

1-1-2015

# Smoking, attitudes to smoking and provision of smoking cessation advice in two teaching hospitals in Ireland: do smoke-free policies matter?

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## Citation

Ohakim A, Mellon L, Jafar B, O'Byrne, C, McElvaney NG, Cormican L, McDonnell R, Doyle F. Smoking, attitudes to smoking and provision of smoking cessation advice in two teaching hospitals in Ireland: do smoke-free policies matter? *Health Psychology and Behavioral Medicine*. 2015;3(1)142-153.

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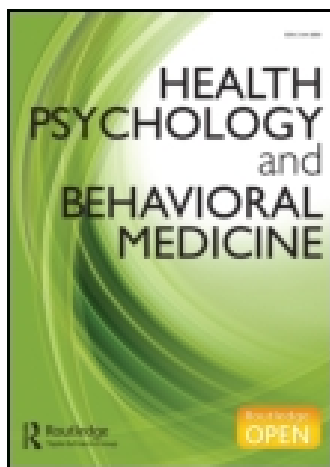
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Publisher: Routledge

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## Health Psychology and Behavioral Medicine: An Open Access Journal

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rhpb20>

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Published online: 01 Jun 2015.



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To cite this article: Adanna Ohakim, Lisa Mellon, Bedour Jafar, Caroline O'Byrne, Noel G. McElvaney, Liam Cormican, Ronan McDonnell & Frank Doyle (2015) Smoking, attitudes to smoking and provision of smoking cessation advice in two teaching hospitals in Ireland: do smoke-free policies matter?, *Health Psychology and Behavioral Medicine: An Open Access Journal*, 3:1, 142-153, DOI: [10.1080/21642850.2015.1026347](https://doi.org/10.1080/21642850.2015.1026347)

To link to this article: <http://dx.doi.org/10.1080/21642850.2015.1026347>

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## Smoking, attitudes to smoking and provision of smoking cessation advice in two teaching hospitals in Ireland: do smoke-free policies matter?

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(Received 21 October 2014; accepted 3 March 2015)

Brief cessation advice from health-care professionals in the hospital setting significantly increases the likelihood of patients quitting smoking, yet patients are not routinely provided with this advice. Smoke-free hospital policies aim to protect individuals from the adverse effects of smoking; however, it is unclear if such policies encourage systematic delivery of cessation advice by health-care professionals. The study's aim was to determine the prevalence of smoking and cessation advice received by in-patients in two teaching hospitals in Ireland which have implemented smoke-free hospital policies, and to examine patient attitudes towards smoking cessation. Change in smoking prevalence and delivery of smoking cessation advice prior to and post-policy implementation was also examined in one hospital. This study surveyed 466 in-patients across 2 hospital sites, over a 3-week and 5-week period, respectively. Data were also compared to a survey completed prior to the implementation of the smoke-free policy in one of the hospital sites. Smoking prevalence was 17% in Beaumont Hospital and 28% in Connolly Hospital. Overall, nicotine dependence was low (Mean Fagerström Test for Nicotine Dependence = 4.21, ±2.9). Overall, 62% of smokers did not receive smoking cessation advice from a health professional, although 55% indicated a willingness to engage with this type of service. The before-and-after analysis of Beaumont Hospital showed a reduction in smoking prevalence (17% vs 21%) amongst hospital in-patients, and a 6% increase in reported cessation advice provided following the introduction of the hospital smoke-free policy. Smoke-free hospital policies play a role in decreasing the prevalence of in-patient smokers, but further intervention is needed to increase rates of cessation advice provided. Positive attitudes to smoking cessation, coupled with low average nicotine dependence, suggest that low-intensity interventions would be beneficial for most smokers. A systematic focus on provision of brief smoking cessation advice is needed in hospitals.

**Keywords:** smoking; smoking cessation; smoke-free policy; tobacco control; hospitalisations

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## Introduction

Smoking is the single most preventable cause of disease, disability, and death (CDC, 2011), with proven links to conditions such as respiratory diseases, cardiovascular disease and low neonatal birth weight (Jacobs et al., 1999). Smoking-related diseases constitute one of the leading causes of hospitalisation, with a reduction in the prevalence of smoking associated with decreased rates of morbidity and mortality (Doll, Peto, Boreham, & Sutherland, 2004). According to 2011 statistics released by the Department of Health, the number of deaths attributed to smoking in Ireland is 7000 per year (An Roinn Sláinte Department of Health, 2008).

