TITLE: Urban planning & mental health: How can we design healthier cities for our aging population to improve mental health outcomes?

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ABSTRACT

This paper explores the potential for the built environment to serve as a determinant of mental health for the aging population. The exploration of situational and environmental context factors for health, such as low socioeconomic status, low social capital, and social isolation has been stressed in health promotion. Specifically, the presence of accessible green space and facilitated interaction with the green space through activities such as horticulture therapy have been shown to be particularly beneficial. The quality of green space, distance to residential areas, and other factors have also been linked to the impact of the presence of green space on mental health. The incorporation of such spaces in cities can result in an improvement in mental health through increasing physical activity and decreasing stress. Horticulture therapy has been shown to have a positive effect on variables linked to mental health outcomes in older adults. This suggests a potential for inclusion of gardening-based community programming for cities with aging populations. However, there is a need for additional studies to confirm the effect of and find additional causal mechanisms to understand correlations between improved mental health outcomes and green space. There is also a need to consider the ways in which there can be large-scale coordination of policies on urban planning and healthy city design in North America.

INTRODUCTION

Within public health literature, there has been an increased focus on understanding how cities can be shaped and designed in better ways to improve health outcomes.^{1,2} Increasing urbanization over the last few decades has resulted in more Canadians living in cities and large towns than rural regions. Living in urban areas has been correlated with an increased risk for mental illness.³ This may be due to the presence of factors such as air and water pollution, noise pollution, and perceived physical threats and violence.⁴ However, understanding the impact of the fixed or built environment on mental health has important implications for public health and city planning. The built environment can be defined as “the physical form of a neighborhood and includes all buildings, spaces and objects in one's surroundings that are human-made or modifiable such as homes, schools and workplaces.”⁵ It can include features such as housing, traffic, and environmental pollution, as well as central structural characteristics of city design, such as land use, building density.⁶

Given the growing aging population, special consideration must be given to the mental health needs of older adults. The global population of those aged 65 and over is the fastest growing demographic and is expected to increase by 150% in the next 35 years.⁷ The role of the built environment has been seen to become important later in life, with community-level strategies for engaging and empowering older citizens having a significant impact on individual and community health outcomes.⁵ This paper will discuss how choices about city design can influence the physical and mental health of the community and has application in improving mental health outcomes among older adults.

THE VALUE OF GREEN SPACE

The impact of city design on health is complex, extending from the basic features of settlement, such as access to food, clean water, and a functional sewage system, to more nuanced effects of city organization.² Specifically, mental health has been linked to the availability, accessibility, and quality of green space in a community.⁸ Three mechanisms have been proposed to explain the positive impact of green space on mental health: stress reduction, the encouragement of physical activity, and the facilitation of social inclusion.⁸

The link between increased physical activity and improved mental health status is well reported.⁹⁻¹² Public parks can promote physical activity various ways, such as through encouraging walks through the area or the active playing of sports.^{13,14} This is reinforced in the work of de Vries et al., who collected observational data on quality and quantity of streetscape greenery from 80 neighbourhoods in four Dutch cities along with self-reported factors relating to general health, acute health related complaints, and mental health from residents of these neighbourhoods. Multilevel regression analyses revealed stress and social cohesion to be the strongest mediators of the positive effect, with quality of green space mattering more than quantity. Quality was considered to refer to perceived attractiveness or aesthetics of the streetscape or green space, potentially including things such as pleasantness, lack of nuisance, and availability of good paths for walking. Additionally, exposure to green space was also reported to improve mood and reduce stress.⁸ Furthermore, moving to greener urban areas has been found to be associated with sustained mental health improvements.¹⁵

Zuniga-Teran and colleagues explored the ways in which neighborhood design impacts walkability and noted that vegetation, particularly trees, increased physical activity and perceived wellbeing.¹⁶ Another mechanism through which green spaces in urban areas may

improve mental health is through their role in facilitating social interaction.^{8,17} Some studies have found the presence of greenspace to be linked to social cohesion, which can be defined as referring to factors such as trust, shared norms and values, positive and friendly relationships, and feelings of being accepted and belonging.^{18,19} Considering this literature, there is great value in promoting the development of ecologically friendly cities for the improvement of mental health among urban city dwellers.

