Substance use and socio-demographic factors among Aboriginal and Torres Strait Islander school students in New South Wales

Roberto Forero

Health Promotion Unit, South Western Sydney Area Health Service, New South Wales

Adrian Bauman

Epidemiology Unit, South Western Sydney Area Health Service, New South Wales

Jack X.C. Chen

Research Office, Royal North Shore Hospital, New South Wales

Bruce Flaherty

Crime Prevention Division, NSW Attorney General's Department, New South Wales

Abstract

Objective: To estimate prevalence rates of substance use and associated socio-demographic factors among Aboriginal and Torres Strait Islander (ATSI) secondary students.

Method: This paper presents ATSI data from population-based school surveys conducted in 1996, 1992 and 1989 in New South Wales and replicates identical analysis using the three datasets.

Results: The proportion of ATSI students in each survey ranged from 2.5% to 3.8%. After adjusting for age, gender and socio-demographic factors, ATSI students were more likely to smoke cigarettes, and to have tried cannabis and other illicit substances.

Conclusions: This study suggests that Aboriginal and Torres Strait Islander students were more susceptible to, and maintained a higher rate of, substance use than non-Aboriginal and Torres Strait Islander youth. Socio-demographic differences between Aboriginal and non-Aboriginal students in age, rural/urban status, living with both parents, reporting poor school performance, low parental supervision and high school absenteeism remained significantly associated with Aboriginal status and substance use.

Implications: This is one of the first studies examining substance use in a large and representative sample of in-school ATSI youth. These results provide information useful for public health advocates, and require policy changes more likely to reduce substance use among ATSI youth.

(*Aust N Z J Public Health* 1999; 23: 295-300)

The problems of substance abuse among Aboriginal and Torres Strait Islander (ATSI) people have been well-documented.[1-6] Consequences of substance abuse include injury, organic syndromes acute and chronic, alcoholic hallucinations, dementia, anxiety, depression and other disorders.[7] To date, few studies have provided information regarding drug and alcohol use by Aboriginal school age students anywhere in Australia.[8] Population-based adolescent surveys have omitted Aboriginal estimates mainly due to difficulties associated with establishing representative samples or due to their small numbers in population surveys.[9-10]

According to a series of consultations with Aboriginal students in ACT and NSW, little is known about the proportion of Aboriginal children coming to the school system suffering the effects of violence or alcohol and other drug use in their communities.[11] In addition, school retention rates for Aboriginal students were still less than half those of the general population. The Royal Commission into Aboriginal Deaths in Custody found that only two of 99 Aboriginal people whose deaths were investigated had completed secondary schooling. This highlights two major issues:

- little is known about Aboriginal adolescent drug and alcohol use, its determinants and associated factors; and
- some Aboriginal students were out of the school system, affecting the representativeness of in-school survey estimates.[11,12,13]

The purpose of this paper is to explore socio-demographic characteristics of frequent and hazardous levels of substance use among Aboriginal and non-Aboriginal adolescents from representative samples of NSW schoolchildren. The purpose of reporting 1989-92 and 1996 datasets together is to replicate analysis to confirm observed findings.[14-15]

Method

Analyses were based on state-wide samples of secondary students attending either Catholic, government or independent schools in the State of New South Wales. Schools were stratified by local area health service and were selected to participate through cluster random sampling defined by school class.

The surveys were developed to monitor drug use among secondary school students

Correspondence to:
Mr Roberto Forero, Health Promotion Unit, South Western Sydney Area Health Service, Locked Bag 7017, Liverpool BC, NSW 1871. Fax: (02) 9828 5905;
e-mail: roberto.forero@swsahs.nsw.gov.au.

Submitted: May 1998
Revision requested: October 1998
Accepted: April 1999

in NSW. Ethics approvals were obtained from the relevant education sectors and NSW Health Department. A detailed description of the methodology has been reported elsewhere.[14-16]

In this study, the term 'Aboriginal students' was used to denote any student of ATSI descent who identified as such by responding 'Yes' to the question: Are you an Aborigine or Torres Strait Islander? All questions, including Aboriginal status, were approved by the ethics committee for each survey. Parental consent was also sought and children were able to withdraw from the surveys at any time. The self-administered surveys were completed in classrooms under exam-like conditions. Participation was voluntary and anonymous. Extensive consultation was sought (during the analysis of all surveys) from the Aboriginal Branch of the NSW Health Department. Although this study did not seek specific ethical approval from an Aboriginal and Torres Strait Islander Ethics Committee because of the generic nature of the survey, it complied with the NHMRC recommendations on ethical matters on substance use and Aboriginal and Torres Strait Islander research.[17]