The World Health Organisation (WHO) introduced MPOWER measures as part of the Framework Convention on Tobacco Control (FCTC), which was a package of policies including a ban on advertising, raising taxes and prices, protection from second-hand smoke, and availability of cessation services for those who want to quit (World Health Organization, n.d.). The aim of these policies was to protect populations worldwide from the health, economic, social and environmental hazards of exposure to tobacco and tobacco smoke. In an environment where smoking is restricted or prohibited, such as during hospitalisation, individuals may be more open to receive brief advice on cessation and may find it easier to quit, particularly if followed up with smoking cessation services (Meysman, Nackaerts, Dieriks, Indemans, & Vermeire, 2010; Shah et al., 2010). Health-care facilities, in particular, are considered to be amongst the most influential settings for advocating abstinence from smoking and promoting smoke-free environments, as in-patients may possess higher motivation to quit due to ill health, higher receptivity to smoking cessation advice, forced abstinence from smoking and may have access to professional advice and provision of nicotine replacement therapies (Rigotti, Munafo, & Stead, 2007). Furthermore, brief smoking cessation interventions delivered by health-care professionals in hospital settings have been consistently shown in Cochrane review studies to be effective for increasing post-hospitalisation quit rates (Lancaster & Stead, 2005; Rigotti, Clair, Munafo, & Stead, 2012; Stead, Bergson, & Lancaster, 2008). Such brief cessation interventions may be particularly successful with individuals with low levels of nicotine dependence, with evidence from pharmacological intervention studies highlighting that individuals with lower scores on the Fagerström Test for Nicotine Dependence (FTND) were more likely to be abstinent at six months post-intervention than individuals with higher nicotine dependence (Fagerström, Russ, Yu, Yunis, & Foulds, 2012).

However, despite its proven effectiveness, international studies have shown that provision of smoking cessation advice to in-patients is suboptimal (Bartels, McGee, Morgan, McElvaney, & Doyle, 2011; Freund et al., 2009; Raupack, Hasenfuss, Andreas, & Pipe, 2011). The reasons for low rates of delivery of smoking cessation advice have been attributed to attitudes of health-care professionals towards cessation advice, including misperceptions regarding effectiveness of cessation methods, a lack of time and a lack of training to appropriately counsel smoking patients, and a lack of belief in its effectiveness (Thy, Boker, Gallefoss, & Bakke, 2007; Vogt, Hall, & Marteau, 2005). Other barriers include the perception that smokers might not be interested in receiving this advice, or that there simply is no systematic approach to providing appropriate and timely cessation assistance (Vogt et al., 2005). These findings suggest that organisational and attitudinal change is needed, and smoke-free policies may help address this issue. A previous Irish study in 2011 reported that only 44% of current/recent smokers had received smoking cessation advice from a health professional in the past year (Bartels et al., 2011). However, this was a single-site study, and the site examined in this study did not have the smoke-free policy in place at the time of the survey.

Evidence suggests that behavioural interventions, such as smoking cessation interventions, may be enhanced by supportive policies in which to contextualise the intervention (Michie, van Stralen, & West, 2011). Since 2009, the majority of hospitals in Ireland have implemented the Health Service Executive (HSE) Tobacco Free Campus policy, which bans smoking on hospital grounds

(Health Service Executive), with immediate decreases in mortality due to respiratory and cardiovascular diseases evident from analyses of census data (Stallings-Smith, Goodman, Kabir, Clancy, & Zeka, 2014; Stallings-Smith, Zeka, Goodman, Kabir, & Clancy, 2013). To date, studies have shown that the implementation of a 'smoke-free' hospital policy in some countries has resulted in decreased smoking amongst staff and hospital visitors (Fitzpatrick et al., 2009; Poder, Carroll, Wallace, & Hua, 2011; Ratschen, Britton, & McNeill, 2008; Shultz, Finegan, Nykiforuk, & Kvern, 2011), however, the impact on patient smoking behaviour is not well established.

