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Therapeutic environments as a catalyst for health, well-being and social equity

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ABSTRACT

With the increasing prevalence of mental illness, there is an ever-growing need for supportive and rehabilitative social and health services and facilities. In many countries, the healthcare infrastructure, transitional services and communities are isolated from one another, creating physical and mental barriers to rehabilitation. Therapeutic landscape research suggests that outdoor spaces can facilitate rehabilitative healing, foster community support and self-empowerment. Design focused on facilitating preventative and rehabilitative health may bridge the gap between treatment at the institutional level and day-to-day living environment, by supporting the well-being of vulnerable people. In this paper, the literature as well as individual case studies are explored to better understand how therapeutic environments may enable the built infrastructure and transitional landscapes to fruitfully coexist. Findings suggest that suitable urban integration of services through therapeutic landscapes can provide a catalyst for the well-being of the wider community, mediating healthcare stigmas.

1. Introduction

Mental health problems are now one of the leading causes of health loss and disability, affecting one in four people globally and disproportionally affecting those in cities and compact suburbs (Shanahan et al., 2015; Thompson, 2011; World Health Organization, 2001). These figures are staggering, but are also likely underestimated as almost two-thirds of people affected do not seek help (World Health Organization, 2001; World Health, 2018). The causes of the increase in poor mental health are complex and while vulnerability and transition come in many forms, there are clear correlations between deteriorating mental health, and those suffering abuse, violations in human rights, ongoing stress or grief, and unhealthy lifestyles (World Health Organization, 2001). Increased urbanisation has also been blamed for the increasing number of lifestyle-related health problems, such as the increase in sedentary behaviour, a lack of physical activity, chronic psychological stress and more time spent indoors. Without sufficient preventative and rehabilitative services, vulnerable people may experience a deterioration of their long-term health, the volume of sufferers will continue to increase, and the costs of both care and lost productivity will burden the healthcare systems and the economy.

The World Health Organisation (WHO) has called for urgent action to 'close the treatment gap and to overcome barriers which prevent people from receiving appropriate care' and equally prioritising prevention strategies (World Health Organization, 2001, 2003). Seeking to understand the barriers to care, research finds that the largest healthcare barriers are physical and mental inaccessibility,

cultural inappropriateness and high demand for services (World Health Organization, 2003; Te Pou, 2010). Current Western models of healthcare have been criticised as overly focussed on physical illness, often not considering interrelated mental, social, spiritual and environmental health relationships and are isolated from one another, creating both physical and mental barriers to rehabilitation (Weyer, 2017; Yücel, 2013). As a diverse range of health determinants such as psychological, biological, socio-economic and spiritual factors also affect mental well-being, a more holistic approach is clearly called for. Seeking to address this imbalance, the 'Ottawa Charter for Health Promotion', an international agreement curated by the WHO in 1986, suggests that more appropriate strategies may be enabled through setting-based strategies such as the creation of supportive environments, and the integration of health-promoting services into day-to-day life through community spaces.

Over time, the continuum of mental health care from hospital, to mental health complex, to community wellness facility has changed radically (Irvine & Warber, 2002). The buildings were historically considered part of the healing process and much attention was paid to ensuring sufficient access to fresh air, natural light and quiet. The interconnection of the architecture with the natural setting was seen as essential to promote the health and well-being of patients (Joseph et al., 2013). In addition, the imperative for patients 'to move' as part of their treatments, necessitated the attention to outdoor spaces such as balconies, porches, colonnades and walking paths. Today, according to Marcus and Sachs (2014), hospital and healthcare environments can be one of the most uncomfortable places for people to inhabit. As described by Irvine and Warber (2002), 'the relationship among people, nature and well-being has all but been lost', along with the holistic healthcare approach.

Current thinking in health geography and mental health facilities engages with the importance of a natural setting for mental, physical and spiritual healing (Gesler, 1992). Specifically designed healing gardens in healthcare facilities are often off-limits to the general public as they form part of a programme of therapy, and as such, necessitate some degree of control and due to referral requirements through healthcare providers (Joseph et al., 2013; Marcus, 2016; Moon & Kearns, 2019). Other public green spaces are often busy or ill-suited to support deteriorating societal mental health (Kershaw et al., 2018; Marcus & Barnes, 1999). These shifts in context provide opportunities to rethink the relationship between people, nature and well-being. This paper adds to the discussion regarding the relationships between the design of mental healthcare facilities, peripheral or interstitial public spaces, and the potential for bridging existing healthcare to enable more targeted place-based health promotion. It draws from the therapeutic landscape literature and a review of key case studies, to explore design criteria for health promotion and a healing landscape.

2. Method

To investigate the ideas underlying the design of mental healthcare facilities as well as their successful implementation, a comprehensive literature review was undertaken using electronic databases such as Scopus, Google Scholar and ProQuest, as well as landmark book publications. Search terms included healthcare landscapes, restorative outdoor spaces, landscape design for vulnerable people and culturally responsive environments, to identify design criteria. Only peer-reviewed publications were chosen for the subsequent selection of articles. One hundred and twenty studies were evaluated based on title and abstract. When the relevance of a paper was difficult to ascertain after reading the abstract, then the full text was read to decide whether to include it or not. Following this first selection, 44 studies remained. Further 19 studies were excluded based on the content of their full text, resulting in 5 studies remaining for this review. The articles were critically evaluated by conducting a strength and weakness analysis of each study and by considering their relevance in promoting health and well-being. As causal relationships between therapeutic environments and human health are difficult to establish, this critical literature review focussed on studies that dealt with association rather than causation.