1996 data:

The study was a descriptive, cross-sectional survey conducted in New South Wales schools. A multi-stage cross-sectional sampling design was used to achieve a representative sample of NSW secondary school students. Over-sampling occurred in rural regions, providing greater numbers of rural and remote students. The multi-stage survey design was analysed using STATA 5.0. Design effects (DEFF) were calculated for each variable and used to estimate standard errors and confidence intervals. Sampling weights (the inverse of the probability of each individual to be included in the sample) were used for calculating the design effect. The data were collected between September and November 1996. Proportions were calculated taking into account the sampling design. A detailed description of the methodology has been reported elsewhere.[14]

1992-1989 data

The data were collected as the NSW Secondary School Surveys in September 1992 and 1989. To increase the sample of ATSI youth, data were pooled from these two surveys. A simple random sampling design was used to achieve a representative sample.[15,16]

The statistical comparisons between Aboriginal and non-Aboriginal students were conducted using robust logistic regression procedures, adjusting for age, sex, family structure, spending money, rural status, health status, school performance and school absenteeism. These socio-economic variables were incorporated into a model as predictors / potential confounders. Forced entry logistic regression models for complex design surveys were used (Table 1).

Once the associations between socio-demographic factors and Aboriginal status were established, additional logistic regression models for substance use were performed, adjusting for age, gender and selected socio-demographic factors (Table 2). Logistic regression for complex surveys could not be used at this stage because sampling design information for 1992-89 data was not collected nor available. A robust logistic regression procedure was used instead, measuring standard errors by adjusting for clustering by school.[18]

Students were asked how many times they had used tobacco, alcohol, marijuana, analgesics, inhalants, sedatives, hallucinogens, narcotics, amphetamines, speed and cocaine (1996 data) or stimulants (1992-89 data). The findings on regular use (three or more times in the last month) were reported for tobacco, alcohol, analgesics and inhalants. The findings of experimental usage (have used once or more times in their lifetime) were reported for cannabis and other illicit substances. According to the National Health and Medical Research Council guidelines, hazardous drinking was defined as having consumed five or more drinks on a single occasion for males and three or more drinks on a single occasion for females (1996 data only).[19]

Results

1996 data

A total of 10026 students aged 12-17 years were surveyed in 143 NSW schools. Of the total sample, 346 (3.4%) students identified themselves as Aboriginal or Torres Strait Islander, 9,609 (95.8%) as non-Aboriginal students and 71 (0.8%) did not respond.

A higher proportion of Aboriginal students were boys compared to non-Aboriginal students (54% versus 46%) but the difference was not significant. The mean age for Aboriginal students was 14.1 years (SD=1.48 years) compared to 14.4 years (SD=1.53 years, $F_{(9953)}=5.584$, $p<0.05$). A higher proportion of Aboriginal students attending Year 7 to Year 9 was found but the numbers dropped rapidly from Year 10 to Year 12. The Mantel-Haenzel test for linear trend was highly significant suggesting that retention rates for Aboriginal students were lower than retention rates for non-Aboriginal students (χ^2_{MH} for trend=26.18, $p<0.001$).

Thirty-two per cent of Aboriginal students reported having $20 or more per week spending money compared with 30% of non-Aboriginal children. Significant differences were found between Aboriginal and non-Aboriginal students in relation to rural/urban status. Twenty-one per cent of Aboriginal students were from rural/remote areas compared with 10% of non-Aboriginal students.

Fifteen per cent of Aboriginal students reported their school performance as below average compared with 6% of non-Aboriginal children (χ^2_{MH} for trend=48.4, $p<0.001$) and were 2.4 times more likely to report their school performance below average.

Fewer Aboriginal students (52%) reported living with both parents compared with 72% of non-Aboriginal students. Conversely, Aboriginal students were 2.2 times more likely to be living with a step or blended couple family (a child from a previous relationship of either partner is living in a couple family), 1.9 times more likely to be living with one parent and 4.3 times more likely to be living with none of their parents or step-parents or with somebody else (χ^2_{MH} for trend=81.7, $p<0.001$).

