



## A health profile of New Zealand youth who attend secondary school

Adolescent Health Research Group

### Abstract

**Aim** To determine the prevalence of selected health behaviours and protective factors in a representative population of New Zealand youth who attend secondary school.

**Methods** The study sample comprised 12 934 Year 9 to 13 youth from 133 randomly selected secondary schools across New Zealand in 2001. A cross-sectional, anonymous, self-report survey was conducted, incorporating 523 questions in a multimedia computer assisted self-interview (M-CASI) format.

**Results** The school response rate was 85.7% and the student response rate was 75.0%, resulting in an overall response rate of 64.3%. The final dataset comprised 9570 students (males 46.2%, females 53.8%) belonging to diverse ethnic groups (Maori 24.7%, NZ European 55.3%, Pacific 8.2%, and Asian 7.2%). Most students (males 94.2%, females 90.3%) rate their health as good or better, and 90% report the presence of a caring adult in their family or at school. More than one quarter of students (males 27.2%, females 27.6%) report riding in a car driven by a potentially intoxicated driver within the last four weeks. Students report high levels of suicidal thoughts (males 16.9%, females 29.2%), suicide attempts (males 4.7%, females 10.6%), and depressive symptoms (males 8.9%, females 18.3%).

**Conclusions** This survey finds that most school students are healthy, but there are areas of serious concern including driving behaviours and mental health. Students report a high prevalence of positive connections with family and school; these connections are known sources of resiliency in the lives of young people. Findings of the current study support the implementation of the New Zealand Government's newly released youth policies: the Youth Development Strategy Aotearoa and the Youth Health Action Plan.

The health of our youth to a large part determines the health of our society. In 2001, youth aged 12 to 24 years constituted 18% of New Zealand's total population.<sup>1</sup> Much of New Zealand's current preventable morbidity and mortality can be attributed to behaviours that are initiated during adolescence, for example substance use, sexual behaviours, eating and exercise.<sup>2</sup>

Until recently, New Zealand youth have been overlooked in terms of national policy, age-specific health services, and nationally representative population-based databases. This is despite New Zealand's current generation of youth having rates of unintended pregnancy, suicide and self-harm that are among the highest in the Western World.<sup>3,4</sup> In 1990, the Scientific and Technical Advisory Group to the World Health Organisation identified, as a top priority, the urgent need for comprehensive population-based studies of adolescent health problems, concerns, risk behaviours and resiliency.<sup>7</sup> This is particularly pertinent for sensitive personal health areas, such as

sexuality, in which New Zealand research to date has tended to study small, non-representative samples. There is a specific paucity of information on the health and wellbeing of Maori and Pacific youth.

There is likewise a comparative lack of representative population research into the protective and resiliency factors in the lives of youth that promote health and wellbeing. While there exists a considerable amount of knowledge on the presence and impact of risk factors on the health of youth, there has been a shift in focus to examine protective factors and sources of resilience in the lives of adolescents.<sup>6-8</sup> The concept of resilience offers insight into possible effective interventions and programme development.

This study aims to determine the prevalence of selected health risk behaviours, protective factors, health status, and service utilisation indicators in a representative population of New Zealand youth who attend secondary school. This paper presents a contemporary health profile of New Zealand's youth population that informs policymakers, educators, health providers and communities working to improve the health and wellbeing of youth.

## Methods

**Participants and setting** The sampling frame for the survey consisted of all 389 New Zealand schools with greater than 50 students enrolled in Years 9 to 13 (ages 12 to 18 years). From this group, 133 schools were randomly selected and invited to participate in the data collection between March and October 2001. At each school, the study administrators, in collaboration with school staff, generated a random list of 30% of all eligible Year 9 to Year 13 students. The first 15% of students on this list were identified as the selected students, the second 15% were identified as the reserve list. The selected students were all invited to participate. On the day of the survey, if selected students did not arrive at the school study venue students on the reserve list were then invited to participate. Students were ineligible to participate if they were not New Zealand residents, if they had insufficient English language skills to participate, or a disability preventing them from using a standard laptop computer.

