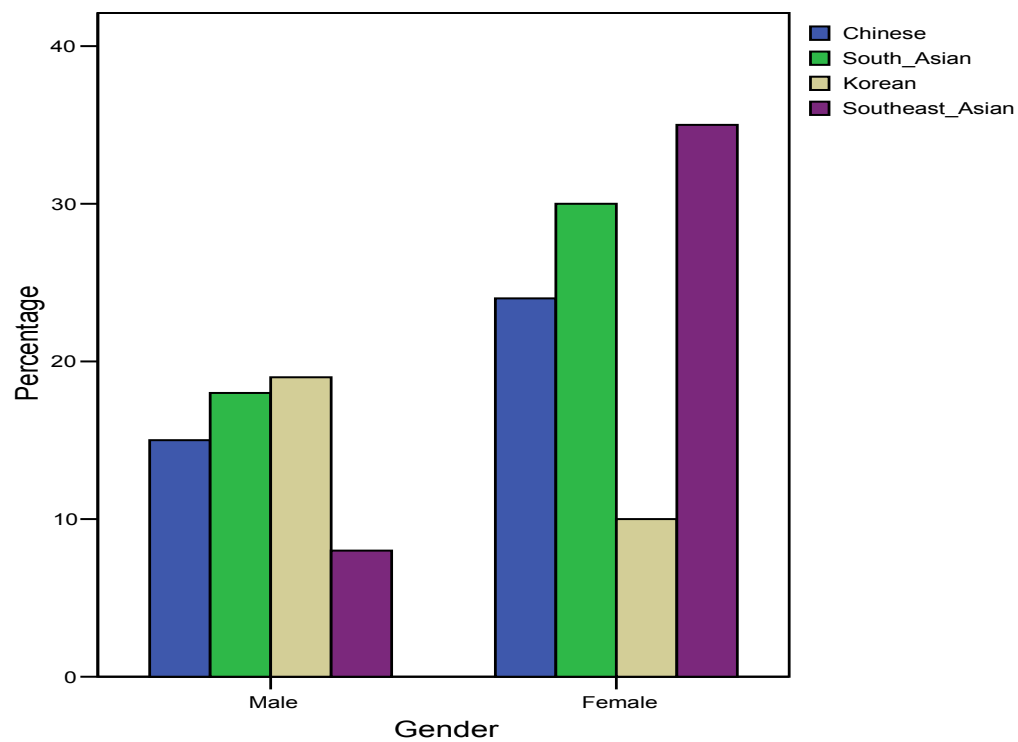
Figure 5a: Distribution of *NO* physical activity, by Main ethnic groupFigure 5b: Distribution of *NO* physical activity, by Asian ethnic group

Table 6a: Prevalence meeting the recommended fruit and vegetable intake, by Main ethnic group

Variable	Asian	Maori	Pacific	European	Total
	%	%	%	%	%
Fruit 2+ a day					
Both sexes	57	46	54	56	55
Male	50	36	51	44	44
Female	63	55	57	66	64
Vegetables 3+ a day					
Both sexes	45	64	41	73	69
Male	40	62	43	68	65
Female	49	67	39	77	73
Fruit & Veges 5+ a day					
Both sexes	41	43	38	56	53
Male	34	34	38	45	43
Female	47	51	38	65	61

Table 6b: Prevalence meeting the recommended fruit and vegetable intake, by Asian ethnic group

Variable	Chinese	South Asian	Korean	South-East Asian	P-value
	%	%	%	%	
Fruit 2+ a day					
Both sexes	64	50	67	51	0.024
Male	56	41	80	45	0.021
Female	70	60	61	56	0.29
Vegetables 3+ a day					
Both sexes	48	41	57	40	0.23
Male	44	39	63	31	0.19
Female	51	44	54	48	0.68
Fruit & Veges 5+ a day					
Both sexes	43	39	47	37	0.60
Male	36	32	63	28	0.30
Female	50	46	40	45	0.87

Figure 6a: Distribution of fruit and vegetable intake (5+ a day), by Main ethnic group



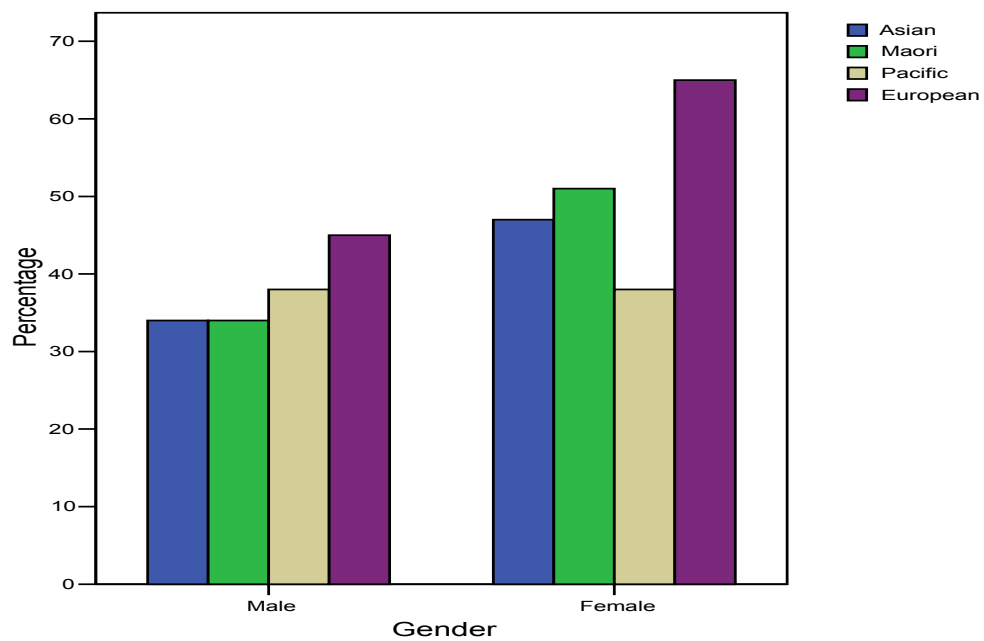


Figure 6b: Distribution of fruit and vegetable intake (5+ a day), by Asian ethnic group

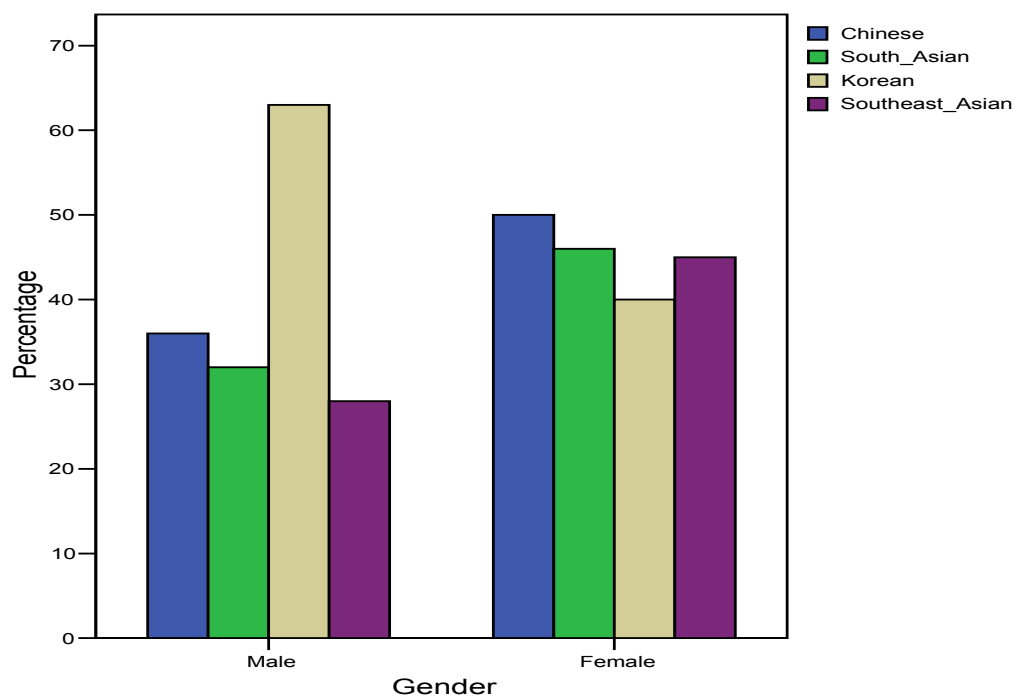


Table 7a: Frequency of alcohol intake in the last year, by Main ethnic group

Alcohol frequency	Asian	Maori	Pacific	European	Total
	%	%	%	%	%
<b>Both sexes</b>					
4+ / week	3	7	3	20	17
2-3 / week	5	11	5	22	19
2-4 / month	13	23	17	22	21
Monthly or less often	30	40	30	25	27
Not in last 12 months	50	19	45	12	16
<b>Males</b>					
4+ / week	4	10	5	26	22
2-3 / week	7	15	8	26	23
2-4 / month	19	26	25	21	21
Monthly or less often	32	35	36	20	22
Not in last 12 months	38	16	27	8	11
<b>Females</b>					
4+ / week	1	4	2	14	12
2-3 / week	3	8	3	18	15
2-4 / month	8	20	9	22	21
Monthly or less often	27	47	24	30	32
Not in last 12 months	60	22	62	15	21

Table 7b: Number of alcohol drinks on a typical day consumed by drinkers, by Main ethnic group

Alcohol drinks on a typical day	Asian	Maori	Pacific	European	Total
	%	%	%	%	%
<b>Both sexes</b>					
10 +	3	25	26	5	7
7-9	2	9	11	4	5
5-6	6	17	13	10	11
3-4	13	22	18	21	21
1-2	75	28	33	60	57
<b>Males</b>					
10 +	4	29	34	8	11
7-9	2	10	11	5	6
5-6	9	16	14	11	12
3-4	18	22	21	25	24
1-2	68	23	21	50	47
<b>Females</b>					
10 +	2	20	13	2	4
7-9	1	8	10	3	3
5-6	3	18	11	9	9
3-4	8	22	14	17	17
1-2	86	32	53	70	66

Figure 7: Alcohol consumption frequency in the last year, by Asian and total New Zealand populations