In relation to school absences during the last month, 28% of Aboriginal students reported missing three or more school days for health reasons compared to 18% of non-Aboriginal students.

Twenty seven per cent of Aboriginal students reported that they had been absent without permission from the school ('wagged') for one or more days in the last month compared with 15% of non-Aboriginal students. Similar proportions of Aboriginal and non-Aboriginal students reported poor health (16% versus 14% respectively, χ^2_{MH} for trend=0.31, $p>0.05$).

1992-89 data

A total of 7,614 students in years 7 to 11 were surveyed in 125 schools. Of the total sample, 224 (2.9%) students identified themselves as Aboriginal or Torres Strait Islander people, 7069 (92.6%) as non-Aboriginal and 334 (4.3%) did not respond. No differences were found on demographic variables between non-respondents and respondents. No statistically significant differences were observed between Aboriginal students and non-Aboriginal students on age, sex or school year.

Forty-nine per cent of Aboriginal students were males compared to 51% of non-Aboriginal students (χ^2=1.69, p=0.19). The mean age for Aboriginal students was 14.2 years (SD=1.44 years) compared to 14.1 years (SD=1.47 years, t_{7281}=0.24, p=0.45). A lower proportion of Aboriginal students attending senior school years was found but the linear trend was non-significant (29.5% versus 32.9%, χ^2_{MH} for trend=1.14, p=0.28).

Thirty-five per cent of Aboriginal youth reported more than $20 spending money per week, compared with 25% of non-Aboriginal students. Seventy per cent of Aboriginal students reported living with both parents compared with 85% of non-Aboriginal students (χ^2_{MH} for trend=70.9, $p<0.001$). Aboriginal students were twice as likely to be living with a single parent or with somebody else (Table 2).

In relation to missing school days during the last month, 27% of Aboriginal students reported missing three (or more) school days for health reasons compared to 21% of non-Aboriginal students. Aboriginal students were 1.1 times more likely to miss whole school days for health reasons and 2.6 times more likely to have 'wagged' school.

Table 1: Logistic regression comparing socio-demographic characteristics of Aboriginal and Torres Strait Islander and non- Aboriginal and Torres Strait Islander youth.

Socio-demographic factors	Proportion (%) Aboriginal	non-Aboriginal	Adj. OR	95% CI	t[a]	*p*	Deff[b]
1996 data. Complex survey design using weighted data.							
15-17 year olds (12-14 years, 15-17 years)	36.5	47.5	0.6	0.4-0.7	-3.9	<0.001***	1.2
Males (males, females)	54.2	46.4	0.8	0.6-1.0	-1.9	>0.05 ns	1.1
$20 or more spending money per week (<$20/>$20)	32.3	30.3	1.1	0.8-1.5	0.9	>0.05 ns	1.0
Living in a rural/remote area (urban-metro, rural-remote)	21.4	10.5	2.0	1.0-3.9	2.1	<0.05*	5.1
Not living with both parents (other family type/original couple)	48.0	27.7	2.0	1.5-2.5	5.6	<0.001***	1.1
School performance below average	15.3	6.0	2.4	1.6-3.3	4.9	<0.001***	1.1
Going out at night without adult supervision (1-2 times per week, 3+times per week)	37.5	25.8	1.6	1.2-2.1	3.3	<0.01**	1.3
Missing 3+school days for health reasons (1-2 times, 3+ times)	27.9	18.3	1.4	1.0-1.8	2.4	<0.05*	1.1
Absent without permission in the past four weeks (None, 1+ times)	27.8	14.7	1.5	1.1-2.0	2.9	<0.01**	1.0
1989-92 data (n=6,010) using robust Logit							
15-17 year olds (12-14 years, 15-17 years)	40.6	41.8	0.7	0.4-1.0	-1.8	>0.05 ns	n.a.[c]
Males (males, females)	49.5	50.8	0.9	0.6-1.0	-0.6	>0.05 ns	n.a.[c]
$20 or more spending money per week (<$20/>$20)	34.7	24.9	1.1	0.8-1.7	0.8	>0.05 ns	n.a.[c]
Not living with both parents (other family type/original couple)	29.7	15.0	2.0	1.3-2.8	3.4	<0.01**	n.a.[c]
Going out at night without adult supervision (1-2 times per week, 3+times per week)	29.8	17.8	1.6	1.1-2.2	2.5	<0.05 *	n.a.[c]
Missing 3+school days for health reasons (1-2 times, 3+ times)	27.1	21.1	1.1	0.7-1.7	0.6	>0.05 ns	n.a.[c]
Absent without permission in the past four weeks (None, 1+ times)	34.3	13.0	2.6	1.7-4.0	4.6	<0.001***	n.a.[c]

Notes:
(a) t statistic with (n-1) clusters.
(b) Design effect (n=9,554), Strata=17 AHS, PSU=143 schools.
(c) Deff non-applicable. Standard errors adjusted for clustering on schools (robust Logit).