This review revealed a number of themes and relationships that relate to the development of therapeutic outdoor spaces that support vulnerable people in the community. Hospital, acute mental health and other facilities where community access is controlled were excluded. Themes and relationships were then organised in a framework according to associations that were empirically evaluated by the published studies. The design criteria extracted were grouped under four areas of well-being: physical, mental, social, and spiritual. Three built case studies, which employed mechanisms for healing, were also identified and evaluated against these design criteria. The case studies were selected during the scoping of the literature to demonstrate a breadth of scales, all three were associated with medically orientated mental health programmes, two directly as part of a treatment programme, and one involving an Indigenous healing process. The two western case study gardens were part of private healthcare clinics and only available with professional guidance with a specific focus on measurable rehabilitation. While not open to the wider general public, public access was still available through the healthcare system, and controlled use ensured personal safety for vulnerable individuals. On the other hand, the unescorted public accessibility in the Indigenous case study illustrates the holistic nature of the Indigenous medical approach, where users can bring as many care providers as they choose. The scale of this site, which is much larger than the other two, dispels some of the tensions that might exist from the proximity of others. The three case studies complement each other and present a progression of thinking from 2001 to 2016. All case studies were then visited and experienced by the authors to assess the application of theory to design. The example gardens illustrate a general approach to a therapeutic garden (Alnarp, Sweden), a garden designed for a specific condition (Dannerhuset, Denmark), in this case, domestic abuse, and a garden designed to address cultural healing (Kopupaka, New Zealand).

3. Literature review

3.1. Defining therapeutic landscapes

The health and well-being benefits of landscapes have received cross-disciplinary attention significantly to-date, with a particular focus on the green and blue aspects over the last two decades. Initially coined by the geographer Wilbert Gesler (1992), the term therapeutic landscape introduced the relationship between place and wellness seeking to understand why certain places were perceived to be therapeutic. The extended literature reflected the growing interest in the relational and situated approach to well-being which acknowledged the therapeutic nature of places in the context of those social, cultural, material, affectional and sensual aspects related to both human and non-human factors (Bell et al., 2018). Such therapeutic encounters are defined differently by others, such as 'networks' (Smyth, 2005), 'experiences' and 'environments' (Conradson, 2005), 'taskscapes' (Dunkley, 2009), 'mobilities' (Gatrell, 2013), 'assemblages' (Foley, 2011) and 'enabling places' (Duff, 2011), with the latter gaining particular purchase amongst health and cultural geographers alike.

Extending a literal relationship between health and place with the acknowledgement of extraordinary places, Smyth (2005) categorised the literature under three main headings. First, she classified therapeutic places, as those renowned for healing properties such as: parks; springs; religious pilgrimage sites; hospitals; clinics; and spas (Gesler & Kearns, 2005; Smyth, 2005; Thompson, 2011). Second, stemming from the understanding that inhabiting urban environments can cause physical and mental health problems, therapeutic spaces were environments deemed to be health promoting (Andrews, 2017; Marques et al., 2019; Williams, 2009). This prompted numerous studies demonstrating the importance of access to natural environments for physical, social and psychological health for creating healthy communities (Dannenberg et al., 2011; Srinivasan et al., 2003; Thompson, 2011; Ward Thompson et al., 2010). Finally, therapeutic networks were defined as those informal spatial relationships developed through interactions between people, information sources and their surrounding environment. In a similar vein, Williams (2009) organised the definition into six categories of landscape,

namely: (i) physical places known for health, (ii) applications for healthcare and sites, (iii) spaces of significance for particular populations, (iv) literary analysis of fiction, (v) use within disciplines outside of geography, and (vi) everyday sites of varied therapeutic value. These categorisations created a shift in the understanding of human health to include the social as well as the physical and to be complexly interwoven in all inhabited environments (Del Casino, 2004; Williams, 2009).

To bring to the forefront the centrality of place as an operational living construct, the new post medical geographies of health looked to the reinvigorated theorisations of place and landscape in cultural geography (Doughty, 2018) and introduced an additional category to encompass the relational dynamics of culture which can be termed 'therapeutic relationships' (Bignate, 2015). These consider how places may be deemed therapeutic because of how people relate to them through non-physical dimensions. For example, 'sense of place' gains importance through the value and meaning people put on their landscape elements, such as streets, squares, community gardens, the environment itself, or landscape features (Bosco, 2009). Conradson (2005) argued that therapeutic landscape experiences should be more critically approached as 'relational outcomes', as things that emerge through a complex set of transactions between a person and their broader socio-environmental setting, bringing together the physiological and the psychological responses to place. This theoretical turn saw a much greater emphasis on qualitative and ethnographic methodologies in the study of health designed to reveal the histories, discourses, and lived experiences of the place.

In defining therapeutic environments as reliant on a series of encounters, networks, and associations, Duff (2011) defines a therapeutic landscape through its enabling character, characterised by the social, affective and material resources of the individual site. Such events or encounters with a particular site foster the ongoing maintenance of health. Similarly, embodied experiences and movement in affective encounters are argued to be related to health and well-being in a form of an assemblage. Foley and Kistemann (2015) considered therapeutic spaces as emergent through a set of embodied experiential practices linking affects, emotions, and bodily senses that arise from being immersed in such therapeutic environments. This inclusion allows for a better understanding of traditional landscapes and the role of culture. The therapeutic landscapes hereby have significant emotional, relational and spatial aspects and can be explored through employing evolutionary, activity-based, mental strength and empathetic design approaches.

