

Recommendations for Tobacco Control on Post-Secondary Campuses that are Geographically Isolated

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ARTICLE INFO

Article type:

Original Article

Article history:

Received: Jul 25 2013

Accepted: Oct 30 2013

e-published: Dec 31 2013

Keywords:

Designated areas,

Policy,

Post-secondary,

Smoke-free,

Tobacco control

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ABSTRACT

Background: Many Ontarians continue to report exposure to second-hand smoke in public spaces. Completely smoke-free environments are the preferred and socially responsible option for non-smoking policies; however, when considering the variety of landscapes in which post-secondary institutions are located, 'a one size fits all' smoking policy is unrealistic to implement and enforce. The purpose of the study was to: 1) gain a better sense of the prevalence of smoking and exposure to second-hand smoke in a post-secondary context that is geographically isolated; 2) assess the awareness of existing non-smoking initiatives; and 3) identify preferred approaches for tobacco control.

Methods: An online survey was distributed in 2012 to all members of the Laurentian University community. Descriptive statistics are presented, using frequency distributions, and group comparisons are reported, using Chi-Square analyses.

Results: A total of 1282 persons completed the survey. Nearly 80% of respondents reported that they had been exposed to second-hand smoke in the past month on campus and the majority of respondents felt that smoking should only be allowed in Designated Outdoor Smoking Areas (51.5%); including 37.3% of daily smokers and occasional smokers.

Conclusion: Institutions with a geographically isolated campus, which limit options to divert smokers from public entrances, should consider the use of Designated Outdoor Smoking Areas. Implementation will create immediate reductions in the prevalence of smoking at building entrances and in high traffic locations and will therefore protect non-smokers from the dangers of environmental tobacco smoke.

Citation: Gauthier AP, Dorman SC, Wenghofer EF, Charbonneau VM, Dignard CY, Fleury DL. Recommendations for Tobacco Control on Post-Secondary Campuses that are Geographically Isolated. Health Promot Perspect 2013; 3(2): 175-184.

Introduction

It is estimated that tobacco use kills more than 5 million people annually¹. Smoking causes a wide range of diseases, including coronary artery disease, stroke, chronic obstructive pulmonary disease, peptic ulcer disease, and many cancers, such as lung, stom-

ach, bladder, kidney, cervical, oral, esophageal, pancreatic, laryngeal, and leukemia². In 2010, 18% of Ontario's population was classified as 'Current Smokers' and public complaints of 'exposure to second-hand-smoke during the last 30 days' continues to be

problematic in the workplace (26%) and at entrances to public buildings (53%)³. Exposure to second-hand-smoke, also known as the environmental tobacco smoke (ETS), has been found to just as lethal as first-hand inhalation. The ETS exposure has been associated with a number of debilitating health effects such as developmental risks (e.g., low birth weight), respiratory effects (e.g., asthma induction and exacerbation in children), carcinogenic effects (e.g., increased prevalence of lung cancer), and cardiovascular effects (e.g., increased heart disease mortality)⁴.

Over the last decade, efforts to promote smoking cessation, prevent the initiation of tobacco consumption, and protect by-standers from second-hand smoke exposure have been extensive. As part of this effort, Ontario developed the Smoke-Free Act, prohibiting smoking in all enclosed public spaces and within 9 meters of any public entrance or exit⁵. Despite these efforts, many people continue to smoke. In fact, cigarette-smoking rates have flat-lined, with no significant reduction in prevalence rates since 2005³. Furthermore, many Ontarians continue to report being exposed to second-hand smoke in public spaces, including patios at restaurants and bars (32%), on sidewalks and in parks (57%). As such, given that smoking is among the leading causes of preventable deaths⁶ and that rates of tobacco consumption and exposure continue to be problematic, continued efforts to help people who smoke to quit and to protect non-smokers from exposure to second-hand smoke are warranted.

