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# Implementation of a smoke free policy in an inpatient psychiatric facility: Patient-reported adherence, support, and receipt of nicotine dependence treatment

Running title: Smoke free policy in inpatient psychiatry

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# Abstract

The implementation of smoke free policies in inpatient psychiatric facilities, including patient adherence, mental health nursing staff support and provision of nicotine dependence treatment to patients has been reported to be poor. The extent to which the quality of smoke free policy implementation is associated with patient views of a policy is unknown. We conducted a cross-sectional survey of 181 patients (53.6%; n = 97smokers and 46.4%; n = 84 non-smokers) in an Australian inpatient psychiatric facility with a total smoke-free policy. Smokers' adherence to the policy was poor (83.5% smoked). Only half (53.6%) perceived staff to be supportive of the policy. Most smokers used nicotine replacement therapy (75.3%); although few received optimal nicotine dependence treatment (19.6%). Overall, 45.9% of patients viewed the smoke free policy in the unit as positive (29.9% smokers; 64.3% non-smokers). For smokers, adhering to the ban, perceiving staff to be supportive, and reporting that the nicotine replacement therapy reduced cravings to smoke were associated with a more positive view towards the smoke free policy. These findings support the importance of patient adherence, mental health nursing staff support and adequate provision of nicotine dependence treatment in strengthening smoke free policy implementation in inpatient psychiatric settings.

**Keywords:** Nicotine dependence, Patient Acceptance of Healthcare, Psychiatric Department, Smoke free policy, Smoking

# Introduction

Compared to the general population, persons with a mental disorder are two to three times more likely to smoke (Lawrence *et al.* 2009), are more likely to suffer smokingrelated morbidity and mortality, and experience a reduced life expectancy of 12 to 15 years (Lawrence *et al.* 2013). Some of the highest rates of smoking (up to 80%) have been observed among patients hospitalised for psychiatric treatment (Lineberry *et al.* 2009, Benowitz *et al.* 2009). Development of effective smoking cessation treatments for persons with a mental disorder has been identified as a priority by the Royal College of Psychiatrists, particularly for delivery in inpatient psychiatric settings by mental health nurses, which represents a teachable moment for providing such care (Royal College of Physicians & Royal College of Psychiatrists 2013).

Smoke free policies have been introduced in inpatient psychiatric settings in most developed nations (House of Commons Health Committee 2005), and mental health nurses carry a large portion of the responsibility in ensuring such policies are effectively implemented (Prochaska 2009, Wye *et al.* 2011). Smoke free policies usually require mental health nurses to enforce smoking bans within the facility, and to provide nicotine dependence treatment, including nicotine replacement therapy (NRT); and brief advice to quit to patients identified as smokers (Fiore *et al.* 2008). Clinical guidelines recommend that a systems approach be adopted when implementing such strategies to address the care needs of smokers admitted to health facilities (Fiore *et al.* 2008). Such an approach identifies clear clinical leadership by clinical directors, senior administrators and nurse unit managers, and the provision of adequate nicotine

nursing staff as key quality of care indicators (McNeill & Owen 2005, Fiore *et al.* 2008). Despite such recommendations, studies conducted in inpatient psychiatric facilities in a number of countries have provided evidence of inconsistent leadership and policy implementation by service directors, senior administrators and nurse unit managers (Lawn & Campion 2010), suboptimal provision of nicotine dependence treatment by mental health nurses to their patients (Wye *et al.* 2010a), and low levels of adherence to the smoking restrictions among patients (Ratschen *et al.* 2008a).

Research regarding patient attitudes towards smoke free policies has indicated low levels of patient support, particularly among smokers (Hehir *et al.* 2012). Qualitative research has suggested that inconsistent implementation of smoke free policies may be a key factor contributing to low patient support for such policies (Lawn & Pols 2005), however no studies have directly assessed the extent to which such patient attitudes may be associated with the extent and quality of smoke free policy implementation in psychiatric inpatient facilities. Determination of whether such an association exists may help identify strategies to improve the implementation of smoke free policies in these facilities by clinical and non clinical staff at all levels, and hence increase the likelihood that the intended benefits of such policies can be realised. In this context, a study was undertaken to examine the prevalence of: 1) patient reported adherence to a smoke free policy in an inpatient psychiatric facility; 2) patient perception of staff support for such a policy; 3) patient receipt of nicotine dependence treatment; and 4) patient acceptability of the smoke free policy, and its association with these indicators of the quality of smoke free policy implementation.

