

Low daily smoking estimates derived from sales monitored tobacco use in six remote predominantly Aboriginal communities

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The Anangu Pitjantjatjara Yankunytjatjara (APY) Lands cover one-fifth of South Australia, or 106,000 square kilometres – larger than the combined area of the Netherlands and Belgium – in the remote far north-west of the state. The nearest large town to the nearest APY community (Indulkana) is Alice Springs, some 430 km by road. In 1981, an Inalienable Free Hold Title was granted to the Pitjantjatjara and Yankunytjatjara Aboriginal peoples (or Anangu) who reside on these lands. The APY Lands have a population of 2,700–3,000 people living in seven municipalities and up to 50 occupied homelands.

There are six stores in the larger towns of Iwantja (Indulkana), Mimili, Kaljiti (Fregon), Pukatja (Ernabella), Amata and Pipalyatjara. There are three smaller stores at Watarru, Kalka and Kanpi. All these stores, except the Pukatja store, participate in the Mai Wiru (Good Food) Regional Stores policy which has been driven by the local Anangu community and has clear health goals.

Stores operate for six hours a day, Monday to Friday and two hours on Saturday and public holidays. The Amata store caters for

a larger population and so also trades for two hours on Sunday. The stores have a software program which enables a full record of all sales, including all tobacco products to be recorded via bar code scanning. Incidents of shops (illegally) selling single cigarettes from opened packs are uncommon in these communities.

Stores do not display tobacco products with all tobacco products kept in cupboards near the point of sale out of sight of the customer. Customers must ask for tobacco products. There are no tobacco vending machines or other sources where cigarettes can be purchased. While there is long history of chewing native tobacco (*Nicotiana spp*), *pituri* (*Duboisia hopwoodii*) and commercial tobacco in Central Australia, most tobacco is now smoked rather than chewed.¹ Chewing tobacco is mainly practiced by middle aged and older women who are least likely to smoke.

In this paper, data on sales of tobacco products for the calendar year 2007 are provided for five APY communities for which we were able to obtain complete data. Because of their remoteness, these communities have few visitors who would purchase from the stores. While some

Abstract

Objective: To estimate daily cigarette consumption among residents aged 15+ in five remote central Australian predominantly Aboriginal communities.

Methods: Estimation of average daily cigarette consumption derived from a 12-month (2007) complete sales audit of cigarettes in isolated communities where no other tobacco supplies are available, using two assumptions of smoking prevalence (50% and 70%).

Results: Across the five communities, daily smoking consumption averaged 8.3 cigarettes per day (assuming a 50% smoking prevalence) or 5.9 cigarettes per day (assuming a 70% smoking prevalence). The corresponding amounts spent per smoker per day were \$4.13 or \$2.95, representing 12.7%–9.1% of the maximum \$453.30 per fortnight unemployment allowance for a single person.

Conclusion: While smoking prevalence may be high in these Aboriginal communities, smoking frequency is low compared to that in the wider Australian community. These results are consistent with other studies. Approaches to cessation premised on assumptions of nicotine dependence in such populations are likely to be misconceived.

Key words: Tobacco, smoking, Aboriginal, Indigenous, Australia.

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residents travel out of APY Lands and return with purchases – including cigarettes – such supply is very minor compared with that obtained routinely from the stores throughout the year. We do not include data from three small Mai Wiru stores at Kanpi, Kalka and Watarru, nor from the large store at Pukatja. Nor do we include the tobacco sold at the small Watinuma roadhouse and at the private mining lease at Mintabie.

Methods

No surveys of smoking prevalence have been undertaken or published for APY Land residents. Nationally, 50% of Indigenous people aged 18 and over are daily smokers, 52% in remote areas.² There are insufficient numbers included in national Indigenous surveys to provide accurate estimates at the regional or local level. For this study, based on observational estimates made by authors RB & PT who have a combined experience of living and working in APY communities of nearly 30 years, we assumed that the minimum prevalence of smoking in those aged 15 and over was 50% (the national daily smoking prevalence) but that it could be as high as 70% and so calculated per adult smoker consumption estimates based on both lower and upper smoking prevalence estimates.