**Questionnaire** The development and piloting of the survey questionnaire has been previously reported elsewhere.<sup>9</sup> In brief, the questionnaire was developed following consultation on youth health information needs with key stakeholders and end users, including health providers, youth health researchers, government agencies, schools, youth, and Maori and Pacific community leaders. An innovative survey tool using multimedia computer assisted self-interviewing (M-CASI) was developed to administer the questionnaire. The pilot study demonstrated that students found a questionnaire using M-CASI acceptable and enjoyable. Results from the pilot study provided suggestions that led to refinements of the questionnaire and its administration. The final M-CASI questionnaire used in this survey had a bank of 523 questions. The Reynolds Adolescent Depression Scale<sup>10</sup> (RADS), which measures depressive symptoms, was incorporated into the final survey.

**Data collection protocol** Approval for this study was obtained from the University of Auckland Human Subjects Ethics Committee. Information about the survey was sent out to all families of students who were invited to participate in the survey. Parents were able to withdraw their child from the study. Written informed consent was obtained from all participating schools and all participating students. The M-CASI delivered questionnaire was administered using laptop computers. Questionnaire responses were automatically coded and stored on the computer hard disk. The data files were transferred via a floppy disk and collated for analysis.

**Analysis** Students were recruited using a clustered sample design with unequal probabilities of selection. In all analyses, the data have been weighted and the variance of estimates adjusted to allow for correlated data from the same school. Chi-square tests were used to test for differences in proportions between males and females. Prevalences and their 95% confidence intervals are presented adjusted for the sampling design. All analyses have been conducted using either SAS version 8.2,<sup>11</sup> or SUDAAN version 7.5.<sup>12</sup>

## Results

A total of 9699 students from 114 schools participated in the survey. The school response rate was 85.7% (114/133), and the student response rate was 75.0% (9699/12 934), resulting in an overall response rate of 64.3%. Participating students accounted for 4.0% of the total 2001 New Zealand secondary school roll.

Participating schools were geographically spread across the country from New Zealand's most northerly to most southerly town. Of participating schools, 70.2% (80/114) were state funded, 23.7% (27/114) state integrated (previously private, now receiving state funding to deliver New Zealand Curriculum), and 6.1% (7/114) private. Almost one third of schools (32.5%) were situated in a rural setting. Of the non-participating schools, 78.9% (15/19) were from New Zealand's three largest urban centres, and 52.6% (10/19) were private or state integrated secondary schools.

The 3235 students who did not participate included students from both selected and reserve student lists. No reason for non-participation could be identified for most students. Students who were invited to participate but were reported as being absent due to sickness on the day of the survey accounted for 28.1% (908/3235) of all non-participating students. A small number of non-participating students (2.5%, 81/3235) were known to have actively declined to participate. A small number of data files (1.3%, 129/9699) were unusable due to technical computer problems, resulting in a final study database of 9570 files available for analysis.

**Demographics** The age and gender distributions of students who participated in the survey were similar to those of the student population at the surveyed schools and of all secondary students nationwide (Table 1). Fewer than expected students aged 17 and above participated. This was partly due to the inclusion of three schools whose year 13 students were unavailable to participate due to other commitments. The survey sample had a higher proportion of female students than the national population due to the fact that the surveyed schools had higher percentages of female students than the national population.

**Table 1. Age and gender of survey participants**

	2001 NZ school population Number (%)	Surveyed schools population Number (%)	Survey sample Number (%)
<b>Age (years)</b>			
13	48 377 (20.2)	13 533 (20.7)	1972 (20.8)
14	54 312 (22.7)	15 146 (23.1)	2285 (24.1)
15	51 430 (21.5)	14 570 (22.2)	2179 (23.0)
16	43 000 (18.0)	11 765 (18.0)	1725 (18.2)
≥ 17	42 378 (17.6)	10 487 (16.0)	1308 (13.9)
<b>Gender</b>			
Male	129 989 (50.3)	30 312 (46.0)	4416 (46.2)
Female	128 507 (49.7)	35 538 (54.0)	5153 (53.8)

Table 2 shows the diverse ethnic distribution of the study population and compares it with the 2001 New Zealand school roll and the 2001 New Zealand Census. Each of these datasets uses different methods for defining ethnicity. The use of the 1996 New Zealand Census ethnicity question in this questionnaire may have resulted in an

apparent over-classification of Maori.<sup>13,14</sup> Of note, almost one third (32.5%) of students identified with more than one ethnicity.