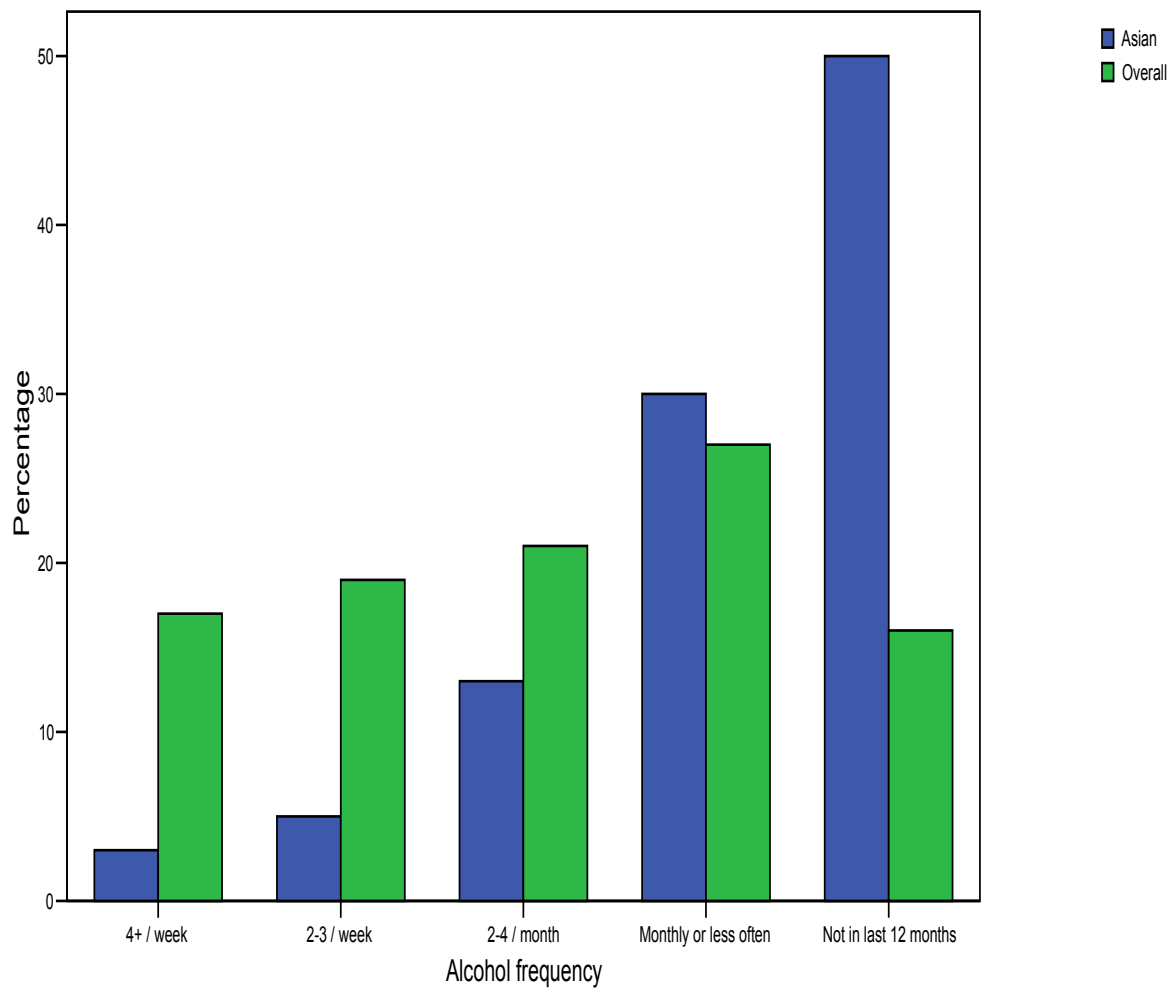


Table 7c: Frequency of alcohol intake in the last year, by Asian ethnic group

Alcohol frequency	Chinese	South Asian	Korean	South-East Asian	P-value
	%	%	%	%	%
<b>Both sexes</b>					
4+ / week	2	4	<1	2	0.09
2-3 / week	3	5	11	5	
2-4 / month	13	14	9	12	
Monthly or less often	31	22	30	36	
Not in last 12 months	50	55	49	44	
<b>Males</b>					
4+ / week	3	7	1	2	0.44
2-3 / week	5	7	8	10	
2-4 / month	21	20	6	14	
Monthly or less often	33	24	32	43	
Not in last 12 months	38	42	55	30	
<b>Females</b>					
4+ / week	1	1	0	3	0.46
2-3 / week	2	2	13	2	
2-4 / month	7	7	11	11	
Monthly or less often	30	20	29	29	
Not in last 12 months	60	69	47	57	

Table 7d: Number of alcohol drinks on a typical day consumed by drinkers, by Asian ethnic group

Alcohol drinks on a typical day	Chinese	South Asian	Korean	South-East Asian	P-value
	%	%	%	%	%
<b>Both sexes</b>					
10 +	<1	1	1	11	0.19
7-9	1	5	0	0	
5-6	5	6	4	9	
3-4	11	15	14	14	
1-2	83	71	81	66	
<b>Males</b>					
10 +	<1	2	2	13	0.028
7-9	<1	7	0	0	
5-6	7	8	0	13	
3-4	14	20	15	21	
1-2	79	64	84	53	
<b>Females</b>					
10 +	0	<1	<1	8	0.50
7-9	1	3	0	0	
5-6	3	4	6	3	
3-4	8	7	14	5	
1-2	88	87	80	84	

Table 8a: Distribution of frequency of tobacco smoking (cigarettes per day), by Main ethnic group

Smoking frequency	Asian	Maori	Pacific	European	Total
	%	%	%	%	%
<b>Both sexes</b>					
21+	<1	5	3	2	3
11-20	3	19	9	8	9
1-10	9	25	23	9	11
Ex-smoker	9	22	17	27	25
Never smoker	79	28	47	53	52
<b>Males</b>					
21+	1	6	3	3	3
11-20	4	19	14	9	10
1-10	15	21	23	8	10
Ex-smoker	15	23	21	31	29
Never smoker	65	31	40	49	48
<b>Females</b>					
21+	0	5	3	2	2
11-20	1	19	6	7	8
1-10	4	29	24	10	12
Ex-smoker	4	21	13	24	22
Never smoker	91	26	54	57	56

Figure 8: Cigarette smoking per day, by Asian and total New Zealand populations.

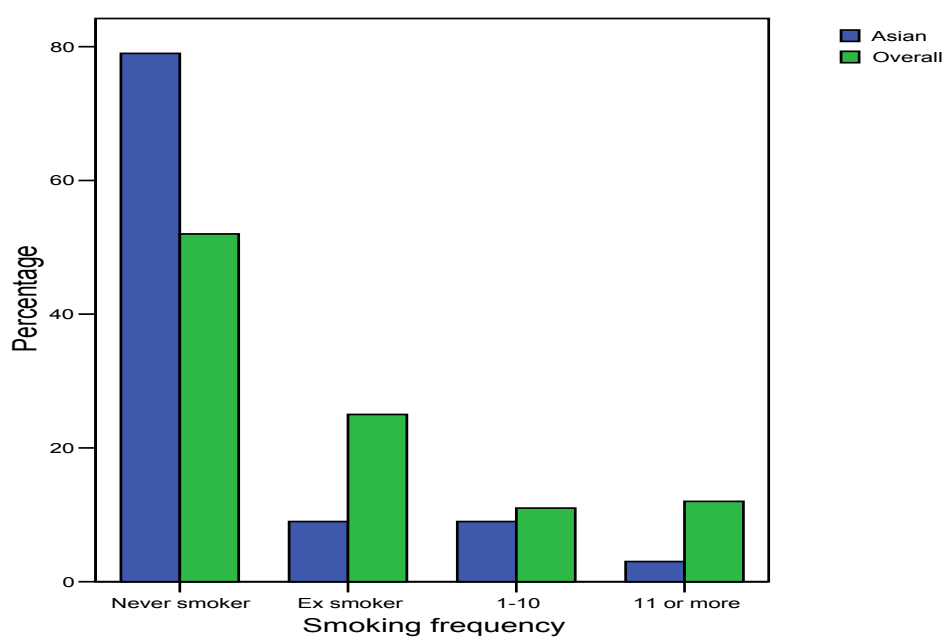


Table 8b: Distribution of frequency of tobacco smoking (cigarettes per day), by Asian ethnic group

Smoking frequency (cigarettes / day)	Chinese	South Asian	Korean	South-East Asian	P-value
	%	%	%	%	
<b>Both sexes</b>					
21+	<1	1	0	1	0.41
11-20	2	2	3	4	
1-10	10	7	7	9	
Ex-smoker	9	9	4	12	
Never smoker	78	81	87	74	
<b>Males</b>					
21+	1	1	0	2	0.79
11-20	3	2	5	8	
1-10	16	13	15	16	
Ex-smoker	16	15	11	16	
Never smoker	64	69	70	58	
<b>Females</b>					
21+	0	0	0	0	0.14
11-20	2	1	2	1	
1-10	5	2	3	3	
Ex-smoker	4	2	<1	9	
Never smoker	89	95	95	87	

Table 8c: Frequency of living in house where people smoke inside every day or most days, by ethnicity

Population	Ethnicity				
Main sample	Asian	Maori	Pacific	European	Total
Smoke inside home	15%	39%	32%	16%	19%
Asian sample	Chinese	South Asian	Korean	South-East Asian	P-value
Smoke inside home	17%	6%	18%	23%	0.0001

Table 9a: Distribution of frequency of cannabis use, by Main ethnic group

Frequency of Cannabis use	Asian	Maori	Pacific	European	Total
	%	%	%	%	%
<b>Both sexes</b>					
Monthly or more often	2	19	6	6	7
Less than monthly	2	12	5	7	7
Not in last 12 months	4	32	17	26	25
Never used	93	37	72	61	61
<b>Males</b>					
Monthly or more often	2	26	12	8	10
Less than monthly	3	12	5	9	9
Not in last 12 months	6	30	23	27	26
Never used	89	32	60	56	56
<b>Females</b>					
Monthly or more often	1	13	2	3	4
Less than monthly	1	13	4	6	6
Not in last 12 months	3	34	12	24	23
Never used	96	41	82	66	66

Table 9b: Distribution of frequency of cannabis use, by Asian ethnic group

Frequency of Cannabis use	Chinese	South Asian	Korean	South-East Asian	P-value
	%	%	%	%	
<b>Both sexes</b>					
Monthly or more often	<1	1	1	4	0.077
Less than monthly	<1	2	0	4	
Not in last 12 months	4	4	1	6	
Never used	95	93	99	86	
<b>Males</b>					
Monthly or more often	<1	3	1	6	0.050
Less than monthly	<1	2	0	8	
Not in last 12 months	7	5	0	8	
Never used	93	90	99	78	
<b>Females</b>					
Monthly or more often	1	<1	1	2	0.68
Less than monthly	1	2	0	0	
Not in last 12 months	2	3	1	5	
Never used	97	95	98	93	



Table 10a: Frequency of Gambling in the last 12 months, by Main ethnic group

Type of Gambling*	Asian	Maori	Pacific	European	P-value
	%	%	%	%	
Do not gamble	59	26	46	28	0.0000
Lotto, Instant Kiwi, Daily Keno	35	66	48	68	0.0000
Casino (main ones)	8	9	7	8	0.58
Pokies (not in casinos)	5	22	11	12	0.0000
TAB	4	12	8	12	0.0000
Overseas betting	1	3	2	2	0.0037
Track (horses & dogs)	1	3	2	4	0.0000
Housie	<1	7	6	1	0.0000
0900 gambling games	0	<1	0	<1	0.11
Internet gaming	2	2	2	<1	0.0018
Spent >\$30 in a week (if gambler)	18	22	26	12	0.0000

\* More than one type could be selected

Table 10b: Frequency of Gambling in the last 12 months, by Asian ethnic group

Type of Gambling*	Chinese	South Asian	Korean	South-East Asian	P-value
	%	%	%	%	
Do not gamble	59	61	73	54	0.31
Lotto, Instant Kiwi, Daily Keno	31	38	23	41	0.13
Casino (main ones)	11	4	5	7	0.017
Pokies (not in casinos)	5	4	1	6	0.08
TAB	5	3	0	4	0.015
Overseas betting	1	1	0	0	0.41
Track (horses & dogs)	1	1	0	0	0.28
Housie	0	<1	2	0	0.48
0900 gambling games	0	0	0	0	-
Internet gaming	3	1	0	1	0.026
Spent >\$30 in a week (if gambler)	25	11	16	16	0.060

\* More than one type could be selected

Figure 9a: Frequency of gambling in last 12 months, by Main ethnic group

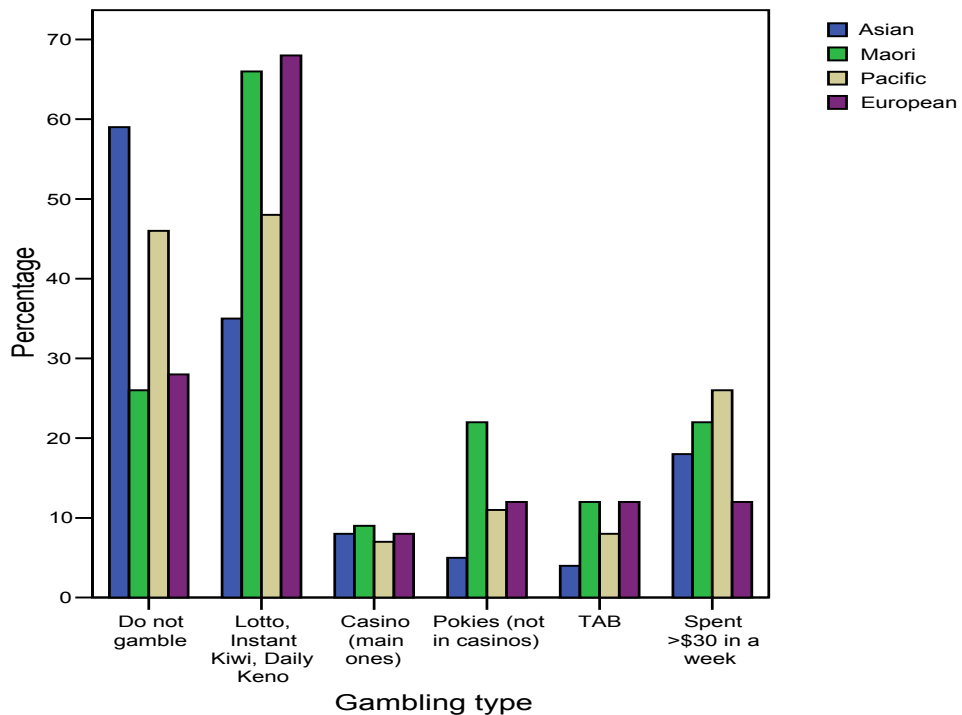


Figure 9b: Frequency of gambling in last 12 months, by Asian ethnic group

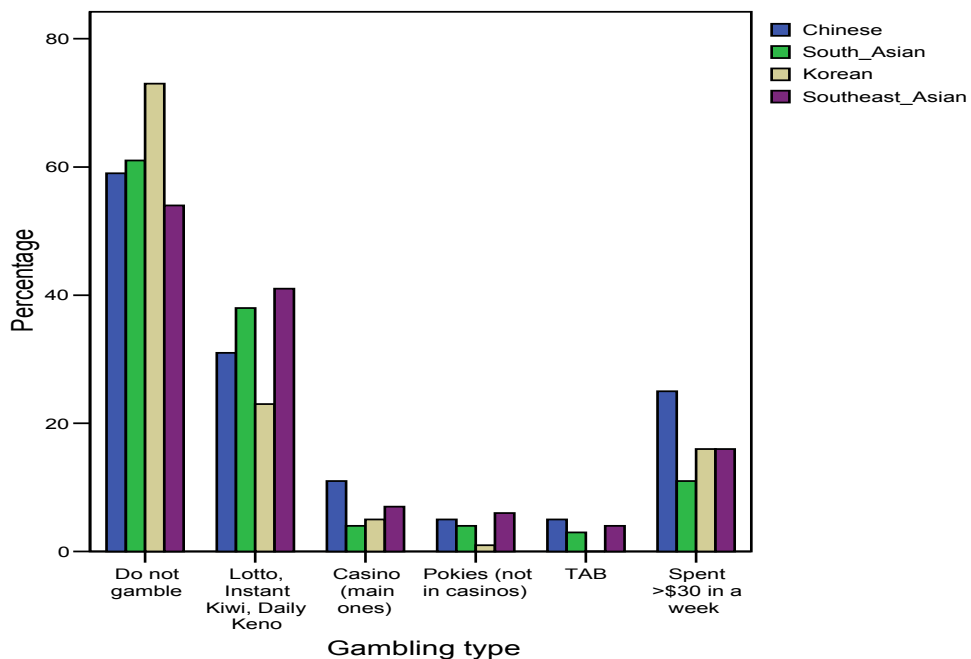


Table 11a: Mean (se) anthropometry measures, adjusted for age and sex (as appropriate), by Main ethnic group\*