# Materials and methods

# Design and setting

A cross-sectional study was undertaken in a public adult inpatient psychiatric hospital in New South Wales (NSW), Australia. The hospital had six psychiatric units of which three units were sampled for this study: one co-morbid acute mental health and substance use unit, and two acute mental health units. The three units not included were two psychiatric emergency care units and one older persons unit. A total smoke free policy that incorporated a ban on smoking in all indoor and outdoor areas was implemented by the facility three years prior to the study. A NSW Health policy directive for all psychiatric facilities in the state required clinical staff (including mental health nurses, medical officers, psychologists and psychiatrists) to provide nicotine dependence treatment, including provision of nicotine replacement therapy (NRT; including nicotine patches, gum, lozenges and inhalers), and brief advice to quit to all smokers admitted to hospital (New South Wales Department of Health 2002).

Ethics approval for the study was obtained from the Hunter New England Human Research Ethics Committee, HREC reference no: 08/04/16/5.10 and the University of Newcastle Human Research Ethics Committee reference no: H-2008-0191. The research methods used conform to the provisions of the Declaration of Helsinki.

# Sample, recruitment and data collection procedures

The survey was undertaken across a 12 month period (May 2009-2010), with patients interviewed on one day each week (Stockings *et al.* 2013). Ward lists were used to identify and approach newly admitted patients. All inpatients that were judged to be

clinically stable by nursing staff, were admitted for at least three days, and were 18 years of age or older, were eligible to participate in the study. Such patients were asked to complete a 20 minute face to face interview conducted by trained interviewers, independent of the hospital, in a quiet location within the patients' unit of admission, as soon as possible following admission and stabilisation.

# Measures

### *i.* Sociodemographic and clinical characteristics

For all patients admitted to the three units throughout the course of the study, data were extracted from patient medical records regarding their sociodemographic and clinical characteristics including age, gender, marital status, mental health diagnosis, admission length, admission history and identification as an Aboriginal or Torres Strait Islander.

#### *ii.* Smoking characteristics

The interview included items assessing smoking status and nicotine dependence (Fagerstrom Test for Nicotine Dependence; [FTND] (Heatherton *et al.* 1991)). Smokers were defined as participants who self-reported being a regular or occasional smoker on their admission to hospital.

# *iii. Quality of smoke free implementation*

# • Adherence to the smoking ban

Adherence to the smoking ban was measured in two ways. First, patients' perception of the adherence of other patients or staff to the smoking ban was

assessed by asking if the patient was aware of patients or staff smoking inside the unit (yes, no), or on the hospital grounds (yes, no) during their admission. Second, smokers were asked if they themselves had smoked inside the unit (yes, no) or on hospital grounds (yes, no) during their admission.

# • *Perceived staff support of the smoke free policy*

Participants were asked to rate their perception of staff (including all nursing and medical staff, psychologists and psychiatrists) support of the smoke free policy (all staff positive, most staff positive, unsure, most staff negative, all staff negative).

#### • Smokers receipt of nicotine dependence treatment

Participants identifying as smokers were asked whether they had received information or advice to quit while admitted to the facility (yes, no), and whether they had been offered NRT (yes, no), and if so, whether they had used it (yes, no). Details were also collected regarding the type of NRT used (including nicotine patches, and adjunctive forms of NRT including nicotine gum, lozenges and inhalers) and its perceived effectiveness in reducing cravings to smoke (not at all, a little, a fair bit, a lot).

# iv. Acceptability of smoke free policy

Participant acceptability of smoke free policies was assessed in terms of inpatient psychiatric facilities generally (good, unsure, not good), and of the smoke free policy in their unit of admission at the time (very positive, somewhat positive, neutral, somewhat negative, very negative).