3.2. Evolving approaches to therapeutic landscape

3.2.1. Evolutionary approach

The definition of the therapeutic landscape was further extended to encompass the promotion of health as well as healing, and to incorporate both aesthetic qualities and the more imperceptible social networks offering a sense of security and inclusion (Bell et al., 2018). Vehicles for healing had been the main drivers in restorative outdoor space research, primarily through three main mechanisms: viewing; the immersive qualities of 'being-in'; and finally, actively engaging with nature. An evolutionary approach initially described by Kaplan and Kaplan (1989) and expanded upon by Stigsdotter et al. (2011) identified the draining effects of complexity and unfamiliarity, common to many healthcare environments, and the restorative benefits of viewing, being-in or actively engaging with nature. Kaplan (1995) concludes that restorative environments have the following qualities: the feeling of 'being away' from daily life to the 'extent' of immersion; 'compatible' for people; and providing stimulation and 'fascination'. In healthcare environments, this has been tested through evidence-based design; however, there is the potential for this research to be more rigorously applied in urban contexts to decrease the mental strain that vulnerable people experience (Daykin et al., 2008; Marcus & Sachs, 2014; Van Hoof et al., 2015).

3.2.2. The activity approach

The Activity Approach goes a step further, engaging with nature through horticultural therapy, which derives from the notion that people enjoy being active and exerting themselves for meaningful activity, and so can promote wellness through activities such as gardening (Corazon et al., 2012; Relf, 1999; Sidenius et al., 2015; Stigsdotter & Grahn, 2002; Stigsdotter et al., 2011). Productive landscapes can provide a feeling of security; they can challenge the body and they can reward the mind. Fascination with nature and nurturing life can facilitate the desire to foster life outside of oneself. Furthermore, horticultural activity enables social interaction as having these experiences with other people makes us feel part of a community.

3.2.3. The mental strength approach

The Mental Strength approach (Grahn, 1991) combines both passive and active interactions with nature and horticultural activity. It demonstrates how the person's interactions with the physical and social environments relate to their mental strength. When well-being levels are low, sensitivity to the environment is increased. As well-being increases, the person's sensitivity to their environment decreases, and they can engage with the surroundings through outgoing involvement. Therefore, when a person is more vulnerable, they have a greater need for enclosed natural environments (Grahn et al., 2010; Söderström, 2017; Stigsdotter & Grahn, 2002).

3.2.4. Empathetic design approach

Correspondingly, an empathetic design approach might challenge us to think more ethically about the designed environment. As Söderström (2017) argues, 'we need to broaden our understanding of mental healthcare design in order to make cities more hospitable places for this group of citizens' (p. 56). The research demonstrates that vulnerable people seek the stimulation and services that city-life offers, while also shying away from the hyper-intensity it can create, as the *milieu* is often heightened for people with mental sensitivity (Carmel-Gilfilen & Portillo, 2016; Lincourt, 2002; Souter-Brown et al., 2021). Noise and light can be overwhelming, while predictability and legibility are essential for maintaining a sense of control in public space. Furthermore, the 'feel' and 'ambiance' of a site has great significance. High-paced places can be also demanding, and so vulnerable people often opt for routes and/or occupy spaces with predictability and appropriately paced rhythms. By placing the end-user at the centre of the design, then using that design as part of a rehabilitation programme, these case studies demonstrate how therapeutic spaces can be used to teach individuals how to engage with the benefits of nature and 'find calm' in other natural environments.

3.3. Healthcare contexts

Urban areas and inner suburbs devote large amounts of land to 'separate residential, shopping and business areas, with limited street connections and lower population densities', many sprawling around major healthcare facilities (Sturm & Cohen, 2004, p. 488). Several studies have identified the negative effects of these environments on mental and physical health especially in low socio-economic areas, due to the increased reliance on vehicles, reduced physical activity, loss of social capital and sense of community, as well as the degeneration of ecosystems (Garrido-Cumbrera et al., 2018; Guite et al., 2006; Iram et al., 2012; Sturm & Cohen, 2004). With increasing demands for mental health services and acknowledging the numerous positive effects of nature on physical, mental and social wellness; landscape architecture research has identified the importance of therapeutic outdoor spaces as cost-effective preventative and rehabilitative measures (Marques et al., 2018, 2019; Shanahan et al., 2015).

More recent healthcare design explores the potential for merging healthcare grounds with the urban fabric, reconnecting isolated healthcare complexes to the city and to society at large (Joseph et al., 2013; Weyer, 2017). The primary aim is to facilitate social interaction and improving community accessibility to healthcare resources. It is suggested that health promotion may be achieved through

community amenities which provide spaces for fitness, rehabilitation, self-check, health talks and education (Marcus, 2016; Weyer, 2017).

Researchers studying the relationship between people, nature and well-being found positive correlations between vegetated green spaces and the strength of community networks (Taylor et al., 1998). Others found that, in particular, communal parks and community facilities could improve well-being (Guite et al., 2006) and providing access to therapeutic outdoor spaces could promote physical activity and stress reduction for disability prevention (Kershaw et al., 2017). Besides allowing people to interact with their natural environment and provide habitats for wildlife, the landscape can also be an important expression of social and cultural identity (De Groot et al., 2002).

Numerous studies describe design criteria for outdoor spaces for vulnerable people in care settings, such as crisis and homeless shelters, and mental health facilities (Ellin, 1997; Lygum et al., 2013; Marcus & Sachs, 2014; Putz, 2014). The application of this research considers domestic scale, homeliness, materiality and connection with natural light, views and vegetation (Bates, 2018). The extensive literature outlines design criteria for most healthcare outdoor space typologies (Marcus & Barnes, 1999; Marcus & Sachs, 2014; Yücel, 2013). These outdoor spaces should encourage feelings of safety, positive distraction through an abundance of vegetation, with minimal intrusions or ambiguity. Principles include accessibility, visibility, physiological comfort, quiet, familiarity, flexibility of use, and sustainability. In addition, planting schemes should include, native vegetation, attract flora and fauna, and stimulate sensory experience.