Table 1 shows adjusted differences for ATSI youth compared with non-ATSI youth on key socio-demographic variables (1996 and 1992-89 data). Adjusted odds ratios, confidence intervals and statistics for each variable were included. After adjusting for complex sampling, gender and spending money were not statistically significant at 0.05 level. The remaining variables were correlated significantly with Aboriginal status.

Substance use

1996 data

Weekly smoking prevalence among ATSI schoolchildren was 30% compared to 20% for non-Aboriginal students. More Aboriginal females (33%) and males (27%) reported weekly smoking when compared with non-Aboriginal students (21% and 19% respectively).

The prevalence of regular drinking (three or more times in the last month) was very similar among Aboriginal and non-Aboriginal students. Aboriginal students were 7.1 times more likely to consider themselves to be heavy drinkers when compared with non-Aboriginal students (95% CI 4.6-11.0). Hazardous drinking was very high among students who have tried alcohol. Fifty-three per cent reported hazardous drinking compared with 34% of non-Aboriginal students. Twice as many Aboriginal students reported hazardous drinking at Year 7 when compared with non-Aboriginal students (40% versus 18%).

Fifty-nine per cent of 12-17 year old Aboriginal boys compared with 33% of non-Aboriginal boys reported hazardous drinking. Aboriginal girls also reported more hazardous drinking than non-Aboriginal girls (44% versus 34%, $\chi^2=3.3, p>0.05$).

Aboriginal students reported a higher prevalence of cannabis use for both boys and girls. Forty-nine per cent of Aboriginal students reported ever having tried cannabis ('experimentation') compared with 36% of non-Aboriginal students, and 24% reported weekly use compared with 10% of non-Aboriginal students. More boys than girls reported cannabis use in every age group. Thirty per cent of Aboriginal boys, 17% of Aboriginal girls, 13% of non-Aboriginal boys and 7% of non-Aboriginal girls reported weekly cannabis use.

After adjusting for age, sex and other socio-demographic variables, Aboriginal students were 1.6 times more likely to have used cannabis, 2.0 times more likely to have used ecstasy, 1.9 times more likely to have used cocaine, 1.7 times more likely to have used narcotics (Table 2).

Table 2: Prevalence rates and odds ratios (a measure of relative risk) of Aboriginal students versus non-Aboriginal students, adjusting for age, sex, spending money, family type, missing school days for illness and wagged school.