Measure	Asian	Maori	Pacific	European	P-value (Wald-F)
Both sexes					
Height (cm)	163.4	167.8	168.6	169.1	0.0000
Weight (kg)	62.8	83.0	92.0	75.3	0.0000
Waist (cm)	83.2	95.8	102.4	89.1	0.0000
BMI (kg / m <sup>2</sup> )	23.5	29.3	32.3	26.2	0.0000
Males					
Height (cm)	170.2	174.4	174.5	175.8	0.0000
Weight (kg)	68.8	90.6	96.2	82.0	0.0000
Waist (cm)	87.8	100.5	104.0	94.7	0.0000
BMI (kg / m <sup>2</sup> )	23.7	29.7	31.5	26.5	0.0000
Females					
Height (cm)	156.8	161.4	162.7	162.6	0.0000
Weight (kg)	56.8	75.5	87.8	68.7	0.0000
Waist (cm)	78.7	91.2	100.7	83.5	0.0000
BMI (kg / m <sup>2</sup> )	23.2	28.9	33.1	26.0	0.0000

\* Asians significantly different from each other ethnic group for all measures

Table 11b: Prevalence of obesity\*, by Main ethnic group

OBESITY MEASURE	ASIAN	MAORI	PACIFIC	EUROPEAN	TOTAL
	%	%	%	%	%
Both sexes					
Obese	5	27	43	20	21
Overweight	20	34	40	36	35
Normal weight	74	39	17	43	44
Males					
Obese	5	27	37	19	20
Overweight	23	37	44	44	42
Normal weight	72	36	19	36	38
Females					
Obese	6	27	48	21	22
Overweight	18	32	37	29	28
Normal weight	77	41	16	51	50

\* *Obese* defined as BMI:  $\geq 30.0$  for Asian & European,  $\geq 32.0$  for Maori & Pacific;  
*overweight* defined as BMI: 25.0-29.9 for Asian & European, 26.0-31.9 for Maori & Pacific.

Table 11c: Mean (se) anthropometry measures, adjusted for age and sex (as appropriate), by Asian ethnic group

Measure	Chinese	South Asian	Korean	South-East Asian	P-value (Wald-F)
Both sexes					
Height (cm)	165.5	163.3 <sup>#</sup>	163.7	162.2 <sup>¶</sup>	0.0007
Weight (kg)	60.4	65.5 <sup>¶</sup>	58.6	60.8	0.0015
Waist (cm)	78.3	86.6 <sup>¶</sup>	75.2	79.9	0.0000
BMI (kg / m <sup>2</sup> )	22.0	24.5 <sup>¶</sup>	21.7	23.1*	0.0000
Males					
Height (cm)	172.2	170.8	170.6	169.8	0.40
Weight (kg)	66.8	70.6	64.4	66.4	0.24
Waist (cm)	82.8	90.4 <sup>¶</sup>	78.0	83.7	0.0002
BMI (kg / m <sup>2</sup> )	22.6	24.1	22.1	23.0	0.18
Females					
Height (cm)	159.8	156.7 <sup>¶</sup>	157.5	155.4 <sup>¶</sup>	0.0008
Weight (kg)	55.3	61.4 <sup>¶</sup>	53.4	55.3	0.0001
Waist (cm)	74.7	83.4 <sup>¶</sup>	72.1	76.2	0.0000
BMI (kg / m <sup>2</sup> )	21.7	25.1 <sup>¶</sup>	21.5	22.9	0.0000

\* p<0.05, <sup>#</sup> p<0.01, <sup>¶</sup> <0.001 v. Chinese

Table 11d: Prevalence of obesity\*, by Asian ethnic group

Obesity Measure	Chinese	South Asian	Korean	South-East Asian	P-value
	%	%	%	%	
Both sexes					
Obese	2	10	1	7	0.0000
Overweight	12	35	17	17	
Normal weight	86	56	83	76	
Males					
Obese	4	6	1	5	0.060
Overweight	16	33	18	23	
Normal weight	80	61	81	73	
Females					
Obese	1	14	1	9	0.0000
Overweight	10	36	16	12	
Normal weight	90	50	83	79	

\* *Obese* defined as BMI:  $\geq 30.0$ ; *overweight* defined as BMI: 25.0-29.9.

Figure 10a: Prevalence of obesity & overweight, by Main ethnic group

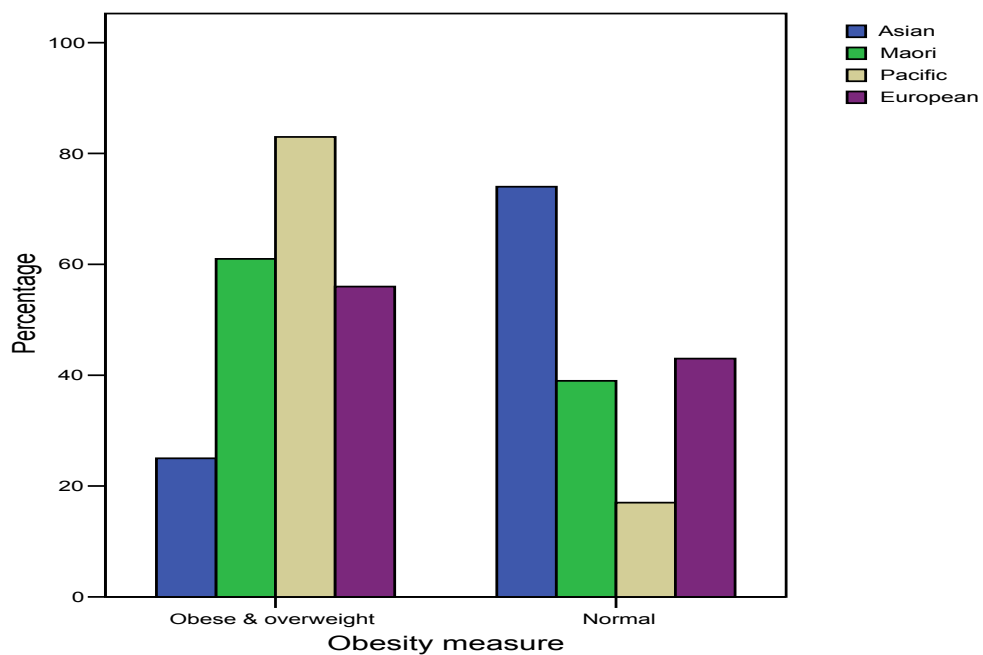


Figure 10b: Prevalence of obesity & overweight, by Asian ethnic group

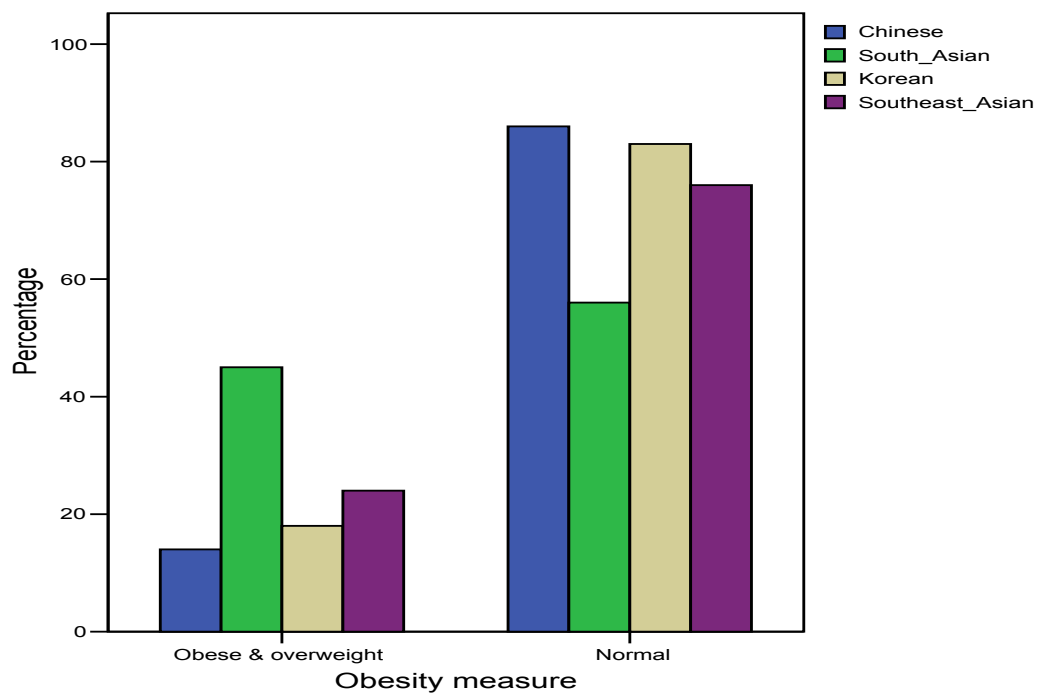
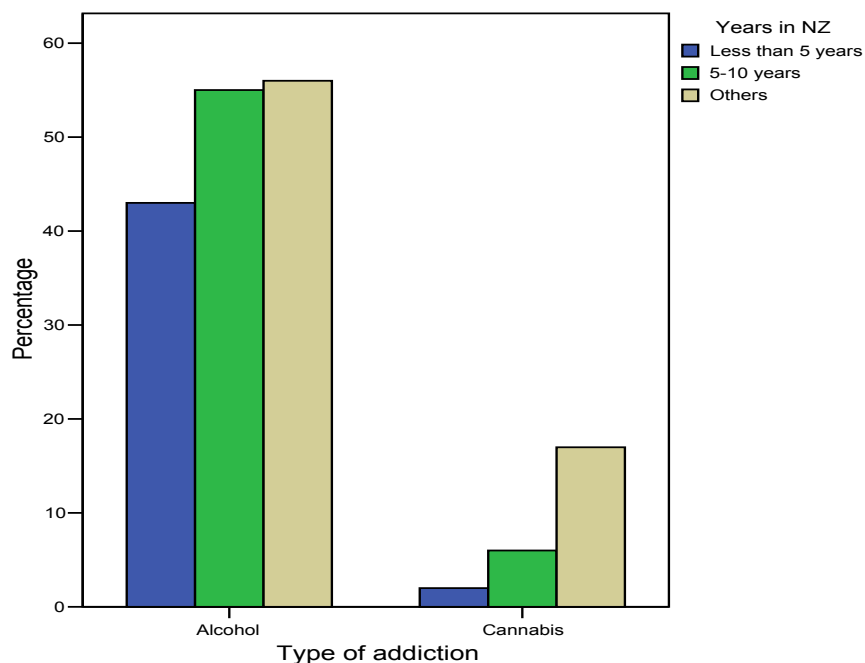


Table 12: Association between Lifestyle and Years in NZ, among Asian participants.