Increasingly, the importance of culture in therapeutic landscapes has been identified (Andrzejewski et al., 2009; Dyck, 2006; Gesler, 1992). However, most of the work in this field places emphasises on Western culture, rather than cultural appropriateness. As discussed by Hatton et al. (2017), in New Zealand's Indigenous Māori culture, sickness is viewed as a symptom of disharmony with nature. A traditional therapeutic landscape should therefore look to natural ecological systems as a means for delivering well-being (Harmsworth & Awatere, 2013). Cultural healing can be promoted by drawing connections with healthy landscape conditions. Exercise can be facilitated through horticultural activity, with numerous opportunities for harvesting natural foods within orchard spaces, cultivating flax for craft activities, and collecting healing resources in gardens. Traditional therapists, therefore, make connections with the environment to empower and enable people with impaired spiritual well-being (Hopkirk & Wilson, 2014). Other potential healing activities suggested are gardening, weaving, and cooking, as these instinctual cultural activities can make conversation easier, particularly in group contexts (Te Pou, 2010). Providing outdoor spaces in which people can engage with the health of their landscapes as well as their own culture is essential for improving the health and well-being of all.

3.4. Summarising the findings

This review identified four super-ordinate key themes: the importance of healthcare landscapes, the dynamics of restorative outdoor spaces, the implications of vulnerable people and the needs for culturally responsive environments. Within each theme, articles were analysed by the four areas of well-being: mental/emotional, social, physical and spiritual. From these, four aspects (sensoriality, interactions, activity and cultural appropriateness) emerged from the analysis of the literature related to healthcare landscapes, restorative outdoor spaces, vulnerable people and cultural appropriateness (Table 1).

4. Design criteria in practice

Three sites with their associated research, explore the application of these mechanisms for healing in outdoor environments: the Alnarp Rehabilitation Garden in Sweden (Bengtsson & Grahn, 2014; Grahn et al., 2010); Dannerhuset's Crisis Garden in Copenhagen, Denmark (Corazon et al., 2012; Lygum et al., 2013; Sidenius et al., 2015); and the recent Kopupaka Wetland Reserve project in

Table 1. Summary of literature review.

Key Theme	Article	Mental/Emotional	Social	Physical	Spiritual
Healthcare	Landscapes	Conradson (2005), Foley and Kistemann (2015), Marcus (2016), Marcus and Barnes (1999), Marcus and Sachs (2014), Williams (2009), Yücel (2013)	+Feeling of control +Positive distractions +Natural aesthetic	+Choices for socialness or solidarity +Sense of intimacy and containment +Communal spaces for engagement	+Encourage exercise +Nature trails and education
+Native planting to reduce hardscape and domestic grass	+Sustainable water management strategies				
Restorative Outdoor Spaces	Duff (2011), Gatrell (2013), Stigsdotter and Grahn (2002), Stigsdotter (2005), Stigsdotter et al. (2011)	+Sensory experiences +Seasonal changes +Nature-based story and symbols +Rich in species +Serene +Wild Nature	+Varying spaces for different interactions	+Joyful and meaningful activity +Horticulture activity	
Vulnerable People	Joseph et al. (2013), Lygum et al. (2013), Söderström (2017)	+Opportunity to connect with nature +Ambivalence +Atmosphere	+Varying spaces for different interactions +Rhythm	+Space for play	
Culturally Responsive	Environments	Andrews (2017), Bignante (2015), Dunkley (2009), Foley (2011), Hatton et al. (2017), McIntosh et al. (2018)			
	+Relationships with traditional healers and the environment +Natural landscape +Design with ecological systems				
		Sensorality	Interactions	Activity	Cultural Appropriateness

Auckland, New Zealand (Harper & Hogan, 2018; Jamal-Hanjani & Swanton, 2015). Two of the three (Alnarp and Dannerhuset) were developed in synergy with therapeutic programmes to facilitate the healing of vulnerable people, and the third was developed through an Indigenous mental health process. Table 2 summarises the case studies, their potential users and the well-being considerations.

The Alnarp Rehabilitation Garden (2 ha) offers the natural landscape and its horticulture as an important component of their treatment programs for those diagnosed with depression. The

Table 2. Summary of case studies.

Garden	Location	Size	Designer	User	Built	Well-being considerations
Alnarp Rehabilitation Garden	SLU Alnarp Campus, Sweden	2 ha	Patrik Grahn; Sara Lundström; Ulrika A. Stigsdotter; and Frederik Tauchnitz	People with stress related disorders	2001	Mental/ Physical/ Social
Dannerhuset's Crisis Garden	Danner, Copenhagen	0.1 ha	Schönherr Landscape Architects	Women and Children Survivors of Domestic Violence	2012	Mental/ Physical/ Spiritual
Kopupaka Wetland Reserve	Auckland, New Zealand	22 ha	Isthmus, Ltd	Indigenous and non-Indigenous	2016	Physical/ Social/ Cultural

therapy is trifold, consisting of a carefully designed landscape setting, a set of therapeutic activities to be undertaken independently and a care package facilitated by an on-the-ground therapeutic team. Visitors can view the garden; they can immerse themselves and they can interact as part of their treatment programme. The garden offers not only scenic landscapes but also offers more intimate experiences through the design focus on sensorial plantings and seating to allow for a restorative and fully immersive environment. The design of the garden is based on contrasts and variations through different garden 'rooms' with different purposes (Figure 1). Finally, opportunities for physical engagement are provided in cultivation areas with crops and planting beds which allow users to engage, interact, protect and personalise (Figure 2). A typical treatment programme lasts approximately 8 weeks, wherein the patients work directly in the garden for 3 1/2 hours per day, 4 days a week. Both the internal and external spaces are designed to provide for very ordinary encounters as well as to accommodate acts of kindness between healthcare professionals and patient. The garden design fosters rest and contemplation as well as facilitating activities and

Figure 1. A 'garden room' where patients can be more secluded.

