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## **Abstract**

**Background and aims:** Tobacco smoking while recovering from surgery can have a negative impact. Prevalence of smoking in the orthopaedic trauma population has been found to be higher than the general population. This study investigates orthopaedic trauma patients smoking cessation history, intentions to quit, receipt of smoking cessation care during hospital admission, and patient-related factors associated with receipt of smoking cessation care.

**Methods:** An online cross-sectional survey of orthopaedic trauma patients was conducted in two public hospitals in New South Wales, Australia. Prevalence of smoking and associated variables were described. Logistic regressions were used to examine whether patient characteristics were associated with receipt of smoking cessation care.

**Findings:** 819 patients (response rate 73%) participated. More than one in five patients (21.8%) were current smokers (n= 175). Of the current smokers, more than half (55.3%) indicated making a quit attempt in the last 12 months and the majority (77.6%) were interested in quitting. More than a third of smokers (37.4%) were not advised to quit; 44.3% did not receive any form of nicotine replacement therapy; and 24.1% reported that they did not receive any of these three forms of smoking cessation care during their admission. Provision of care was not related to patient characteristics.

**Conclusions:** The prevalence of smoking amongst the sample was high. Respondents were interested in quitting, however, the provision of care during admission was low. Smoking cessation interventions need to be developed to increase the provision of care and to promote quit attempts in this Australian population.

## Introduction

The orthopaedic trauma population refers to hospitalised persons who have injured themselves as a result of an accident or injury, with many requiring immediate surgical intervention.<sup>(1)</sup> Previous research has found that orthopaedic trauma patients use substances at higher rates than the general population<sup>(2-4)</sup> and are often more likely to partake in risky behaviour.<sup>(2, 5)</sup>

The adverse effects of continuing to smoke tobacco while recovering from surgery are serious and include: post-injury complications; increased risk of mortality and infection; longer healing times; and longer hospital stays.<sup>(6-14)</sup> Despite this, evidence suggests that few orthopaedic trauma patients understand the impact that continuing to smoke may have on their recovery from surgery, with few interested in quitting when first admitted to hospital.<sup>(5, 15)</sup>

Previous studies in this population fail to state whether psychometrically valid questionnaires have been employed in order to determine smoking status.<sup>(16, 17)</sup> Measures of other important clinical aspects of tobacco dependence including: severity; history of use; important treatment aspects related to previous quit attempts; and future quit intentions have not been previously measured in this population. This study is the first to assess smoking status using psychometrically valid questionnaires, as well as additional measures of smoking among this challenging population.

The hospital stay has been shown to be an ideal time for individuals to address their smoking,<sup>(18)</sup> with previous support found for this.<sup>(19-21)</sup> For example, a Cochrane review of smoking cessation interventions for hospitalised patients found that hospital initiated interventions which continued a month post-discharge increased cessation rate by 37%<sup>(21)</sup>.

During their hospital stay, individuals may be primed for the receipt of care as: (i) they are provided with a smoke-free location; (ii) they are away from their everyday triggers; and (iii)

quit smoking medications may be provided free of charge to assist with withdrawal symptoms. Current clinical guidelines recommend that patients who smoke should be offered brief advice to quit and nicotine replacement therapy (NRT) for the length of their admission, as well as a three-day supply of NRT and a Quitline referral upon discharge.<sup>(22)</sup> However, little is known about the provision of smoking cessation care to orthopaedic trauma patients. Research with other hospital patient groups suggest that smoking cessation care provision is low,<sup>(23-26)</sup> despite patients showing interest in receiving help to quit while in hospital.<sup>(27, 28)</sup> Understanding current smoking practices, previous quit attempts, and preferences for quitting creates a foundation to increase future success in smoking cessation. Factors which have been linked to making a successful quit attempt include: intentions to quit; making a quit attempt in the previous year; longer duration of last quit attempt; a lower level of nicotine dependence; and lower age.<sup>(29)</sup> Understanding quit history provides a basis for the development of interventions to enhance the provision of smoking cessation care in hospitals.