**Table 2. Ethnic diversity of survey participants**

Ethnic group	2001 national school population (%)	2001 Census 12–18 years (%)	Survey sample (%)
Maori	17.5	20.0	24.7
Pacific	7.2	7.0	8.2
Asian	6.8	8.0	7.2
NZ European	67.1	61.0	55.3
Other/unspecified	1.4	4.0	4.6

**Health status and service utilisation** The majority of students rated their health as good, very good or excellent (males 94.2%, females 90.3%). Approximately two thirds of students (males 67.9%, females 63.9%) stated they did not have a long-term (greater than six months) health condition. Asthma was the most common chronic health condition, being reported by 20.3% of all students.

A family doctor was identified by 83.4% of the students as the one person they usually approach for healthcare. When asked to select the barriers they faced in obtaining healthcare, 54.1% of male students and 49.7% of female students reported no barriers. Among those barriers identified in accessing healthcare, the most common were: not wanting to make a fuss (27.7%); could not be bothered (23.8%); cost (15.0%); not feeling comfortable with the health provider (14.9%); too scared (14.9%); and worries that the consultation would not be kept private (13.2%).

**Table 3. Prevalence of selected protective factors in survey participants**

	Male Adjusted percent 95% CI	Female Adjusted percent 95% CI	p value
<b>Family</b>			
Get enough time with at least one parent	62.9 (60.9, 64.8)	60.8 (59.2, 62.4)	0.1
At least one parent cares a lot	92.7 (91.7, 93.7)	92.3 (91.4, 93.2)	0.5
<b>School</b>			
Teachers are fair	86.2 (84.8, 87.5)	89.5 (88.4, 90.6)	0.0001
Adults at school care	89.0 (87.9, 90.2)	89.6 (88.7, 90.5)	0.4
<b>Peers</b>			
If had a serious problem have a friend to talk to	72.8 (71.3, 74.3)	89.4 (88.5, 90.4)	<0.0001
<b>Neighbourhood</b>			
Feel safe in neighbourhood	86.7 (85.2, 88.2)	82.9 (81.2, 84.7)	0.001
<b>Spirituality</b>			
Spiritual beliefs are very important	27.9 (24.8, 31.0)	38.6 (35.4, 41.8)	<0.0001

**Social and environmental protective factors** Table 3 lists the prevalences of social and environmental protective factors by gender. Approximately 90% of the students reported the presence of a caring adult in their family or at school. Of note, nearly

40% of all students feel they do not get enough time with at least one parent. Most students (males 86.7%, females 82.9%) reported feeling safe in their neighbourhood. Female students were more likely than male students to identify having a peer to talk to about a serious problem ( $p < 0.0001$ ) and have higher rates of important spiritual beliefs ( $p < 0.0001$ ).

**Health behaviours** Table 4 lists prevalences for individual health behaviours by gender. The majority of both male and female students report participating in regular exercise, defined as moderate or strenuous exercise on three or more of the last seven days, though males are more likely to report this ( $p < 0.0001$ ). Females are twice as likely as males to report not having breakfast ( $p < 0.0001$ ) and trying to lose weight ( $p < 0.0001$ ).

While two thirds of students (males 65.2%, females 65.9%) report always wearing a seatbelt while driving or riding in a car, more than one quarter of students (males 27.2%, females 27.6%) report riding in a car driven by a potentially intoxicated driver within the last four weeks.