To date, no updated data are available on the prevalence of smoking amongst in-patients in Ireland, and the provision of smoking cessation advice to in-patients post-implementation of smoke-free hospital policies in Ireland has not been examined. This study hypothesised that a trend towards better delivery of care for smoking cessation amongst hospital in-patients may be evident following the introduction of smoke-free hospital policies. The study had the following aims:

- To determine the prevalence of smoking amongst in-patients in two teaching hospitals.
- To determine the proportion of patients who recalled receiving cessation advice from health-care professionals in the past year.
- To explore attitudes towards smoking cessation and nicotine dependence levels amongst hospitalised smokers.
- To examine the proportion of quit attempts amongst hospitalised smokers in the previous 12 months.
- To explore the trend changes in provision of cessation advice in one of the sites following implementation of a smoke-free hospital policy.

## Methods

### *Participants and setting*

The survey was conducted in two teaching hospitals in north Dublin city. The two hospitals that were included were selected as they are the two teaching hospitals for the Royal College of Surgeons in Ireland, which is the largest medical school in Ireland. The study hospitals serve a population of approximately 580,000, and each centre has implemented the HSE Tobacco Free Campus policy, Beaumont Hospital in 2012 and Connolly Hospital in 2009. All eligible in-patients in Beaumont Hospital were surveyed over a 3-week period from the 8th to 22nd of May 2013 and all eligible in-patients in Connolly Hospital were surveyed over a 5-week period from 27th June to 2nd August 2013. Patients were excluded if they were under 18 years of age, were unable to complete the interview (e.g. due to patient fatigue), unable to provide informed consent, unable to speak English, comatose or cognitively impaired (according to staff assessment), or were infected with a resistant transmissible organism (e.g. methicillin-resistant *Staphylococcus aureus* or Vancomycin resistant Enterococci positive). Patient eligibility was assessed by the ward managers in each ward in accordance with the eligibility criteria.

### *Procedure*

The study received ethical approval from the Research Ethics Committees of the two hospital sites. Eligible in-patients were informed of the study and its purpose, were provided with patient information leaflets, and then asked to provide informed consent. They were then interviewed by one of the researchers, which lasted approximately 10 minutes duration. The interview was designed to collect data regarding demographics, reasons for admission, and smoking status. *Current smokers* were those who had smoked more than 100 cigarettes in their lives and were



currently smoking regularly; *recent smokers* were those who had smoked more than 100 cigarettes in their lives but had stopped smoking completely in the 12 months prior to hospital admission; *ex-smokers* were those who had smoked more than 100 cigarettes in their lives but had stopped smoking completely for more than 12 months prior to hospital admission; and *non-smokers* were those who had never smoked a minimum of 100 cigarettes in their lives. Participants identified as smokers also responded to additional questions regarding their smoking habits, including amount of cigarette consumption; age at smoking initiation; degree of interest in quitting smoking; number of attempts to quit smoking; degree of interest in receiving smoking cessation advice; need for assistance in quitting smoking. Level of nicotine dependence was determined with the FTND (Fagerström, 1978). The FTND is a validated measure of nicotine dependence commonly used in clinical settings (Fagerström et al., 2012), and includes six questions to address smoking behaviour (e.g. how soon after you wake up do you smoke your first cigarette? Do you find it difficult to refrain from smoking in places where it is forbidden?). Cronbach's alpha for the FTND in this sample was 0.77. Attitudes to smoking and cessation were examined using questions developed as part of previous work in order to facilitate direct comparison (Bartels et al., 2011). Data were collected using an encrypted iPad device.

### **Statistical analysis**

Descriptive statistics, chi-square ( $\chi^2$ ), and z-ratio tests for differences in proportions were used to assess the differences between groups as appropriate. Univariable multinomial regression analysis was conducted for the purpose of descriptive analyses for those variables with greater than two categories, in order to examine the differences between the two hospital sites on demographic variables. Logistic regression analysis was employed to examine the change in delivery of smoking cessation advice following the introduction of the smoke-free policy in Beaumont Hospital. For this, data from the current study were compared to a previous study conducted by the research team in 2011 in the selected hospitals using the same study methodology (Bartels et al., 2011). Data were analysed using Stata Version 12.

## **Results**

### **Sample profile**

The profile of the current sample is given in [Table 1](#).