**The aims of the study were the following:**

- 1) Describe the rates of smoking, quit intentions, plans to quit, self-efficacy and motivation to quit among a sample of orthopaedic trauma patients;
- 2) Describe the rates of previous quit attempts and past methods used to quit;
- 3) Describe patient self-reported receipt of smoking cessation care both prior to and during their current hospital admission and knowledge of prescription NRT;
- 4) Determine if there is a relationship between age, gender, marital status, household income, insurance type, heaviness of smoking, stage of change and motivation with receipt of smoking cessation care during current admission for orthopaedic trauma patients who are current tobacco users.

**METHODS**

**Design and Setting**

An online cross sectional survey of orthopaedic trauma patients was conducted at two public hospitals in New South Wales Australia. The survey was conducted between April 2015 and September 2016.

## **Participants**

Patients were included if they had been admitted to hospital with any fracture (skull and cervical spinal fractures not included); were aged 18-80 years; and were able to read and comprehend written English. Patients judged incapable of providing consent were not approached to take part. All patients who were admitted under the hospital trauma team or orthopaedic team were screened for eligibility, despite their presenting problem.

## **Procedure**

All orthopaedic trauma patients were approached consecutively during admission by a research assistant (RA) to participate in an online health behaviours survey. RAs were provided daily with a list of new orthopaedic trauma admissions from a research nurse on the project. RAs approached all new admissions, assessed eligibility and sought informed consent. All participants were provided with a survey number to de-identify their information from their results. If an individual was too ill or receiving treatment on the day they were first approached, they were approached the following day. Patients completed the online survey using a tablet computer provided to them by the RA who was able to provide assistance if required.

## **Measures**

Existing validated survey items were used or adapted where possible.<sup>(30-38)</sup> Questions used to measure described variables can be found in the Supplemental Digital Content (Table 1) and form part of a longer survey which took approximately 15 minutes to complete.

### *Participant demographics*

Participants were asked to report: age; gender; country of birth; indigenous status; marital status; education; main source of income; household income; and insurance type.

#### *Smoking status and smoking related variables*

Based on previous research; daily, occasional, ex- and non-smoker status was determined.<sup>(30)</sup> For participants who identified as current tobacco users, smoking specific questions related to consumptions were also asked,<sup>(31, 32)</sup> with the Heaviness of Smoking Index (HSI) used to determine nicotine dependence (cut offs of 0-2 for low, 3-4 moderate, and 5-6 high).<sup>(31, 39-41)</sup>

#### *Quit related variables*

Intentions to quit,<sup>(33)</sup> plans to quit,<sup>(34, 35)</sup> preference to quitting (abrupt or gradual cessation),<sup>(36)</sup> self-efficacy,<sup>(37)</sup> motivation<sup>(37, 38)</sup> and stage of change were measured for all current tobacco users. Stage of change for smoking was assessed using an adapted version of the measure developed by Etter et al.<sup>(42)</sup> that aligns with the stages described by the Trans-theoretical model of behaviour change.<sup>(43)</sup> Stage of change was categorised as pre-contemplation (not thinking of quitting in the next 6 months), contemplation (thinking of quitting in the next 6 months), and preparation (thinking of quitting within the next 30 days).

#### *Quit history*

Using the definition of a serious quit attempt as being defined as a period where the individual purposely choose not to smoke for at least 24 hours, quit histories were investigated by asking respondents questions regarding their previous quit attempts and their quit attempts in the last 12 months.

#### *Provision of smoking cessation care*

Participants were asked to self-report their receipt of the following forms of smoking cessation care: (i) advised to quit; (ii) received NRT; and (iii) offered other form of smoking cessation service (e.g. Quitline, counsellor or group therapy referral).

A binary (Yes; No) composite score labelled ‘provision of smoking cessation care’ was determined if respondents self-reporting that they had received at least one of the three measures (advised to quit, offered NRT and offer other stop smoking service).

#### *Knowledge of prescription NRT*

Respondents were also asked about their awareness of and interest in using prescription NRT patches.

#### **Ethics approval**

Ethics approval from the Hunter New England Health Ethics Committee (14/02/19/4.04), with site approval form the University of Newcastle Human Ethics Committee (H-2014-0081) and the South West Sydney Human Ethics Committee (HREC/14/HNE/46; SSA/14/LPOOL/191) was received.