Post-secondary institutions are often at the forefront of social change and have the potential to influence a large and key community demographic, given that approximately half of all young adults in Canada attend college or university⁷. Indeed, post-secondary institutions have a responsibility to model, provide, and promote healthy environments and behaviors to students. Relevant to the current paper, it is recognized that transition to post-secondary education holds great importance for young

adults, as a period of initiation and escalation in smoking. It has been reported that many students (anywhere from 19% to 30%) initiate smoking after arriving 'on-campus'^{8,9}. In 2005, Giesler et al. surveyed a random sample of 9,956 full-time and part-time students from 23 campuses in Ontario (13 universities; 10 colleges) and reported that 21% of the study participants were current smokers¹⁰.

In 2004, Dalhousie University was the first Canadian university to implement a 'smoke-free' campus policy (no smoking anywhere on campus property) and Ballie et al. recently reported that 10 of 77 Canadian universities claimed to be "smoke-free" campus¹¹. However, to date no university in Ontario has been able to successfully implement a completely smoke-free campus and given that not all university landscapes are the same, unique approaches are likely to be most fruitful. Campuses that are geographically removed from municipal property may face additional challenges in implementing and enforcing smoke-free grounds. The context in which this study was conducted is at a university campus that is relatively isolated from public property (the campus in question is surrounded by dense forest, lakes, and spans 765 acres of land).

The purpose of the study was to 1) *gain* a better sense of the prevalence of smoking and exposure to second-hand smoke in a post-secondary context that is geographically isolated; 2) assess the awareness of existing non-smoking initiatives; and 3) identify preferred approaches for tobacco control. As such, this collaborative approach will help to identify prevention, education, and protection strategies from which members of the post-secondary community, both smokers and non-smokers, could benefit.

Methods

Survey Development and Data Collection

We reviewed existing Canadian population health and tobacco surveys from 2012

to identify relevant questions. Questions from surveys were tailored according to the objectives of this project. Additional questions were added where necessary. The intent was to construct a survey containing approximately 25 items with a five-minute completion time. The completed survey was reviewed by members external to the research group to ensure item clarity and to test time-to-completion. The final survey contained a total of 26 questions with an opportunity to leave comments. Depending on the response patterns, the number of questions to complete ranged from 12 (for never-smokers) to 22 (for current smokers). The survey was available in both French and English.

The survey was accessed via the internet, using Gravic's Remark Web Survey Software.¹² Two e-mails were sent to all students, staff, faculty, administrators, and contract workers at the University through the in-house email provider. The first email was sent in the fall of 2012 and a second, reminder email, was sent two weeks after the initial request for participation. An incentive (a draw for one of two BlackBerry Playbooks) was offered to potential respondents. Respondents were made aware of the incentive in the survey recruitment script to encourage participation.

The respondents could indicate their wish to be included in the draw and this information was separated from the questionnaire and not linked with their responses; thus, we could not link respondent names with their actual responses.

Approval from the institutional Research Ethics Board was obtained prior to the collection of data.

Statistical Analyses

Survey data were analysed in SPSS (version 16). Descriptive statistics are presented, using frequency distributions and group comparisons are reported, using Chi-Square analyses. Only group level data were analyzed (e.g., Men vs. Women; Students vs. Faculty/Staff/Other; On-campus vs. Off-campus students; Smokers vs. Non-Smokers).

Results

Respondent Characteristics

A total of 1282 persons completed the Smoking Behaviour Survey in the fall of 2012. Sixty-seven percent of respondents were female (n=860) and the average time spent on-campus for all respondents was 5.2 years. Among all respondents, 15.1% were current smokers (either daily: 10%, n=128 or occasional: 5.1%, n=65), 15.4% (n=197) were former smokers, and 69.5% (n=889) indicated that they had never smoked.

Among students, 14.7% indicated that they were either daily (9.0%; n=82) or occasional smokers (5.7%; n=52), 9.3% (n=85) were former smokers, and 76.0% (n=695) were never-smokers. Among non-students (i.e., staff, faculty, administration, contract worker, other), 16.2% (n=59) indicated that they were either daily (12.6%; n=46) or occasional smokers (3.6%; n=13), 30.7% (n=112) were former smokers, and 53.2% (n=194) were never smokers. Among men, 19.2% (n=79) were current smokers and 12.7% (n=109) of women were current smokers (Table 1).