A total of 466 in-patients consented to participate in the study, 260 from Beaumont Hospital and 206 from Connolly Hospital. Differences in patient characteristics were reported between the two hospital sites, with participants from Beaumont Hospital more likely to be younger, have secondary or tertiary education, have private health insurance, and were less likely to be retired. The median length of hospital stay also differed between sites, with Beaumont Hospital reporting a shorter length of stay as compared to Connolly Hospital. Eligible patients from Beaumont Hospital were largely admitted as cardiology (20%), gastrointestinal (19%), and respiratory (15%) cases, as compared with gastrointestinal (26%), respiratory (20%), and vascular surgery (12%) cases in Connolly Hospital.

### **Prevalence of in-patient smoking**

The overall prevalence rate of smoking amongst hospital in-patients was 22%. Smoking prevalence differed between the two hospital sites, with significantly more current smokers in Connolly Hospital than Beaumont Hospital (28% vs 17%), although there was no difference in FTND scores between sites (4.17 [ $\pm 3.17$ ] vs 4.25 [ $\pm 2.83$ ]). The overall FTND score was 4.21 ( $\pm 2.9$ ).

Table 1. Sample description by hospital.

	Overall	Beaumont Hospital ( <i>n</i> = 260)	Connolly Hospital ( <i>n</i> = 206)	Odds ratio ( $\chi^2$ )	95% CI (df)	<i>P</i> -value			
Age, mean (SD)	60.8 (19.2)	57.0 (18.8)	65.7 (19.6)	0.98	0.96–1.00	<.001***			
Men (%)	266 (57%)	153 (59%)	113 (55%)	1.18	0.81–1.70	.387			
Private insurance		74 (28%)	40 (19%)	1.65	1.07–2.56	.025*			
Education									
Primary or less (ref)	164 (35)	75 (29%)	95 (46%)	–	–	–			
Secondary	196 (42)	117 (45%)	73 (35%)	2.03	1.33–3.09	.001**			
Tertiary	105 (23)	68 (26%)	38 (19%)	2.27	1.38–3.73	.001**			
Employment									
Working (ref)	117 (25)	76 (29%)	36 (18%)	–	–	–			
Unemployed	112 (24)	81 (31%)	38 (18%)	1.01	0.58–1.76	.973			
Retired	237 (51)	103 (40%)	132 (64%)	0.37	0.23–0.59	<.001***			
Marital status									
Single (ref)	109 (23)	46 (18%)	45 (22%)	–	–	–			
Married/cohabiting	310 (67)	163 (63%)	88 (43%)	1.81	1.11–2.95	.016*			
Separated/widowed	47 (10)	51 (19%)	73 (35%)	0.68	0.40–1.18	.171			
Consultant speciality									
Respiratory	80 (17)	38 (15%)	42 (20%)	$\chi^2 = 98.2$	df = 11	<.001**			
Cardiology	59 (13)	52 (20%)	7 (3%)						
Gastrointestinal	103 (22)	49 (19%)	54 (26%)						
Orthopaedics	41 (9)	21 (8%)	20 (10%)						
Neurology	55 (12)	34 (13%)	21 (10%)						
Vascular	29 (6)	5 (2%)	24 (12%)						
Geriatrics	26 (6)	2 (1%)	24 (12%)						
Endocrine	19 (4)	11 (4%)	8 (3%)						
Oncology	20 (4)	20 (8%)	0 (0%)						
Renal	18 (4)	16 (6%)	2 (1%)						
General	14 (3)	10 (4%)	4 (2%)						
Length of hospital stay (median)	5	4.5	7				2.19	1.32–3.64	.003**
Emergency admissions	311 (67)	175 (67%)	136 (66%)				1.06	0.72–1.56	.769
Smoking status									
Smokers	102 (22)	45 (17%)	57 (28%)	$\chi^2 = 12.53$	df = 3	.006**			
Recent smokers	25 (5)	19 (7%)	6 (3%)						
Ex-smokers	189 (41)	116 (45%)	73 (35.4%)						
Non-smokers	150 (32)	80 (31%)	70 (34%)						
FTND ( $\pm$ SD)	4.2 (2.9)	4.17 (3.17)	4.25 (2.83)	0.99	0.88–1.12	.889			

\**p* < .05.\*\**p* < .01.\*\*\**p* < .001.