All items on sale in every store are bar-coded for scanning at the cash register, allowing a complete audit of all sales. Bar-coded sales data for all tobacco brands stocked in the five stores were disaggregated into cigarette stick numbers (to account for different pack sizes), and both annual and daily cigarette consumption and dollar costs calculated for both 50% and 70% smoking prevalence assumptions (Table 1). Population data (aged 15+) for each of the five communities were obtained online from the Australian Bureau of Statistics 2006 Census data.

Results

Across the five APY communities, daily sales-estimated smoking consumption by smokers aged 15+ averaged 8.3 cigarettes per day (assuming a 50% smoking prevalence) or 5.9 cigarettes per day (assuming a 70% smoking prevalence). The corresponding amounts spent per smoker per day were \$4.13 or \$2.95, representing 12.7%-9.1% of the maximum \$453.30 per fortnight unemployment allowance for a single person. Winfield Blue was the overwhelming most popular brand sold, with 79% of all sales and 96% of the tobacco products sold were manufactured by British American Tobacco Australia.

Discussion

Indigenous smoking control has been the recent focus of a \$14.5 million allocation of funds by the Australian government.³ High Indigenous smoking prevalence is widely considered to be the most challenging problem in Australian tobacco control today. However, while smoking prevalence is observably high by national standards in APY communities, the data provided in this paper demonstrate that the daily number of cigarettes smoked appears to be low when compared to the

Australian community at large, and to the lowest income earning group across Australia. Based on cigarettes (and cigarette equivalents of tobacco) for which duty was excised or customs duty was levied in 2004/5, Australian smokers aged 14 and over smoked an average of 19.1 cigarettes a day.⁴ This is 2.3 or 3.2 times greater than our estimated daily consumption in the five APY communities, depending on whether a 50% or 70% smoking prevalence in these communities is assumed.

Our estimates are also considerably less than those reported in the National Drug Strategy Household Survey 2004,⁵ which found that Australian smokers at large self-reported smoking an average of 13.9 cigarettes a day and that smokers in the lowest of five income quintiles smoked an average of 17.1 cigarettes per day. The same report found that Aboriginal and/or Torres Strait Islander smokers reported smoking an average of 18.6 cigarettes per day, although the low response rate (46%) among Indigenous respondents involved should be noted when considering the reliability of these data.⁶

In surveys, smokers typically under-report the number of cigarettes they smoke,^{7,8} leading to lower estimates of consumption than indirect national measures based on tobacco excise clearances. This phenomenon strengthens the importance of using sales-based methods of estimating tobacco consumption in communities, as in the present study.

Our estimates of low average daily consumption corroborate several other studies of Aboriginal smoking. Recent sales-based estimates of consumption in remote Aboriginal communities from northern Australia, where smoking is more common than in Central Australia, have reported that Aboriginal smokers smoke from six (in a community with a nearby town)⁹ to 15.8 cigarettes per day.¹⁰ In a 1986/87 survey across the Northern Territory, 56% of 921 Aboriginal smokers reported smoking 10 or less cigarettes a day.¹¹ That study found double the consumption by store turnover than by self-report in two sample communities; however, the two more recent cited studies both reported higher estimates of consumption by self-report than by store turnover. A recent study on smoking by Townsville pregnant Aboriginal women found a smoking prevalence of two thirds, but that 40% had low nicotine dependency scores and more than 60% smoked less than 10 cigarettes a day.¹² Self-reported consumption in surveys in similar remote Aboriginal communities has been further questioned by the weak correlation between the reported number of cigarettes smoked and cotinine levels.¹³

Might tobacco purchases from stores in the five settlements monitored in this study underestimate true purchases (and so smoking) because of additional purchases made elsewhere? A significant proportion of those classified as the permanent Anangu population of APY lands travel out of those lands.¹⁴ For example, a study of sexually transmitted infections in the area reported that in an eight week period nearly 40% of the permanent population aged 14-40 yrs were away from the lands at some time in that period.¹⁵

There are other locations on the Lands where cigarettes might be purchased by residents of these five communities. In the West, there are three small Mai Wiru stores we did not monitor, the closest to one to the five stores is the Kalka store, 12 km from Pipalyatjara, but per capita consumption was not notably lower in Pipalyatjara compared with other communities. Watinuma is

about 45 minutes drive from Fregon and on a transit route across the Lands but this would seldom cause people to stop. Fregon would be the community most affected by this store. The store in the large community of Pukatja is also a similar distance from Fregon. The mining town of Mintabie on the Eastern side of the Lands and is about one hour's drive from Indulkana and has several cigarette outlets which we were unable to monitor. Some

Indulkana residents would go there between once a week and once a fortnight. Some people would also visit there from Mimili and Fregon communities. We have no data on the price of the cigarettes sold in these unmonitored stores, but can think of no reason why they might be so much cheaper as to motivate special buying trips involving considerable return travel by the residents in our monitored communities.