#### Analyses

IBM® SPSS® Statistics release version 19.0.0 (IBM 2011) was used to analyse the data. Descriptive statistics were used to summarise the sample with respect to sociodemographic and clinical characteristics, smoking behaviours, adherence to the smoke free policy, perceived staff support, receipt of nicotine dependence treatment and acceptability of the smoke free policy.

# Variable transformation

Responses to the following variables were collapsed into two categories: cultural identification (Aboriginal or Torres Strait Islander [yes, no]), diagnosis (mood disorders, other) previous admission (yes, no), nicotine dependence (FTND total  $\leq 5$ ,  $\geq$  6 (Fagerstrom *et al.* 1996)), and NRT effectiveness in reducing cravings (not at all – a little, a fair bit – a lot). The remaining variables were reduced to three categories: age (< 30, 31-45, 46+), and admission length (< 7 days, 8-30, 31+).

Four variables describing adherence to the smoke free policy in the unit were created from patient responses to items regarding the observed adherence of other patients/staff in the unit and/or grounds (yes, no), and the smokers' own adherence in the unit and/or grounds (yes, no). Responses to the survey item assessing perceived staff support of the policy were collapsed into two categories (most-all staff positive, most-all staff negative/unsure). Items assessing the receipt of brief advice to quit, receipt of NRT and types of NRT used were collapsed into a single variable termed 'optimal nicotine dependence treatment' (patch + adjunctive NRT + brief advice to quit vs. other) in

accordance with the NSW Health treatment guidelines for the management of nicotine dependent inpatients (New South Wales Department of Health 2002). Patient acceptability of the smoke free policy was derived from the item assessing patients' view of the smoke free policy within the current unit of admission, with responses collapsed into two categories (somewhat-very positive, somewhat-very negative/neutral).

#### Statistical tests

Chi square analyses and independent samples t-tests were used to explore sociodemographic and clinical differences between those who did and did not complete the survey (i.e. those not approached, or who did not provide consent), and between smokers and non-smokers. Chi square analyses were also used to determine the association between smoke free policy implementation (including smokers' own adherence to the smoking ban, perceived adherence to the smoking ban by other patients and staff, perceived staff support of the smoke free policy and patient receipt of nicotine dependence treatment, including NRT effectiveness in reducing cravings to smoke), and patient views of the policy. These analyses were conducted separately for smokers and non smokers.

# Results

# **Participants**

A flow diagram of participant recruitment is shown in Figure 1. A total of 757 patients were admitted to the three study units during the survey period, of whom 263 (34.7%) were approached and 494 (65.3%) were not, the large majority (n = 385, 77.9%) of

whom were not present in the unit on a day of data collection. Of the 263 approached patients, 49 (18.6%) were ineligible and 15 (5.7%) declined participation, leaving 199 (93.0% consent rate) who consented to the survey, with interviews able to be completed for 181 patients (90.9% response rate; 23.9% of admitted patients).

# \*Insert figure 1 here\*

# Sociodemographic and clinical characteristics

Survey participants were mostly male (56.9%), aged 31 years or over (70.7%; M = 40.9, SD = 14.2, range = 18 to 80), single (75.1%), and not of Aboriginal or Torres Strait Islander descent (96.1%). The most common diagnoses were mood disorders (42.0%), and schizophrenia and related psychosis (38.1%). Average length of stay was 36.2 days (SD = 49.8, median = 21, range = 3 to 543), with 40.9% admitted for between 8 to 30 days. Participants were surveyed on average 15.5 days (SD = 10.5, median = 13, range = 3 to 41) after admission, which did not differ between smokers and non smokers. Chi square analyses indicated no differences in socio-demographic or clinical characteristics between those who did and did not complete the survey.

# Smoking characteristics

Just over one half of survey participants identified themselves as smokers; 53.6% (n = 97). Compared to non smokers, smokers were younger (M = 37.2, SD = 11.9 vs. M = 44.5, SD = 15.8, t(179) = 3.6, p < .0001), and more likely to be single (86.6% vs. 64.2%,  $\chi^2$  (2) = 12.3, p = .0005). The majority of smokers (54.6%) had high levels of nicotine dependence (FTND  $\geq$  6) (Fagerstrom *et al.* 1996).