Participants who Smoke

On average, current smokers consumed 7 cigarettes per day (range: less than 1 cigarette – 35 cigarettes) and had been smoking for 12.3 years (range: less than 1 year – 51 years). The majority of smokers had 'tried to quit smoking' (70.0%, n=133) and most indicated they planned to quit within the next year (57.5%, n=103). The most frequently cited quitting aids were nicotine patch (n= 34), nicotine gum (n=37), and medication (n=24) (note: 76 respondents (39.2%) indicated they tried 'nothing' to help them quit). Only 9.5% of current smokers felt that further restrictions on campus would increase their likelihood of quitting.

Participants who formerly smoked

The most frequently cited quitting aid used among former smokers was 'nothing' (65.5%, n=129). Among the 86 who quit while at the university, 8.6% (n=8) said that the 'quitting aids used were offered by the

university.’ Among former smokers, 40.2% (n=80) felt that if they were still trying to quit smoking, further restrictions on campus would increase their likelihood of quitting.

Smoking Behavior on Campus

Most respondents (80.8%, n=1019) indicated they had been exposed to second-hand smoke, either daily (9.3%, n=117), almost daily (21.3%, n=269), weekly (28.4%, n=358), or monthly (21.8%, n=275) on the University campus and most respondents (77.3%, n=981) said that it bothered them to be exposed to cigarette smoke. A significantly greater percentage of never-smokers (90%, n=795) indicated that ‘it bothered them to be exposed to second-hand smoke,’ when compared to current smokers. Fourteen percent of daily smokers (n=17) and 30.8% (n=20) of occasional smokers indicated that it bothered them to be exposed to second-hand smoke. A significantly greater percentage of never smokers (71.7%, n=632) and former smokers (60.2%; n=118) indicated that they had ‘wanted to ask someone to stop smoking in a public space,’ compared to current smokers. Twenty-two percent of occasional smokers (n=14) and 9.4% (n=12) of daily smokers reported that they wanted to ask someone to stop smoking in a public space. Importantly, only 11.7% (n=150) of all participants had ever actually asked someone to stop smoking in their presence, most of whom, were never-smokers (8.7%, n=111) (Table 2).

Knowledge and Awareness of Current Non-Smoking Initiative

A significantly greater percentage of men (81.7%, n=334) than women were aware that smoking is prohibited within 9 meters of any entrance. While only 27.7% (n=113) of men and 30.8% (n=264) of women were aware of the ‘*Leave the Pack Behind*’ smoking cessation program currently offered at the University (Table 3). The *Leave the Pack Behind* (LTPB) program is a standardized tobacco control initiative for young adults on post-secondary campuses in Ontario, offering cessation tools and incentives (see <http://www.leavethepackbehind.org/index.php> for more

information). Most current smokers, 94.5% (n=121) of daily smokers and 80.0% (n=52) of occasional smokers, were aware that smoking is prohibited within 9 meters of any entrance. Only 25.8% (n=32) of daily smokers and 37.5% (n=24) of occasional smokers were aware of the ‘*Leave the Pack Behind*’ smoking cessation program.

The majority of respondents (51.5%, n=660) felt that smoking should only be allowed in ‘Designated Outdoor Smoking Areas,’ which included 37.3% (n=72) of daily smokers and occasional smokers. Nineteen percent (n=247) of the total sample felt smoking should not be allowed anywhere on Campus; 23.7% (n=304) felt that smoking should only be allowed away from any entrance or exit (as reflected in the current University Non-Smoking policy); and 5.2% (n=67) felt smoking should be allowed anywhere outside on Campus. Most students (53.0%, n=483) also indicated that smoking should only be allowed in ‘Designated Outdoor Smoking Areas.’ Similarly, the majority of students living ‘on campus’ felt that smoking should only be allowed in ‘Designated Outdoor Smoking Areas’ (51.1%, n=235), compared to 19.3% (n=89) who felt smoking should not be allowed anywhere on Campus; 23.7% (n=109) felt that smoking should only be allowed away from any entrance or exit (as reflected in the current University Non-Smoking policy); and 5.9% (n=27) felt smoking should be allowed anywhere outside on campus (Table 4).

