

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Cities

journal homepage: www.elsevier.com/locate/cities

Are public open space attributes associated with walking and depression?

Mohammad Javad Koohsari^{a,b,c,d,*}, Hannah Badland^e, Suzanne Mavoa^c, Karen Villanueva^{c,e}, Jacinta Francis^c, Paula Hooper^f, Neville Owen^{b,g}, Billie Giles-Corti^{c,e}

^a Faculty of Sport Sciences, Waseda University, Japan

^b Behavioural Epidemiology Laboratory, Baker Heart and Diabetes Institute, Australia

^c Melbourne School of Population and Global Health, The University of Melbourne, Australia

^d Mary MacKillop Institute for Health Research, Australian Catholic University, Australia

^e The Centre for Urban Research, RMIT University, Australia

^f Centre for the Built Environment & Health, University of Western Australia, Australia

^g Swinburne University of Technology, Australia

ARTICLE INFO

Keywords:

Public green space
Physical activity
Urban design
Public health
Mental health
Park

ABSTRACT

Public open spaces (POS) are key neighbourhood destinations shown to confer numerous physical and mental health benefits. The amount and spatial distribution of POS throughout cities are guided by urban planning policies and standards. However, empirical evidence is not generally used to create POS standards. Developing and testing POS indices associated with positive health outcomes, can inform evidence-based POS urban design and planning standards that support the creation of healthier cities. This study examined associations of urban design policy-derived and empirical measures of POS proximity and density with walking and depression. The 2011–12 Australian Diabetes, Obesity and Lifestyle study (AusDiab) wave data were used. Adults living in metropolitan Melbourne, Australia were included ($n = 319$). Participants reported walking for recreation and any walking within their neighbourhood during the last week. Depression was calculated using the Center for Epidemiologic Studies Short Depression Scale (CESD-10). Informed by Australian urban design policies and empirical evidence, various POS measures were calculated at different street network distances around residential addresses using geographic information systems software. Measures tested included: distance to nearest POS, size of nearest POS, total number of POS, and area of POS at scales of 400, 800, 1000, and 1600 m. Associations of these POS measures with walking and depression were examined using adjusted multilevel logistic regression models. Overall 68% and 77% of participants reported walking for recreation and any walking in the past week, respectively; and about 13% were categorized as depressed. Living within 400 m of POS was not associated with either type of walking, but those whose nearest POS was > 1.5 ha had 1.90 and 2.66 times greater odds of walking for recreation and any walking during the last week, respectively. In Melbourne, the urban design policy standard is that POS be available within 400 m of homes. In our study, this standard was not associated with walking or depression; however having a larger POS nearby supported residents' walking. This study highlights the importance of assessing such standards for their potential health impact, and warrants further investigation.

1. Introduction

Access to public open spaces (POS) is an important environmental factor contributing to neighbourhood 'liveability' (Badland et al., 2014; Villanueva et al., 2015). A 'liveable' environment has been defined as "safe, attractive, socially cohesive and inclusive, and environmentally sustainable; with affordable and diverse housing linked to employment,

education, public open space, local shops, health and community services, and leisure and cultural opportunities; via convenient public transport, walking and cycling infrastructure" (Lowe et al., 2013). Consistent with this definition, POS confers numerous benefits to individuals and communities, such as encouraging physical activity (Han, Cohen, & McKenzie, 2013; Hooper, Knuiman, Bull, Jones, & Giles-Corti, 2015), enhancing mental health (Francis, Wood, Knuiman, & Giles-

* Corresponding author at: Faculty of Sport Sciences, Waseda University, Japan.

E-mail addresses: Javad.Koohsari@baker.edu.au (M.J. Koohsari), hannah.badland@rmit.edu.au (H. Badland), suzanne.mavoa@unimelb.edu.au (S. Mavoa), karen.villanueva@mcri.edu.au (K. Villanueva), francisjacinta@hotmail.com (J. Francis), paula.hooper@uwa.edu.au (P. Hooper), neville.owen@bakeridi.edu.au (N. Owen), billie.giles-corti@rmit.edu.au (B. Giles-Corti).

¹ Address: 2-579-15 Mikajima, Tokorozawa, Saitama 359-1192 Japan.

<https://doi.org/10.1016/j.cities.2017.11.011>

Received 28 January 2017; Received in revised form 24 September 2017; Accepted 19 November 2017
0264-2751/ © 2017 Elsevier Ltd. All rights reserved.

Corti, 2012), fostering community social cohesion (de Vries, van Dillen, Groenewegen, & Spreeuwenberg, 2013; Peters, Elands, & Buijs, 2010), and reducing urban heat effects (Feyisa, Dons, & Meilby, 2014; Oliveira, Andrade, & Vaz, 2011).

The pathways through which POS may influence health behaviours and outcomes, such as walking behaviours and depression, have been captured in our earlier conceptual framework. This framework was developed to identify and understand plausible pathways between POS and health and wellbeing behaviours and outcomes (Villanueva et al., 2015). Several proximity measures, such as access to the nearest POS and the size of POS, were identified as important, and these were considered useful developing urban design and planning policy-relevant indicators. The provision and spatial distribution of POS throughout cities is currently guided by urban planning policies and standards, which vary by jurisdictions and regions. Moreover, standards and policies are typically practice, rather than evidence-based. For example, in Australia, the Western Australian (State) Liveable Neighbourhood Guidelines require a minimum of 8–10% of gross subdivisible land area within a given area to be allocated to POS (Western Australian Planning Commission, 2009). For the city of Melbourne, the Victorian (State) Planning Provision recommends that 95% of dwellings have access to a local park within 400 m of their homes (Department of Transport Planning and Local Infrastructure, 2014). However, we found no research investigating whether implementation of POS policy standards and metrics influenced health behaviours and outcomes, and accordingly, whether and which policy standards have the most impact on health outcomes.