#### **Statistical Analysis**

All data was stored on secure servers at the University of Newcastle and was exported into STATA v13 (StataCorp LP., College Station, TX, USA) for analysis.

Descriptive statistics of participant socio-demographics were presented as numbers and percentages for categorical variables and means (standard deviation; SD) or medians (quartile 1, quartile 3) for continuous variables, depending on distribution of the data.

Logistic regressions were used to look at patient variables related to the receipt of smoking cessation care during hospital admission. Outcomes for regressions included being advised to quit by a doctor/nurse/other health worker; being offered NRT by a doctor/nurse/other health worker; being offered another stop smoking service by a doctor/nurse/other health worker; and provision of smoking cessation care. Variables included in the regression were selected a priori and included factors previously related to the provision of smoking cessation care including age and gender<sup>(44, 45)</sup>; and some not previously investigated (marital status; heaviness of smoking; and stage of change).



Adjusted odds ratios with 95% confidence intervals and p-values were calculated for variables in the models. Significance was determined at  $p < 0.05$ . Collinearity of variables related to smoking cessation care were checked using variance inflation factors (VIFs). No variables were found to be collinear, with all VIFs less than two.

## Results

Of 1,128 orthopaedic trauma patients approached, 819 agreed to participate in the survey (72 refused, 103 were too ill to participate and 134 were not eligible, response rate of 73%).

*Patient demographics.* A summary of the demographics of the respondents can be found in the Supplemental Digital Content (Table 2). For the total sample, 60% were male with a mean age of 50.6 years.

*Rates of smoking and quit attempt related variables.* Table 1 shows the rates of smoking and quit related variables. A total of 21.8% of the population reported being current tobacco smokers (occasional or daily tobacco smokers). Of those respondents who smoked, the majority (48.6%) had a low level of nicotine dependence (as indicated by the heaviness of smoking measure). Over three-quarters of respondents who smoked (77.6%) were somewhat or very interested in quitting smoking, with 31% indicating that they intended to quit in the next 30 days. Despite this, 53.5% of current smokers were deemed to be at the pre-contemplation stage of change. A total of 40.2% of current tobacco users indicated that they would prefer to quit smoking suddenly. The mean level of motivation was 5.72 (SD= 2.88) with 29.3% of smokers not at all sure they would be able to make a successful quit attempt.

<<Insert table 1 about here>>

*Rates of previous quit attempts and past methods used to quit.* A summary of the quit history is provided in Table 2. Of current smokers, 76.6% had made a previous quit attempt, with 55.3% indicating that they had made a quit attempt in the last 12 months. Table 3 shows the

stop smoking methods used by respondents in the last 12 months and ever; “no help” was the most commonly reported method (59.4%), followed by self-purchased NRT (22.6%) and doctor prescribed NRT (15%).

<<Insert table 2 and table 3 here>>

*Patient self-reported receipt of smoking cessation care for current admission and knowledge of and interest in using prescription NRT patches.* Table 4 shows that less than half of the respondents received advice to quit smoking during their current admission from a doctor (48.3%), nurse (44.3%), or another health worker (23%), with 37.4% of respondents indicating that no-one advised them to quit during their current admission. Respondents who were current smokers reported that nurses were found to be more likely to offer NRT (46%), with 44.3% of participants stating that they did not receive any offer of NRT. Of current smokers, 87.9% indicated that they did not receive any other smoking cessation service during their current hospital admission. When combining together the three smoking cessation care variables, 75.9% of smokers indicated that they received some form of smoking cessation care during their current admission from either a doctor, nurse or other health care worker. Only 24.7% indicated they knew about prescription nicotine patches. However, almost half (48.3%) of the respondent who smoked indicated that knowing about the availability of prescription patches made them more likely to use them.

<<Insert table 4 about here>>

*Relationship between demographics, heaviness of smoking and plans to quit with receipt of smoking cessation care.* No factors were significantly associated with an increased chance of receiving smoking cessation care during their current admission for an orthopaedic trauma (Table 5).