Figure 2. Cultivation area with crops and planting beds.

workspaces, offering spaces for solitude as well as social interaction. To date, the garden is reported to have healed more than 140 patients (Grahn et al., 2010).

Dannerhuset's Healing Garden (0.1 ha) incorporates nature-based healing strategies through a number of architectural strategies (Corazon et al., 2012; Sidenius et al., 2015). Feelings of security are engendered through spaces of refuge and outlook which also offer privacy and provide calming outlooks to natural scenic spaces. Needs for social interaction are accommodated through the introduction of more active spaces that promote playfulness. There is also a specially designed crisis shelter garden which surrounds accommodation facilities for both female and child survivors of domestic violence. Day-to-day activities and active therapy sessions use the garden to reduce stress and anxiety, to increase bodily awareness, to help foster self-worth and to promote social competence. The connection to nature is enhanced through the strategic employment of enclosure and exposure elements, softened landscape elements and external/internal transitions, variations in scale and alternatives between formal and informal characteristics (Figure 3). Due to the sensitivity of users, transitional smaller spaces for a retreat that incorporate the experiential qualities of wild-flowers and herbs, peaceful and safe open lawn areas where surveillance is possible, transitioning to more intense social spaces as mental strength increases. The user's physical experiences of sitting, walking, playing and picking up fruit are supplemented with sensory and spiritual experiences of smells, nature sounds, sensations of heat and cold and haptic experiences of open and closed spaces (Figure 4). This garden offers techniques for creating a sense of privacy and refuge while remaining connected to its surroundings.

The Kopupaka Wetland Reserve (22 ha) was designed to ecologically restore a stormwater reserve acknowledging the associated Indigenous values (Figure 5). The master plan adopts a park typology that unites green infrastructure and stormwater management with cultural and recreational aims. The restoration of the Sakaria stream and its tributaries was achieved through the introduction of a progressive wetland system in which the infrastructure of ponds provides the frame for adjacent meeting areas, active play areas, open fields, a botanical weaving garden and horticultural planting (Figure 6). While not directly associated with a medically oriented mental health programme,

Figure 3. Illustration of the soft and hard landscape elements.

Figure 4. Leaf of lamb's ear plant as an example of a sensorial experience.

Figure 5. Example of indigenous patterns and building techniques.

Figure 6. Wetland area at the confluence of the streams.

fostering Indigenous Māori values provide many of the same qualities. Waterways provide an abundance of life with food and purification, both contributing to the well-being of the people as Māori maintain that a healthy landscape makes for a healthy individual. Views over the wetlands which surround the confluence of two freshwater streams, display the varied birdlife and biologically diverse horticulture. Hard landscape forms are inspired by the abundance of kai (food) found in

wetlands and guide the boardwalk design. Open spaces for communal activities are contrasted with private places for an emotional retreat are also available along the reserve. The body is engaged through sitting or walking, the senses are engaged through sights, sound and smells. The park is a celebration of the inseparable bond of water and earth, vital to sustaining and balancing the natural environment and which is reflected through *wairua* which refers to the spiritual plane. Healthy water and rich resources which are deeply embedded in Maori cultural and spiritual landscape values as water is sacred.

5. Discussion

Therapeutic landscape research suggests that outdoor spaces can facilitate rehabilitative healing, foster community support and self-empowerment. This is achieved through the attention given to the sensory experience of space, the interactions fostered between individuals through the accommodation of a variety of meaningful activities and through cultural appropriateness. Our research investigated three sites at three different scales. The two Scandinavian studies adopted a European model of health, which involved healthcare professionals, structured programmes of care in quasi-specialised contained spaces of less than 2 ha in total. In contrast, the New Zealand study adopted an Indigenous model of health, involving extended family and connecting with Indigenous understandings of nature, in an open area of 22 ha. Regardless of the scale or the type of user, all of the three case studies adopted similar design criteria and experienced similar outcomes. More specifically: *Sensorality* was a key theme as vulnerable people often seek the stimulation and services of urban environments while conversely avoiding the hyper-intensity they can create. The predictability and legibility, essential for maintaining a sense of control in public spaces can also be missing. In practice, sensoriality can be achieved through planting with varied textures and smells, through the manipulation of light to create areas of brightness and shadow, through nature sounds such as running water and bird song, through haptic experiences such as warmth, coolness and air movement, and through the taste of planted vegetables, herbs and flowers.

Interaction related to the 'feel' and 'ambiance' of a site, which can determine the way people interact with public space, making it calming or not. This can correlate with rhythms of life, which sensitive people are attuned to. In the case studies, spaces were developed for the user to take refuge in and to look out from to survey the landscape, and as such, gain control over the interactions with others. Predictability and appropriately based rhythms incorporated into the urban environment can relieve the high demands these environments place on vulnerable people. A range of interactions were afforded by the gardens, ranging from viewing others right through working alongside others and preparation of a meal, depending on the informality of the site.