### ***Delivery of smoking cessation advice***

All 127 smokers and recent smokers were asked whether they had received smoking cessation advice from a health professional within the past 12 months, and whether they would like to receive such advice whilst in hospital (Table 2).

The results show that, overall across the two hospital sites, 38% had received smoking cessation advice from a health professional in the past year, with significantly different delivery rates reported across the 2 sites. Half of patients in Beaumont Hospital received smoking cessation advice from a health professional in the past year, as compared with 25% of smokers in Connolly Hospital. Mode of delivery of smoking cessation advice varied by hospital. In Beaumont Hospital, 11 participants (35%) received cessation advice from a hospital doctor/nurse and 21 (65%) from a general practitioner (GP). In Connolly Hospital, cessation advice was received equally, 50% from a hospital doctor/nurse and 50% from a GP. Overall, 55% of participants reported that they would like to receive cessation advice from a health-care professional whilst in hospital, with attitudes towards receiving cessation advice slightly higher in Connolly Hospital (Beaumont Hospital = 51% vs Connolly Hospital = 58%;  $z = 0.68$ ,  $p = .49$ ).

### ***Attitudes towards smoking cessation amongst hospitalised smokers***

Table 3 explores attitudes towards cessation. Overall, patients reported positive attitudes to smoking cessation in terms of its positive effects on short-term health (79%) and long-term health (82%), and achieving something worthwhile (80%). Attitudes towards commonly perceived barriers to successful cessation were largely positive, with only 30% of smokers reporting that they thought they would put on weight if they quit smoking, and just over half of participants (55%) reporting that it would be difficult to handle stress if they quit smoking. Of note is that, with the exception of handling stress and weight concerns, positive attitudes towards cessation were reported more often in Beaumont Hospital than in Connolly Hospital (Table 3).

### ***Past quit attempts amongst hospitalised smokers***

Overall amongst smokers, 63% smoked every day, whilst 25% stated that they were trying not to smoke during their hospital stay. On examination of past quit attempts, 41% of current smokers

Table 2. Comparison of smoking cessation advice and attempts to quit smoking.

	Overall	Beaumont Hospital	Connolly Hospital	Beaumont Hospital – 2011 study (2)
Received smoking cessation advice <sup>a</sup>	48 (38%)	32 (50%)	16 (25%)	23/52 (44%)
Would like to receive smoking advice <sup>b</sup>	56 (55%)	23 (51%)	33 (58%)	17/43 (40%)
Smoking every day <sup>b</sup>	64 (63%)	22 (49%)*	42 (74%)	30/43 (70%)*
Trying not to smoke whilst in hospital <sup>b</sup>	25 (25%)	13 (29%)	12 (21%)	14/43 (33%)
Attempted to quit smoking in past 12 months <sup>b</sup>	42 (41%)	22 (49%)	20 (35%)	19/43 (44%)

<sup>a</sup>Out of all current and recent smokers ( $n = 127$ ).

<sup>b</sup>Out of current smokers only ( $n = 102$ ).

\* $p < .05$ .

Table 3. Attitudes towards quitting.

	Yes	No	Unsure
1. Your health would improve in the short term			
Overall	99 (79%)	12 (10%)	14 (11%)
Beaumont Hospital	54 (86%)	3 (5%)	6 (9%)
Connolly Hospital	45 (73%)	9 (15%)	8 (13%)
Beaumont Hospital 2011 data <sup>a</sup>	27 (57%)	16 (34%)	4 (9%)
2. Your health would benefit in the long term			
Overall	101 (82%)*	12 (9%)	12 (9%)
Beaumont Hospital	57 (91%)	2 (3%)	4 (6%)
Connolly Hospital	44 (71%)	10 (16%)	8 (13%)
Beaumont Hospital 2011 data <sup>a</sup>	34 (72%)	9 (19%)	4 (9%)
3. You would put on weight			
Overall	38 (30%)	73 (58%)	14 (11%)
Beaumont Hospital	25 (40%)	31 (49%)	7 (11%)
Connolly Hospital	13 (21%)	42 (68%)	7 (11%)
Beaumont Hospital 2011 data <sup>a</sup>	24 (51%)	20 (43%)	3 (6%)
4. It would be harder to handle stress in your life			
Overall	69 (55%)*	43 (35%)	13 (10%)
Beaumont Hospital	46 (73%)	13 (21%)	4 (6%)
Connolly Hospital	23 (37%)	30 (48%)	9 (15%)
Beaumont Hospital 2011 data <sup>a</sup>	18 (38%)	23 (49%)	6 (13%)
5. You would feel you had done something worthwhile			
Overall	100 (80%)*	12 (10%)	13 (10%)
Beaumont Hospital	58 (92%)	3 (5%)	2 (3%)
Connolly Hospital	42 (67%)	9 (15%)	11 (18%)
Beaumont Hospital 2011 data <sup>a</sup>	37 (79%)	9 (19%)	1 (2%)

