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Neighbourhood built environments as correlates of hospital burden and premature mortality in Canada

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Introduction

The built environment can shape modifiable risk factors such as obesity, poor diet, and physical inactivity, and could be a policy lever for the reduction of chronic disease. In Canada, the health care costs related to chronic disease continue to rise and there have been few policy options offered.

Objectives and Approach

We examine the role of the built environment in hospital burden and premature mortality, with an emphasis on one of the highest burden diseases, Type 2 Diabetes (T2D). Neighbourhood built environment measures for active living were derived using geographic information systems for respondents of the Canadian Community Health Survey, for whom we have linked hospitalization and mortality records. A combination of ICD codes, self-reported diabetes status, as well as a population-based algorithm identifying those at higher risk of developing diabetes were used to identify cases. Differences in hospitalization frequency, cumulative length of stay, and mortality are investigated.

Results

Over half a million hospitalization records were identified in our cohort of roughly 450,000 survey respondents. Key factors such as age, gender, race, and socioeconomic status are accounted for in modelling the association between neighborhood environment and hospitalization. Hospital burden and mortality in T2D patients are much higher than that of patients who do not report having the condition, and those at elevated risk of T2D display intermediate levels of hospitalization. Two-part hurdle models show evidence of an association between more walkable neighborhoods and lower hospitalization risk in non-T2D patients as well as those at elevated risk of developing T2D. The relationship between neighborhoods and the volume of chronic-disease related episodes as well as mortality is unclear, and under further investigation.

Conclusion/Implications

Elucidating the role of neighbourhood built environments on hospital burden and premature mortality for individuals with diabetes will provide insight as to the full range of clinical and non-clinical interventions that could feasibly address the needs of some the highest health care system users.

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