Substance	Prevalence (%) Aboriginal adolescents	Prevalence (%) non-Aboriginal adolescents	Adj. OR[a]	95% CI	n	t	p
1996 survey data(total sample=10,631, effective sample=10,026)							
Tobacco (weekly)	30.8	20.8	1.5	1.1-2.0	9,887	2.7	<0.01**
Alcohol							
Weekly	33.9	32.4	1.0	0.7-1.4	9,861	0.1	>0.05 ns
Hazardous drinking	53.4	34.5	2.1	1.6-2.8	7,466	5.2	<0.001***
Analgesics (weekly)	37.4	36.6	1.0	0.7-1.3	9,677	0.2	>0.05 ns
Inhalants (ever tried)	33.4	27.3	1.1	0.8-1.4	9,812	0.7	>0.05 ns
Cannabis (ever tried)	49.6	36.4	1.6	1.2-2.1	9,815	3.4	<0.01**
Sedatives (ever tried)	24.9	19.9	1.1	0.8-1.4	9,771	0.9	>0.05 ns
Hallucinogens (ever tried)	14.8	9.6	1.4	0.8-2.1	9,814	1.4	>0.05 ns
Narcotics (ever tried)	9.5	4.0	1.7	1.0-2.7	9,810	2.1	<0.05*
Amphetamines (ever tried)	11.9	7.2	1.3	0.8-1.9	9,802	1.3	>0.05 ns
Ecstasy (ever tried)	10.4	4.4	2.0	1.2-3.3	9,809	2.7	<0.01**
Cocaine (ever tried)	10.4	4.1	1.9	1.2-2.9	9,801	2.9	<0.01**
1989-92 survey data (total sample=7,614, effective sample=7,552)							
Tobacco (weekly)	34.5	17.6	1.9	1.4-2.8	5,972	3.6	<0.001***
Alcohol (weekly)	33.7	20.3	1.4	0.9-2.1	5,936	1.9	>0.05 ns
Analgesics (weekly)	37.9	33.9	1.1	0.7-1.5	5,961	0.5	>0.05 ns
Inhalants (ever tried)	37.3	26.9	1.4	1.0-1.9	6,009	2.3	<0.05*
Cannabis (ever tried)	42.4	26.7	1.8	1.2-2.5	5,993	3.1	<0.01**
Sedatives (ever tried)	18.3	9.9	2.0	1.2-3.2	6,005	2.9	<0.01**
Hallucinogens (ever tried)	12.3	5.6	1.9	1.0-3.2	5,996	2.2	<0.05*
Narcotics (ever tried)	10.5	3.1	2.6	1.5-4.4	6,011	3.5	<0.001***
Stimulants (ever tried)	19.0	6.0	2.9	1.8-4.6	6,008	4.4	<0.001***

Notes:
(a) Standard errors adjusted for clustering on schools (robust Logit)

1992-89 data

More Aboriginal girls and boys reported regular smoking when compared with non-Aboriginal students. These differences were consistent across gender and age groups. Regular drinking was more common among Aboriginal children. Twenty-eight per cent of Aboriginal boys compared with 14% of non-Aboriginal boys reported regular alcohol drinking. Aboriginal girls also reported more regular drinking than non-Aboriginal girls. These differences were consistent across age. Aboriginal students were 2.9 times more likely to consider themselves to be medium/heavy drinkers when compared with non-Aboriginal students.

Aboriginal students reported a higher prevalence of regular use of all substances for both boys and girls and both age groups 12-14 and 15-17 year olds. Fifty-eight per cent of Aboriginal students and 74% of non-Aboriginal students had never used cannabis. Experimentation with cannabis ('ever used') was reported by significantly more males than females in every age group. Eight per cent of Aboriginal students reported regular cannabis use versus 4% of the non-Aboriginal students.

Almost one-third of the students had deliberately sniffed inhalants (glue, petrol, thinner) to get high at least once in their lives. Statistically significant differences were found between Aboriginal students and non-Aboriginal students ($\chi^2_{MH}=13.55, p<0.001$). Both occasional and regular usage were significantly higher among Aboriginal students.

The regular use of illicit drugs such as sedatives (without prescription), hallucinogens, narcotics and stimulants was small. The differences between Aboriginal students and non-Aboriginal students were statistically significant for all of these substances in spite of the small proportions of students involved in such behaviours.

After adjusting for age, sex and other socio-demographic variables, Aboriginal students were 1.9 times more likely to have smoked, 1.8 times more likely to have used cannabis, 2.9 times more likely to use stimulants, 2.6 times more likely to use narcotics, twice as likely to have used sedatives or hallucinogens. A summary of the adjusted analysis for tobacco, alcohol and other drugs is presented in Table 2.

Discussion

The overall samples were representative of the NSW school population, and large enough to permit this secondary analyisis on a large sample of Aboriginal in-school youth. Rates of reported use of tobacco, alcohol, cannabis and other illicit substances were consistent with previous reports that have demonstrated higher frequencies of use among Aboriginal or Torres Strait Islander youth.[8,20] In this paper, these rates were consistently higher across three surveys over a decade.

The results show that in-school Aboriginal students represent a susceptible population at increased risk of developing drug related problems. For example, ATSI youth were more likely to report themselves as medium or heavy drinkers, and more likely to use tobacco, cannabis and other illicit drugs, compared to non-ATSI students.