Most students (males 83.7%, females 80.4%) report that they have drunk alcohol. One half of all students (males 50.3%, females 54.6%) report having ever smoked a cigarette, and more than one third (males 38.5%, females 37.9%) report having ever used marijuana. The reported prevalences of drinking alcohol, cigarette smoking and marijuana use were similar between genders, except for a higher proportion of females reporting daily cigarette smoking.

Two thirds of students (males 67.6%, females 69.6%) report they have never had sexual intercourse. The prevalence of sexual activity increases across age groups with 16.8% of 13 year olds, 33.3% of 15 year olds, and 48.7% of 17 year olds reporting having had sexual intercourse. Use of a condom by a student or their partner during the most recent episode of sexual intercourse was reported by more than two thirds of all sexually active students, and by more males than females (males 76.5%, females 68.8%,  $p = 0.0007$ ).

Male students report significantly higher rates of involvement in violent behaviours than female students ( $p < 0.0001$ ). Female students report higher rates of suicidal thoughts ( $p = 0.0001$ ) and suicide attempts ( $p = 0.0007$ ) than male students. Significant depressive symptoms are more than twice as prevalent among female students (18.4%) than male students (males 9.0%,  $p < 0.0001$ ).

Many students (39.5%) report engaging in none or only one of the following six health risk behaviours: ever having drunk alcohol, ever smoked a cigarette, ever used marijuana, ever had sex, been in a fight in the last year, or thought of killing themselves in the last year. A small number (11.8%) report they have engaged in either five or all six of these health risk behaviours. An ordinal logistic regression found no difference in the average number of these six health risk behaviours engaged in by male students compared with female students ( $p = 0.2$ ).

**Table 4. Prevalence of selected health behaviours in survey participants**

	<b>Male</b> Adjusted percent 95% CI	<b>Female</b> Adjusted percent 95% CI	<b>p value</b>
<b>Activities</b> Regular exercise	70.4 (68.7, 72.1)	57.3 (55.2, 59.4)	<0.0001
<b>Nutrition</b> Never have breakfast Tried to lose weight in last year	11.8 (10.6, 13.1) 28.6 (27.2, 30.0)	23.2 (21.4, 24.9) 63.2 (61.3, 65.2)	<0.0001 <0.0001
<b>Driving</b> Always wear seatbelt Passenger of drunk driver in last 4 weeks	65.2 (62.9, 67.5) 27.2 (24.9, 29.4)	65.9 (64.2, 67.6) 27.6 (25.6, 29.6)	0.6 0.7
<b>Alcohol</b> Ever drunk alcohol Binge drinking in last 4 weeks	83.7 (80.8, 86.5) 41.4 (38.1, 44.7)	80.4 (77.3, 84.4) 38.5 (35.7, 41.3)	0.007 0.03
<b>Smoking</b> Ever smoked Daily smoking	50.3 (47.3, 53.3) 7.9 (6.6, 9.1)	54.6 (51.9, 57.3) 10.6 (9.2, 12.0)	0.003 0.0009
<b>Marijuana</b> Ever used ≥ Weekly use	38.5 (35.6, 41.3) 7.9 (6.6, 9.2)	37.9 (35.2, 40.7) 5.7 (4.6, 6.8)	0.7 0.004
<b>Sex</b> Ever had sex Currently sexually active Used condom at last sex	32.4 (29.7, 35.0) 20.6 (18.8, 22.5) 76.5 (73.7, 79.3)	30.4 (28.2, 32.7) 21.6 (19.6, 23.7) 68.8 (66.2, 71.3)	0.1 0.4 0.0007
<b>Violence</b> Been bullied once a week or more Been in a serious physical fight in last year	9.2 (8.1, 10.3) 27.9 (26.0, 29.8)	5.2 (4.4, 6.0) 14.5 (13.0, 16.0)	<0.0001 <0.0001
<b>Suicide</b> Thought about killing self in last year Tried to kill self in last year Depressive symptoms	16.9 (15.5, 18.2) 4.7 (3.9, 5.6) 8.9 (8.0, 9.9)	29.2 (27.7, 30.7) 10.6 (9.3, 11.8) 18.3 (17.0, 19.6)	<0.0001 0.0007 <0.0001

## Discussion

The major findings of this study are that New Zealand secondary school students are generally healthy. Most students feel healthy and have positive connections to families, schools and peers. Likewise, few students engage in multiple health risk behaviours, including sexual intercourse, cigarette smoking, or marijuana use.