Variable	Years in New Zealand			P-value
	< 5 years	5-10 years	Others*	
Sedentary: Yes	24%	21%	18%	0.21
5+ a day: Yes	38%	43%	44%	0.46
Alcohol in last 12 months: Yes	43%	55%	56%	0.034
Smoker				
Current	12%	8%	15%	0.26
Ex	9%	12%	8%	
Never	79%	80%	76%	
Cannabis smoker?				
Yes: last 12 months	1%	3%	7%	0.0054
Yes: not last 12 months	1%	3%	10%	
Never	97%	94%	84%	
BMI				
Obese & Overweight	23%	22%	33%	0.08
Normal	77%	78%	67%	

\* Includes more than 10 years & born in NZ

Figure 11: Alcohol drinking and Cannabis smoking by Years in NZ among Asians



## CHRONIC DISEASE

Age-standardised weights have been used in this section to control for age differences between comparison groups. The disease prevalences described in this section are based on self-reports by survey participants, and have not been validated against medical records.

*Main ethnic comparisons (Table 13a, Figure 12a):* the age-adjusted prevalence of people on treatment for hypertension or high blood cholesterol did not vary between the four main ethnic groups ( $p>0.05$ ). The prevalence of heart disease was significantly lower among Asians (5%) compared to Maori (11%) and Europeans (8%); as was the prevalence of stroke. However, the prevalence of diabetes was higher among Asians than Europeans (8% vs.3%).

The prevalence of asthma was significantly lower among Asian and Pacific people (10% each) in comparison with Maori (20%) and Europeans (18%), while chronic bronchitis/emphysema did not vary between ethnic groups ( $p=0.67$ ).

The total prevalence of arthritis did not vary between ethnic groups ( $p=0.28$ ), although osteoarthritis was less common in Asians (3% vs. 6%), while gout was more common (2% vs. 1%), compared to the national prevalence.

Neck and back disorder (14% vs.24%), cancer (3% vs. 6%) and other long term illness (17% vs.23%) were significantly lower among Asians in comparison with the national prevalence. The most common chronic disease among Asians was neck and back disorder, followed by and hypertension.

*Asian comparisons (Table 13b, Figure 12b):* the age-adjusted prevalence of people on treatment for hypertension did not vary between the four Asian communities ( $p=0.69$ ). In contrast, the prevalence of being on treatment for high cholesterol was highest in South Asians (12%), intermediate in South-East Asians (6%), and lowest in Chinese (3%) and Koreans (0%). The prevalences of heart disease (11%), diabetes (14%) and asthma (16%) were highest in South Asians. In particular, diabetes and asthma were significantly more common in South Asians when they were compared with the other three Asian ethnic groups combined (diabetes  $p=0.035$ ; asthma  $p=0.022$ ). In contrast, Koreans had a significantly lower



prevalence of total arthritis than other Asians, with no Korean participants reporting any type of arthritis.

Table 13a: Age-standardised prevalence of chronic diseases, by Main ethnic group

Chronic disease	Asian	Maori	Pacific	European	Total
	%	%	%	%	%
Hypertension*	11	13	11	10	10
High cholesterol*	6	6	5	5	5
Heart Disease	5	11	6	8	8
Stroke	<1	3	1	2	2
Diabetes	8	8	10	3	4
Asthma	10	20	10	18	17
Bronchitis/Emphysema	4	6	8	5	5
Total Arthritis	10	15	14	14	14
Osteoarthritis	3	5	3	7	6
Rheumatoid	3	4	3	3	3
Gout	2	2	5	1	1
Neck and back disorder	14	21	12	26	24
Osteoporosis	2	1	1	2	2
Cancer	3	6	2	6	6
Other long-term illness	17	19	14	25	23

\* Currently on medication

Table 13b: Age-standardised prevalence of chronic diseases, by Asian ethnic group

<b>Chronic disease</b>	<b>Chinese</b>	<b>South Asian</b>	<b>Korean</b>	<b>South-East Asian</b>	<b>P value</b>
	%	%	%	%	
Hypertension*	9	14	11	12	0.69
High cholesterol*	3	12	0	6	0.0001
Heart Disease	2	11	2	4	0.26
Stroke	<1	<1	0	1	0.39
Diabetes	6	14	7	6	0.21
Asthma	7	16	3	8	0.07
Bronchitis/Emphysema	<1	10	0	0	0.46
Total Arthritis	9	13	0	12	0.0014
Osteoarthritis	2	4	0	3	0.16
Rheumatoid	4	6	0	0	0.06
Gout	1	2	0	3	0.16
Neck and back disorder	16	13	5	17	0.12
Osteoporosis	1	1	0	3	0.26
Cancer	2	3	6	4	0.75
Other long-term illness	14	17	10	26	0.16

\* Currently on medication

Figure 12a: Age-standardised prevalence of chronic diseases, by Main ethnic group

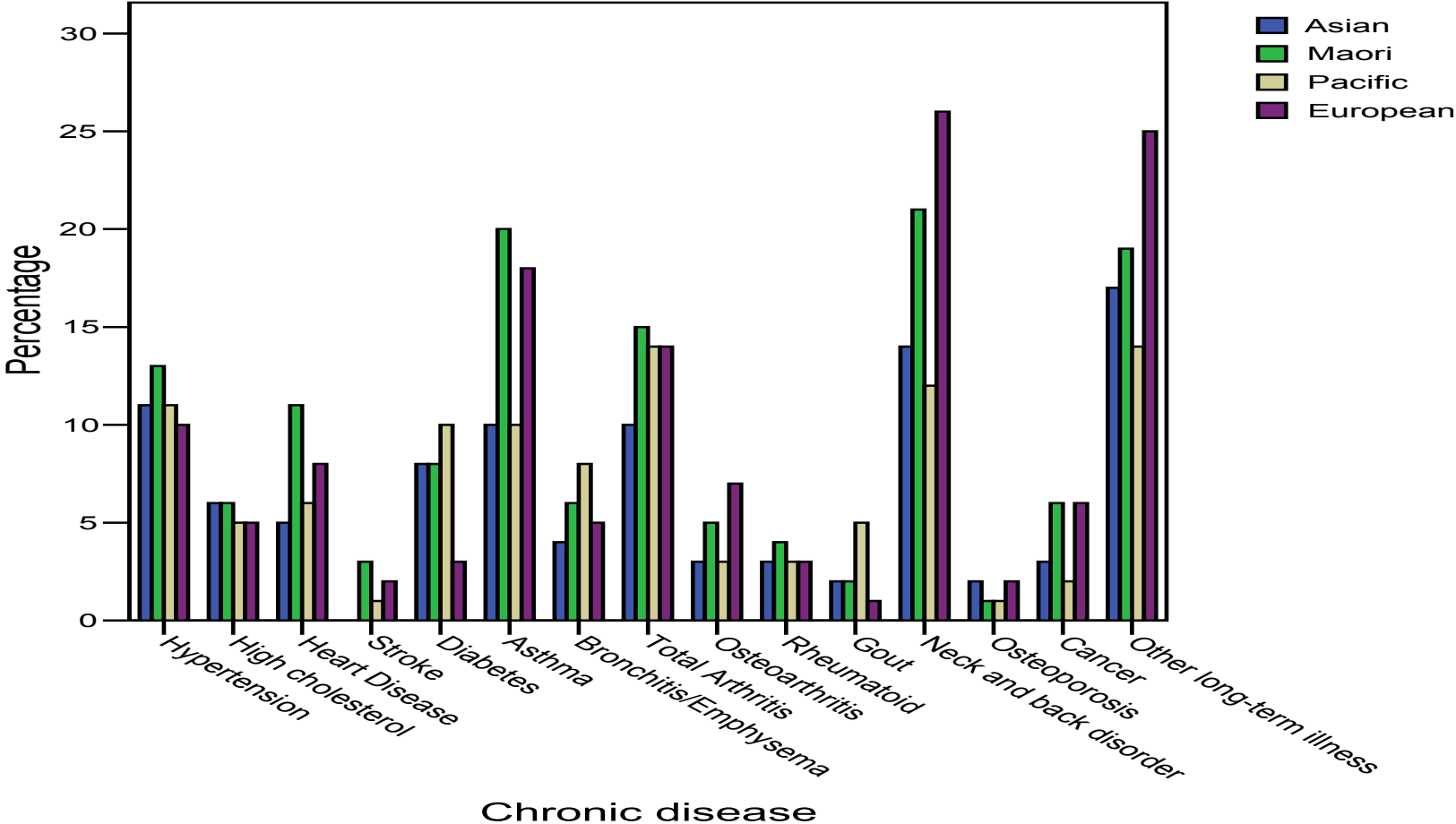
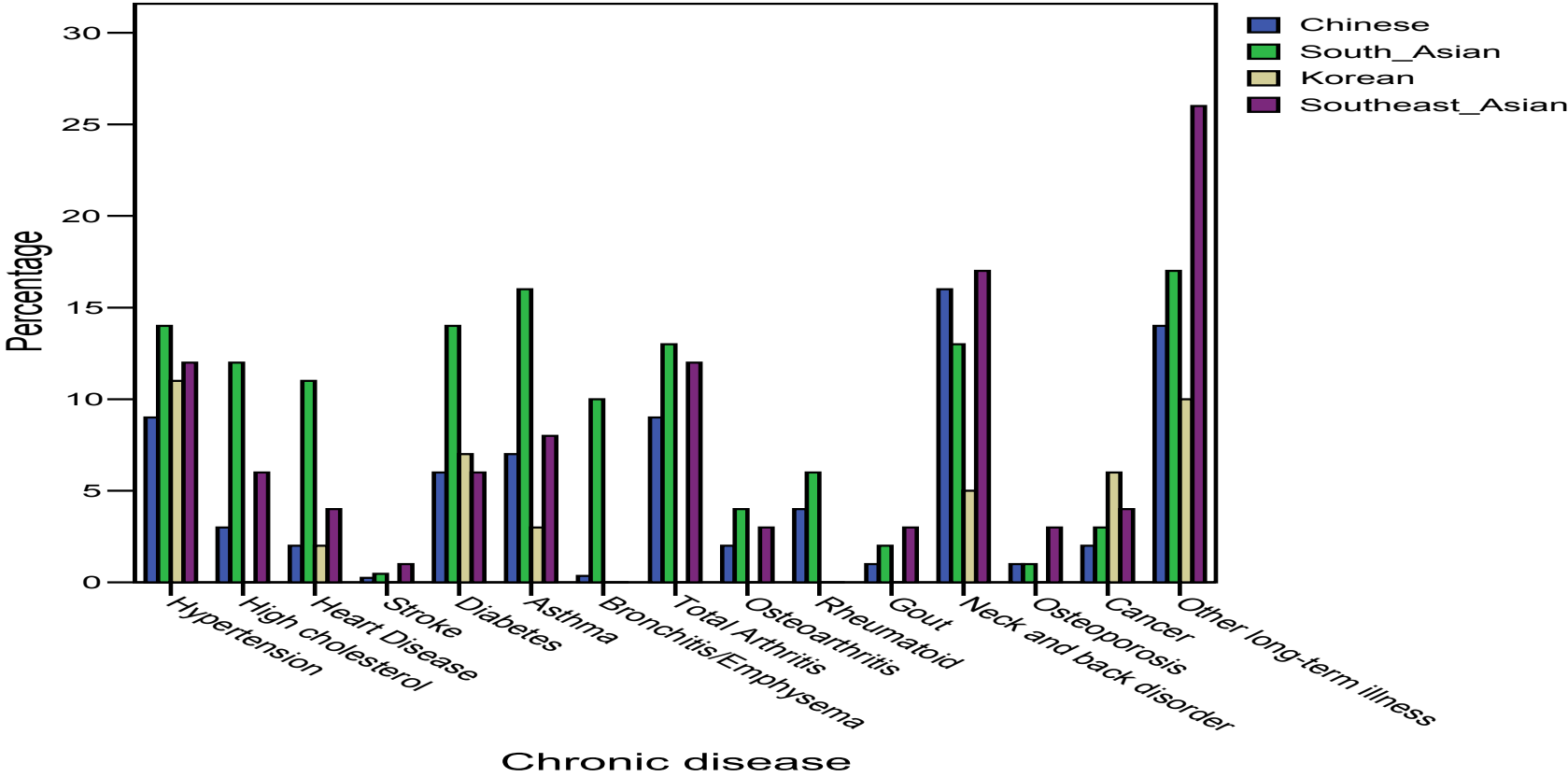


Figure 12b: Age-standardised prevalence of chronic diseases, by Asian ethnic group



## ACCESS TO HEALTHCARE

Age-standardised weights have been used in this section to control for age differences between comparison groups.

### **Type of Practitioner consulted First when Unwell**

*Main ethnic comparisons (Table 14a):* Asian people (81%) were less likely to have a health practitioner (or service) to visit in the first instance when they were unwell than Maori (92%), Pacific (95%) and Europeans (94%). Most New Zealanders (90%) initially visited a family doctor or general practitioner (GP) when unwell, although the proportion of Asians doing this (78%) was lower than other ethnic groups. None of the Asians visited a local nurse in the first instance. Visits to alternative health care provider in the first instance were also very small in number (less than 1%) for all ethnic groups including Asians.