Discussion

In general, reported rates of smoking (15.1%) from this survey were lower than what has been reported provincially (18.0%)³. Likewise, among the current smokers surveyed in this study, a greater percentage was occasional smokers, 5.1% versus 3.5% provincially. Specifically, among students, only 14.7% were current smokers (5.7% were occasional smokers) and this is considerably lower than what has been previously reported by Kirkwood et al. (21%)¹³. Over 80% of the study’s respondents reported that they had not been exposed to second-hand smoke in the past month on campus and many voiced displeasure with unwanted tobacco exposure.

Table 1: Descriptive statistics- smoking status

| | | Daily % (n) | Occasional % (n) | Former % (n) | Never Smoker % (n) |
|-----------------|--------------|------------------------|-----------------------------|-------------------------|-------------------------------|
| All Sample | | 10.0 (128) | 5.1 (65) | 15.4 (197) | 69.5 (889) |
| Gender | Men | 11.2 (46) | 8.0 (33) | 14.4 (59) | 66.3 (272) |
| | Women | 9.2 (79) | 3.5 (30) | 16.0 (137) | 71.3 (612) |
| Academic Status | Students | 9.0 (82) | 5.7 (52) | 9.3 (85) | 76.0 (695) |
| | Non Students | 12.6 (46) | 3.6 (13) | 30.7 (112) | 53.2 (194) |

Table 2: Descriptive statistics- exposure to second-hand smoke

| | | Everyday % (n) | Almost Every day % (n) | At least once a week % (n) | At least once in the past month % (n) | Not at all % (n) |
|-----------------|-------------------|---------------------------|-----------------------------------|---|--|-----------------------------|
| All Sample | | 9.3 (117) | 21.3 (269) | 28.4 (358) | 21.8 (275) | 19.3 (243) |
| Gender | Men | 10.6 (43) | 22.2 (90) | 31.4 (127) | 20.7 (84) | 15.1 (61) |
| | Women | 8.4 (71) | 21.1 (178) | 27.2 (229) | 22.3 (188) | 20.9 (176) |
| Academic Status | Students | 9.3 (83) | 21.9 (196) | 28.2 (252) | 22.4 (200) | 18.1 (162) |
| | Non Students | 9.2 (34) | 19.8 (73) | 28.7 (106) | 20.3 (75) | 22.0 (81) |
| Smoking Status | Daily Smoker | 9.7 (12) | 29.8 (37) | 21.0 (260) | 19.4 (24) | 20.2 (25) |
| | Occasional Smoker | 9.2 (6) | 24.6 (16) | 44.6 (29) | 12.3 (8) | 9.2 (6) |
| | Former Smoker | 10.7 (21) | 18.4 (36) | 30.6 (60) | 22.4 (44) | 17.9 (35) |
| | Never Smoker | 8.9 (77) | 20.7 (180) | 27.6 (240) | 22.8 (198) | 20.0 (174) |

Table 3: Knowledge of current campus non-smoking policy and cessation program

| | | Campus Non-Smoking Policy | | | Cessation Program | | |
|-----------------|-------------------|---------------------------|-------------|-------------------------------------|-------------------|-------------|------------------------------------|
| | | Yes % (n) | No % (n) | <i>P</i> | Yes % (n) | No % (n) | <i>P</i> |
| All sample | | 77.5 (992) | 22.5 (288) | | 30.0 (383) | 70.0 (892) | |
| Gender | Men | 81.7 (334) | 18.3 (75) | $\chi^2 = 6.10$ <i>P</i> <0.05 | 27.7 (113) | 72.3 (295) | $\chi^2 = 1.31$ <i>P</i> =0.25 |
| | Women | 75.5 (649) | 24.5 (211) | | 30.8 (264) | 69.2 (592) | |
| Academic Status | Students | 72.4 (661) | 27.6 (252) | $\chi^2 = 47.5$ <i>P</i> <0.001 | 30.8 (281) | 69.2 (630) | $\chi^2 = .99$ <i>P</i> =.321 |
| | Non- Students | 90.2 (331) | 9.8 (36) | | 28.0 (102) | 72.0 (262) | |
| Students | On-campus | 71.0 (328) | 29.0 (134) | $\chi^2 = .92$ <i>P</i> =.34 | 34.5 (159) | 65.5 (302) | $\chi^2 = 5.81$ <i>P</i> <0.05 |
| | Off-campus | 73.8 (333) | 26.2 (118) | | 27.1 (122) | 72.9 (328) | |
| Smoking Status | Daily Smoker | 94.5 (121) | 5.5 (7) | $\chi^2 = 38.35$ <i>P</i> <0.001 | 25.8 (32) | 74.2 (92) | $\chi^2 = 3.29$ <i>P</i> =0.349 |
| | Occasional Smoker | 80.0 (52) | 20.0 (13) | | 37.5 (24) | 62.5 (40) | |
| | Former Smoker | 85.3 (168) | 14.7 (29) | | 32.1 (63) | 67.9 (133) | |
| | Never Smoker | 73.1 (648) | 26.9 (239) | | 29.5 (262) | 70.5 (626) | |