In the past, comparison between Aboriginal and non-Aboriginal students has been avoided due to small numbers of Aboriginal students in population surveys.[8-10] In this study, special care was taken to assess the representativeness of the Aboriginal population. ABS population estimates confirmed that the distribution of the Aboriginal population in these samples were not different from 1991 Census estimates of Aboriginal and Torres Strait Islander population by Area Health Service.[21] In 1996, because of the oversampling in rural areas, the sampling fraction was much higher for Aboriginal and Torres Strait Islander youth (being 1.62% for those aged 12-14 years, compared to 0.74% for non-ATSI youth). This provided a large sample for analysis, and hence made the findings more credible for in school ATSI youth.

There are complex issues surrounding these estimates, including rates of self-identification as Aboriginal or Torres Strait Islander. Further, the estimated proportion of school-aged Aboriginal and Torres Strait Population out of the school system is very high. This population is made up of higher rates of young people not at school and lower school retention rates.[11] This suggests these findings may have under-estimated actual prevalence rates of substance use among ATSI youth.

The findings reported in this paper show that the rates of tobacco and alcohol among Aboriginal students were no longer significantly different from non-Aboriginal students in 1996, a larger, more current and methodologically sounder study than the 1989-92 study. The rates of tobacco, alcohol and illicit drugs remained higher among Aboriginal students than among non-Aboriginal students; and the 1996 data also show an overall increase of drug use among Aboriginal and non-Aboriginal students. The purpose of this paper was not to report trends, but the consistency of the findings is of public health concern, as preventive strategies appear inadequate in this important subgroup.

Hazardous drinking in particular continues to be of serious concern to both government and non-government organisations. Aboriginal students drink more than their peers of the same age, however these differences were not significant after adjusting for socio-demographic factors. The difference in inhalant use was not significant, probably because petrol sniffing among Aboriginal students was practised most commonly, by adolescents who spent large amounts of time in places outside schools.[6,22-23]

The proportion of Aboriginal students not living with both parents was significantly higher. Aboriginal students miss out many more school days than non-Aboriginal students. These socio-demographic factors, and the potential role of mental health concerns among ATSI youth should be considered important co-factors among ATSI youth. Programs for increasing school retention as well as more innovative strategies for delaying the onset of weekly drug use should be an integrated part of a program for limiting access and opportunity for tobacco and alcohol use among minors.

These school surveys identify that in-school ATSI youth have not yet benefited from drug and alcohol educational and preventive programs. Efforts for improving the health status of ATSI youth requires community consultation to identify possible strategies, which would need to be rigorously tested.[24]

This is one of the first studies examining this issue in a large and representative sample of in-school ATSI youth. As such, the survey data provide information useful for public health advocates, and require policy changes more likely to reduce substance use among ATSI youth. For those with clinical problems related to substance use, "the health services for Aboriginal people, even in remote areas, have improved enormously, (but) young people, males in particular, are poor users of these facilities".[23]

Substance abuse prevention requires culturally relevant programs, and addressing social issues such as providing support to single parents, reducing school absenteeism and empowering Aboriginal communities to assist in preventive efforts.[24] This paper suggests that these problems affect ATSI youth across NSW, not just in rural regions. Collaborative efforts from a broader range of agencies may be required to reduce school absenteeism among ATSI youth, and to work within communities to enhance drug education and training skills. Restricting access by minors to alcohol, tobacco and illicit substances is essential in reducing the health consequences associated with this problem.[25-26] Data such as these need to be used actively, to act as population benchmarks, against which public health efforts at change can be assessed.

Acknowledgments

The NSW component of the 1996 Australian School Students' Alcohol and Drugs (ASSAD) survey was funded by the NSW Cancer Council and NSW Health Department. We acknowledge NSW Department of School Education, Catholic Education Commission of NSW, Association of Independent Schools, NSW Attorney General's Department, Department of Gaming and Racing and Centre for Behavioural Research in Cancer of Victoria. We are grateful to the Aboriginal Branch of the NSW Health Department that provided invaluable consultation and support to this initiative. We are also grateful to school principals, teachers and students who participated in the study.

