



## Neighbourhoods in Ontario: The Association with Attempts to Quit Smoking

### Objective

Social cohesion is “the extent of connectedness and solidarity among groups in society”.<sup>1</sup> High levels of social cohesion have been associated with low likelihood of smoking, even after controlling for differences in neighbourhood deprivation.<sup>2,3</sup> We assessed the relationship between neighbourhood-level deprivation and social cohesion in Ontario communities on smokers’ attempts to quit smoking.

### Methods

Data for this study were obtained from the Ontario Tobacco Survey (OTS), a regionally-stratified longitudinal survey of 3,293 adult (18+ years) smokers from Ontario.<sup>4</sup> Smokers were followed-up at six-month intervals for up to three years and linked to the 2006 Canadian Census using the Postal Code Conversion File Plus (PCCF5H) at the neighbourhood level.<sup>5</sup> An overall neighbourhood deprivation score was derived from the following neighbourhood indicators: unemployment rate, percent of residents without a high school degree, percent of families receiving government transfer payments, percent of families below the low income cutoff, percent of lone-parent families, and percent of private dwellings in need of repair.

Generalized Estimating Equation (GEE) logistic regression was used to assess the association between neighbourhood social cohesion and deprivation level on making an attempt to quit smoking, adjusting for other individual factors (age, sex, education, daily smoking, lifetime number of quit attempts). Cigarette consumption was further explored as a potential mediator in the relationship.

### Highlights

- High social cohesion increases the odds of making a quit attempt regardless of whether smokers lived in deprived or affluent neighbourhoods
- The association between social cohesion and deprivation is driven by level of cigarette consumption
- Ontario public health organizations can facilitate smoking cessation behaviours and better the overall health and well-being of their populations by promoting social cohesion within their communities

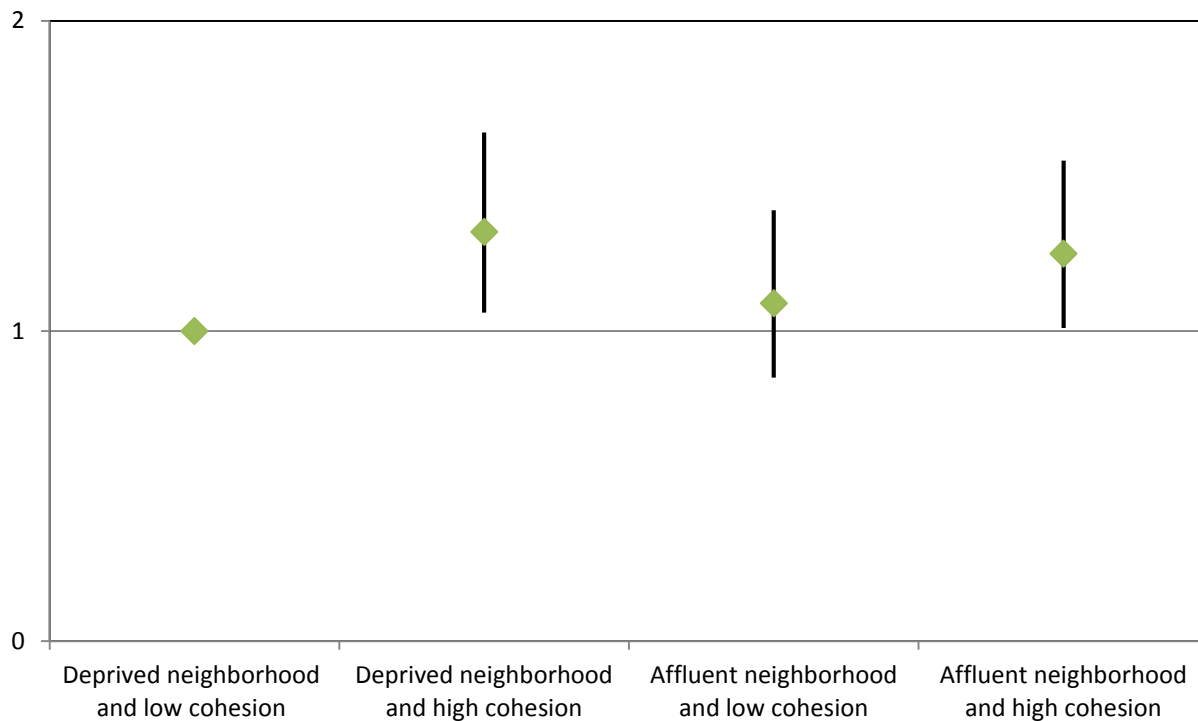


## Results

There were no significant differences in the likelihood of smokers making a quit attempt between those living in deprived or affluent neighbourhoods; however, smokers with high social cohesion to their deprived neighbourhood were 32% more likely to make a quit attempt compared to those with low social cohesion in a similarly deprived neighbourhood. Furthermore, smokers from affluent neighbourhoods with high social cohesion were 25% more likely to make a quit attempt compared to those from deprived neighbourhoods with low social cohesion (Figure 1).

This relationship between social cohesion, neighbourhood deprivation level and making a quit attempt was mediated by cigarette consumption. That is, smokers who lived in deprived neighbourhoods and had low social cohesion were more likely to smoke more cigarettes per day; higher consumption was associated with lower odds of making a quit attempt.

Figure 1: Association of Neighbourhood Characteristics and Likelihood of Making a Quit Attempt



Odds Ratios are adjusted for age (18-24, 25-39, 40-54, 55+ year olds), sex, education ( $\leq$  secondary education vs. more than secondary education), smoking status (daily vs. occasional) and lifetime number of quit attempts.