# Adherence with the smoking ban

The majority of participants (87.3%) were aware of other patients smoking in the facility during admission, and just under a fifth (19.9%) indicated that they were aware of staff doing likewise (Table 1). No differences in awareness of patients or staff smoking were found between smokers and non smokers. Almost all smokers (83.5%) reported that they smoked during their admission.

# \*Insert Table 1 here\*

#### *Receipt of nicotine dependence treatment*

Of the smokers, 36.1% reported that they had received brief advice to quit during their stay and 75.3% used NRT (Table 2). Of those who used NRT, the majority (86.3%) continued to smoke during admission. Less than a fifth of smokers (19.6%) reported receiving 'optimal' nicotine dependence treatment as recommended in the clinical practice guidelines (i.e. patch + adjunct NRT + brief advice to quit). The majority (56.1%) of NRT users reported that the NRT either did not reduce their cravings or only did so a little.

\*Insert Table 2 here\*

# Perceived staff support of the smoke free policy

Just over half (53.6%) of participants perceived all or most treating staff to hold a positive view towards the smoke free policy (Table 3). Smokers were less likely to perceive staff to be supportive of the smoke free policy than non-smokers (45.4% vs. 63.1%,  $\chi^2$  (1) = 5.8, *p* = .016).

# \*Insert table 3 here\*

# Acceptability of the smoke free policy

Nearly half of the participants (43.1%) believed smoke free policies to be positive in inpatient psychiatric facilities generally, with smokers less likely to do so than non-smokers (25.8% vs. 63.1%;  $\chi^2$  (1) = 25.9, p < .0001; Table 3). A similar proportion (45.9%) reported the smoke free policy within their current unit of admission to be positive, with smokers less likely to hold this view than non smokers (29.9% vs. 64.3%;  $\chi^2$  (1) = 39.6, p < .0001).

# Factors associated with acceptability of the smoke free policy in the current unit of admission

For non smokers, chi square analyses revealed no significant associations between the independent variables: perceived adherence to the smoking ban by other patients and staff and perceived staff support, and the dependent variable, patient acceptability of the smoke free policy in the unit.

For smokers, adhering to the policy ( $\chi^2$  (1) = 5.92, *p* =.015), perceiving staff to be supportive of the smoke free policy ( $\chi^2$  (1) = 95, *p* <.0001) and reporting that the NRT reduced their cravings to smoke ( $\chi^2$  (1) = 4.45, *p* =.032) were associated with a positive view towards the smoke free policy within the current unit of admission.

# Discussion

This study examined the associations between the quality of smoke free policy implementation and patient acceptability of a smoke free policy within an inpatient psychiatric facility. The results indicate that the introduction of a smoke free policy three years prior had limited effectiveness in stopping smoking among patients during admission, and in ensuring that mental health nurses and other treating medical staff provided adequate nicotine dependence treatment to smokers. Less than half of patients had a positive view towards the smoke free policy. Smokers were more likely to be accepting of the smoke free policy in their unit of admission if they perceived treating staff to have a positive view of the policy, if they themselves did not smoke on the unit, and if they felt that the NRT provided reduced their cravings to smoke.

The findings are consistent with previous research internationally indicating lower levels of support for smoke free policies among smokers than non smokers (Smith *et al.* 2012, Hehir *et al.* 2013), and low patient adherence with smoking bans (Ratschen *et al.* 2008b). The finding that most smokers continued to smoke during admission is also consistent with a recent observational study conducted in the same facility in 2011, where an estimated 267 observable instances of smoking occurred daily over a nine day

period, with minimal enforcement of the smoking ban by mental health nursing staff (Wye *et al.* 2014).

It has been suggested that consistent monitoring and enforcement of smoking bans by mental health nursing staff is a potentially efficacious method of improving adherence in hospital settings (Eadie *et al.* 2013), however nursing staff are often reluctant to do so, with fear of patient aggression a commonly cited barrier (Wye *et al.* 2010b). Previous studies have reported that nursing staff often anticipate greater levels of aggression from patients than actually occur following smoke free policy implementation (Lawn & Pols 2005), and as such, providing education, training and support to increase confidence in non-confrontational methods to enforce smoking bans among mental health nursing staff may be required to improve patient adherence (Shipley & Allcock 2008).