<<Insert table 5 here>>

## Discussion

The rate of smoking amongst the orthopaedic trauma population remains higher than the Australian general population (21.8% versus 14.5% respectively).<sup>(46)</sup> Further, the majority of respondents had a low or moderate level of nicotine dependence; were interest in quitting smoking; with many indicating that they intended to quit in the next 30 days; and would prefer to stop smoking suddenly. It appears that receipt of smoking cessation care during hospital admission was low, with about a quarter (24.4%) not having received any. More than a third of current tobacco users (37.4%) did not receive any advice to quit, with a further 44.3% reporting that they were not offered any form of NRT and 87.9% did not receive any other form of smoking cessation service, e.g. referral to Quitline. Finally, few current tobacco users (24.7%) reported knowing about the possibility of receiving subsidised NRT on prescription. Despite this, almost half of the tobacco users indicated that knowing about the availability of prescription NRT patches made them more likely to use them.

Our findings suggest that current tobacco users in this population are primed for receiving additional smoking cessation support while in hospital. Previous research<sup>(5)</sup> has found lower interest in quitting, with 26.8% of respondents indicated that they were ‘very interested in quitting’, 27.9% were intending to quit in the next 30 days and 82% had a low to moderate heaviness of smoking. Further, Neptune et al. found higher rates of smoking within this population. This may indicate that the smoking rate within this population is dropping, with interest in quitting increasing. Therefore, the provision of smoking cessation care may be more important, and perhaps more welcome, in this population than previously found.

It is important to understand the influence of interest in quitting, level of nicotine dependence, and intention to quit as these factors have previously been found to be linked with making a future quit attempt.<sup>(29)</sup> The results of this study may indicate that making a quit attempt while an inpatient may suit many smokers in this population as indicated by their

224 interest in quitting abruptly and within the next 30 days. This would also have greater  
225 benefits on their recovery. Given hospitals are smoke-free sites, patients are required to  
226 abstain for the length of their hospital admission, a time which may range from 7 to 66  
227 days.<sup>(47, 48)</sup> This may present an ideal opportunity to make a quit attempt while in the care of  
228 medical staff and receiving free stop smoking medication.

229 Motivation to quit was ambiguous (mean 5.72) and a large proportion of the sample reported  
230 low self-efficacy (46.6%). Possible explanations for this may include patients being primarily  
231 concerned with their current injury and issues associated with it, such as rehabilitation:  
232 medical costs; time off work; and injury related trauma. Because of this, the hospital  
233 admission may provide a good opportunity to provide information on the effects continuing  
234 to smoke may have on a patient's recovery and the impact this may have on their  
235 rehabilitation and recovery time.

236 Smoking cessation care may not have been provided as patients may not be reporting their  
237 true smoking status to staff due to stigma or staff not asking for current smoking status.

238 Previous research suggests systemic, staff, and patient related barriers to the provision of  
239 smoking cessation care, including: lack of role delineation; limited opportunities for follow-  
240 up support;<sup>(49)</sup> lack of enforcement regarding smoke-free policies<sup>(50, 51)</sup> (systemic); lack of  
241 appropriate knowledge or skills,<sup>(23, 52-54)</sup> time constraints and lack of resources<sup>(54-56)</sup> (staff);  
242 fear of patient aggression<sup>(51)</sup> and patient refusal to use stop smoking medication<sup>(57)</sup> (patient).

243 These barriers are leading to the continuation of low smoking cessation care in the hospital  
244 setting. Designing interventions that account for these barriers and the psychological  
245 concerns of the population may assist medical staff to address smoking cessation care with  
246 their patients in this population.

247 The lack of knowledge of prescription NRT may not be limited to the orthopaedic trauma  
248 population, however further research with a greater population would be needed. Lack of

knowledge could be improved with more education about the availability of prescriptions.

One way of addressing this with the orthopaedic trauma population may be to ensure that all patients are told about the availability of prescription smoking cessation medication during their admission, with notes made in discharge summaries to be followed up by health care providers or general practitioner post-discharge.