<sup>a</sup>Beaumont Hospital vs Connolly Hospital (current/recent smokers); and Beaumont Hospital vs Beaumont Hospital 2011 data (compared for current smokers only).

\* $p < .05$ .

\*\* $p < .01$ .

\*\*\* $p < .001$ .

stated that they had stopped smoking for at least 1 day in the previous 12 months, with the proportion of quit attempts varying by hospital site (Beaumont Hospital = 49% vs Connolly Hospital = 35%,  $\chi^2 = 4.42$ ,  $p = .11$ ).

### ***Pre- and post-smoke-free policy implementation: a single-site comparison***

Data from Beaumont Hospital were compared to similar data from the same hospital collected in 2011 (Bartels et al., 2011) before the introduction of the smoke-free policy. Participants from the 2013 sample were older (57 years vs 65 years,  $p < .001$ ) but did not differ on any other demographic characteristics (data not shown). The prevalence of in-patient smoking decreased slightly from 2011 to 2013, although this was not statistically significant (20% vs 17%;  $z = -1.003$ ,  $p = .315$ ). A statistically significant reduction was seen in the proportion of smokers who reported smoking every day when comparing 2011–2013 (70% vs 49%;  $z = -1.99$ ,  $p = .02$ ). Logistic regression analysis examined the relationship between year of study (2011 vs 2013) and delivery of smoking cessation advice, adjusting for participant age. Encouragingly, the delivery of smoking cessation advice by a health professional evidenced a non-significant increase from 2011 to 2013, when adjusted for age differences between the samples (44% vs 50%;  $z = -1.84$ ,  $p = .07$ ) (Table 2). An increase in positive attitudes of patients towards receiving such advice was also evident (40% vs 51%  $z = 1.09$ ,  $p = .27$ ), although this increase was not statistically significant.

Slight, albeit sometimes non-significant, increases in both quit attempts and attitudes towards quitting was evident when 2011 data and 2013 data were compared. The proportion of quit attempts increased from 44% to 49% ( $p = .445$ ). Similarly, there were statistically significant increases of 19% of those who perceived longer term health benefits of smoking cessation ( $\chi^2 = 10.46, p = .015$ ) (Table 3). The belief that individuals would feel that they had done something worthwhile if they quit increased from 79% to 92% ( $\chi^2 = 13.96, p = .003$ ). Interestingly, a larger proportion reported that it would be harder to handle stress if they ceased smoking (38% vs 73%;  $\chi^2 = 18.54, p < .001$ ) following the introduction of the smoke-free policy.

## Discussion

This study profiled smokers, attitudes towards smoking and smoking cessation care provision in two teaching hospitals in Ireland. We also compared our data to a previous study to determine if there were any trends in relevant outcomes post-implementation of a smoke-free hospital policy. Interestingly, smoking prevalence seems to be decreasing in Beaumont Hospital over the last 2 years since the implementation of the smoke-free policy (21% to 17%), with the possibility that this decrease can be partially explained by the successful implementation of the smoke-free policy. Whilst this decrease in smoking prevalence was not statistically significant, the findings are encouraging given the negative impact of smoking on a range of health outcomes. However, sampling variation and changes in staff management of identified smokers cannot be ruled out as also contributing to this decrease in addition to the smoke-free policy. Overall, our findings showed that provision of cessation care was suboptimal, with 62% of smokers not receiving cessation advice whilst in hospital. This was despite the fact that over half (55%) of smokers showed a willingness to receive this type of intervention whilst in hospital. Attitudes towards smoking cessation were largely positive in both hospital samples, with Beaumont Hospital reporting more positive attitudes overall. Promisingly, a 6% increase in the proportion of patients who reported receiving quit advice from health-care professionals was noted in Beaumont Hospital since the implementation of the smoke-free policy, and overall there was a significant increase noted in positive attitudes amongst smokers towards smoking cessation in this hospital.