*Asian comparisons (Table 14b):* Chinese people (74%) were less likely to have a health practitioner or service to visit in the first instance when they were unwell than South Asians and South-East Asians (87% each). Chinese (70%) were also less likely than other Asians to visit their family doctor or GP in the first instance if they or their family members were sick. Only Chinese and South East Asian people reported visiting an alternative health care provider in the first instance when unwell (both <1%).

### **Type of Practitioner consulted in Last 12 Months**

*Main ethnic comparisons (Table 15a, Figure 13a):* Asian people (70%) were less likely to have consulted a family doctor or GP (in last 12 months) for their own health than Maori (76%), Pacific (80%) and Europeans (83%). Only 20% of the Asians visited to a specialist in last 12 months compared to 31 % of all New Zealanders. Almost 27% of the Asians visited to local nurse for their own health in last 12 months of the study. Only 12% of the Asians went to alternative health care provider. Although neck and back disorders were very common among Asians (Table 13a), the proportion of them who visited a physiotherapist was significantly lower compared to other ethnic groups. Asian people consulted a dentist, optometrist and social worker/psychologist less often than Europeans in last 12 months; while the proportion of them who visited a dietitian (2%) was similar to other ethnic groups (p=0.30).

*Asian comparisons (Table 15b, Figure 13b):* Overall, South Asian and South-East Asian people were more likely to consult health professionals in the last 12 months than Chinese and Korean people. South Asians (77%) were significantly more likely to have visited a family doctor or GP in last 12 months than South-East Asians (71%), Chinese (64%) and Koreans (62%). More than 88% South-East Asians and 85% South Asians consulted chemist or pharmacist for their own health. Koreans were least likely to have visited a specialist (6%), while Chinese (17%) and Koreans (15%) were most likely to have visited alternative health care provider, than other Asian ethnic groups. Dental visits were lowest for Chinese (19%) whereas optometrist visits were lowest for Koreans (5%). Consultation with a social worker or psychologist was strikingly higher among South-East Asians (7%) than any other Asian ethnic group.

In analyses restricted to people with a chronic medical condition, Asians were less likely to have seen all types of health practitioners in the last 12 months compared with Europeans, after adjusting for age and sex (Table 15c). In the last three years, Asian women aged 40-69 years were less likely to have had a mammography test than European women (52% v. 65%), and Asian women aged 20-69 years were less likely to have had a cervical smear than all New Zealand women (42% v. 69%; Table 15d). The proportion of women having either of these screening tests did not vary between the four Asian groups ( $p>0.05$ ).

### **Reasons for visiting Family Doctor**

*Main ethnic comparisons (Table 16a, Figure 14a):* Asian people were most likely to visit a family doctor because of a short term illness or routine check up. They were less likely to consult a family doctor for an injury or poisoning than the all New Zealanders (7% v. 12%). Only 1% of the Asians consulted a family doctor for mental or emotional health problems at their last visit, which was lower than the national percentage (4%).

*Asian comparisons (Table 16b, Figure 14b):* The medical condition cited for the last visit to the family doctor did not vary between the four Asian ethnic groups ( $p>0.05$ ).

### **Level of satisfaction with Family Doctor & Unable to see Doctor when needed**

*Main ethnic comparisons (Table 17a, Figure 15a):* Most Asian people who visited a family doctor in last 12 months were very satisfied or satisfied (92%) with their last visit. The level of satisfaction for Asians was similar to that of all other ethnic groups. In the last

12 months, 13% of Asian people were unable to see a family doctor when they needed to, similar the value for all New Zealanders.

*Asian comparisons (Table 17b, Figure 15b):* There was no significant difference in satisfaction level among different Asian ethnic group. However, more Chinese (16%) and South-East Asians (14%) could not see their family doctor when they needed to (in the last 12 months), compared with South Asians (10%) and Koreans (3%).

### **Use of Telephone Helplines**

*Main ethnic comparisons (Table 18):* Asian people were less likely to use any type of telephone helpline in the last 12 months than all New Zealanders (6% v. 16%). The most common helpline they had used was Plunketline (2%), while none reported using the Aids hotline or Gambling Crisis hotline in the last 12 months.

*Asian comparisons:* The percentage of people using any type of telephone helpline did vary ( $p=0.30$ ) between the main Asian communities, being 10% for South Asian, 6% for South-East Asian, 5% for Korean, and 4% for Chinese.

### **Mental Health**

*Main ethnic comparisons (Table 19a, Figure 16a):* 77% of Asian people felt happy all or most of the time in last 4 weeks, close to the national figure of 78%. The percentage of Asians who felt calm and peaceful all or most of the time in last 4 weeks (71%) was also similar to that for other ethnic groups. Asian people (62%) were more likely to feel full of life (all or most of the time) in last 4 weeks than Maori (52%), Pacific (59%) and Europeans (49%). Only 2% Asians felt down (all or most of the time) in last 4 weeks. About 14% of the Asians had difficulty in understanding what other people said because of their physical or mental health during the past 4 weeks, similar to the national figure.

*Asian comparisons (Table 19b, Figure 16b):* Feelings reflecting mental health status did not vary between the four Asian ethnic groups ( $p>0.05$ ).

Table 14a: Type of practitioner usually seen first when unwell, by Main ethnic group (age-standardised percents).

Practitioner or Service	Asian	Maori	Pacific	European	Total
	%	%	%	%	%
Have health practitioner or service: % Yes	81	92	95	94	93
Type of Practitioner					
Family doctor/GP	78	88	94	91	90
Chemist/pharmacist	<1	1	<1	<1	<1
A &E at public hospital	<1	<1	<1	<1	<1
A &E at private clinic	<1	1	<1	1	1
Maori health clinic	<1	<1	0	0	<1
Local nurse	0	<1	0	<1	<1
Alternative health care provider	<1	1	<1	<1	<1



Table 14b: Type of practitioner usually seen first when unwell, by Asian ethnic group (age-standardised percents).

Practitioner or Service	Chinese	South Asian	Korean	South-East Asian	P Value
	%	%	%	%	
Have health practitioner or service: % Yes	74	87	78	87	0.0091
Type of Practitioner					
Family doctor/GP	70	85	78	85	0.0027
Chemist/pharmacist	<1	0	0	0	0.82
A &E at public hospital	1	0	<1	<1	0.27
A &E at private clinic	<1	1	0	<1	0.39
Maori health clinic	0	<1	<1	0	0.59
Local nurse	0	0	0	0	*
Alternative health care provider	<1	0	0	<1	0.58

\* P value could not be calculated.

Table 15a: Type of practitioner seen for own health in last 12 months, by Main ethnic group (age-standardised percents).

Type of practitioner	Asian	Maori	Pacific	European	Total
	%	%	%	%	%
Family Doctor	70	76	80	83	81
Specialist	20	25	20	33	31
Nurse	27	42	31	44	43
Chemist/Pharmacist	79	81	85	87	86
Alternative health care provider	12	23	12	26	24
Physiotherapist	7	12	10	17	15
Dentist	26	28	20	45	41
Optometrist	13	11	6	19	17
Social worker, Psychologist	2	8	3	5	5
Dietitian	2	4	3	3	3

Figure13a: Type of practitioner seen in last 12 months, by Main ethnic group (age-standardised percents).

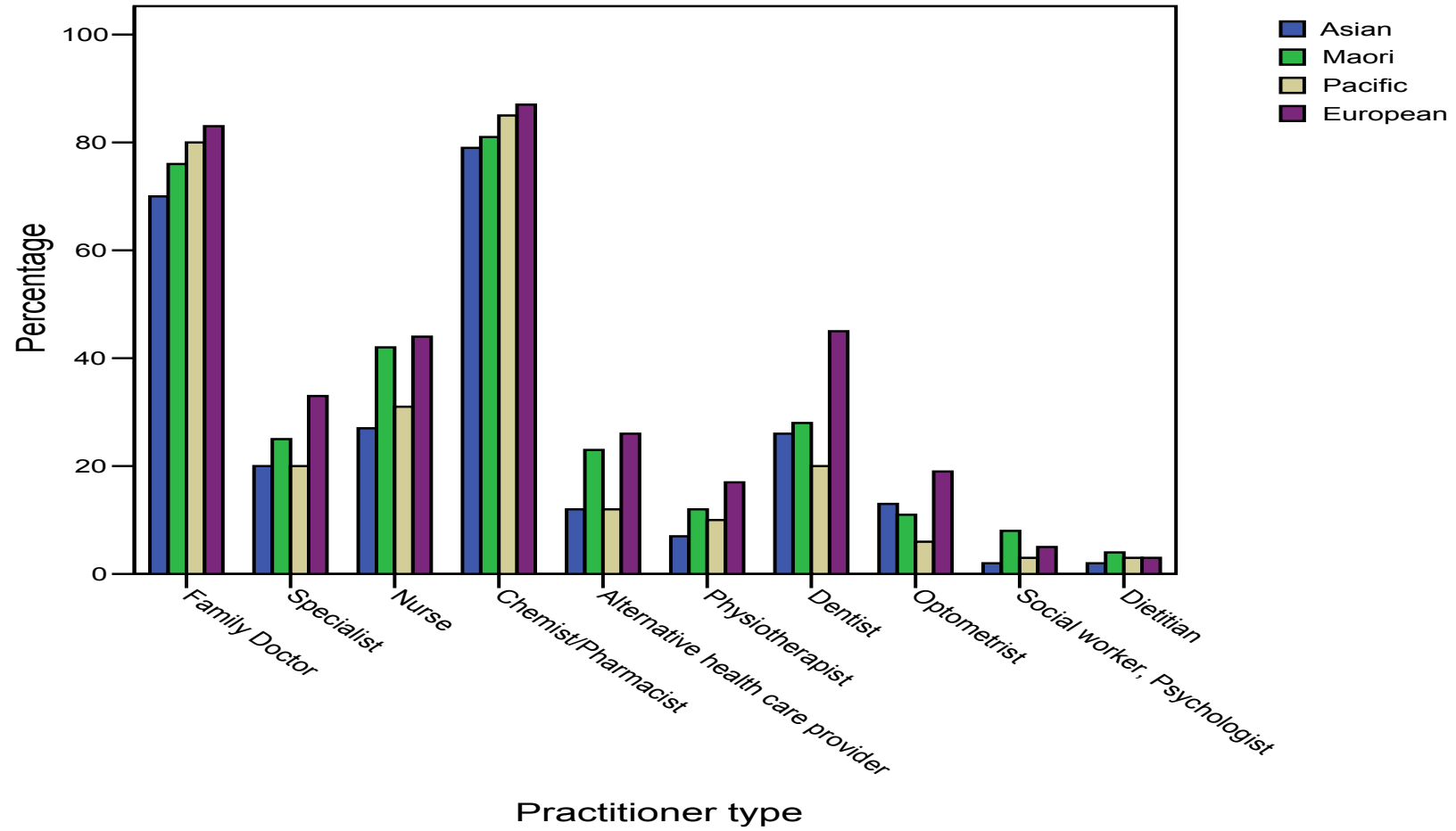


Table 15b: Type of practitioner seen for own health in last 12 months, by Asian ethnic group (age-standardised percents).

Type of practitioner	Chinese	South Asian	Korean	South East Asian	P value
	%	%	%	%	%
Family Doctor	64	77	62	71	0.039
Specialist	13	27	6	27	0.0007
Nurse	19	37	17	32	0.027
Chemist/Pharmacist	70	85	76	88	0.0002
Alternative health care provider	17	7	15	9	0.056
Physiotherapist	6	9	1	8	0.014
Dentist	19	32	25	30	0.11
Optometrist	13	17	5	11	0.047
Social worker, Psychologist	1	1	1	7	0.56
Dietitian	<1	4	0	5	0.14

Figure13b: Type of practitioner seen in last 12 months, by Asian ethnic group (age-standardised percents).