Levels of patient self reported receipt of NRT and brief advice to quit were similar to those reported previously by psychiatric inpatients (Prochaska *et al.* 2006), and were higher than indicated by medical record audits in the same study settings (Wye *et al.* 2010a), however, the observed levels of receipt suggest inconsistent care provision by clinical staff. Further, the majority of smokers did not receive optimal nicotine dependence treatment as outlined in treatment guidelines (New South Wales Department of Health 2002). Although NRT was used by the majority of smokers, its adequacy in effectively managing nicotine withdrawal appeared to be limited, as most patients who used NRT continued to smoke during admission, and reported that it had little to no effect in reducing their cravings to smoke. Importantly, those smokers who reported that the NRT they received was effective in reducing their cravings to smoke were more likely to view the policy as positive. Evidence from general medical settings suggests that smoking during hospitalisation is more common among those with higher cravings to smoke and lower among those who use NRT during admission (Regan *et al.* 2012). Paired with the current findings, such research suggests that if mental health nursing staff and other treating medical staff including psychologists and psychiatrists provided adequate doses of NRT to patients who smoke, it may both improve patient adherence to a smoking ban, and improve patient acceptability of a smoke free hospital admission. Mental health nursing staff should also ensure that they consistently monitor nicotine cravings of their patients during admission, and offer nicotine dependence treatment (including NRT) as needed. This approach may improve smoke free policy adherence among patients, and has also been suggested to have the additional benefits of reducing the likelihood of adverse behavioural events (Lawn & Pols 2005), and could further promote cessation among patients post-hospitalisation (Rigotti *et al.* 2000).

Perceived staff support of the smoke free policy was found to be associated with smokers' acceptability of the policy. This finding highlights the importance of clinical staff agreeing with and endorsing smoke free policies, and reflecting the same to patients. Policy implementation guidelines recommend that clinical staff are aware of, and endorse smoke free policies (McNeill & Owen 2005). Strong and consistent leadership by clinical directors, senior administrators and nurse unit managers, and cohesive teamwork among mental health nurses, psychologists and psychiatrists have been suggested to be important factors for smoke free policy success (Lawn & Campion 2010). Previous qualitative research in inpatient psychiatric settings suggests that

negative predispositions towards a smoke free policy at all levels of clinical and non clinical staff can lead to the failure of such policies, and detrimentally affect provision of nicotine dependence treatment (Campion *et al.* 2008). Staff at all levels, including clinical directors, senior administrators, nurse unit managers, mental health nursing and other medical staff need to emphasise the importance of treating smokers' nicotine dependence during admission, and to ensure that nicotine dependence treatment is provided consistently and systematically to all patients who present as smokers. Emphasising the view of smoking as an addiction rather than a personal habit may help to improve nursing staff provision of adequate nicotine dependence treatment in inpatient psychiatric settings (Wye *et al.* 2010b).

This study is limited to a single inpatient psychiatric setting in NSW, Australia, and as such, the extent to which the findings may be generalised is limited. Further, statistical power for the association analyses may have been compromised due to the relatively small low sample size, and potential biases due to self-reported data cannot be discounted. However, the sample appeared to be representative of the patient population during the survey period, and the findings reported here indicating low policy adherence among patients, variable use of NRT, and moderate levels of patient support for the smoke free policy are consistent with previous studies conducted in inpatient psychiatric settings is a pervasive issue (Ratschen *et al.* 2008a, Smith *et al.* 2012, Willemsen *et al.* 2004, Prochaska *et al.* 2006).