Table 1: Cigarettes consumed per adult (15+) smokers, assuming 50% or 70% smoking prevalence, 2007.

Communities (population aged 15 and over) [50-70% smoking prevalence] Brand/\$ price	Number packs sold	Number cigarettes	Total community expenditure (\$) year	\$ cost/adult smoker: year (day)
Amata (n=231) [115.5-161.7]				
Winfield Blue 25 (\$13.80)	17,111	427,775		
Winfield Red 25 (\$13.80)	845	21,125		
Winfield Extra Mild 50g ^a (\$27.80)	151	9,437.5		
Escort Red 35 (\$15.80)	615	21,525		
Escort Blue 35 (\$15.90)	427	14,945		
Longbeach Original 30 (\$15.00)	441	13,230		
Log Cabin Tobacco 50g ^a (\$27.70)	219	13,687.5		
Horizon Purple 50 (\$23.55)	247	12,350		
B&H Smooth 25 (\$13.80)	351	8,775		
Total		542,850		
Cigarettes per adult smoker/year (per day)		4,700-3,357 (12.9-9.2)	292,007.85	2,528-1,806 (6.92-4.94)
Fregon (n=222) [111-155.4]				
Winfield Blue 25 (\$13.35)	6,736	168,400		
Winfield Blue 20 (\$11.35)	6,553	131,060		
Winfield Red 25 (\$13.30)	534	13,350		
Winfield Extra Mild 50g ^a (\$27.33)	191	11,937.5		
Escort Extra Mild 25 (\$13.35)	394	9,850		
Escort Red 25 (\$13.30)	230	5,750		
Total		340,347.5		
Cigarettes per adult smoker/year (per day)		3,066-2,190 (8.4-6.0)	184,943.28	1,666-1,190 (4.56-3.26)
Mimili (n=215) [107.5-150.5]				
Winfield Blue 25 (\$13.50)	4,419	110,475		
Winfield Blue 20 (\$11.00)	4,326	86,520		
Winfield Red 25 (\$13.50)	714	17,850		
Winfield Red 20 (\$10.20)	784	15,680		
Winfield Gold 20 (\$10.25)	295	5,900		
Log Cabin 50g (\$31.50) ^a	185	11,562.5		
Escort Red 35 (\$18.00)	276	9,660		
Total		25,7647.5		
Cigarettes per adult smoker/year (per day)		2,397-1,712 (6.6-4.7)	138,697.55	1,290-921 (3.53-2.52)
Indulkana (n=233) [116.5-163.1]				
Winfield Blue 20 (\$11.40)	6,796	135,920		
Winfield Blue 25 (\$14.50)	3,832	95,800		
Log Cabin 50g (\$27.30) ^a	266	16,625		
Winfield 30g (\$18.85) ^a	164	6,150		
Total		254,495		
Cigarettes per adult smoker/year (per day)		2,185-1,560 (6.0-4.3)	93,384.00	1,569-1,121 (4.30-3.07)
Pipalyatjara^a (n=90) [45-63]				
Winfield Blue 25 (\$13.00)	2,656	66,400		
Winfield Blue 20 (\$11.00)	1,764	35,280		
Winfield Red 25 (\$14.00)	99	2,475		
Total		104,155		
Cigarettes per adult smoker/year (per day)		2,315-1,653 (6.3-4.5)	37,854.40	841-601 (2.30-1.65)
Total 15+ population: n=991 [495.5-693.7]		1,499,495	\$746,887.08	1,507-1,077 (4.13-2.95)
		3026-2162 (8.3-5.9)		

Notes:

0.8g of hand-rolling tobacco makes one cigarette equivalent.

a) Census data does not provide age data for Pipalyatjara, so 15+ population there has been assumed to be the average of the four other communities (26.5%).