Activity was essential for improving well-being; however, the intensity needs to be adjusted to allow for varying degrees of mental and physical strength. Instead of being excessively demanding, activities should attempt to stimulate curiosity and foster meaningful engagement. The gardens studied offered a wide range of activities, varying from nature trails and educational activities through to horticultural activities and spaces for play.

Cultural appropriateness was essential for the creation of an inclusive environment which emphasises the development and maintenance of relationships through respect and trust. A lack of awareness or insensitivity to cultural diversity can neutralise or negatively impact the design of a beneficial therapeutic landscape. Consideration of cultural diversity was often unexplored in the literature as were the connections between spaces for vulnerable people. These connections would benefit from a greater accessible and a less demanding social landscape. Two different approaches to cultural appropriateness are evidenced by the removal of any culturally sensitive materials from the garden (e.g. Alnarp) to the garden which focused on introducing Māori values to landscape (e.g. Kopupaka).

While much has been written in therapeutic gardens, application in practice is needed to understand how the design acts a catalyst for health, well-being and social equity. It is unrealistic for the

design of therapeutic landscapes to be prescriptive. So much depends on the knowledge of the therapists using them. For example, the Dannerhuset's Healing Garden uses the leaves of *Stachys byzantina*, commonly known as a lamb's ear due to the soft fuzzy texture as a therapy tool for calming victims of abuse. There is a strong relational dynamic between vegetation and the other landscape components, for creating spatial variability, sensory engagement, improving ecological health, and delivering healing narratives. The success of this seems to come down to bodily relationships with vegetation for the articulating therapeutic spatial conditions, and visceral engagement.

Unfortunately, many healing gardens, including those at Alnarp and Dannerhuset, are private facilities inaccessible to the general public. More work is needed to link this research with the design for vulnerable people in public spaces. Furthermore, the research focus is on mental well-being with influences of social and physical strength yet fails to address cultural aspects of healing.

6. Conclusions

The development of programmes and facilities addressing mental health has been deemed an international imperative by the World Health World Health Organization (2018) as mental health problems are now one of the leading causes of health loss and disability. To improve the quality of healing in healthcare environments, notions of re-humanising healthcare have been developing for decades. They raise fundamental questions about what makes us human, by questioning human health rights, identity, emotion, creativity, sensibility and culture, and how these may be incorporated into healthcare environments through architecture, art and design.

As the demarcation of the landscape further separates humans from each other, other life, and the ecosystems we are inherently a part of, the relationships between culture and nature, and humans and nature become more removed. This research suggests that there is an opportunity for a healing catalyst through the introduction of therapeutic landscapes; which relate to the human body, through scale and sensory experience, which provide a framework for activity and place-based health strategies that can empower vulnerable people to regain a sense of self-sufficiency and increase mental resilience; which address the need for a gradient of social opportunities, gradually increasing capacity for social interaction by allowing for varying mental strengths; and which offer a more culturally appropriate design response to healthcare, equitably enabling greater environmental and community well-being.

To address the gap between the literature and practice, three case studies were featured to illustrate the usability and site experiences of therapeutic environments that encourage vulnerable people to connect with their mental, physical, social, and spiritual well-being, while drawing connections with the landscape. These offered strategies to accommodate physical well-being, providing meaningful horticultural activities, which engaged with environmental restoration, healthy food production, and/or traditional medicinal and cultivation education. Some addressed the importance of spiritual and cultural engagement, facilitating traditional healing through enabling relationships between people and the natural environment in an ecological regenerative manner. This was achieved by responding to the following design criteria: improve ecological health; facilitate traditional healing practices and cultural engagement; enable physical activity through the harvesting of natural foods and healing resources; provide varying interactivity; and ensure mental restoration through sensory experience, natural aesthetic and healing narratives.

Research highlighted that a holistic healthcare approach is needed which considers all aspects of wellness particularly cultural/spiritual well-being and environmental health. A holistic healthcare approach should acknowledge the mental and emotional aspects of well-being and provide mental restoration through sensory experience and a natural aesthetic. Yet this research fails to fully address the psychological and physical barriers associated with healthcare, and the stigmatising relationship with the surrounding urban environment. If appropriately implemented, a place-based holistic design approach could challenge the health sector to transform from a reactive treatment model

towards proactive prevention and rehabilitation.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributor

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References

Andrews, G. (2017). Landscapes of Wellbeing. In T. Brown, G. J. Andrews, S. Cummins, B. Greenhough, D. Lewis, & A. Power (Eds.), *Health geographies: A critical introduction* (pp. 59–74). John Wiley & Sons.

Andrzejewski, C. S., Reed, H. E., & White, M. J. (2009). Does where you live influence what you know? Community effects on health knowledge in Ghana. *Health & Place*, *15*(1), 228–238. https://doi.org/10.1016/j.healthplace.2008.05.002

Bates, V. (2018). 'Humanizing' healthcare environments: Architecture, art and design in modern hospitals. *Design for Health*, *2*(1), 5–19. https://doi.org/10.1080/24735132.2018.1436304

Bell, S. L., Foley, R., Houghton, F., Maddrell, A., & Williams, A. M. (2018). From therapeutic landscapes to healthy spaces, places and practices: A scoping review. *Social Science & Medicine*, *196*, 123–130. https://doi.org/10.1016/j.socscimed.2017.11.035

Bengtsson, A., & Grahn, P. (2014). Outdoor environments in healthcare settings: A quality evaluation tool for use in designing healthcare gardens. *Urban Forestry & Urban Greening*, *13*(4), 878–891. https://doi.org/10.1016/j.ufug.2014.09.007

Bignante, E. (2015). Therapeutic landscapes of traditional healing: Building spaces of well-being with the traditional healer in St. Louis, Senegal. *Social & Cultural Geography*, *16*(6), 698–713. https://doi.org/10.1080/14649365.2015.1009852

Bosco, C. (2009). *Socially-constructed landscapes: Evolving governing structures to sustain community gardens*. Cornell University.