References

1. Thomson N, Smith L. An analysis of Aboriginal mortality in NSW country regions, 1980-1981. *Med J Aust* 1985; 143(suppl): 49-54.
2. Hunter E. Aboriginal alcohol use: a review of quantitative studies. *J Drug Issues* 1992; 22: 713-31.
3. Weeramanthri T, D'abbs P, Matthews JD. Definition of an alcohol-related death: an analysis in Aboriginal Adults. *Aust J Public Health* 1994; 18: 71-8.
4. Unwin CE, Gracey MS, Thomson NJ. The impact of tobacco smoking and alcohol consumption on Aboriginal mortality in Western Australia. *Med J Aust* 1995; 162: 475-8.
5. Public Health Division. *The Health of the people of New South Wales: report of the chief health officer.* Sydney: NSW Health Department, 1996.
6. Brady M. *Heavy metal: the social meaning of petrol sniffing in Australia.* Canberra: Aboriginal Studies Press, 1992.
7. Swan P, Raphael B. *Ways forward: national consultancy report on Aboriginal and Torres Strait Islander mental health.* Part 1 and 2. Canberra: National Mental Health Strategy, 1995.
8. Gray D, Williams S. The use of tobacco, alcohol and other drugs by young Aboriginal people in Albany, Western Australia. *Aust N Z J Public Health* 1997; 21: 71-6.
9. Zubrick SR, Silburn SR, Garton A, et al. *Western Australian Child Health Survey: Developing Health and Well-being in the Nineties.* Perth: Australian Bureau of Statistics, 1995. ABS Catalogue No.: 4303.5.
10. Commonwealth Department of Human Services and Health-National Drug Strategy. *1994 household survey: urban Aboriginal and Torres Strait Islander people supplement.* Canberra: AGPS, 1996.
11. National Drug Strategy. *Outcomes of community consultation forums (1993-1994). The impact of alcohol and other drug use on the education of Aboriginal students.* Report on the outcomes of community consultation forums held at La Perouse (October 1993), Armidale (April 1994) and Griffith (April 1994). Canberra: AGPS, 1996.
12. Wootten H. *Royal Commission into Aboriginal Deaths in Custody.* Canberra: AGPS, 1992.
13. Australian Bureau of Statistics. *National Aboriginal and Torres Strait Islander Survey 1994: Australia's indigenous youth* Canberra: ABS, 1996. ABS Catalogue No.: 4169.0.
14. Forero R, Rosier M, Bauman A, Ricci F. *The 1996 Australian school students alcohol and drugs survey (ASSAD)c-NSW component. Technical report.* Sydney: NSW Health Department, 1997.
15. Forero R, Bauman A, Chen JXC, Flaherty B. Alcohol and other drugs usage amongst Aboriginal and Torres Strait Islander school students in New South Wales, Australia. *Int J Adolesc Med Health* 1998; 10(1): 39-50.
16. Cooney A, Dobbinson S, Flaherty B. *1992 survey of drug use by NSW secondary school students.* Sydney: NSW Drug and Alcohol Directorate, 1994 March. In-house Report Series No.: DAD 93-166.
17. National Health and Medical Research Council. *Guidelines on ethical matters in Aboriginal and Torres Strait Islander health research.* Canberra: NHMRC, 1991.
18. *Stata Statistical Software* [computer program]. Release 5.0. College(TX): Stata Corporation, 1997.
19. National Health and Medical Research Council. *Is there a safe level of daily consumption of alcohol for men and women? recommendation regarding responsible drinking behaviour.* 2nd ed. Canberra: AGPS, 1992.
20. Williams M. *Survey of drug and alcohol use by Aboriginal school students in New South Wales: a commonwealth school commission project of national significance.* Sydney: AECG (Aboriginal Education Consultative Group), 1986.
21. Basic Community Profiles ex-Census Applications. *1991 Census estimates of Aboriginal and Torres Strait Islander populations by area/district.* Sydney: Aboriginal Health Branch, NSW Health Department, 1993.
22. Brady MA. Health issues for Aboriginal youth: social and cultural factors associated with resilience. *J Paediatr Child Health* 1993; 29(1 Suppl): S56-S59.
23. Brady M. Culture in treatment, culture as treatment. A critical appraisal of developments in addictions programs for indigenous North Americans and Australians. *Soc Sci Med* 1995; 41(11): 1487-98.
24. Sheehan M, Sconfeld C, Hindson E, Ballard R. Alcohol education in an indigenous community school in Queensland, Australia. *Drugs Educ Prev Policy* 1995; 2: 259-73.
25. Drug and Alcohol Directorate. *New South Wales youth alcohol strategy.* Sydney: NSW Health Department, 1993.
26. Drug and Alcohol Directorate. *New South Wales tobacco and health strategy 1995-1999.* Sydney: NSW Health Department, 1995.