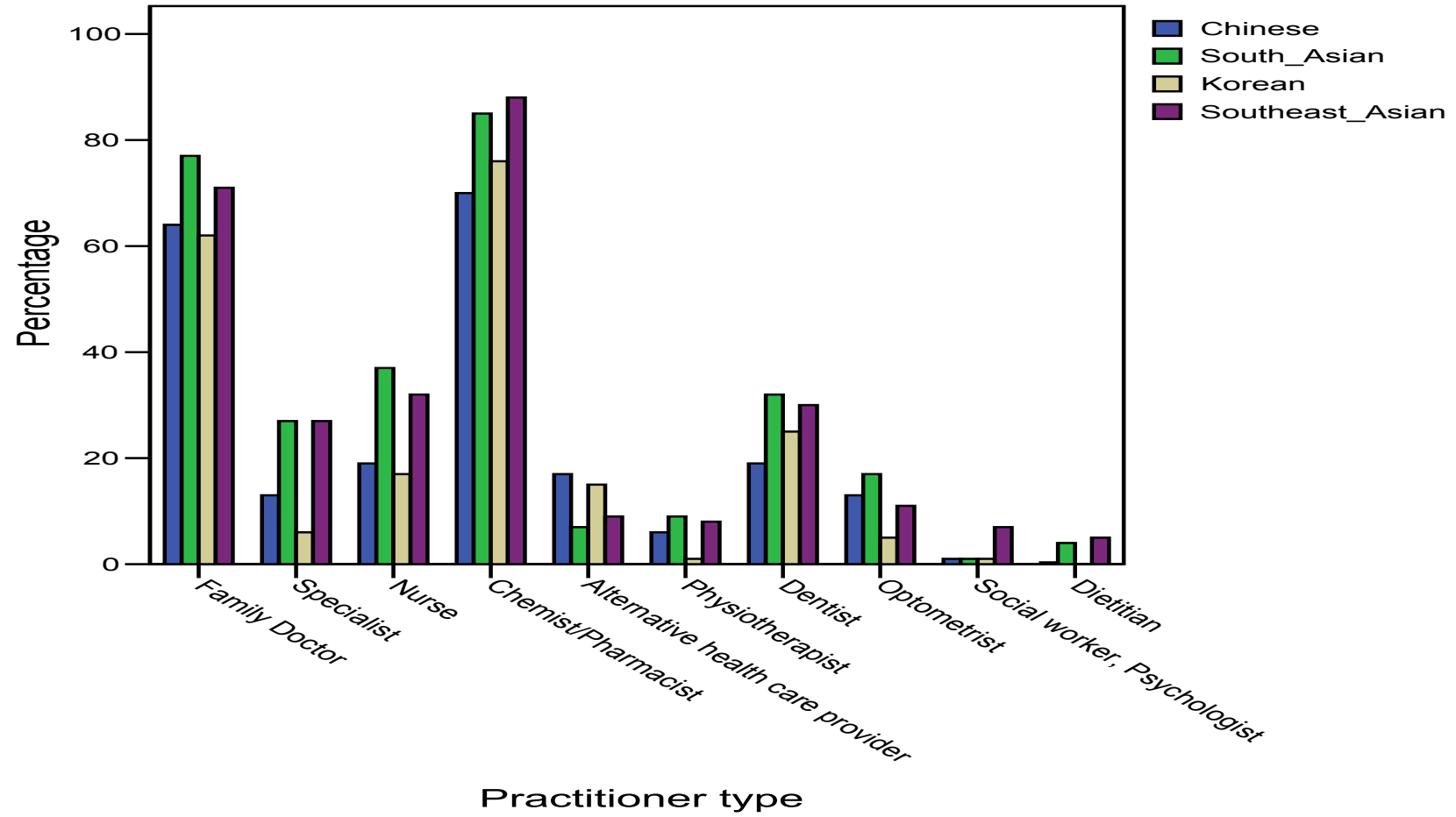


Table 15c: Relative Risk of seeing a health care practitioner in last 12 months for Asians compared with Europeans, among people who have a chronic disease\*, adjusted for age and sex.

Health Care Provider	Ethnicity	Visited Practitioner (%)#	Relative Risk (95% CI)
Family Doctor	Asian	83	0.91 (0.84, 0.98)
	European	89	1.00
Specialist	Asian	31	0.78 (0.59, 1.01)
	European	40	1.00
Nurse	Asian	37	0.68 (0.56, 0.84)
	European	52	1.00
Chemist	Asian	86	0.94 (0.88, 1.00)
	European	91	1.00
Complementary healer	Asian	16	0.49 (0.35, 0.67)
	European	30	1.00

\* Any of the diseases listed in Table 13a

# Age-standardised percent

Table 15d: Age-standardised percentage of women having a mammogram or cervical smear in the last 3 years.

Screening Test	%	%	%	%	%
Main ethnic groups	Asian	Maori	Pacific	European	Total
Mammography (45-69 years)	52	54	43	65	61
Cervical smear (20-69 years)	42	68	50	73	69
Asian ethnic groups	Chinese	South Asian	Korean	South East Asian	P value
Mammography (45-69 years)	47	52	99	54	0.66
Cervical smear (20-69 years)	41	40	31	48	0.71

Table 16a: Type of health issue last saw family doctor about, by Main ethnic group (age-standardised percents).

Type of illness	Asian	Maori	Pacific	European	Total
	%	%	%	%	%
Disability or long-term illness or chronic condition	15	21	18	18	18
Injury or poisoning	7	11	9	13	12
Immunization or vaccination	3	3	3	3	3
Mental or emotional health	1	2	2	4	4
Family planning	4	5	2	6	6
Maternity care*	5	8	12	4	5
Cervical smear*	8	7	3	10	9
Short term illness	45	35	41	36	37
Routine check up	33	31	36	27	28
Sexual health problem	<1	1	1	1	1
Prescription	1	1	2	2	2
Minor surgery	<1	<1	<1	1	1
Referral for further treatment	0	<1	0	<1	<1
Follow-up after surgery	<1	<1	0	<1	<1

\* Females only

Figure 14a: Health issue last saw family doctor about, by Main ethnic group (age-standardised percents).

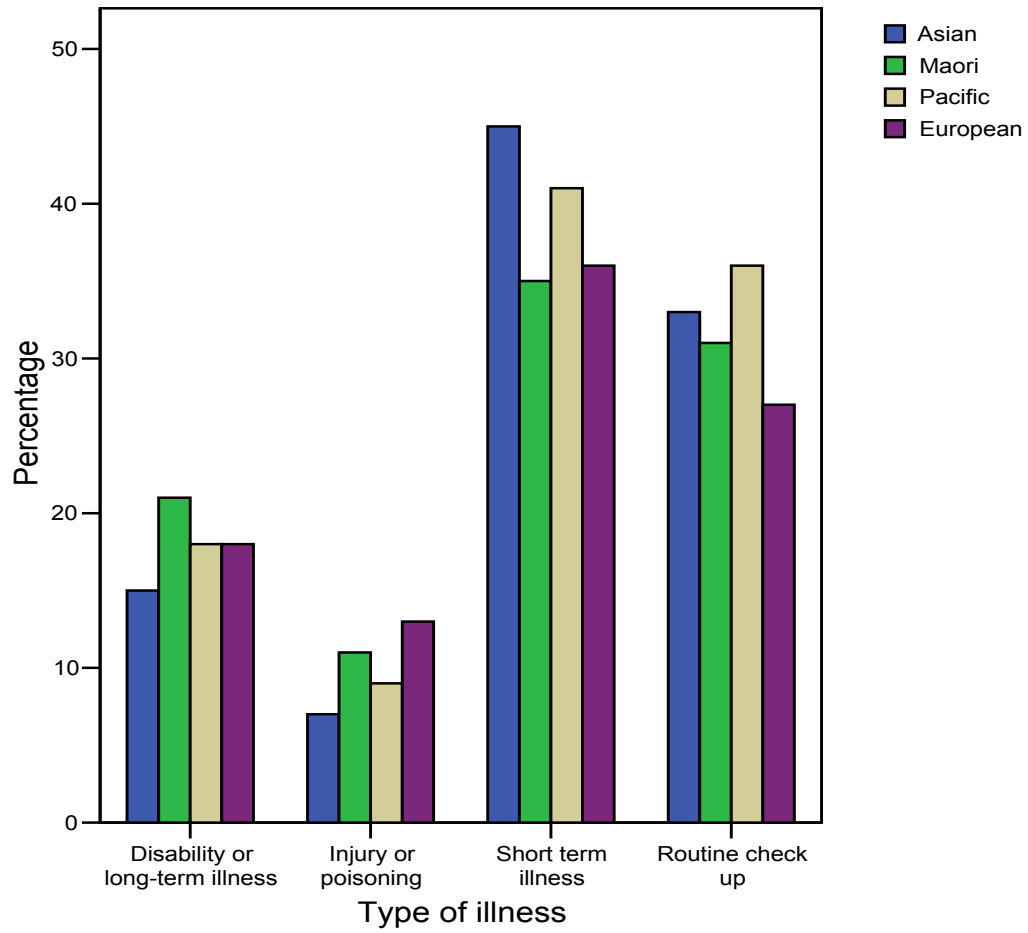




Table 16b: Type of health issue last saw family doctor about, by Asian ethnic group (age-standardised percents).

Type of illness	Chinese	South Asian	Korean	South-East Asian	P value
	%	%	%	%	
Disability or long-term illness or chronic condition	12	14	13	22	0.65
Injury or poisoning	5	9	4	7	0.58
Immunization or vaccination	1	7	0	3	0.07
Mental or emotional health	<1	1	1	1	0.67
Family planning	3	3	0	7	0.06
Maternity care*	4	3	0	10	0.14
Cervical smear*	9	5	10	10	0.51
Short term illness	52	43	55	35	0.19
Routine check up	27	42	26	32	0.44
Sexual health problem	<1	<1	0	1	0.47
Prescription	1	1	0	4	0.53
Minor surgery	<1	1	0	<1	0.50
Referral for further treatment	0	0	0	0	#
Follow-up after surgery	0	0	0	<1	0.82

\* Females only

# P-value could not be calculated

Figure 14b: Health issue last saw family doctor about, by Asian ethnic group (age-standardised percents).

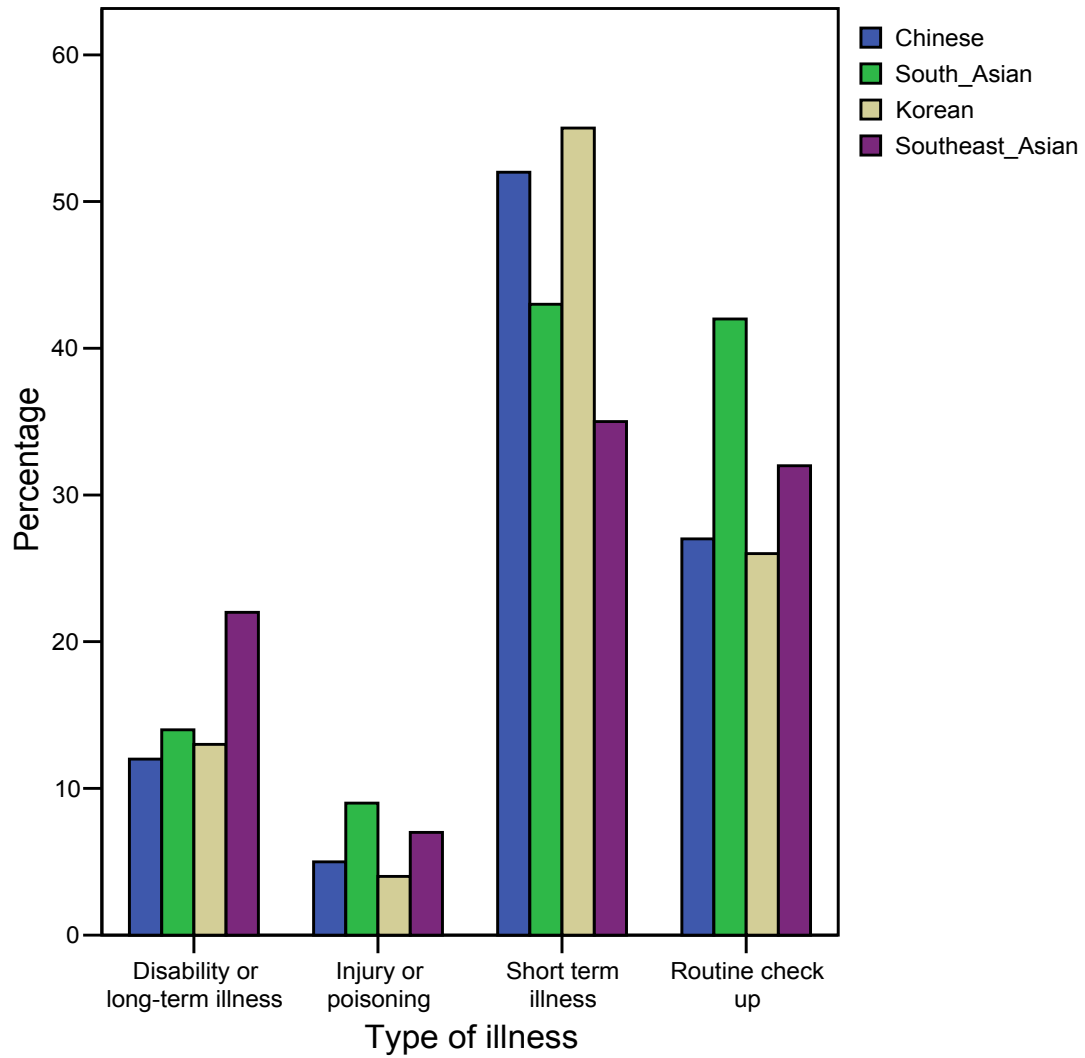


Table 17a: Percent who were satisfied with family doctor at last visit, and who could not see a family doctor when they needed to (in the last 12 months), by Main ethnic group.