Carmel-Gilfilen, C., & Portillo, M. (2016). Designing with empathy: Humanizing narratives for inspired healthcare experiences. *HERD: Health Environments Research & Design Journal*, *9*(2), 130–146. https://doi.org/10.1177/1937586715592633

Conradson, D. (2005). Landscape, care and the relational self: Therapeutic encounters in rural England. *Health & Place*, *11*(4), 337–348. https://doi.org/10.1016/j.healthplace.2005.02.004

Corazon, S. S., Stigsdotter, U. K., Moeller, M. S., & Rasmussen, S. M. (2012). Nature as therapist: Integrating permaculture with mindfulness- and acceptance-based therapy in the Danish healing forest garden nacadia. *European Journal of Psychotherapy & Counselling*, *14*(4), 335–347. https://doi.org/10.1080/13642537.2012.734471

Dannenberg, A., Frumkin, H., & Jackson, R. (2011). *Making healthy places: A built environment for health, well-being, and sustainability*. Island Press.

Daykin, N., Byrne, E., Soteriou, T., & O'Connor, S. (2008). The impact of art, design and environment in mental healthcare: A systematic review of the literature. *Journal of the Royal Society for the Promotion of Health*, *128*(2), 85–94. https://doi.org/10.1177/1466424007087806

De Groot, R. S., Wilson, M. A., & Boumans, R. M. (2002). A typology for the classification, description and valuation of ecosystem functions, goods and services. *Ecological Economics*, *41*(3), 393–408. https://doi.org/10.1016/S0921-8009(02)00089-7

Del Casino, V. J. (2004). (Re)placing health and health care: Mapping the competing discourses and practices of 'traditional' and 'modern' Thai medicine. *Health & Place*, *10*(1), 59–73. https://doi.org/10.1016/S1353-8292(03)00019-4

Doughty, K. (2018). Therapeutic landscapes. In P. Howard, I. Thompson, E. Waterton, & M. Atha (Eds.), *The routledge companion to landscape studies* (pp. 341–353). Routledge.

Duff, C. (2011). Networks, resources and agencies: On the character and production of enabling places. *Health & Place*, *17*(1), 149–156. https://doi.org/10.1016/j.healthplace.2010.09.012

Dunkley, C. M. (2009). A therapeutic taskscape: Theorizing place-making, discipline and care at a camp for troubled youth. *Health & Place*, *15*(1), 88–96. https://doi.org/10.1016/j.healthplace.2008.02.006

Dyck, I. (2006). Travelling tales and migratory meanings: South Asian migrant women talk of place, health and healing. *Social & Cultural Geography*, *7*(1), 1–18. https://doi.org/10.1080/14649360500452772

Ellin, N. (1997). *Architecture of fear*. Princeton Architectural Press.

Foley, R. (2011). Performing health in place: The holy well as a therapeutic assemblage. *Health & Place*, *17*(2), 470–479. https://doi.org/10.1016/j.healthplace.2010.11.014

Foley, R., & Kistemann, T. (2015). Blue space geographies: Enabling health in place. *Health & Place*, *35*, 157–165. https://doi.org/10.1016/j.healthplace.2015.07.003

Garrido-Cumbrera, M., Ruiz, D. G., Braçe, O., & Lara, E. L. (2018). Exploring the association between urban sprawl and mental health. *Journal of Transport & Health*, *10*, 381–390. https://doi.org/10.1016/j.jth.2018.06.006

Gatrell, A. C. (2013). Therapeutic mobilities: Walking and 'steps' to wellbeing and health. *Health & Place*, *22*, 98–106. https://doi.org/10.1016/j.healthplace.2013.04.002

Gesler, W. M. (1992). Therapeutic landscapes: Medical issues in light of the new cultural geography. *Social Science & Medicine*, *34*(7), 735–746. https://doi.org/10.1016/0277-9536(92)90360-3

Gesler, W. M., & Kearns, R. A. (2005). *Culture/place/health*. Routledge.

Grahn, P. (1991). *Om parkers betydelse*. Movium.

Grahn, P., Ivarsson, C. T., Stigsdotter, U. K., & Bengtsson, I.-L. (2010). Using affordances as a health-promoting tool in a therapeutic garden. In C. W. Thompson, S. Bell, & P. Aspinall (Eds.), *Innovative approaches to researching landscape and health* (pp. 116–154). Routledge Editors.

Guite, H. F., Clark, C., & Ackrill, G. (2006). The impact of the physical and urban environment on mental well-being. *Public Health*, *120*(12), 1117–1126. https://doi.org/10.1016/j.puhe.2006.10.005

Harmsworth, G., & Awatere, S. (2013). *Indigenous Māori knowledge and perspectives of ecosystems*. Landcare New Zealand.

Harper, T., & Hogan, B. (2018). Mapping outstanding projects in the Asia-Pacific. *Landscape Architecture Australia*, *157*, 60.

Hatton, W., Marques, B., & McIntosh, J. (2017). Mātauranga Māori and Therapeutic Landscapes. In *The IAFOR international conference on global studies 2017: Official conference proceedings* (pp. 1–14). The International Academic Forum.

Hopkirk, J., & Wilson, L. H. (2014). A call to wellness - Whitiwhitia i te ora: Exploring Maori and occupational therapy perspectives on health. *Occupational Therapy International*, *21*(4), 156–165. https://doi.org/10.1002/oti.1373

Iram, A., Rasool, L., Shahzad, F., & Saeed, Y. (2012). Impact of Urban sprawl on public health: An Analysis of Lahore-Pakistan. *World Applied Sciences Journal*, *20*(1), 80–86.