Distinct variability in the provision of smoking cessation to in-patients was evident between the two hospital sites studied. Potential explanations for this observed variability may relate to differences in staffing levels and training for smoking cessation between the two hospitals, and needs further exploration. It is disappointing to note that overall, just over one-third of smokers received smoking cessation advice whilst in-hospital, despite the evidence to suggest the ideal positioning of hospitalisation as an excellent time to intervene with smokers (Lancaster & Stead, 2005; Rigotti et al., 2007, 2012; Stead et al., 2008). Research examining the attitudes of clinicians towards delivering smoking cessation highlights that smoking cessation is not a priority for clinicians, with 32–42% reporting that discussing smoking with patients was too time consuming (Thy et al., 2007; Vogt et al., 2005). Almost a third of clinicians also felt that discussing smoking cessation was a waste of time, with their efforts perceived as largely ineffective. Interestingly, whilst only 5% of GPs considered smoking cessation interventions outside of their professional duty (Vogt et al., 2005), 28% of hospital doctors felt that this was not their role during the patients admission (Thy et al., 2007). Variability in service provision was also evident between the 2 hospitals in this sample, with 50% of smokers in Beaumont Hospital receiving some form of cessation advice as compared with only 25% of smokers in Connolly Hospital. This highlights the lack of a systematic approach to smoking cessation in Irish hospitals.

Our finding that a quarter of in-hospital smokers were trying not to smoke whilst in hospital, coupled with an observed improvement in attitudes towards smoking cessation and the finding that smokers on average had low pharmacological nicotine dependence, is encouraging and

supports the contention that that hospitalisation is an ideal time to intervene with smoking cessation advice for smokers (Rigotti et al., 2007, 2012). The presence of low pharmacological nicotine dependence in this sample suggests that it may be the psychosocial aspects of smoking, such as established habits and routine (Fagerström et al., 2012) that may be associated with sustained smoking behaviour in a substantial proportion of the smokers assessed in our study. Evidence suggests that even brief cessation advice delivered to those expressing an interest in quitting has a positive effect on successful quit attempts (Aveyard, Begh, Parsons, & West, 2012), which highlights the need for a routine, hospital-wide systematic approach delivery of cessation advice to hospitalised smokers, particularly to those who are motivated to stop. Successful brief cessation advice may even take the form of provision of written information or details of a quit-line. This form of intervention may be feasible to deliver under time constraints, which is consistently highlighted as a barrier to smoking cessation delivery (Thy et al., 2007; Vogt et al., 2005). Therefore, it seems that a behaviour change intervention targeted towards health-care professionals, with the aim of increasing provision of smoking cessation care, is needed. The implementation of policy, such as a smoke-free hospital policy, to support behaviour change is an important factor (Michie et al., 2011), yet other factors including appropriate and systematic intervention and management of identified smokers by staff are also important and further resources such as smoking cessation intervention training for staff are probably required to significantly increase provision of cessation care.

Interestingly, over half of the sample felt that it would be difficult to handle stress following quitting smoking. Recent evidence from a UK meta-analysis has shown that in actuality, smoking cessation is reliably associated with decreased stress levels, anxiety and depression, in conjunction with improved mood and mental well-being, even in the absence of a psychiatric disorder (Taylor et al., 2014). This common misperception, that smoking cessation will negatively affect stress levels, should be addressed as part of public health promotion efforts and mass media interventions to encourage smoking cessation.

