ABSTRACT

Title: Scale matters: exploring the variability of associations between neighbourhood exposures and smoking across increasingly large spatial units

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There is a substantial body of research providing evidence of significant neighbourhood-level inequalities in smoking prevalence. These inequalities are a matter of concern among young adults, in particular because this population has the highest prevalence of smoking among all age groups, with significant smoking uptake occurring after high school age. However, research on neighbourhood-level exposures and changes in smoking status in young adults is scarce. Moreover, in spite of numerous calls to take scale issues into consideration in studies of neighbourhoods and health, the role of geographic scale in shaping smoking-related findings has received limited attention.

This study examined associations between two neighbourhood exposures and retrospectively reported changes in smoking status among young adults across increasingly large spatial units in Montreal, Canada. The sample was 2093 Island of Montreal residents aged 18-25 years who had lived at their current address for ≥ 1 year at study inception. The dependent variable was retrospectively reported change in smoking status including four categories: 1) non-smoker for ≥ 2 years, 2) smoker for ≥ 2 years, 3) smoker for < 2 years, and 4) non-smoker for < 2 years. Participants’ residential addresses were coded and linked to two nested, increasingly large spatial definitions. Data on presence of tobacco retail outlets and smoking accommodation facilities were included at each spatial area. Associations between neighbourhood exposures and changes in smoking status were examined using three-level multinomial models.

Multilevel analyses showed significant variability in change in smoking status at the larger spatial unit. Individual-level variables –sex, age, and education– explained a limited amount of this variability (18.7% of total variance). The likelihood of being a smoker for 2 years or longer was significantly higher in neighbourhoods with high presence of tobacco retail outlets at the proximal level (OR=1.56, 95%CI= 1.20-2.05). At the larger spatial unit definition, the likelihood of being a smoker for 2 years or longer was significantly higher in neighbourhoods with high presence of smoking accommodation facilities (OR=1.77, 95%CI= 1.77-2.33).

These findings suggest that variability on change in smoking status over a 2-year period, above and beyond individual socio-demographic characteristics is significant at a more regional rather than a more proximal spatial level. This variability was explained by high presence of regional-level smoker accommodation and high proximal-level presence of tobacco retail stores. We conclude that a full understanding of neighbourhood-level smoking inequalities requires examination of a range of exposures along a variety of spatial scales.

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