

Tobacco Free Communities

UTAS Evaluation Summary

Background

Smoking is one of the largest yet most preventable contributors to morbidity and mortality in Australia and around the world [1,2]. It increases the risk of many diseases including myocardial infarction, stroke, type 2 diabetes, and numerous cancers [1]. Quitting can reduce the risk of these diseases and increase life expectancy, with those who quit at younger ages obtaining the greatest improvements [3]. Despite this, 16.9% of Tasmanians continue to smoke; a rate higher than the national average of 14.9% and the second highest of all Australian states and territories [4]. Additionally, people living in rural and remote localities are more likely to smoke and have reduced access to smoking cessation services [5]. More work is needed to both reduce rates of smoking in Tasmania, and increase access to effective smoking cessation services in rural areas.

One increasingly investigated method to aid smoking cessation is financial incentive (FI) programs, wherein monetary rewards are provided contingent upon cessation. Theoretically, the benefits of incentivisation may be twofold. First, as described within learning theories like Operant Conditioning [6], providing rewards can positively reinforce behaviour and aid the formation of new habits [7]. Second, providing FIs may encourage decisions to abstain through utilisation of temporal discounting principles; a preference for immediate over delayed rewards, even when the delayed reward is of higher value [8,9]. Smokers wishing to quit encounter the choice between the immediately available rewarding effects of smoking (e.g., relieve nicotine withdrawal), or the greater yet distant benefits (e.g., to health) of quitting [10]. In this situation, many will select the immediately available rewarding option and continue smoking. FI programs may alter this decision by providing alternative, more immediate rewards for smoking abstinence, thereby encouraging sustained quitting attempts.

As one of the most accessible health professionals, pharmacists regularly and effectively provide advice on smoking cessation [11,12], and can effectively provide cessation interventions [12,13]. While scarce, some research also shows pharmacists can effectively provide FI programs [14]. Adding FI programs to pharmacy quit smoking practices may further enhance this profession's ability to engage smokers and motivate cessation. Implementing FI programs in pharmacies could also enhance FI program viability by utilising trained, effective, and resourced health professionals.

The viability of implementing FI programs in pharmacies was piloted through the Tobacco Free Communities program (TFCP). Smokers visited their local pharmacy to enrol. Six "check-ins" over three months followed, beginning one week after enrolment. Check-ins occurred once weekly for a month, then once at the end of the second- and third-months. Participants received cessation support and pharmacological advice at each check-in. They received \$10 for enrolling, and \$50 for every check-in attended where they were verified as not smoking through carbon monoxide (CO) testing (maximum remuneration amount \$310). Three rural pharmacies (Bicheno Community Health Group, Triabunna Pharmacy and Swansea Pharmacy) delivered the program.

Through the program, all residents of the Glamorgan-Spring Bay community were encouraged to participate as either a smoker trying to quit, a family/friend supporting a smoker to quit, a business owner at whose store vouchers could be redeemed, or simply by encouraging known community members who smoked to be part of the program. Recruitment occurred through word of mouth, within pharmacies by staff, posters and flyers in local businesses, community newsletter advertisements, newspaper advertisements, and brief radio and television interviews. Pharmacists received training on measuring expired CO, and updated training on how to provide best practice smoking cessation support (provided by Quit Tasmania) prior to commencement.

Data Collection and Analysis

During enrolment and “check-ins”, participants were asked to complete short surveys and provide CO breath samples to verify their smoking status. These data were recorded on hard copy forms and forwarded, with consent from participants, to the program evaluation team (researchers from the University of Tasmania). Participants who withdrew from the TFCP or were lost to follow-up were assumed to be smoking for analyses. While participants received vouchers based solely on CO readings during the TFCP, they were only considered quit within analyses following both self-reported abstinence (no cigarettes in the previous week) and biochemical verification ($\text{CO} \leq 4$ ppm).

