

Built Environment Health Research: The Time Is Now for a Canadian Network of Excellence

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Every generation since World War II has faced its own great public health challenges. In the post-war period, the challenge was the integration back into society of young men and women who had fought a war that took a terrible toll on life and spirit; in the 1960-70s, efforts to control or eradicate smallpox, polio and malaria dominated; in the 1980-90s, tobacco control, heart disease, stroke and HIV/AIDS commanded attention; and in contemporary times, SARS, the H1N1 flu epidemic, mental health and a host of natural and human-made catastrophes have been added to the mix. But of all the great public health challenges, the global epidemic of obesity has emerged as the nemesis of our generation. The numbers paint a grim picture. Obesity is a disorder in its own right, but more pervasively it is also the gateway to many other chronic conditions. The public health and medical care costs attributable to obesity are staggeringly large, and the personal and social costs are not far behind. It is against this backdrop that we offer this special supplement on the built environment and health from a Canadian perspective.

Why this supplement, and why now? While it is clear there is an urgent need to take action to address obesity, particularly in children, it is also very apparent that the empirical body of evidence regarding the determinants of obesity – especially those most upstream, such as the built environment, time use and technology change – is only now taking shape. The sense of urgency to halt the childhood obesity epidemic has helped catalyze political processes in some local jurisdictions aimed at making environmental changes by altering public policy. We need new research, especially as it relates to Canadian cities, to indicate which policy-driven built environmental factors are the most important contributors to obesity, and to understand the mechanisms through which they work. Such evidence is critically needed to deepen the policy debate, leading to action with greater promise of decreasing childhood and adult overweight and obesity in Canada.

The articles in this supplement present current Canadian evidence supporting the impact of the built environment on health,¹⁻¹¹ particularly with regard to child health and obesity. Collectively, these works represent the contributions of multidisciplinary teams of researchers from all five regions of Canada and offer evidence linking various aspects of built and food environments (defined around neighbourhoods and schools) and community design, and their impact on active transportation, physical activity, diet and obesity.

Reports from studies in three Canadian cities – Toronto, Kingston and Saskatoon – investigate types of urban form (for example, as

one study identified: grid-pattern, mixed grid- and curvilinear-pattern, or curvilinear-pattern neighbourhoods) in order to understand their impact on physical activity or BML.¹⁻³ These papers push the threshold of current built environment research by going back to the basics – looking at the design of our urban centres and neighbourhoods, and how that constrains or facilitates people's choices, activities and even residential selection. It is necessary to start with the basic form (structure) of urban and rural neighbourhoods as that is the blueprint that directs what gets built, as we delve into the specifics of built characteristics.

Seven of the ten papers in this supplement report on children between the ages of 8 and 14 years.¹⁻⁷ Are there any theoretical or developmental reasons that make children of this age group particularly advantageous to study? Where in neighbourhoods, or when and how do they accumulate their physical activity? In practical terms, 10-14 year-olds may be an ideal group to study given that they are old enough to make choices regarding travel and mobility but not so old as to be completely travel independent (i.e., driving a vehicle). There may be neurodevelopmental reasons as well. Between the ages of 11-15, youth undergo a second phase of brain development specifically related to spatial configuration and analysis.¹² According to environmental psychologists, important cognitive development occurs through the processes of memorizing landmarks and the sequence of routes and through navigating the integration of routes. Environments that stimulate this development are ones in which navigation and spatial orientation are challenged and in which opportunities for independent travel are facilitated. As a society, we should, according to Weston,¹² develop cities that allow this to occur in young people.

Many of the studies in this special issue and elsewhere report physical activity levels, or access to food retailers, in relation to neighbourhoods, with or without the specification of a surrounding area or buffer zone.¹⁻⁷ The underlying assumption is that this activity or access is occurring in and around participants' home or school neighbourhoods. These assumptions now need to be tested, by measuring where, when and what types of activities and food access occur and under what circumstances (e.g., structured/registered type of activity; free play). It is likely that the location and types of activity are distributed differentially across socio-economic status and, therefore, neighbourhood types as well. We know that frequently children get driven to a structured activity, and when this

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occurs the locations are often outside of their residential or school neighbourhoods. The apparent inconsistencies seen in some of the research – for example, greater physical activity in children from high SES neighbourhoods as well as inner-city neighbourhoods – could be explained by a careful delineation not only of the intensity of physical activity level but also of where these activities occur and of what type. We must resist the generalization that what is good for adults in terms of built environment and health is also necessarily good for young children. Much of the behaviour observed in young children is strongly influenced by their adult caregivers (and their peers); this simple fact has not as yet been adequately accounted for with regard to much of the built environment and children's physical activity and diet research.

Several of the studies in this supplement have defined built and/or food environments in relation to the neighbourhoods where participating children reside and the schools they attend.¹⁻⁷ This differentiation of environments makes sense given the amount of time children spend at school compared to at home during weekdays. However, an important finding reported in this issue is the difference in physical activity levels, for both boys and girls, during school days compared to on weekends.^{1,3} The level of physical activity and active living in general for children is not only spatially but also temporally patterned – within a day, as well as across the week. The weekday-weekend physical activity levels are different enough, and consistently so, that future studies are well advised not to treat all days of the week as equal when physical activity measures are taken or analyzed. It is increasingly clear that we need to understand what the contextual (including the built environment) and individual determinants of physical activity for children are on the weekends, as they may be distinct from the determinants shaping activity on the school days. It follows then that we need to be more precise when we consider defining built environments in relation to schools and residences. Obviously school-based definitions of built environments may not be relevant when considering weekend physical activity levels. On the other hand, when considering active transportation to school, not only is the distance between home and school important, but further gains in insight are likely to be made if we are able to link the residential neighbourhood and school neighbourhood built environments in a seamless manner. In other words, what children are likely to see outside their homes and surrounding their schools is as important in influencing their and their parents' decisions as what they encounter throughout the travel path from home to school and back again.

Like the youth who form the subject of many of the papers here, built environment health research is still a young field, at times awkward, but with much energy and potential. As the supplement demonstrates, Canadian researchers are making important contributions to this quickly evolving field. There is however much work yet to do. The next key steps involve creating more clarity in definitions and operationalization of concepts, measurement and integration of multiple methods, and deeper engagement and commitment for creating a community of researchers in this field. The time is now for a coordinated national effort in built environment and health research – a network of centres on built environment. It is through an escalation of current efforts, integration of local research into a national network, and engaging of partners across sectors, locally and nationally, that we will curb childhood obesity in Canada.

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