FACILITATED ENGAGEMENT WITH GREEN SPACE: HORTICULTURE THERAPY & OLDER ADULTS

While research suggests access to green spaces may have positive effects on the general population, the effect on older adults can be further elucidated. In particular, programs that facilitate engagement with green spaces, such as horticulture therapy and public gardening, have been found to have a positive impact on mental health among older adults. A review from 2013 investigating gardening as a mental health intervention concluded that garden-based interventions were found to decrease signs of anxiety, depression, and stress. Improvements in attentional capacity, self-esteem, interpersonal relationships, and social behavior were also noted.²⁰ Another systematic review conducted in 2017 on the effects of horticultural therapy on persons with mental health conditions showed that 11 out of 14 identified studies demonstrated a positive impact of horticulture therapy on variables linked to mental health, such as self-esteem, cognitive functioning, sleep, and quality of life.²¹ Similarly, Detweiler and colleagues reviewed literature from 1982 to 2011 on the benefits of gardening programs involving aging populations. They found that agitation and antipsychotic medication use decreased with participation in the programs.²²

These conclusions are further reinforced by additional research. A systematic review of literature on the link between green space and mental health by Gascon et al. found that of the 18 studies focusing on adults or the general population irrespective of age, 13 found a reduced risk of mental health or related disorders with increasing surrounding greenness.²³ Specifically, multiple studies found the distance between residential areas and green space had an impact on mental health outcomes. Three studies found that increasing distance to the nearest green space or park increased the risk of mental health problems, depressive systems, and treatment for anxiety and mood disorders in adults.^{23,24-26} This may be due to the fact that having parks further away from residential areas may result in decreased accessibility to the green space. Another systematic review conducted by Wang and MacMillan sought to explore the literature on the benefits of gardening for older adults.²⁷ They reviewed 22 articles and concluded that the majority of studies found that gardening is beneficial for older adults.²⁷ Thus, there is ample evidence to suggest that horticulture therapy has beneficial effects on mental health of older adults. Facilitated engagement with green spaces, therefore, has a potential role in improving mental health. Given their benefits, gardens can serve as an economically favorable, non-pharmacological intervention that should be incorporated into city health plans. This underscores the therapeutic value of well-planned urban design and the development of targeted community programming for older adults.

CHALLENGES & RECOMMENDATIONS

More research is needed to identify factors of the built environment that may influence mental health outcomes. A systematic review conducted by Lachowycz and Jones found that the evidence linking green space and physical activity to be inconsistent.²⁸ Gascon and colleagues

also noted that the literature on greenness and mental health disorders is limited and warrants further exploration through larger studies and a measurement of particular outcomes related to mental health and wellbeing, such as stress and memory.²³ The impact of additional aspects of the built environment on mental health should also be assessed. This would include examination of other aspects of the built environment, such as blue space, which can be defined all the visible surface waters (e.g. lakes and rivers).²³ For example, a systematic review on mental health benefits of long-term exposure to green and blue spaces noted that only three studies had sought to assess the impact of blue spaces on mental health.²³

As evidence is collected and synthesized, it also becomes important to consider the ways in which this knowledge can be operationalized and how its impact can be measured. The healthy cities movement is a public health term that describes the increase in focus on recognizing the importance of the geographical setup of a city in shaping the health of its residents. This movement has been promoted through initiatives that empower local authorities to formulate and implement policies seeking to achieve equity in health and wellbeing.²⁹ This movement has been described as desirable for cities and has been adopted by some policy makers and politicians.³

The uptake of the healthy cities movement has been slow and uncoordinated in North American cities, and this lack of implementation may be damaging to the health of its residents. Other countries, however, have done a better job of implementing the movement. One example of this is the European Healthy Cities Network, which was launched by the World Health Organization 30 years ago with the aim of achieving goals set by the healthy cities movement.³⁰ Having a multinational initiative focusing on implementing evidence-informed policies on city design acknowledges the growing literature in this area. It also positions health-focused urban

planning higher on the agenda of politicians. While there has been greater political commitment and infrastructural and strategic development in Europe, there is a lack of coordinated and sustained adoption of the healthy cities movement in North America.³¹ There is a need for increased political prioritization of healthier city design and increased partnership between healthcare professionals and urban planners in a Canadian context.

CONCLUSION

Therapies that are outside traditional healthcare domains remain important in disease prevention and management, and as such, it is likely that urban planning and the ensuing engagement of communities could be useful to improve health outcomes. However, there is a need for additional studies to confirm the treatment effect of horticultural therapy, specifically measuring the impact on improving attention and reducing stress. Furthermore, steps for advancing this research into policy should be considered simultaneously. Guiding health promotion planners to design cities with the intention of promoting mental health is an example of a proactive approach to the promotion of health and wellbeing. Through the integration of urban planning and public health promotion, cities can be designed to include more green space, encourage physical activity, and ultimately promote the mental wellbeing of its citizens.

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