The current study has several strengths. It is the first nationally representative sample of New Zealand secondary school students that gives a comprehensive picture of their health risk behaviours, protective factors, health status and service utilisation indicators. It includes an ethnically diverse group of New Zealand's young people that is similar to New Zealand's current youth population. The survey's sampling frame, sample size and response rates provide a basis for the accurate prediction of population prevalences of a wide range of health risk behaviours, protective factors, health status, and service utilisation indicators. However it should be noted that the findings of this survey cannot be generalised to the entire youth population. Many students leave secondary school from year 11 (age 16 years) onwards. In 2001, New

Zealand secondary school retention rates were 80% of 16 year olds and 58% of 17 year olds.<sup>15</sup> Youth who leave secondary school at a young age or who are in alternative education are known to have high rates of health risk behaviours.<sup>16,17</sup> Non-response bias from students being absent on the day of the survey is a further limitation of this study. Past research has found youth who do not attend school,<sup>18</sup> and students absent on the day of a school health survey,<sup>19</sup> have higher rates of health risk behaviours. Therefore, it is likely that the findings of this survey may overestimate the health and wellbeing of New Zealand's school-age youth population.

Comparison between these findings and previous New Zealand research is limited by the absence of previous research on a nationally representative population of secondary school students. However, analysis of age-specific rates of past sexual activity suggests the current findings may be different to past New Zealand research. In the current study, 33.3% of students aged 15 years report having had sexual intercourse. The Dunedin and Christchurch longitudinal studies report rates of sexual activity before the age of 16 years of 29.3%, and 25.5% respectively.<sup>20,21</sup> A recent survey of Hawkes Bay Year 10 students found 39.4% of students reported having had sexual intercourse.<sup>22</sup> Possible explanations for these differences include: the use of different methodologies; the use of different survey instruments; and changes in the frequency of behaviour over time.

While this survey finds most school students are healthy, there are areas of serious concern. Motor vehicle crash deaths remain the leading cause of mortality in this age group.<sup>23</sup> The substantial numbers of youth who report engaging in risky behaviours while driving or riding in a car suggest there is an ongoing need to develop effective strategies that will prevent motor vehicle crash injuries and deaths in this age group. The prevalence of emotional health problems, including depression, eating issues and suicidal behaviours, are alarmingly high amongst students, particularly female students. The rates of these problems in New Zealand youth are up to twice those found in the recent national mental health survey of young people in Australia.<sup>24</sup> These findings support the current priority of promoting improved mental health for young New Zealanders.

Similarly, although the current study finds most students have positive connections with family and school, some do not, and strengthening these students' resiliency factors may enhance their healthy development and wellbeing. Further examination is required to determine whether it is simply the presence or absence of such protective factors or more complex interactions between protective and risk factors that better explain the relationships of these factors to behaviours and outcomes. Analyses by age, gender, ethnicity and socioeconomic factors and their relationships to health risk behaviours, protective factors and health status are the subject of ongoing work by this research group.

This survey finds that for many New Zealand youth there exists a range of barriers to health services that require the health sector to be more responsive to their needs. There is increasing evidence that youth-specific health services promote health service utilisation and better health outcomes for young people.<sup>25</sup>

This study has important implications. The findings provide valuable information to policymakers, educators, health providers and communities working to improve the health and wellbeing of youth. Specifically, the findings inform the implementation of

the New Zealand Government's newly released youth policies: the Youth Development Strategy Aotearoa,<sup>26</sup> and the Youth Health Action Plan,<sup>27</sup> both of which identify risk reduction and promotion of protective factors as effective strategies in improving outcomes for youth. This study reports a contemporary health profile of New Zealand's youth that has the potential to be compared with future surveys to enable the monitoring of trends in the health and wellbeing of young New Zealanders.

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