### **Implications on policy or practice**

The results show that current policy is not being followed, with practices around the current delivery of smoking cessation care sub-optimal in both a major regional level one trauma teaching hospital and a major metropolitan level one trauma hospital. This suggests that the provision of care may need to be increased, and indicates that orthopaedic trauma patients are a prime target group for receiving smoking cessation care during their admission. Prior to the development of an intervention, staff barriers and facilitators to the provision of smoking cessation care needs to be investigated in order to determine if staff provided support to quit can be increased. One way of avoiding previously discovered staff barriers to the provision of care may be the implementation of an online intervention. However, prior to the development of an online programme, rates of internet access and interest in using the internet for health would first need to be investigated. Utilising an online intervention for this population group may be ideal, as a Cochrane review of smoking cessation interventions for hospitalised patients recommends that any interventions begins during hospitalisation and continues at least one-month post-discharge in order to be effective at increasing cessation rates.<sup>(21)</sup> Using the internet for health during admission and continuing post-discharge may be one way of providing this intense form of smoking cessation support.

### **Limitations**

One limitation of this study is that it relied on patient self-reported receipt of smoking cessation care and current smoking status. It is believed that any bias found would reflect

under reporting of smoking status, however rates higher than the general population were still found. Further, patient self-report using touchscreen devices has previously been found to be acceptable and accurate, by smokers, non-smokers and medical staff.<sup>(58-60)</sup>

There are no gold standard measures for collecting this data given staff are likely to under-report care provision and medical record audit is likely to be incomplete.<sup>(61, 62)</sup> Patient-report is valuable information as it provides an estimate of care provision from the patient perspective however it may be linked to over-reporting.<sup>(61-63)</sup>

While no associations were found to be significant with the provision of smoking cessation care, it is important to note that the sample size of current smokers for this survey was small (n = 147). Therefore, this study may have lacked adequate power to detect differences in the provision of care based on patient characteristics.

## **Future research**

Further research is needed with hospital staff to understand what their self-reported provision of care is and how this may differ from patients' report. Further research into barriers and facilitators to the provision of smoking cessation care from a staff point of view would be useful in order to determine possible interventions to help overcome the barriers and improve smoking cessation care provision for this population group. As well, research looking at the current tobacco users' rates of internet access and interest in using the internet for health should be investigated as eHealth interventions may provide a method for overcoming already known staff barriers.

## **Conclusions**

The smoking rates amongst orthopaedic trauma patients is higher than community average. The provision of smoking cessation care during hospital admission is sub-optimal with new intervention needed to increase the care provided. Interventions which incorporate lessons

298    learned from previous quit attempts, utilise an abrupt approach, and include techniques to  
299    boost motivation and self-efficacy could help to address this gap in care.

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447 **Table 1.** Smoking history and quit related variables among the sample of current smokers.

Variable		Total (n= 175) n (%)
Age when started smoking	Mean (SD)	16.92 (5.4%)
	Median (Q1,Q3)	16 (14, 18)
Number of cigarettes per day	Mean (SD)	15.33 (9.1)
	Median (Q1,Q3)	15 (10, 20)
Tobacco type used	Cigarettes (pre-rolled)	137 (78.3%)
	Cigarettes (roll your own)	33 (18.9%)
	Chop Chop (cheaper loose leaf tobacco)	2 (1.1%)
	Electronic cigarettes or e-cigarettes	-
	Chewing tobacco	2 (1.1%)
	Snuff (powder tobacco)	-
	Cigar or pipe	1 (0.6%)
	Other	-
Average spent on tobacco per week	Mean \$ (SD)	84.60 (55.0)
	Median \$ (Q1,Q3)	75 (50, 112)
Heaviness of smoking	Low	85 (48.6%)
	Medium	71 (40.6%)
	High	19 (10.9%)
Interest in quitting smoking	I am not at all interested in quitting smoking	39 (22.4%)
	I am somewhat interested in quitting smoking	75 (43.1%)
	I am very interested in quitting smoking	60 (34.5%)
Quit intention	Quit in the next 30 days	54 (31.0%)
	Quit in the next 6 months	28 (15.5%)
	Quit, but not in the next 6 months	14 (8.1%)
	Never quit	14 (8.1%)
	Unsure	65 (37.4%)
Stage of change	Pre-contemplation	93 (53.5%)
	Contemplation	27 (15.5%)
	Preparation	54 (31.0%)
Preference to quit	Stop smoking suddenly	70 (40.2%)