To address this gap, the current study aimed to examine associations of urban design policy-derived and empirical POS attributes with walking and depression.

2. Public open spaces, walking, and mental health

2.1. Socio-ecological models in promoting population health

Along with individually-based interventions to support health and well-being, socioecological models are increasingly used for population-based approaches to shaping people's behaviours (Sallis & Owen, 2015). Socioecological models recognise there are multiple levels influencing a person's behaviour, including personal, organizational, community, and public policy layers. The underlying premise of the socioecological models is that changing people's health behaviours is not easy, especially if multiple factors do not support healthful choices (Sallis & Owen, 2015). Within the socioecological framework, there has been an emphasis on the 'built environment', which can operate as an enabler or barrier for healthier behaviours. The built environment refers to "the human-made space in which people live, work, and recreate on a day-to-day basis" (Roof, 2008, p. 24), and encompasses elements such as streets, buildings, land uses, and POS. For example, the 'walkability' of a neighbourhood is recognised in previous studies as a facilitator to walking (Cole, Dunn, Hunter, Owen, & Sugiyama, 2015; Frank et al., 2010). However, walkability may not be effective to encourage someone to walk within their neighbourhoods, if there are no appealing routes or destinations (such as parks and playgrounds) (Sugiyama, Neuhaus, Cole, Giles-Corti, & Owen, 2012).

2.2. An updated literature

POS is defined as "managed open space, typically green and available and open to all, even if temporally controlled" (Carmona, 2010, p. 62), and include parks, green spaces, and playgrounds. There has been a growing body of research examining the associations of different aspects of POS with health behaviours and outcomes, especially walking and mental health (Alcock, White, Wheeler, Fleming, & Depledge, 2014; Francis et al., 2012; Giles-Corti et al., 2005; Sugiyama et al., 2015). For example, an Australian cross-sectional study found those

residents who had access to larger attractive POS within 1.6 km of their homes were more likely to report weekly sufficient amount of walking for health (> 150 min per week) (Sugiyama, Francis, Middleton, Owen, & Giles-Corti, 2010). Another recent Brazilian study found having at least two POS within 500 m of residents' homes was associated with increased recreational walking (Florindo et al., 2017). Further, a longitudinal study found proximity to neighbourhood POS associated with adults' recreational walking maintenance over four years, independent of psychosocial attributes (Sugiyama et al., 2013). In relation to mental health, a cross-sectional study found the quality of POS to be associated with mental health: residents who lived in neighbourhoods with higher quality POS reported lower levels of psychosocial distress compared with those who lived in neighbourhoods with lower quality POS (Francis et al., 2012). Another longitudinal study found those who moved to a neighbourhood with more green space showed significant mental health improvements, compared with those who moved to a neighbourhood with less green space (Alcock et al., 2014).

Nevertheless, the current empirical evidence reporting associations between POS, walking and mental health are inconsistent (Koohsari et al., 2015). For example, a systematic review showed only 40% of quantitative studies examining associations of objective access to POS with physical activity found positive associations (Lachowycz & Jones, 2011). Another recent systematic review of 28 studies found 'limited' evidence on causal relationships between proximity to and quality of surrounding POSs with residents' mental health (Gascon et al., 2015). The importance of POS may differ in relation to the outcome being investigated. For instance, presence and proximity of POS were associated with recreational walking maintenance over time (but not the uptake of walking) (Sugiyama et al., 2013); while only the quality of POS (not quantity) was associated with mental health (Francis et al., 2012). These inconsistencies in the empirical evidence for the role of POS on health behaviours and outcomes provide a challenge for developing and testing evidence-based urban planning policy and standards for POS measures that support population health. Although the provision and spatial distribution of POS is largely guided by practice-based urban design and planning policies and standards, the extent to which current policies and standards for POS provision influence health behaviours (e.g. walking) and outcomes (e.g. mental health) is unclear. Existing underlying policies that influence POS provision in cities is largely ignored in previous studies exploring relationships between POS, walking and mental health. It is unknown whether meeting the current policies and standards are associated with better health behaviours or outcomes.

2.3. Strengthening the implementation science on POS

Implementation science refers to "the scientific study of methods to promote the systematic uptake of clinical research findings and other evidence-based practices into routine practice" (Eccles et al., 2009, p. 2), and considers how an intervention can yield 'optimal values' for its receivers (Easterling & Metz, 2016). In relation to POS design and planning, current standards are typically based on professional opinion, rather than evidence-based (Koohsari et al., 2015). In addition, a recent review into the historical origins of Australian POS planning guidelines found the majority of POS standards were based on British (developed in 1925) or American standards, rather than being empirically derived for the Australian context (Veal, 2013). Testing the current Australian POS policies will strengthen implementation science by providing context-specific evidence on POS planning that is health-promoting (Giles-Corti, Kerr, & Pratt, 2017).

Download English Version:

<https://daneshyari.com/en/article/7417494>

Download Persian Version:

<https://daneshyari.com/article/7417494>

[Daneshyari.com](https://daneshyari.com)