

Editor's note

The information in this journal article was correct at the time of publication and should not be used as legal advice. Legislation may have changed since this article was published. Relevant state or territory legislation should be consulted for current information.

Prevalence of tattooing and body piercing in the Australian community

Toni Makkai,¹ Ian McAllister²

Abstract

Tattooing and body piercing are now worldwide fashion crazes. The health risks associated with these procedures are as yet unclear. This article examines the prevalence of body decoration and the associated health risks within the Australian population using a random sample survey of individuals aged 14 years and over, collected between June and September 1998 (n = 10,030). The results show that one in 10 people have had a tattoo at some point in their lives and 8 per cent some form of body piercing, excluding ear piercing. Men are more likely than women to report tattooing, while females are more likely to report body and ear piercing. Some 10 per cent of respondents report drinking alcohol or using other drugs when the procedures were undertaken. The prevalence of tattooing and body piercing is considerably higher among injecting drug users. Although the rates of transmission of bloodborne disease due to body decoration are believed to be low, the strong association with youth and with injecting drug use suggests considerable potential for transmission. *Commun Dis Intell* 2001;25:67-72.

Keywords: tattooing; body piercing; hepatitis C; HIV/AIDS; injecting drug use; prevalence

Tattooing and body piercing are the worldwide fashion craze of the 1990s. Body piercing, in particular, has become the fastest growing form of body decoration in the modern world, and is widely practised among the young.^{1,2} The body decoration craze, however, has occurred following the emergence of bloodborne viruses (BBVs), notably hepatitis B, HIV, and the hepatitis C virus (HCV). Tattooing and body piercing have become potential routes of BBV transmission.

Widespread tattooing and body piercing has also coincided with an unprecedented rise in injecting drug use (IDU) in Australia. Record numbers of deaths have occurred due to overdoses,³ while those who have injected illicit drugs in the previous year have trebled compared with a decade ago.^{4,5} There is a strong association between tattooing and body piercing and injecting drug use, partly due to youth but also to cultural values. While health promotion campaigns have much reduced the risk of infection due to shared needles, tattooing and body piercing remain a major potential source of infection for this group.

Health risks from body piercing

In western countries, HIV has spread primarily through sexual contact, and specifically homosexual contact, and secondarily through injecting drug use. In Australia, 90 per cent of AIDS cases in 1994 occurred among men with a history of homosexual contact.⁶ The spread of HIV through the sharing of contaminated needles has been much less prevalent. Reliable estimates are problematic, but about 2 to 5 per cent of injecting drug users are HIV positive compared to up to 27 per cent in parts of the United States of America. The risk of contracting HIV through tattooing or body piercing exists, but it is not believed to be high. In contrast to HIV, the risks of contracting HCV through some form of skin penetration are probably much greater. It has been estimated that there are 210,000 people in Australia with hepatitis C.⁷

The most important risk factor for contracting HCV is injecting drug use. Less common routes of transmission may include receipt of blood or blood products (although blood donor screening has vastly reduced this risk), needle stick injury, tattooing, body piercing, sexual activity and household contact such as blood contact and the sharing of toothbrushes and razors.⁸ The epidemiological support for some of these routes of transmission remain inconclusive and it is therefore difficult to provide estimates of the risk of transmission.

Information on recent patterns of HCV transmission in Australia can be gained by examining the data on incident HCV notifications reported to the National Notifiable Diseases Surveillance System. Most incident hepatitis C notifications in 1999 were in the 15 to 29 year age range. Notifications among males outnumbered females by 1.8 to 1 in 1999.⁹

Particular subgroups have a higher risk of BBV infection, notably the prison population. The prevalence of widespread tattooing and body piercing among prison inmates using non-sterile equipment, coupled with high rates of IDU and high turnover among inmates, makes prisons a major area of potential infection.^{10,11} Estimates of the prevalence of tattooing among the prison population vary from 51 per cent of females and 57 per cent of males in New South Wales in 1996¹⁰ to 58 per cent of prisoners in Western Australia.¹² In Victoria virtually all male injecting drug users in prison have been found to possess tattoos, with 60 per cent reporting that they acquired a tattoo while in prison.¹³ Studies show that the cleaning of tattooing equipment is less common than for injecting equipment, and that tattoo needles are often shared.¹²