Table 4: Preferred campus non-smoking policy

| | | Smoking should not be allowed any- where on campus % (n) | Smoking should only be allowed in 'designated smoking areas' % (n) | Smoking should only be allowed away from any entrance or exit % (n) | Smoking should be al- lowed anywhere outside % (n) | <i>P</i> |
|-----------------|--------------------------------|---|--|---|--|----------------------------------|
| All sample | | 19.3 (247) | 51.5 (660) | 23.7 (304) | 5.2 (67) | |
| Gender | Men | 23.4 (96) | 42.0 (172) | 28.0 (115) | 6.6 (27) | $\chi^2 = 24.67$ $P < 0.001$ |
| | Women | 17.6 (151) | 56.7 (486) | 21.5 (184) | 4.2 (36) | |
| Academic Status | Students | 18.8 (171) | 53.0 (483) | 23.6 (215) | 4.7 (43) | $\chi^2 = 3.37$ $P = .338$ |
| | Non- Students | 20.8 (76) | 48.4 (177) | 24.3 (89) | 6.6 (24) | |
| Students | On-campus | 19.3 (89) | 51.1 (235) | 23.7 (109) | 5.9 (27) | $\chi^2 = 3.42$ $P = .331$ |
| | Off-campus | 18.1 (82) | 54.9 (248) | 23.5 (106) | 3.5 (16) | |
| Smoking Status | Daily and Occasional Smoker | 3.6 (7) | 37.3 (72) | 40.4 (78) | 18.7 (36) | $\chi^2 = 150.29$ $P < 0.001$ |
| | Former Smoker | 20.6 (40) | 47.9 (93) | 26.3 (51) | 5.2 (10) | |
| | Never Smoker | 22.4 (199) | 55.7 (495) | 19.5 (173) | 2.4 (21) | |

As such, this questions the effectiveness of current smoking restriction policies that have been implemented in public spaces across the province of Ontario, including at post-secondary institutions. If building entrance/exit points are used as gathering spots for smokers, the exposure to tobacco smoke becomes nearly unavoidable. Furthermore, very few people (only 11.7% in this study) may ever ask others to refrain from smoking in a restricted area. According to our results, there was the lack of awareness for existing cessation services offered on Campus, suggesting the lack of effectiveness in these programs. Very few respondents indicated that they were aware of cessation aids offered by the University and few individuals were aware of the *Leave the Pack Behind* program, which is meant to offer comprehensive tobacco control initiatives designed specifically for students on post-secondary campuses.

As such, results from this study raise three important points that merit further discussion. First, existing non-smoking policies seem to have a limited impact on rates of exposure to second smoke, even in post-secondary institutions. Nevertheless, data from our survey suggest a tendency for all people (smokers and non-smokers) to prefer a non-smoking policy that is restrictive as opposed to a complete ban. Over 75% of the respondents felt the ideal smoking policy would either reflect the current Smoke Free-Ontario Act or incorporate the use of DSAs. There does not appear to be a general readiness to become a completely smoke-free campus (less than 20% reported that their ideal policy would prohibit smoking everywhere on campus property, most of whom were non-smokers). Thus, given the continued exposure to second-hand smoke under the current restrictive policy, the use of DSAs in low traffic areas may be the more successful approach.