It is interesting to note that Beaumont Hospital, which implemented the smoke-free policy just 1 year prior to the study, had a lower smoking prevalence (17%) compared to Connolly Hospital (28%) amongst in-patients and also performed much better with regard to delivery of smoking cessation advice (50% vs 25%), despite Connolly Hospital having implemented the smoke-free policy in 2009. Connolly Hospital is a smaller facility than Beaumont Hospital, and similar analyses of policy implementations in health facilities have shown that smaller hospitals may be less bureaucratic and more efficient in implementing wide-ranging policies (Murray, Leonardi-Bee, Marsh, Jayes, & Britton, 2012). However, suboptimal and disjointed delivery of smoking cessation advice by health-care staff has been identified as an ongoing international problem despite the widespread introduction of hospital smoke-free policies (Freund et al., 2009). Findings suggest that poor staff motivation, staff reluctance to endorse the smoke-free policy and continued lack of systems-based enforcement of the smoke-free policy may be the main barriers to successful policy implementation (Michie et al., 2011). Furthermore, enforcement fatigue may be an issue in Connolly Hospital, given that the smoke-free policy has been in place for over four years and is primarily driven by staff and hospital management. For successful policy implementation, it is clear that proper enforcement must be reinforced by the existing support structures in place.

This study provides an insight into the potential effects of the smoke-free policy in Ireland by comparison of data from before-and-after the policy. Only two hospitals were included in this analysis, which may limit the external validity of the observed trends as these findings may not reflect the status of the implementation of smoke-free policies in other hospitals in Ireland as well as in other health-care settings (such as general or private hospitals). It is important to note that we are not attributing differences between the hospitals to their respective smoking cessation policies or implementation of same, but that these could reflect differences in the

populations served by each site. We chose to compare these hospitals for two main reasons: (1) there was no such data available for Connolly Hospital, and therefore this provides the first evidence of the provision of cessation care for this site; (2) the results on provision of cessation advice have an increased level of generalisability of the findings – indeed, we have no reason to think that provision of smoking cessation advice is markedly different in other similar sites, although research would be needed to confirm this. Of course, whilst direct comparability of the sites would be problematic, future research should concentrate on providing longitudinal data for each site. Further examination of the impact of the smoke-free policy may warrant the use of nationally representative repeated measures surveys using a time-series design for optimal examination of the impact of a smoke-free policy and ability to control for the effect of potential confounds such as parallel service improvements. Additional limitations include the final small sample size for in-hospital smokers, recall and response bias, and the reliance on self-reported data. No data were available for the percentage of patients referred to the in-hospital smoking cessation service. Furthermore, it was not possible to establish the documentation of smoking status by staff in medical notes. Findings from the UK highlight suboptimal documentation of patient smoking status (Murray et al., 2012); however, no Irish data are currently available. We were also not able to observe the impact of the policy on staff or visitors, as previous research has shown a greater reduction in smoking prevalence amongst staff compared to in-patients (Radwan, Loffredo, Aziz, Abdel-Aziz, & Labib, 2012). Medical chart data were not accessed; thus care related to smoking cessation may have been recorded but not reported by participants during the study interview. Additionally, we did not record the presence of other comorbid conditions in addition to the presenting problem, including psychiatric disorders. Given that depression is associated with less successful quit attempts in a number of health conditions such as respiratory conditions and chronic heart disease (Doyle et al., 2014; Ho, Alnashri, Rohde, Murphy, & Doyle), it is suggested for future research that access to medical chart information is essential to assess co-morbid conditions and smoking status (Mellon et al., 2015). A strength of the present study was the use of participant interview and iPad methodologies for data collection purposes, which allowed for clarification of participant misunderstandings of items in the survey, and ensured valid responses were provided to all questions.

The hospital is a key setting for the promotion of smoking cessation amongst smokers; however, implementation and maintenance of successful hospital-based smoking cessation programmes have been identified as an ongoing worldwide challenge (Bains, Britton, Marsh, Jayes, & Murray, 2014; France, Glasgow, & Marcus, 2001). The findings of this study highlight the importance of enforcing the smoke-free policy in health-care facilities, and the important role that health professionals play in providing smoking cessation advice to patients under their care. Future research should investigate whole-organisational interventions to determine their effectiveness on subsequent quit rates amongst hospitalised smokers, and the provision of more intensive interventions those with greater needs, such as higher dependence scores or indeed other issues with decrease in the probability of cessation.

### Disclosure statement

No potential conflict of interest was reported by the authors.

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