Whether tattooing in prison is associated with acquiring HCV remains controversial, due to the overwhelming association of HCV with intravenous drug use. On

1. Australian Institute of Criminology, Canberra ACT 0200, Australia

2. Research School of Social Sciences, Australian National University, Canberra ACT 0200, Australia

Corresponding author: Ian McAllister, Director, Research School of Social Sciences, Australian National University, Canberra ACT 0200. Telephone: + 61 2 6125 2340. Facsimile: +61 2 6249 0502. E-mail: ian.mcallister@anu.edu.au

multivariate analysis, Butler and colleagues found no association between HCV infection and tattooing. In a subset of inmates who self-reported no intravenous drug use, HCV infection was associated with greater than 11 tattoos, suggesting that tattooing may cause infections in non-IDUs. Whether these tattoos were received in prison or not was not reported. These results should be viewed with caution as the history of injecting drug use was self-reported by the inmates.

Most studies to date on HCV infection in prisons examine HCV prevalence rather than incidence. No study in Australia has estimated the risk of acquiring HCV via tattooing in prison therefore further studies are required.

Regulation of tattooing and body piercing

Tattooing and body piercing are not nationally regulated; the responsibility lies with each of the States and Territories. Regulation can either be covered by the criminal code or by health acts that regulate providers in regard to the control of infectious diseases. Skin penetration procedures can occur in both health and non-health care settings and some states and territories have established Codes of Practice, usually based on the Australian Standards and National Health and Medical Research Council guidelines, to ensure minimum standards. Victoria and the Australian Capital Territory further require that the premises conducting such procedures be formally registered.

There is no accredited system of apprenticeship for body modification in Australia, nor are there currently any technical courses offered at TAFE colleges for potential practitioners. The Professional Tattooing Association of Australia (PTAA) was established in 1994 to represent the industry; it works with the relevant health authorities to develop Codes of Practice. There is no comparable national association to the PTAA for other forms of body modification.

All States and the Australian Capital Territory have legislation stipulating a minimum age of consent for tattooing, with penalties for non-compliance. The age of consent is generally 18 years, although it is 16 years in New South Wales and 17 years in Queensland (Table 1). It is possible in 3 States for minors to be tattooed with written parental consent, but in Western Australia it must be because of cultural or religious belief. In all States the penalty includes a fine while in 4 States imprisonment is also an option. Tattooing in prison is illegal in all jurisdictions, although enforcement varies considerably.

Method

The National Drug Strategy Household Survey is the sixth in a series of surveys conducted by the Department of Health and Aged Care since 1985. The survey is designed to examine awareness, attitudes and behaviour relating to drug use and drug problems, and to assess changes in these attitudes and behaviours. The 1998 survey was conducted between June and September by the Roy Morgan Research Centre and was based on a stratified multi-stage sample. The sample was designed to provide a random sample of households within each geographical stratum.^{14,15}

The survey had three separate but related samples. The first sample was a national random sample, stratified by region, of persons aged 14 years and over living in households. The second sample was collected from households included in the first sample where there was more than 1 person over the age of 14 years; respondents were the youngest persons in the household, other than the respondent included in the first sample. The third sample was collected from different, randomly selected households in the same areas as households in the first sample, but in capital cities only; these respondents were aged between 14 and 39.

The first sample used a personal interview schedule with a self-administered questionnaire for the sensitive drug use sections. The second and third samples used a self-administered questionnaire only. In total, 4,012, 1,983 and 4,035 people participated, representing effective response rates of 54.5 per cent, 48.2 per cent, and 33.5 per cent, respectively. Analyses indicated few statistically significant differences between the samples which allowed them to be pooled for analysis.¹⁵ The samples were weighted to adjust for age, gender, stratum, and household size and type.¹³ Of the total sample of 10,340 respondents, 1,200 were aged between 40 and 49 years, 806 between 50 and 59 years, and 1,134 were aged over 60 years.