Overview of Results

The TFCP was funded to fully incentivise 36 smokers. Thirty-five people enrolled in the program. Of these, 29 consented to their data being analysed. Four were excluded from analysis as they provided CO readings ≤ 4 ppm, meaning current smoking at enrolment could not be assumed. The final sample therefore consisted of 25 smokers (see *Table 1*). On average, participants were 50 years old, had begun smoking at 14 years of age, and had smoked for 21 years. On entry to the program, participants were smoking on average 19 cigarettes per day, everyday. Over the course of the program, participants on average collected \$188.00 (SD = 121.00) of the potential \$310 of vouchers. Participants who were abstinent at the end of the program collected an average of \$298.89 (SD = 2.05) in vouchers.

Table 1:

Participant characteristics and differences by smoking status at program completion

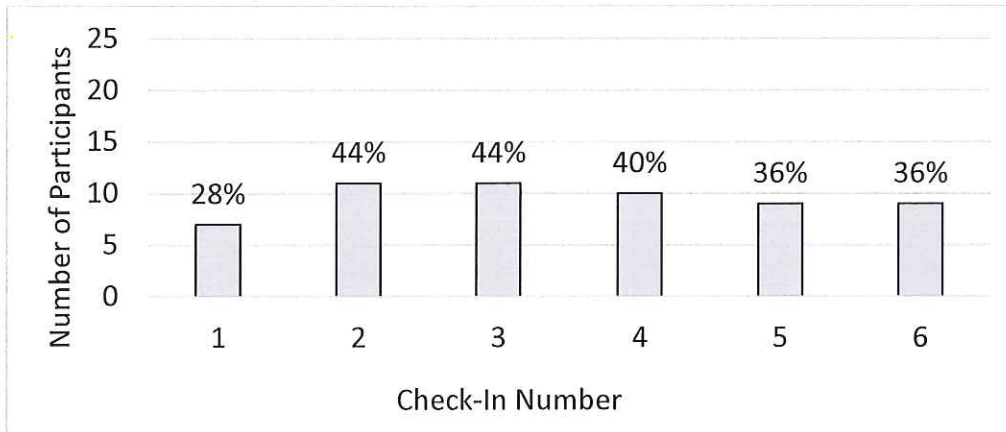
Characteristic	Total	Quitters	Smokers	<i>p</i>
	<i>n</i> = 25	<i>n</i> = 9	<i>n</i> = 16	
Age (years)	49.94 (13.32)	57.33 (13.39)	45.31 (12.10)	.027 *
Gender (% male)	52	66.67	43.75	.411
Level of Education (%)				.714
Secondary School	28	33.33	25.00	
College	28	22.22	31.25	
TAFE	32	22.22	37.50	
University	12	22.22	6.25	
Age first smoked	14.44 (4.77)	13.80 (6.67)	14.80 (3.51)	.360
At least one previous attempt (%)	96	100	93.75	1.000
Years smoked	21.46 (16.47)	25.83 (19.30)	19.00 (14.75)	.333
Days smoke per month	29.15 (2.53)	28.90 (3.33)	29.30 (2.06)	1.000
Enrolment cigarettes per day	19.08 (10.00)	15.61 (29.34)	21.03 (9.26)	.200
Enrolment carbon monoxide	10.08 (2.58)	9.89 (1.36)	10.19 (3.10)	.788

Note: Values represent mean (standard deviation) unless otherwise indicated. * Result significant at alpha = 0.05.

Quit Rates

Quit rates for each check-in are displayed in *Figure 1*. Nine (36%) participants were quit at the end of the program, three months post-enrolment. While those who did quit during the program were slightly older, there were no further sociodemographic or baseline smoking behaviour differences (see *Table 1*).