Level	Asian	Maori	Pacific	European	Total
	%	%	%	%	%
Very satisfied or satisfied	92	91	93	93	93
Could not see doctor when needed to	13	19	18	12	13

Figure 15a: Percent who were satisfied with family doctor at last visit, and who could not see a family doctor when they needed to (in the last 12 months), by Main ethnic group.

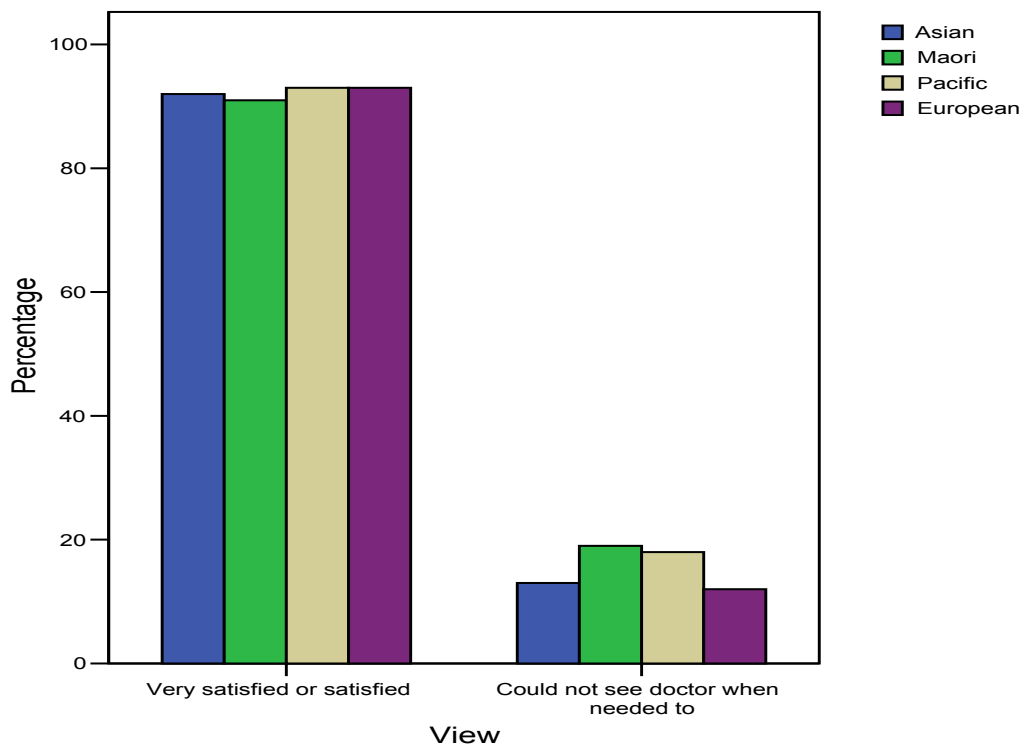


Table 17b: Percent who were satisfied with family doctor at last visit, and who could not see a family doctor when they needed to (in the last 12 months), by Asian ethnic group.

Level	Chinese	South Asian	Korean	South-East Asian	P value
	%	%	%	%	
Very satisfied or satisfied	93	93	90	90	0.95
Could not see doctor when needed to	16	10	3	14	0.0075

Figure 15b: Percent who were satisfied with family doctor at last visit, and who could not see a family doctor when they needed to (in the last 12 months), by Asian ethnic group.

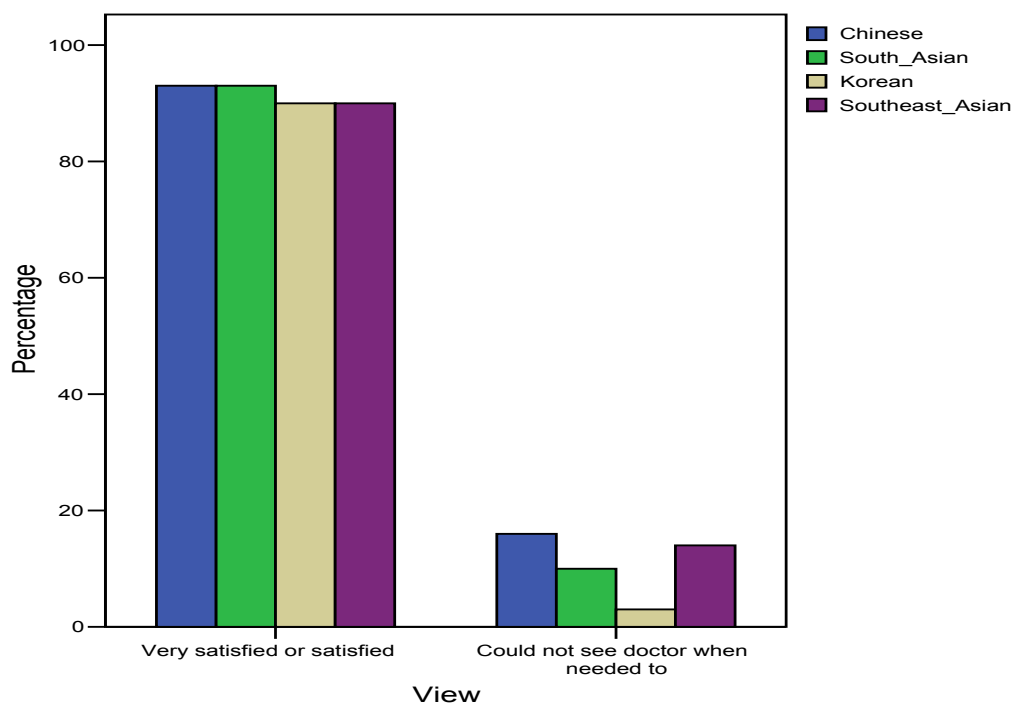


Table 18: Type of telephone helpline called in last 12 months, by Main ethnic group.

Type of service	Asian	Maori	Pacific	European	Total
	%	%	%	%	%
Any helpline	6	19	12	16	16
Healthline	1	1	1	1	1
Plunketline	1	1	2	1	1
Quitline	1	5	2	2	2
National Poison Centre	<1	<1	<1	<1	<1
Youthline	<1	<1	<1	<1	<1
Women's Refuge	0	<1	<1	<1	<1
Aids Hotline	0	0	0	0	0
Gambling Crisis hotline	0	<1	0	<1	<1
Lifeline	<1	<1	<1	<1	<1
Toughlove	<1	<1	0	<1	<1
Alcohol helpline	<1	<1	<1	<1	<1
Narcotics Anonymous	<1	<1	0	<1	<1
Sexual Health Service	<1	<1	<1	<1	<1

Table 19a Mental health status in last four weeks, by Main ethnic group.

<b>Mental Health Status</b>	<b>Asian</b>	<b>Maori</b>	<b>Pacific</b>	<b>European</b>	<b>Total</b>
	%	%	%	%	%
Felt happy all or most of the time	77	77	76	79	78
Felt calm and peaceful all or most of the time	71	69	71	69	69
Felt down all or most of the time	3	3	3	2	2
Felt nervous all or most of the time	2	3	4	2	2
Felt full of life all or most of the time	62	52	59	49	50
Difficulty understanding what people say because of physical or mental health	14	19	15	12	13

Table 19b Mental health status in last four weeks, by Asian ethnic group.

Mental Health Status	Chinese	South Asian	Korean	South East Asian	P value
	%	%	%	%	
Felt happy all or most of the time	78	74	63	83	0.14
Felt calm and peaceful all or most of the time	77	68	61	68	0.21
Felt down all or most of the time	1	2	<1	7	0.31
Felt nervous all or most of the time	1	4	2	2	0.73
Felt full of life all or most of the time	64	61	57	63	0.94
Difficulty understanding what people say because of physical or mental health	12	13	17	21	0.19

Figure 16a: Mental health status, by Main ethnic group

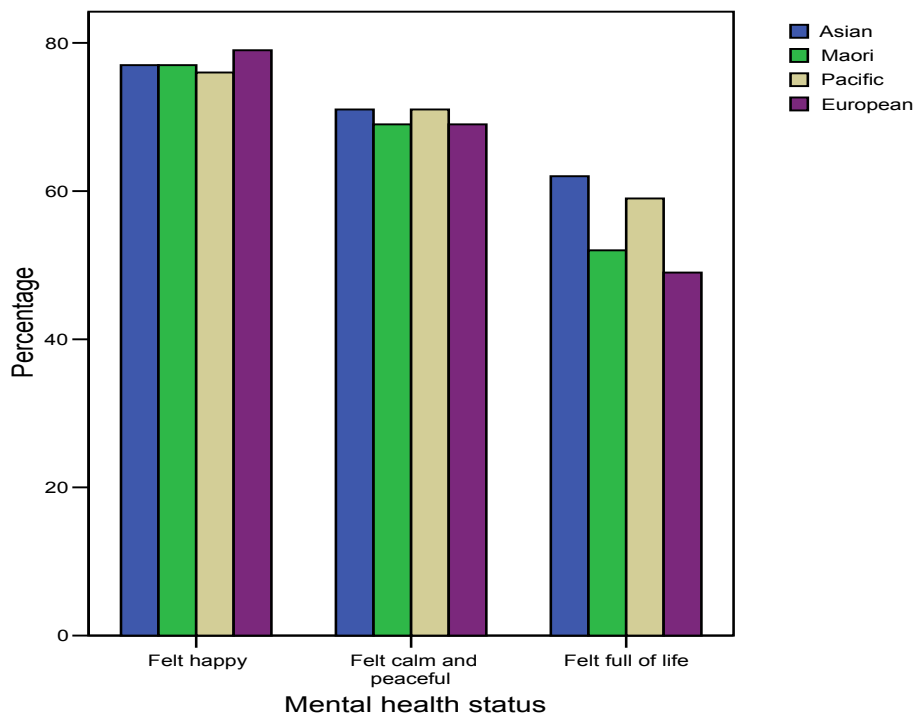
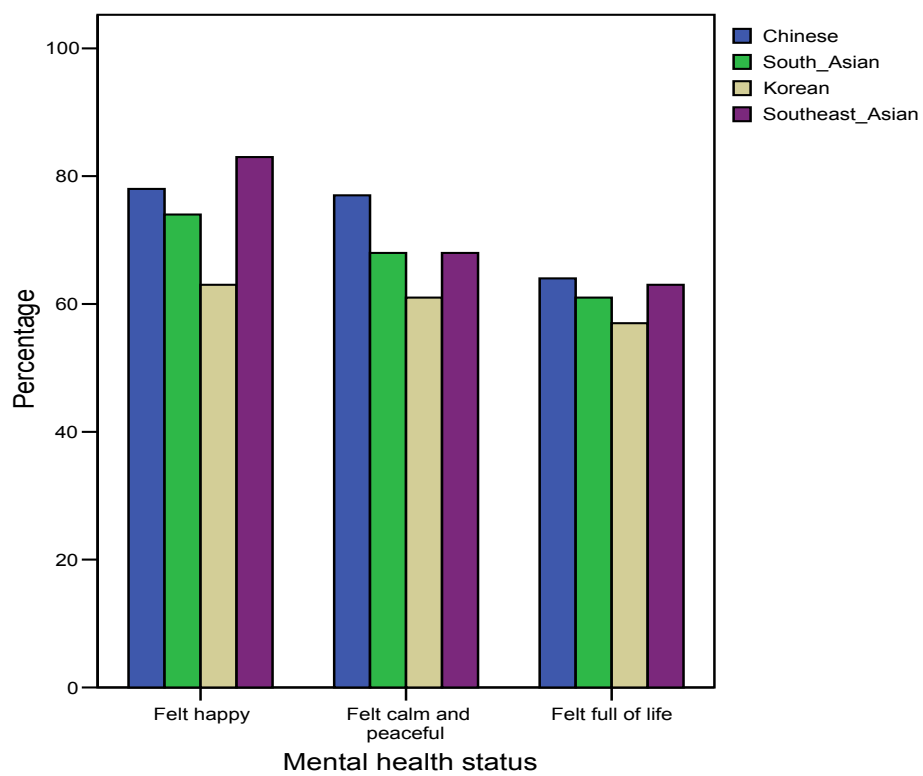


Figure 16b: Mental health status, by Asian ethnic group





## SUMMARY OF MAIN RESULTS

### **Socio-demographic variables**

#### *1. Age*

- Asian people have a similar age-distribution to Maori and Pacific, but are younger (on average) than Europeans.
- South Asians are older (on average) than Chinese, South-East Asians and Koreans

#### *2. New Zealand Born*

- Asian people are less likely to have been born in New Zealand compared with other New Zealanders, with nearly half arriving in New Zealand within the last 5 years.