Statistical tests and confidence intervals were adjusted to take account of the 'effective sample size' by dividing the total number of respondents by a 'mean design effect'.¹⁵ Standard chi square tests were based on the assumption that the dataset was reasonably large, and that the tables were densely populated and well balanced (i.e. has asymptotic properties). When these assumptions were not met exact tests were calculated using Monte Carlo approximation.¹⁶ The exact significance was always reliable, regardless of the size, distribution, sparseness, or balance of the data.

Table 1. Legal restrictions on tattooing in Australia

State/Territory	Age of consent	Maximum penalty
Australian Capital Territory	18 or written parental consent	\$1,000 fine
New South Wales	16 or written parental consent	\$22,000 fine
Northern Territory	No specific legislation	Not applicable
Queensland	17	\$3,000 fine or 6 months imprisonment
South Australia	18	\$1,000 fine or 3 months imprisonment
Tasmania	18	\$500 fine or 6 months imprisonment
Victoria	18	\$1,200 fine
Western Australia	18 or parental consent based on long standing cultural or religious belief	\$400 fine, 6 months imprisonment or both

Patterns of body decoration in the population

The most common form of body decoration is ear piercing. Table 2 shows that nearly 1 in 3 of the population aged 14 years and over reported having had their ears pierced at some point in their lives. The prevalence is much higher among women than men; in 1998, 44.4 per cent of women reported having had their ears pierced, compared to less than half that proportion for men. Around 1 in 10 people have had a tattoo at some point in their lives, with more men (11.9%) than women (8.5%) falling into this category. Body piercing is the least common form of body decoration; 6.7 per cent reported undergoing this procedure at some stage in their lives.

The estimates for those who had undergone these procedures in the past year show that nearly 5 per cent of women had their ears pierced, which represents 349,564 women (95% CI: 273,648-425,675). Just under 3 per cent of men reported having acquired a tattoo in the previous 12 months, representing a population estimate of 180,974 men (95% CI: 125,856-236,245). It is also notable that nearly 2 per cent of women reported acquiring a tattoo during that period. Overall, nearly 1 in 3 Australians possess some form of body decoration, with twice as many women falling into the category as men. About 1 in every 16 people undergo some form of body piercing procedure each year.

In addition to marked gender differences in the use of body decoration, there are also significant age variations. The current popularity of tattoos means that the prevalence is much higher among the young (Figure 1). Among young men aged about 20, around 25 per cent reported having a tattoo, compared with 20 per cent of women of the same age. Thereafter, the prevalence of tattooing in the population declines significantly, particularly among those aged in their 50s and 60s, where only around 5 per cent reported a tattoo. Reflecting the prevalence of tattooing among the young, about 1 in 8 younger men said that they had acquired a tattoo in the previous 12 months, compared to 1 in 16 women. Interestingly, there is an upward trend in recent tattooing among older women.

Ear piercing is more common among women than men, but again the age trends suggest that it is becoming increasingly prevalent among younger men. Unlike tattoos, however, Figure 2 shows that ear piecing is widespread among men aged in their late 20s and 30s, as well as among those in their late teens and early 20s. Prevalence is highest among men aged in their mid-20s, where 30 per cent have had their ears pierced. Among younger women, nearly 70 per cent

report having undergone the procedure, although the figures are much less for older women.

As with tattooing and ear piercing, body piercing shows the same concentration among the young, notably among younger women. Around 1 in 5 women aged about 20 report