	Gradually cut down	45 (25.9%)
	Gradually cut down with the help of stop smoking medication	37 (21.3%)
	No preference	22 (12.6%)
Motivation	Mean (SD)	5.72 (2.88)
	Median (min, max)	6 (4, 8)
Self-efficacy	Not at all sure	51 (29.3%)
	Slightly sure	30 (17.2%)
	Moderately sure	47 (27.0%)
	Very sure	25 (14.4%)
	Extremely sure	21 (12.1%)

**Table 2.** Quit history and previous methods used to quit of the sample of current smokers.

Variable		Total (n= 175) n (%)
Previous quit attempt?	No	41 (23.4%)
	Yes	134 (76.6%)
Time since last quit attempt	<3 months	44 (33.3%)
	3-6 months	14 (10.6%)
	Between 7-12 months	15 (11.4%)
	Between 1-2 years	14 (10.6%)
	Between 2-5 years	33 (25.0%)
	More than 5 years	12 (9.1%)
Time quit (days) last quit attempt	Mean (SD)	62.76 (157.01)
	Median (Q1,Q3)	7 (4, 30)

451 **Table 3.** Method used to quit smoking in the last 12 months.

<b>What method have you used to try and stop smoking in the past 12 months?</b>	<b>Total (n= 133) n (%)</b>
No Help	79 (59.4%)
Bupropion	6 (4.5%)
Varenicline	11 (8.3%)
Dr prescribed NRT	20 (15.0%)
NRT (self-purchased)	30 (22.6%)
Self-help books	1 (0.8%)
Alternative therapies (acupuncture, hypnosis etc)	6 (4.5%)
Group therapies	1 (0.8%)
Internet support	2 (1.5%)
Telephone support	4 (3.0%)
GP Visit	12 (9.0%)
Other (Stated)	10 (7.5%)
<b>Have you ever used any of these method to quit smoking?</b>	<b>Total (n= 147) n (%)</b>
No Help	81 (55.1%)
Bupropion	9 (6.1%)
Varenicline	17 (11.6%)
Dr prescribed NRT	32 (21.8%)
NRT (self-purchased)	42 (28.6%)
Self-help books	5 (3.4%)
Alternative therapies (acupuncture, hypnosis etc)	14 (9.5%)
Group therapies	2 (1.4%)
Internet support	1 (0.7%)
Telephone support	11 (7.5%)
GP Visit	18 (12.2%)
Other (Stated)	19 (12.8%)

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**Table 4.** Receipt of smoking cessation care and knowledge of prescription nicotine replacement therapy as reported by smokers.

		Total (n= 175) n, %
Advised to quit current admission by health professional	Doctor	84 (48.3%)
	Nurse	77 (44.3%)
	Other health worker	40 (23.0%)
	None	66 (37.4%)
Offer of NRT by health professional current admission	Doctor	40 (23.0%)
	Nurse	80 (46.0%)
	Other health worker	15 (8.6%)
	None	78 (44.3%)
Offered other stop smoking service by health professional current admission	Doctor	12 (6.9%)
	Nurse	16 (9.2%)
	Other health worker	6 (3.5%)
	None	154 (87.9%)
Provision of smoking cessation care	No	42 (24.1%)
	Yes	132 (75.9%)
Did you know that doctors can prescribe cheaper nicotine patches to assist you with quitting?	No	119 (68.4%)
	Yes	43 (24.7%)
	Unsure	12 (6.9%)
Does knowing about the availability of cheaper nicotine patches make you more likely to try or use them?	Yes, definitely	43 (24.7%)
	Yes, maybe	41 (23.6%)
	No	77 (44.3%)
	Unsure	13 (7.5%)

**Table 5.** Logistic regressions of provision of advice to quit smoking, offer of NRT, offer of other stop smoking service and provision of any smoking cessation care during current admission; adjusted model includes age, gender, marital status, heaviness of smoking and stage of change.