## Conclusions

High social cohesion increases the odds of making a quit attempt regardless of whether smokers lived in deprived or affluent neighbourhoods. Smokers in cohesive communities have greater access to information on smoking cessation,<sup>6</sup> social support for quitting (e.g. “buddy systems”), and better psychosocial health (i.e. self-confidence, self-esteem, optimism, and hopefulness)<sup>5,7</sup> which may assist them in their efforts toward quitting. A social network analysis has demonstrated that decisions to quit smoking occur among groups of interconnected smokers, rather than isolated persons.<sup>8</sup> These findings illustrate the importance of considering smoking cessation from a social context in addition to the individual level.

When social cohesion was excluded, we identified no significant differences in quit attempts between smokers living in deprived or affluent neighbourhoods, which is consistent with the findings from the Australian cohort of the International Tobacco Control study.<sup>9</sup> However, other studies suggest that smokers living in deprived neighbourhoods are more likely to smoke,<sup>2,10,11,12</sup> and are less likely to remain quit<sup>8,13,14</sup> than those in affluent neighbourhoods; these differences have been reported independent of individual socio-economic status. Thus, smokers from all neighbourhood levels make similar attempts to quit, but whether or not they succeed appears to be associated with their neighbourhood. Increased social contagions and lack of cessation resources are probable barriers for quit success among smokers in deprived neighbourhoods.<sup>15,16</sup>

Cohesive neighbourhoods have much more rapid diffusion of health information and higher likelihood of adapting healthy behaviours. As such, Ontario public health organizations can facilitate smoking cessation behaviours, as well as advance the overall health and well-being of their populations by promoting social cohesion within their communities.



## References

- <sup>1</sup> Kawachi I, Berkman L, eds. Social capital, social cohesion, and health. In: Berkman LF, Kawachi I. *Social Epidemiology*. New York: Oxford University Press, 2000:174-190.
- <sup>2</sup> Matheson FI, LaFreniere MC, White HL, Moineddin R, Dunn JR, Glazier RH. Influence of neighborhood deprivation, gender and ethno-racial origin on smoking behavior of Canadian youth. *Preventive Medicine* 2011 May;52(5):376-380.
- <sup>3</sup> Patterson JM, Eberly LE, Ding Y, Hargreaves M. Associations of smoking prevalence with individual and area level social cohesion. *Journal of Epidemiology and Community Health* 2004 Aug;58(8):692-697.
- <sup>4</sup> Diemert L, Chaiton M, Victor JC, Bondy SJ. *Ontario Tobacco Survey Technical Report 2: Six and Twelve Month Data*. Toronto, ON: Ontario Tobacco Research Unit, April 2010.
- <sup>5</sup> Wilkins R, Khan S. *PCCF+ Version H User's Guide. Automated Geographic Coding Based on the Statistics Canada Postal Code Conversion Files, Including Postal Codes through October 2010*. Catalogue 82F0086- XDB. Ottawa: Statistics Canada, Health Analysis Division, January 2011.
- <sup>6</sup> Lindström M. Social capital and health-related behaviors. In: Kawachi I, Subramanian SV, Kim D, eds. *Social Capital and Health*. New York: Springer-Verlag, 2008:215-238.
- <sup>7</sup> Patterson JM, Eberly LE, Ding Y, Hargreaves M. Associations of smoking prevalence with individual and area level social cohesion. *Journal of Epidemiology and Community Health* 2004 Aug;58(8):692-697.
- <sup>8</sup> Christakis NA, Fowler JH. The collective dynamics of smoking in a large social network. *New England Journal of Medicine* 2008 May 22;358(21):2249-2258.
- <sup>9</sup> Partos TR, Borland R, Siahpush M. Socio-economic disadvantage at the area level poses few direct barriers to smoking cessation for Australian smokers: Findings from the International Tobacco Control Australian cohort survey. *Drug and Alcohol Review* 2012 Jul;31(5):653-663.
- <sup>10</sup> Rejineveld S. The impact of individual and area characteristics on urban socioeconomic differences in health and smoking. *International Journal of Epidemiology* 1998 Feb;27(1):33-40.
- <sup>11</sup> Lakshman R, McConville A, How S, Flowers J, Wareham N, Cosford P. Association between area-level socioeconomic deprivation and a cluster of behavioural risk factors: Cross-sectional, population-based study. *Journal of Public Health* 2011 Jun;33(2):234-245.
- <sup>12</sup> Shohaimi S, Luben R, Wareham N, Day N, Bingham S, Welch A, et al. Residential area deprivation predicts smoking habit independently of individual educational level and occupational social class: A cross sectional study in the Norfolk cohort of the European Investigation into Cancer (EPIC-Norfolk). *Journal of Epidemiology and Community Health* 2003 Apr;57(4):270-276.
- <sup>13</sup> Giskes K, van Lenthe FJ, Turrell G, Brug J, Mackenbach JP. Smokers living in deprived areas are less likely to quit: A longitudinal follow-up. *Tobacco Control* 2006 Dec;15(6):485-488.
- <sup>14</sup> Kendzor DE, Reitzel LR, Mazas CA, Cofta-Woerpel LM, Cao Y, Ji L, et al. Individual-and area-level unemployment influence smoking cessation among African Americans participating in a randomized clinical trial. *Social Science and Medicine* 2012 May;74(9):1394-1401.
- <sup>15</sup> Boardman JD, Robert SA. Neighborhood socioeconomic status and perceptions of self-efficacy. *Sociological Perspectives* 2000 Apr;43(1):117-136.
- <sup>16</sup> Ross CE. Walking, exercising, and smoking: Does neighborhood matter? *Social Science and Medicine* 2000 Jul;51(2):265-274.