Figure 1. Lifetime prevalence of tattooing, Australia, 1998, by age and sex

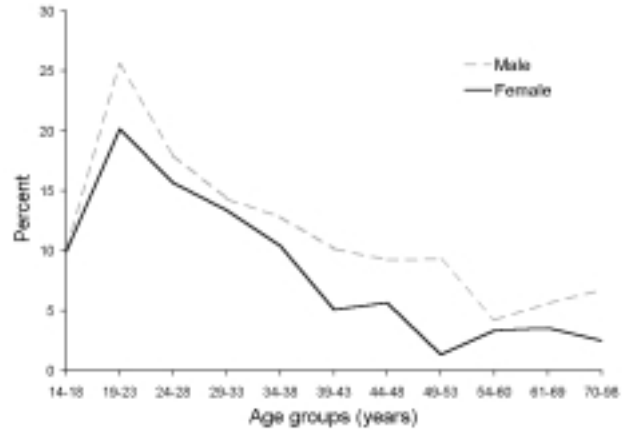


Figure 2. Lifetime prevalence of ear piercing, Australia, 1998, by age and sex

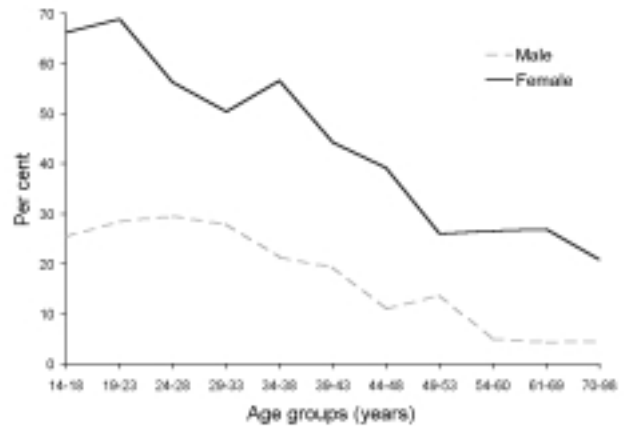


Table 2. Prevalence of body decoration, 1998, by sex

Per cent undergoing	Lifetime (%)			Past 12 months (%)		
	All	Male	Female	All	Male	Female
Tattoo	10.1	11.9	8.5*	2.2	2.6	1.8
Pierced ears	31.5	18.2	44.4*	3.8	2.7	4.8*
Pierced body	6.7	6.5	7.0	1.8	1.3	2.2
At least one of above)	(34.6)	(22.2)	(46.6*)	(6.2)	(5.2)	(7.2*)
(n)	(9,489)	(4,675)	(4,814)	(9,489)	(4,675)	(4,814)

* Males statistically significantly different from females at p <.01, two-tailed test.

Source: 1998 NDS Household Survey.

having had their bodies pierced, a figure that declines to half that proportion among those just 10 years older. Body piercing is less common among younger men, although it is notable that about 1 in 8 younger men reported having undergone the procedure and among men aged in their late 40s and early 50s, the prevalence of body piercing actually exceeded that of women. This may reflect its popularity among older homosexual men.

During the 12 months prior to the survey, more young women than men said that they had engaged in body piercing. About 7 per cent of younger women reported having had their bodies pierced in the past 12 months, as compared to around 3 per cent of males. As with tattooing, the prevalence of this activity declines with age, the major exception being older women, where a small percentage report recent body piercing.

Body decoration and drug use

The survey respondents who reported having a tattoo or having had their bodies pierced were asked if they were under the influence of alcohol or drugs while undergoing the procedure. Table 3 shows that alcohol or drugs affected significant proportions of those acquiring a tattoo at the time of the procedure. Among those who were tattooed in the past 12 months, the figure least likely to be subject to recall bias, about 10 per cent, reported having been influenced by drugs at the time. The same estimate for those undergoing body piercing is slightly less at 7 per cent.

There are significant gender patterns in these findings, with men being much more likely to report being influenced by drugs than women. For example, of those aged in their 20s who said that they were tattooed in the previous 12 months, 7 per cent of women reported being affected by alcohol or drugs at the time, compared to 19 per cent of men. Similarly, among those of the same age group who reported body piercing in the previous 12 months, 2 per cent of women said they were influenced by drugs compared to 26 per cent of men. Although self-regulation among tattooists and body piercers normally precludes a procedure being conducted on a person who is obviously intoxicated or affected by drugs, the evidence suggests that in the case of men this rule is frequently breached.