		Crude		Adjusted	
	Yes n (%)	Odds Ratio (95%)	P- value	Odds Ratio (95%)	P- value
<b>Advice to quit during current admission (n=147)</b>					
<b>Age</b>		0.98 (0.96, 1.00)	0.049	0.98 (0.95, 1.00)	0.062
<b>Gender</b>			0.434		0.876
Female	26 (57.8%)	Ref.		Ref.	
Male	83 (64.3%)	1.32 (0.66, 2.64)		0.93 (0.39, 2.25)	
<b>Marital status</b>			0.817		0.900
Married/Defacto	45 (61.6%)	Ref.		Ref.	
Single/Widowed/ Separated/Divorced	64 (63.4%)	1.08 (0.58, 2.00)		0.95 (0.47, 1.96)	
<b>Heaviness of smoking</b>			0.9668		0.9430
Low	37 (64.9%)	Ref.		Ref.	
Medium	47 (66.2%)	1.06 (0.51, 2.20)	0.879	1.12 (0.52, 2.42)	0.763
High	12 (63.2%)	0.93 (0.31, 2.73)	0.890	0.98 (0.32, 3.05)	0.976
<b>Stage of change</b>			0.7380		
Pre- contemplation	56 (60.2%)	Ref.		Ref.	0.716
Contemplation	17 (63.0%)	1.12 (0.46, 2.72)	0.797	0.98 (0.35, 2.75)	0.970
Preparation	36 (66.7%)	1.32 (0.66, 2.67)	0.436	1.37 (0.62, 3.06)	0.438
<b>Offered NRT (n=147)</b>					
<b>Age</b>		0.98 (0.97, 1.00)	0.087	0.9 (0.96, 1.01)	0.235
<b>Gender</b>			0.156		0.538
Female	21 (46.7%)	Ref.		Ref.	
Male	76 (58.9%)	1.64 (0.83, 3.24)		1.31 (0.55, 3.09)	
<b>Marital status</b>			0.925		0.510
Married/Defacto	41 (56.2%)	Ref.		Ref.	
Single/Widowed/ Separated/Divorced	56 (55.5%)	0.97 (0.53, 1.78)		0.79 (0.39, 1.60)	
<b>Heaviness of smoking</b>			0.3869		0.3236
Low	32 (56.1%)	Ref.		Ref.	
Medium	47 (66.2%)	1.53 (0.75, 3.14)	0.246	1.68 (0.79, 3.57)	0.178
High	10 (52.6%)	0.87 (0.31, 2.46)	0.790	0.95 (0.32, 2.84)	0.923
<b>Stage of change</b>			0.3855		0.3037
Pre- contemplation	50 (53.7%)	Ref.		Ref.	
Contemplation	13 (48.2%)	0.80 (0.34, 1.88)	0.607	1.17 (0.43, 3.19)	0.766
Preparation	34 (63.0%)	1.46 (0.74, 2.90)	0.278	1.87 (0.84, 4.16)	0.124
<b>Other stop smoking service (n=174)</b>					

<b>Age</b>		0.99 (0.96, 1.01)	0.313	0.99 (0.96, 1.02)	0.239
<b>Gender</b>			0.450		0.673
Female	4 (8.9%)	Ref.		Ref.	
Male	17 (13.2%)	1.56 (0.49, 4.90)		1.30 (0.38, 4.45)	
<b>Provision of smoking cessation care (n=147)</b>					
<b>Age</b>		0.98 (0.96, 1.00)	0.074	0.98 (0.96, 1.01)	0.236
<b>Gender</b>			0.207		0.554
Female	31 (68.9%)	Ref.		Ref.	
Male	101 (78.3%)	1.63 (0.76, 3.47)		1.34 (0.51, 3.53)	
<b>Heaviness of smoking</b>			0.4543		0.469
Low	44 (77.2%)	Ref.		Ref.	
Medium	58 (81.7%)	1.32 (0.56, 3.12)		1.46 (0.60, 3.57)	0.407
High	13 (68.4%)	0.64 (0.20, 2.02)		0.74 (0.22, 2.45)	0.617
<b>Stage of change</b>			0.6534		0.563
Pre-contemplation	68 (73.1%)	Ref.		Ref.	
Contemplation	21 (77.8%)	1.29 (0.47, 3.56)	0.627	1.44 (0.41, 5.03)	0.570
Preparation	43 (79.6%)	1.44 (0.64, 3.22)	0.377	1.62 (0.64, 4.09)	0.307

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