The potential benefits for patient and staff well-being of fully and consistently implemented smoke free policy within psychiatric hospital settings are significant. In addition to reduced exposure to, and risk of harm from environmental tobacco smoke, adequately addressing issues of nicotine dependence and withdrawal within a smoke free setting, and being abstinent from cigarettes during the inpatient stay have been suggested to positively influence post-discharge quit attempts and cessation (Duffy *et al.* 2010). While the actual impact of smoke free policy or interventions initiated within psychiatric treatment settings on post discharge quitting or cessation has scarcely been addressed by research (Bowman & Stockings 2012), some evidence suggests that increases in motivation to quit and reductions in daily cigarette consumption may occur (Stockings *et al.* 2014). Strategies that increase patient adherence to smoking bans, improve clinical and non clinical staff endorsement of smoke free policies, and that increase mental health nursing staff provision of adequate nicotine dependence treatment to smokers may improve patient acceptability of smoke free policies in inpatient psychiatric settings and assist in effective policy implementation.

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	Smokers (%,n)	Non-smokers (%,n)	Total (%, n)
	( <i>n</i> = 97)	( <i>n</i> = 84)	( <i>n</i> = 181)
Aware of patients smoking:			
All areas	86.6 (84)	88.1 (74)	87.3 (158)
In unit	86.3 (82)	85.4 (70)	85.9 (152)
On hospital grounds	50.0 (48)	41.0 (34)	45.8 (82)
Aware of staff smoking:			
All areas	20.6 (20)	19.0 (16)	19.9 (36)
In unit	12.5 (12)	7.2 (6)	10.1 (18)
On hospital grounds	16.8 (16)	19.3 (16)	18.0 (32)
Adhered to the smoke free			
policy			
Yes	15.5 (15)	-	-
No	83.5 (81)	-	-

Table 1. Adherence with the smoking ban<sup>+</sup>

+ Numbers vary due to missing data

	Smokers (%, n)
	( <i>n</i> = 97)
Received brief advice to quit	
No	63.9 (62)
Yes	36.1 (35)
Offered NRT	
No	11.3 (11)
Yes	88.7 (86)
Accepted NRT	
No	17.4 (15/86)
Yes	82.6 (71/86)
Used NRT	
No	24.7 (24)
Yes	75.3 (73)
Nicotine dependence treatment received	
None	20.6 (20)
Brief advice to quit	7.2 (7)
Adjunct NRT	22.7 (22)
Adjunct NRT + patch	20.6 (20)
Adjunct NRT + brief advice to quit	8.2 (8)
Patch + brief advice to quit	1.0 (1)
'Optimal': adjunct NRT + patch + brief advice to	
quit	19.6 (19)
NRT effectiveness in reducing cravings	
Not at all - a little	56.1 (41/73)
A fair bit - a lot	43.8 (32/73)

 Table 2. Smokers receipt of nicotine dependence treatment

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		Non-	
	Smokers	smokers	Total
	(%, n)	(%, n)	(%, n)
	( <i>n</i> = 97)	( <i>n</i> = 84)	( <i>n</i> = 181)
Perceived staff acceptability of the			
smoke free policy*			
Most-all staff positive	45.4 (44)	63.1 (53)	53.6 (97)
Most-all staff negative or unsure	53.6 (52)	35.7 (30)	45.3 (82)
Acceptability of smoke free policies			
in inpatient psychiatric facilities***			
Good	25.8 (25)	63.1 (53)	43.1 (78)
Unsure	8.2 (8)	15.5 (13)	11.6 (21)
Not good	64.9 (63)	20.2 (17)	44.2 (80)
Acceptability of smoke free policy in			
current unit of admission***			
Somewhat-very positive	29.9 (29)	64.3 (54)	45.9 (83)
Neutral	13.4 (13)	23.8 (20)	18.2 (33)
Somewhat- very negative	54.6 (53)	10.7 (9)	34.3 (62)
Anything positive about smoke free			
policy?***			
Yes	42.3 (41)	69.0 (58)	54.7 (99)
No	53.6 (52)	28.6 (24)	42.0 (76)
Anything negative about smoke free			
policy?***			
Yes	76.3 (74)	36.9 (31)	58.0 (105)
No	22.7 (22)	60.7 (51)	40.3 (73)

**Table 3.** Acceptability of the smoke free policy+

+ Numbers vary due to missing data

\* Significant difference between smokers and non-smokers; p < .05\*\*\* Significant difference between smokers and non-smokers; p < .0001



# Figure 1. Flow diagram of participant recruitment