The survey included measures of whether or not the respondent reported having injected illicit drugs at any point in their lifetime and in the previous 12 months. A total of 2.1 per cent (sample n = 198) reported lifetime injecting drug use, and 0.8 per cent (sample n = 72) said that they had injected an illicit drug in the previous 12 months. Injecting drug users had substantially higher proportions that had undergone tattoo or body piercing compared to the rest of the population, and a significant minority had undergone these procedures in the past year.

Table 4 shows that lifetime injecting drug users record four times the rate of tattooing compared to the general population, and among those who have injected in the past 12 months, more than five times the population rate. Current injecting drug users are also more likely to have engaged in ear and body piercing; nine times more injecting drug users reported having had their bodies pierced in the previous year compared to the general population. The data suggest that recent experience of body decoration may be increasing, particularly in regard to body piercing among injecting drug users. For example, 16 per cent of such users said that they had had their body pierced in the previous 12 months compared with 11 per cent of lifetime injecting drug users and 2 per cent of the general population.

Discussion

Throughout history and across numerous cultures, body decoration has been used for many purposes. Western societies have often viewed it as unhealthy and have usually defined people who adopt it as deviant. Yet body decoration is 'perhaps the oldest art known to human beings, and the most ancient method of expressing personal and communal spiritual beliefs'.¹⁷ In the past 20 years tattooing has experienced a social renaissance, embracing a better educated, more affluent population. By contrast, body piercing practices remain virtually undocumented but like tattooing there has been a noticeable shift in the demographic profile, from being a largely homosexual practice to adoption by middle class heterosexuals of both sexes.¹⁷ This change is reflected in Australia with significantly more young people engaging in body piercing.

Table 3. Alcohol or drug influence during body procedure, 1998

	Drinking alcohol/taking drugs %			Sample (n)
	Yes	No	Don't know/ can't recall	
Tattoo				
Ever	10.9	52.8	36.3	(963)
Past 12 months	10.1	78.3	11.6	(206)
Ear piercing				
Ever	3.6	69.7	26.6	(2,990)
Past 12 months	5.0	75.6	19.3	(357)
Body piercing				
Ever	5.2	45.8	49.1	(638)
Past 12 months	7.1	71.4	21.4	(168)

All associations statistically significant at p <.01, two-tailed test.
Source: 1998 NDS Household Survey.

Table 4. Injecting drug use and body decoration, 1998

Per cent undergoing:	Injecting drug users		
	All	Lifetime	Past 12 months
Tattoo			
Ever	10.2	42.4*	54.2*
Past 12 months	2.2	9.1*	4.3
Ear piercing			
Ever	31.6	57.6*	54.2
Past 12 months	3.8	9.1*	12.5
Body piercing			
Ever	6.8	24.2*	31.8*
Past 12 months	1.8	10.6*	16.7*
Sample (n)	(9,422)	(198)	(72)

* Lifetime and previous 12 months injecting drug users were statistically significantly different from the total population at $p < .01$, two-tailed test.

Source: 1998 NDS Household Survey.

Although the reasons currently advanced for body decoration vary, three common themes emerge: the importance of pain; the confirmation of identity; and self-stigmatisation. Withstanding pain is important to gender constructions and is seen as a rite of passage into adulthood, particularly for young males. It may signal initiation into a particular gang or social group and demonstrate loyalty. Higher rates of participation in risk behaviours, including criminal behaviour, may partly account for the higher rates of body decoration among men. These activities can be social events and may explain the link between intoxication and body decoration noted above. Body decoration has also been recognised as a major concern in prisons, where self-mutilation is common.

For women, body decoration can symbolise gender rebellion, blurring the boundaries between male and female roles. This may account for its increasing prevalence among younger women, particularly with respect to body piercing. As body decoration is often frowned upon in Western societies, women tend to choose adornments that are not publicly visible which probably accounts for a slightly lower rate of overall participation in body modification practices. Women do exceed men in the rates of ear piercing, but this practice has been widely accepted for women and only recently for men.