However, the cigarettes purchased elsewhere by 'permanent resident' Anangu smokers when travelling to other communities or living away from APY lands and so not included in this study would be largely balanced by the cigarettes purchased in these communities by temporary residents who could be living in the communities for a few months of the year. Additionally, if some of the purchases in the five settlements we studied were made by people visiting these settlements from other settlements, this would mean that the daily consumption of the resident smokers in the five settlements would be even less than we estimate. Given the movement between the communities, the most important estimate we provide is therefore the average daily consumption figure across all five communities.

Some of the cigarettes sold from the stores in our study would be also purchased and consumed by the non-Indigenous population of the APY lands. The 2006 census reports that in the total population of 1,355 in the five communities in this study there were 168 (12.3%) non-Indigenous (and Indigenous status not stated) people usually resident in these communities. This means that the estimates of average daily smoking calculated in this study may significantly over-estimate that by Anangu smokers, as non-Indigenous smokers would be consuming some of the tobacco sold from APY stores.

Anangu in these APY communities have only limited access to purchase cigarettes, which may lead to smaller numbers of cigarettes smoked. Stores are only open limited hours and many Anangu live on small homelands with no store. There is no significant black market selling of cigarettes. In these APY communities, like other remote Aboriginal communities, the sharing of cigarettes is ubiquitous, obligatory and reinforces relationships with kin.¹⁶ Such sharing is a central element of

Australian Aboriginal society and cultures.¹⁷ It is difficult for smokers to carry or store large quantities of cigarettes. Full packs of cigarettes may be purchased but are typically not smoked by the purchaser, who is inevitably approached and will have to share some of the cigarettes.¹⁶ The original purchaser can, of course, then 'humbug' someone else to share cigarettes after his/her packet runs out. The give-and-take of obligatory sharing may make it too difficult for many smokers to smoke large quantities of cigarettes, but does enable many to smoke smaller quantities.

The Nganampa Health Service does not have any reliable clinic data on smoking rates. The observational experience of authors RB and PT suggests smoking prevalence is high but and that people frequently do not have cigarettes and so smoking frequency appears consistent with the data we have presented.

Our data suggest that daily smoking frequency by Aboriginal residents of APY lands is much less than that in Australian society at large, including that by the lowest socio-economic group, which has the highest smoking prevalence and daily smoking frequency.⁵ This finding is notable and runs counter to the negative stereotype that Aboriginal people are heavy smokers. It may further suggest that many central Australian Aboriginal smokers do not have patterns of consumption which suggest nicotine addiction. Limited data are available from standard instruments of assessing nicotine addiction such as the Fagerström scale¹⁸ in Aboriginal populations, but a small survey of 65 pregnant and postnatal Indigenous women in Townsville found 77% had Fagerström scores under 6, indicating low or medium nicotine dependency.¹⁹

While some have called for NRT subsidisation for Aboriginal smokers,²⁰ persistent patterns of low daily smoking challenge aspects of nicotine addiction theory and should require those working in smoking cessation to consider how appropriate



Figure 1: How Winfield is advertised in Germany.

cessation methods based on assumptions of addiction, such as nicotine replacement therapy are for at least some Aboriginal groups. A recent well-powered trial of NRT gum in light African American smokers did not show a significant cessation effect.²¹

While the daily smoking rates that we report are encouragingly lower than those in both the wider community and in low income groups, the rates are certainly cause for concern. A prospective study of over 42,000 Norwegians found that those smoking just 1–4 cigarettes per day had elevated rates of tobacco caused disease. Adjusted relative risks (95% confidence interval) in smokers of 1–4 cigarettes per day, with never smokers as reference, of dying from lung cancer were 2.79 (0.94 to 8.28) in men and 5.03 (1.81 to 13.98) in women, and from ischaemic heart disease 2.74 (2.07 to 3.61) in men and 2.94 (1.75 to 4.95) in women.²²

British American Tobacco brands dominate sales in APY Lands drawing 96% of the market, and so their products will be responsible for most of the predictable smoking-related deaths and illnesses among Anangu smokers. BAT's Winfield brand dominates brand preference in APY Lands with 90% of all cigarettes smoked, compared to its national market share of 31.7%. Winfield Blue has 84.4% of brand share. Winfield and BAT's culpability is reinforced by its previous use of an Anangu cultural icon, the distinctive country of Kata Tjuta, to sell its cigarettes in Germany (See Figure 1 and <http://www.ashaust.org.au/images/KataJWinfieldAd.jpg>).

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