Figure 1: Number of participants quit at each check-in



Other Quitting Support

All participants received quitting advice and brief cessation counselling during enrolment. Twenty-four (96%) of the 25 participants included in analyses attended minimum one check-in at the pharmacy and obtained further behavioural support. Nineteen (76%) were still engaged with the program and pharmacists one-month post-enrolment, 15 (60%) were engaged two-months post-enrolment, and 10 (40%) remained engaged after three-months (final check-in). Of those who attended minimum one check-in, other methods of quitting used included varenicline (Champix; 20.83%), single form NRT (37.5%), combination NRT (4.17%), E-cigarettes (4.17%), and herbal methods (4.17%). Six participants (25%) did not use any product or other quit method (quit “cold turkey”). No participants reported accessing the Quitline, although researchers are still waiting on area level data to confirm whether promotion of the program correlated with an increased uptake of Quitline services in the area. Of the nine participants quit at the end of the program, no method was most common. There were no differences in pharmacology/other quit methods use between those who quit versus those who remained smoking at the end of the program.

While all participants were encouraged to start their quit attempt before the first check-in to have the best chance of obtaining the vouchers, this was not formally measured. Prevalence of participants setting a quit date would have been assessed through planned post-program interviews, however only one participant consented to be interviewed, meaning this was not viable. However, there is evidence most did start a quit attempt within this timeframe. Specifically, **the average cigarettes smoked per day decreased from 19.08 (SD = 10.00) at enrolment to 2.87 (SD = 4.64) at check-in one**, with eight participants (32%) reported smoking no cigarettes between enrolment and the check-in one and a further six (24%) reporting reducing smoking to less than one cigarette per day. CO readings also decreased from 10.08ppm (SD = 2.58) at enrolment to 3.43ppm (SD = 3.58) at the first check-in. Smoking, as indicated by CO levels, reduced across the program (see *Table 2*). These values reflect only participants engaged in the study at each timepoint. As participants were more likely to sustain engagement if they were quit, these values should be considered with caution.

Table 2:
Average participant carbon monoxide level for each check-in

	N	Mean	Std. Deviation
Enrolment	25	10.08	2.581
Check-In 1	23	3.43	3.578
Check-In 2	22	3.05	2.768
Check-In 3	21	2.71	2.704
Check-In 4	19	2.79	2.371
Check-In 5	15	2.4	2.23
Check-In 6	10	1.4	0.516

Working with Pharmacies and Other Learnings

The reception of the TFCP was overwhelmingly positive. Whilst planning, pharmacists were excited about the novelty of the program, and the chance to engage further with smokers in their community. The three pharmacies in the Glamorgan Spring Bay eagerly volunteered to deliver the program and provided excellent suggestions about how best to integrate the program within their daily routines, including how pharmacy assistants could be utilised to aid program workings (e.g., aid with survey completion), and offering to call/text appointment reminders. Once the program commenced, the feedback from the pharmacists suggested the interest and reception from the community was high and positive. While smokers took a few weeks to contemplate enrolling in some locations, the pharmacist's continued engagement with these participants, due to other pharmacy services provided (e.g., other regular script filling), presented the ideal opportunity to repeatedly discuss enrolment and smoking cessation. Antidotally, pharmacy staff reported that participants seemed to think the vouchers provided extra reason or motivation to give quitting a go. Once enrolled, it seemed the program was working because the accountability to pharmacy staff (for example, one participant who was feeling bad and feared relapse, but refrained from smoking as she remembered she had to see one of the pharmacy staff the next day). Interestingly, some pharmacies did report sensing participants were reluctant to attend the next check if they relapsed, perhaps related to a desire not to let staff down. This is something that could be addressed in future. A final important learning the program was not to over-burden participants with surveys. Originally, participants were asked to complete a survey every "check-in". Pharmacists recognised early in the program that participants felt inconvenienced by the length and repetitive nature of the surveys and thus asked participants only to complete surveys at the enrolment, 2-month, and 3-month (final) check-ins. In future, we will also trial the use of electronic survey completion (e.g., via iPad) to improve the efficiency and accuracy of data collection (cf. hard copy surveys in remote locations).

Conclusions

The TFCP quit rate (36%) is higher than that reported in nine of the twelve studies included within a recent review of community pharmacy programs for smoking cessation [13] and is higher than all five trials deemed effective within that review. While further research with a control condition and a larger sample is needed to fully investigate effectiveness, this pilot provides positive indication FI programs can feasibly be implemented within a pharmacy to promote smoking cessation.

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