Regulatory control of those who provide tattooing and body piercing services is essential to the control of infectious diseases. Infections can occur when needles and other sharp instruments are not thoroughly cleaned and sterilised. But infections can also be transmitted when other materials are not clean or handled and used unhygienically, and when operators, their premises and their sterilisation equipment are not clean. Given that these data indicate increasing prevalence of body decoration practices, particularly among the young, the regulation of the industry is necessary to ensure that body modification does not become a major source of the transmission of bloodborne viruses.

A 1998 review of Australia's response to HCV found that the implementation of infection control programs was not fully developed in even a majority of states and territories. More importantly, few jurisdictions reported that their current programs were fully effective.⁹ The necessity for training skin penetration practitioners is exemplified by the 10 per

cent of respondents who reported being influenced by alcohol or drugs when they obtained a tattoo and the 8 per cent who reported being under their influence when they engaged in body piercing in the past 12 months. As some of these activities are social events, it is also important that individuals and friends make informed decisions. Education strategies informing young people about the risks in body modification should be a high priority.

References

1. Polhemus T. The customized body. New York: The Serpent's Tail, 1996.
2. Vale V, Juno A, eds. Modern Primitives: an investigation of contemporary adornment. San Francisco: Research Publications. 1989.
3. Hall W, Teeson M, Denehardt L. The prevalence in the past year of substance use and ICD-10 substance use disorders in Australian adults: Findings from the National Survey of Mental Health and Well-Being. Sydney: NDARC Technical Report No 63, 1998.
4. Crosbie D. A background report on heroin use in Australia. Canberra: Alcohol and Other Drugs Council of Australia, 1997.
5. Loxley WM, Bevan J, Carruthers S. Age and injecting drug use revisited: the Australian study of HIV and injecting drug use. *Aids Care* 1997;9:661-670.
6. Department of Health and Family Services. Partnerships in Practice: National HIV/AIDS Strategy 1996-97 to 1998-99. Canberra: Department of Health and Family Services, 1996.
7. Hepatitis C virus projections Working Group: estimates and projections of the hepatitis C virus epidemic in Australia. Australian National Council on AIDS and Related Diseases Hepatitis C Sub-Committee. 1998.
8. Copland J. Monitoring newly acquired hepatitis C infection in South Australia. National Centre in HIV Epidemiology and Clinical Research. Australian HIV surveillance report. 2001;17:1-5.
9. Australia's notifiable diseases status, 1999. *Commun Dis Intell* 2001; In press.
10. Butler TG, Dolan KA, Ferson MJ, McGuinness LM, Brown PR, Robertson PW. 'Hepatitis B and C in New South Wales Prisons: Prevalence and risk factors.' *Med J Aust* 1997;166:127-130.
11. Crofts N, Stewart T, Hearne P, Ping XY, Breshkin AM, Locarnini SA. 'Spread of bloodborne viruses among Australian prison entrants.' *BMJ* 1995;310:285-288.
12. Crofts N, Dolan K, Webb-Pullman J. An analysis of trends over time in social and behavioural factors related to the transmission of HIV among injecting drug users and prison inmates. Canberra: Department of Health and Family Services, 1996.

13. Crofts N, Thompson S, Wale E, Hernberger F. Risk behaviours in blood borne viruses in a Victorian prison. *The Australian and New Zealand Journal of Criminology* 1996;29:20-28.
14. Australian Institute of Health and Welfare. 1998 National Drug Strategy Household Survey First Results, Canberra: AIHW, 1999.
15. Roy Morgan Research. National Household Strategy Household Survey Report 1998. Melbourne: Roy Morgan Research, 1999.
16. SPSS. SPSS Exact Tests 7.0 for Windows. Chicago: SPSS Inc, 1996.
17. Hewitt K. *Mutilating the Body: Identity in Blood and Ink*. Bowling Green: Bowling Green State University Popular Press, 1997.

1. Communicable Disease Control Branch, Department of Human Services South Australia.
2. Environmental Health Officer, Corporation of the City of Adelaide, South Australia.
3. Institute of Medical and Veterinary Science, South Australia