#### *3. Housing*

- Nearly all Asian people (99%) live in urban areas.
- Asian people (31%) are more likely to live in most deprived (lowest NZDep2001 quintile) areas than Europeans (13%), although less likely than Maori (43%) and Pacific (66%).
- South Asians (38%) were more likely to live in the lowest NZDep01 quintile areas than other Asian people.

#### *4. Education, Occupation & Income*

- Asian people (35%) are more likely to have a university degree than all New Zealanders (15%).
- Asian people (47%) are less likely to have a paid job than all New Zealanders (65%).
- Asian people (25%) are less likely to receive government income support than all New Zealanders (38%).
- Asian people (20%) are more likely to live in a low income household (<\$15,000 annually) than other New Zealanders (12%).

## **Lifestyle**

### *1. Physical activity*

- Asian people are less likely to be physically active than other New Zealanders.
- South Asian women are less likely to be physically active than other Asian women.

### *2. Fruit and Vegetables*

- Asian people have a similar fruit and vegetable intake to Maori and Pacific, but lower than Europeans.

### *3. Alcohol*

- Asian people are less likely to drink alcohol, and less likely to binge drink, than other New Zealanders.
- South-East Asian men are more likely to binge drink than other Asian men.

### *4. Tobacco*

- Asian people are less likely to smoke tobacco than other New Zealanders.
- South-East Asians were more likely to allow smoking inside their homes than other Asian people.

### *5. Cannabis*

- Asians people are less likely to use cannabis than other New Zealanders.
- South-East Asian men were more likely to use cannabis than other Asian men.

### *6. Gambling*

- Asian people were less likely to gamble than other New Zealanders.
- Chinese were more likely to gamble at a casino than other Asian people.

### *7. Obesity*

- Asian people are less likely to be overweight and obese than other New Zealanders
- South-Asians are more likely to be overweight and obese than other Asian people.

### *8. Lifestyle & Years in New Zealand*

- Increasing time living in New Zealand was associated with increased consumption of alcohol and cannabis among Asian people.

## **Chronic Disease**

### *1. Cardiovascular Disease & Diabetes*

- Asian people have a similar prevalence of treated high cholesterol compared to other New Zealanders, but reported a significantly lower prevalence of heart disease than other New Zealanders (5% v. 8%).
- The prevalence of diabetes was higher among Asians than Europeans (8% vs.3%).
- South Asians have a higher prevalence of treated high cholesterol (12%) and diabetes (14%) compared with other Asian people.

### *2 Other Chronic diseases*

- The prevalences of asthma (5% vs.14%), neck and back disorder (14% v. 24%), cancer (3% v. 6%) and other long term illness (17% v. 23%) were significantly lower among Asian people in comparison with the national prevalence.
- South Asians have a higher prevalence of asthma (16%) than other Asian people.
- Koreans have a lower prevalence of arthritis than other Asian people.

## **Access to Health Care**

### *1. Type of practitioner consulted*

- Asian people (81%) were less likely to have visited a health practitioner (or service) when they were first unwell than other New Zealanders (93%).
- 12% of Asian people visited an alternative health care provider for their own health in the last 12 months.
- Among people with chronic disease, Asian people were less likely than Europeans to visit a health practitioner in the last 12 months.
- Asian women were less likely to have had a mammography or cervical screening test in the last three years than other New Zealand women.

### *2. Reasons for visiting General Practitioner (GP)*

- Asian people most commonly visited their GP for a short term illness or a routine check up.
- Asian people were less likely to visit a family doctor for injury or poisoning, or for mental or emotional health reasons, than other New Zealanders.

### 3. *Level of satisfaction at last GP visit*

- Most Asian people were very satisfied (92%) with their last GP visit, similar to the proportion for all new Zealanders (93%).

### 4. *Use of Telephone Helplines*

- Asian people were less likely to use any type of telephone helpline in the last 12 months than all New Zealanders (6% v. 16%).
- Most common helpline used by Asian people was Plunketline (2%).

### 5. *Mental Health*

- 77% of Asian people felt happy all or most of the time in last 4 weeks, similar to the national figure of 78%.
- Feelings reflecting mental health status did not vary between the four Asian communities.

## DISCUSSION

The results of this analysis provide an overall picture of the current health needs of the Asian community in Aotearoa and identify issues that may affect their health into the future.

### *Main ethnic groups*

#### **Sociodemography**

Comparing the four main ethnic groups, the socio-demographic pattern for Asians is similar to the situation for Maori and Pacific people in a number of aspects. The Asian community is relatively young, with 52% of its adult population aged between 15-34 years, compared with 35% of all New Zealanders (Table 2a), so that the need for health services is projected to increase more rapidly in the future among Asians than for the total population. The Asian community has the highest proportion of people who have newly arrived to New Zealand (46% in the last 5 years, compared with 5% for the total population – Table 2a) and clearly the highest need for interpreting services within the health sector. Yet the health sector has been slow to recognize this need. As an example, the current guidelines for completing ethics applications to the government Health and Disability Ethics Committees does not specifically mention any Asian languages for inclusion in the list of languages requesting interpreters on consent forms [47]. Further, interpreters are not widely available in primary health care.

Overall, the Asian community is poorer economically than the European, although not as disadvantaged as the Maori and Pacific communities (Tables 3a, 4a). However, Asians are more likely to live in the most deprived areas (NZDep2001 deciles 9 & 10) than the total population (31% v. 20%); and more likely to live in a household earning less than \$15,000 annually than the total population (20% v. 12%). Despite having a higher proportion unemployed (53% v. 35% for total population), Asians are less likely to receive any form of government income support (25% v. 38%). Low household incomes and low levels of government income support are likely to adversely affect access to health care by the Asian community.

### **Lifestyle**

The overall lifestyle pattern of the Asian community is generally good. Asians are less likely to smoke (tobacco or cannabis) and drink alcohol than other New Zealanders (Tables 7a, 8a, 9a). They are also less likely to gamble than other New Zealanders (Table 10a), consistent with 2003 data from the Problem Gambling Foundation which show that the proportion of Asian clients who ring the telephone helpline is consistent with their proportion in the population [48]. The latter report also documents that a small proportion of Asian gamblers have very high gambling losses (median of \$4000 in last 4 weeks, about 5 times higher than for other ethnicities), which contrasts with the proportion of Asian gamblers spending >\$30 in a week being lower than for European and higher than for Maori and Pacific gamblers (Table 10a). It is possible that the small number of self-referred clients to the Gambling Problem website (n= 41 in 2003) do not represent the patterns among all Asian gamblers, but rather one mode of a bi-modal gambling pattern in the Asian community [49].

However, some lifestyle patterns are of concern in the Asian community. Firstly, physical activity levels are low, particularly among Asian women who are more likely to be inactive than all other ethnic groups (Table 5a). Secondly, the proportion eating 5+ serves of fruit and vegetables per day is lower in Asians (and Maori and Pacific) compared with the Europeans. These findings have been reported previously [2]. Given the substantial body of evidence showing the health benefits from physical activity and high consumption of fruit and vegetables, health promotion strategies are urgently required to increase activity and good nutrition levels in the Asian communities.

### **Chronic Disease**

The overall pattern indicates that Asians have low prevalences of most chronic diseases, including heart disease, compared with other New Zealanders (Table 13a). These findings need to be treated with caution as they are based on self-reports, particularly when they are not consistent with previous New Zealand studies – for example earlier studies showing an increased measured hypertension prevalence [37]. However, the increased prevalence of self-reported diabetes among Asians, compared with Europeans,

in the current survey is consistent with earlier New Zealand studies [36,39], and consistent with studies comparing South Asians with native British in the United Kingdom [50]. The prevalences of chronic disease in the Asian community are likely to increase over time with acculturation towards the 'kiwi' lifestyle.

Within the Asian community, South Asians have an increased risk of diabetes, hypercholesterolaemia and asthma (Table 13b). Special targeted preventive efforts are required so that cardiovascular disease does not escalate in this group.

Although mental previously has been identified as a major health concern by representatives from the Asian community [1], the lack of poorer mental health status by Asian participants in this study maybe due to problems with understanding questions, or from fear or stigma about disclosing poor mental health in a new cultural environment [51].

### **Access to Health Care**

Asian people are less likely to visit a health practitioner if unwell, and less likely to have visited a family doctor (for any reason) in the last 12 months than other New Zealanders (Tables 14a, 14b). These findings have been reported previously [2]. They are not due to lower prevalences of disease in the Asian community, since analyses restricted to those with a chronic condition showed that Asians were less likely to have visited a range of health practitioners compared with Europeans (Table 15c). The latter finding indicates that Asian people with chronic disease are not accessing health services to the same degree as Europeans, and complements research showing decreased access to health services by Asian (and Pacific) immigrants to the United States [52]. Further, Asian women were less likely to have had a mammography or cervical screening test in the last three years than other New Zealand women (Table 15d), while Asian people were less likely to use telephone helplines than other New Zealanders (Table 18). The reasons for lower access to health services by Asian people need to be identified. However, a number of factors may be acting as barriers to health care among Asians, including language, fear and suspicion about consulting health practitioners from another culture, unfamiliarity of

the range of health services available in New Zealand, reliance on cultural healers who are not part of the established NZ health system, and cost.

### *Asians comparisons*

A major contribution of the current report is to examine the health status of each of the main Asian communities in Aotearoa. New Zealanders typically have a pan-Asian perspective of the Asian community. However, the data from the 2002/03 New Zealand Health Survey show that health issues vary between the four main Asian communities, as described in this report.

#### **Chinese**

Chinese are the largest Asian community in New Zealand. Generally, their health status is good compared with the other Asian communities. Gambling is the only health issue identified with them, particularly their use of casinos, which is significantly higher than by other Asians (Table 10b). The proportion who spent >\$30 in a week was highest among Chinese.

#### **South Asians**

South Asians are the second largest Asian community in New Zealand. They are more likely to live in deprived areas than other Asians (Table 3b). South-Asian women have reduced prevalences of vigorous physical activity compared with other Asian women (Table 5b). South-Asians have higher prevalences of obesity compared with other Asians (Table 11d), which is a contributing factor to their increased risk of diabetes, heart disease and hypercholesterolaemia (Table 13b). If the experience of South Asian immigration to the United Kingdom is any guide [33,34], the prevalences of the above diseases could increase further over time among the South Asian community in New Zealand

#### **South-East Asians**



South-East Asians are less likely to have arrived in New Zealand within the last 5 years than other Asians (Table 2b), and so have had more time to acculturate. Thus, the behaviour and disease patterns related to the dominant culture in New Zealand may emerge first among South-East Asians before becoming manifest in other Asian communities. South-East Asian men are more likely to binge drink alcohol and consume cannabis than other Asian men (Tables 7d, 9b). Smoking prevalences currently do not vary between Asian communities (Table 8b), although smoking is more likely in South-East Asian homes than those of other Asian ethnicities (Table 8c).

### **Koreans**

Koreans are the newest arrivals to Aotearoa among the Asian community, with 70% having arrived in the 5 years before 2002 (Table 2b). They are more likely to live in high decile areas than other Asians (Table 3b). No specific health issues were identified in the Korean community, perhaps because of their small sample size in this survey (n=102).

## CONCLUSIONS

1. Asian people in New Zealand are more highly educated than other New Zealanders, but are less likely to have jobs and less likely to receive government income support. These are important socio-economic determinants of health.
2. Asian people in New Zealand currently have lower prevalences of most chronic diseases, aside from diabetes, compared with other New Zealanders. However, the health status of Asian people needs to be monitored as disease rates are likely to change over time with acculturation. Already, South Asians have an increased prevalence of diabetes compared with other New Zealanders.
3. Asian people with chronic disease are not accessing health services, and Asian women are not having mammography or cervical screening tests, to the same degree as Europeans. The reasons for this need to be identified.
4. Asian people in New Zealand are not a single cultural entity, but made up of distinct communities, each with its own unique health needs. Culturally aware health services should be developed to meet these unique needs.

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## **Appendix 1**

### **Search Strategy for Identifying Relevant Literature**

The articles in this literature review were obtained from the following sources. Databases from Medline, Current contents, Proquest were searched for publications during 1984 to 2005 using the following terms (in varying combinations): ‘Asian Continental Ancestry Group’, ‘New Zealand’, ‘Asian’, ‘Income’, ‘Lifestyle’, ‘Ethnicity’, ‘Primary health care’, ‘Cardiovascular diseases’, ‘Diabetes’, ‘Heart disease’, ‘Risk factor’, ‘Asthma’, ‘Nutritional and metabolic diseases’, ‘Chronic disease’, ‘Mental health’, ‘Alcohol’, ‘Smoking’, ‘Physical activity’,

In addition, references from the earlier report from the Asian Public Health Project were examined [1]. The main initial focus of the search was to identify New Zealand studies, but broadened to include international studies because of the small number of New Zealand articles on Asian health.