Second, while some campuses may be able to successfully implement a smoke-free campus, when considering the variety of landscapes in which post-secondary institutions are located, 'a one size fits all' smoking

policy is likely to be unrealistic to implement and enforce. According to Ballie et al., at the national level many (approximately 10) post-secondary institutions have implemented completely smoke-free environments¹¹. However, provincially, no academic institution has been able successfully implement such a policy and post-secondary institutions with campuses that are geographically removed could face additional resistance if a completely smoke-free campus were to be implemented. Clearly, a completely smoke-free environment is the preferred and socially responsible option for non-smoking policies for all post-secondary institutions. Institutions that have implemented a smoke-free campus policy have reported numerous benefits including a significant decrease in the prevalence of smoking, a change in the social acceptability of smoking among students, and an increase in favorable attitudes toward tobacco regulation¹⁴. In addition, Lechner et al. recently completed a 4-year study that followed a campus-wide tobacco intervention program¹⁵. The program included completely eliminating the use and sale of tobacco products on campus property. The researchers observed a gradual decrease in the prevalence of smoking over time, and most notably, an immediate decrease in exposure to second-hand smoke at entry points to campus buildings. However, campuses that are removed from public property cannot provide an opportunity for employees and students to leave the campus to consume a cigarette. This is particularly relevant for students living on-campus. Many students make their post-secondary institution their full-time residents throughout the school year; thus, not providing on-campus student smokers with an outdoor location to smoke would likely lead to wide-ranging non-compliance.

Third, while there are pre-existing programs and services available to post-secondary students these on-campus initiatives seem to be underutilized. Significantly, former smokers stated that had smoking policies on-campus been stricter, it would have helped/encouraged them to quit and most

successful quitters did so without cessation aids. Both of these points highlight the importance of policy in cessation and support the use of further campus restriction, like DSAs. On-campus students were more aware of existing services than off-campus students, but in general, increased efforts to use the university or college campus as a platform to promote cessation and discourage the uptake of smoking is warranted. Hammond reported that 21.6% of students between the ages of 18 and 29 were classified as current smokers¹⁶. Importantly, the 2011 Canadian Tobacco Use Monitoring Survey showed that significant increases in the prevalence of smoking occur between the ages of 15-19 years (9%), and during the period of post-secondary transition, ages 20-24 years (21%)¹⁷. These statistics highlight the important role that post-secondary institutions can play in preventing the initiation of smoking, altering the development of permanent smoking patterns and encouraging the early cessation of smoking in a critical group of youth. In addition, from a public health perspective, this is a key time-frame for the early prevention of smoking-related diseases in a large proportion of society. Given the substantive body of research that has identified peers and peer relationships as primary factors involved in cigarette smoking¹⁸⁻²¹ and that seeing peers smoke conveys the message that smoking is an enjoyable activity²², an argument can also be made for implementing DSAs, in an attempt to reduce visibility of smokers on-campus and hence reduce perceptions of acceptability of smoking behavior. Other research has shown that non-smokers who affiliate with smokers have been found to be at a greater likelihood for transitioning to tobacco use^{19,23,24}. This would also support the implementation of DSAs to minimize the interaction of smokers, while smoking, with non-smokers.

Conclusions

The overwhelming majority of respondents from this survey felt that the ideal

smoking policy for the study's post-secondary institution would reflect the use of DSAs. Despite this study being delimited to one campus in Ontario, we recommend post-secondary institutions be more progressive in developing non-smoking initiatives given that no university in Ontario is completely smoke-free and that smoking rates in the province continue to be problematic. Some campuses may more easily implement and enforce a smoke-free campus than others, given their proximity to public spaces (e.g., sidewalk; side streets). For institutions with a geographically isolated campus that have limited options for diverting smokers away from buildings, consideration should be given to the use of DSAs, with a vision of transitioning to a smoke-free environment. Immediate reductions in the prevalence of smoking at building entrances and in high traffic locations will immediately protect non-smokers from the dangers of environmental tobacco smoke and reduce smoker visibility. Furthermore, all universities should parallel policy change with aggressive efforts to raise awareness and increase the utilization of existing cessation services offered on campus for both students and employees.

Acknowledgements

The authors also have no funding source to declare.

Competing interests

The authors declare that there is no conflict of interest.

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