Irvine, K. N., & Warber, S. L. (2002). Greening healthcare: Practicing as if the natural environment really mattered. *Alternative Therapies in Health and Medicine*, *8*(5), 76–83.

Ivarsson, C. T. (2011). *On the Use and Experience of a Health Garden Exploring the Design of the Alnarp Rehabilitation Garden* [Unpublished doctoral dissertation]. Swedish University of Agricultural Sciences.

Jamal-Hanjani, M., & Swanton, C. (2015). The value of patient and public involvement in trial design and development. *Clinical Oncology*, *30*, 1e3.

Joseph, A., Kearns, R., & Moon, G. (2013). Re-imagining psychiatric asylum spaces through residential redevelopment: Strategic forgetting and selective remembrance. *Housing Studies*, *28*(1), 135–153. https://doi.org/10.1080/02673037.2013.729270

Kaplan, R., & Kaplan, S. (1989). The experience of nature: A psychological perspective. CUP Archive.

Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*, *15*(3), 169–182. https://doi.org/10.1016/0272-4944(95)90001-2

Kershaw, C., Cornwall, J., McIntosh, J., & Marques, B. (2017). Therapeutic landscape design for older persons health and well-being. In A. Gospodini (Ed.), *The third international conference of changing cities*. Spatial Design, Landscape and Socio-Economic Dimensions (pp. 1163–1170). Grafima Publications.

Kershaw, C., Marques, B., & McIntosh, J. (2018). Rehabilitating Healthcare: Healthcare landscapes a catalyst for health, well-being and social equity. In P. Rajagopalan & M. M. Andamon (Eds.), *International conference of the architectural science association* (pp. 511–516). The Architectural Science Association (ANZAScA).

Lincourt, J. (2002). A place for empathy: Ethics involving architectural designs in healthcare. *HEC Forum: An Interdisciplinary Journal on Hospitals' Ethical and Legal Issues*, *14*(2), 86–98. https://doi.org/10.1023/A:1020999429800

Lygum, V. L., Stigsdotter, U. K., Konijnendijk, C. C., & Højberg, H. (2013). Outdoor environments at crisis shelters user needs and preferences with respect to design and activities. *Archnet-IJAR*, *7*(1), 21–36.

Marcus, C. C. (2016). The future of healing gardens. *HERD: Health Environments Research & Design Journal*, *9*(2), 172–174. https://doi.org/10.1177/1937586715606926

Marcus, C. C., & Barnes, M. (1999). *Healing Gardens: Therapeutic benefits and design recommendations*. Wiley.

Marcus, C. C., & Sachs, N. (2014). Therapeutic Landscapes: An evidence-based approach to designing healing gardens and restorative outdoor spaces. *Health Environments Research & Design Journal*, *9*(2), 172–174.

Marques, B., McIntosh, J., & Hatton, W. (2018). Haumanu ipukarea, ki uta ki tai:(re) connecting to landscape and reviving the sense of belonging for health and well-being. *Cities & Health*, *2*(1), 82–90. https://doi.org/10.1080/23748834.2018.1514754

Marques, B., McIntosh, J., Hatton, W., & Shanahan, D. (2019). Bicultural landscapes and ecological restoration in the compact city: The case of Zealandia as a sustainable ecosanctuary. *Journal of Landscape Architecture*, *14*(1), 44–53. https://doi.org/10.1080/18626033.2019.1623545

McIntosh, J., Marques, B., & Hatton, W. (2018). Indigenous Cultural Knowledge for Therapeutic Landscape Design. In S. Rosa, I., . C. Lopes, J., . R. Ribeiro, & A. Mendes (Eds.), *Handbook of research of methods and tools for assessing cultural landscape adaptation* (pp. 28–52). IGI Global Editors.

Milligan, C., & Wiles, J. (2010). Landscapes of care. *Progress in Human Geography*, *34*(6), 736–754. https://doi.org/10.1177/0309132510364556

Moon, G., & Kearns, R. (2019). Health geography in New Zealand and Australia: Global integration or Antipodean exceptionalism? *Geographical Research*, *57*(1), 8–23. https://doi.org/10.1111/1745-5871.12336

Pou, T. (2010). *Talking therapies for Pasifika Peoples: Best and promising practice guide for mental health and addiction services*. Auckland.

Putz, A. (2014). Healing garden for survivors of domestic violence and sexual assault. C. D. Weber, J. Nelson, & J. Sather-Wagstaff, Eds. ProQuest Dissertations Publishing.

Relf, P. (1999). The role of horticulture in human well-being and quality of life. *Therapeutic Horticulture*, *10*, 10–14.

Shanahan, D. F., Fuller, R. A., Bush, R., Lin, B. B., & Gaston, K. J. (2015). The health benefits of Urban Nature: How much do we need? *BioScience*, *65*(5), 476–485. https://doi.org/10.1093/biosci/biv032

Sidenius, U., Refshauge, A. D., & Stigsdotter, U. K. (2015). A year in the therapy forest garden nacadia: Participants' use and preferred locations in the garden during a nature-based treatment program. *International Journal on Sustainable Tropical Design Research and Practice*, *8*(2), 44–53.

Smyth, F. (2005). Medical geography: Therapeutic places, spaces and networks. *Progress in Human Geography*, *29*(4), 488–495. https://doi.org/10.1191/0309132505ph562pr

Söderström, O. (2017). 'I don't care about places': The whereabouts of design in mental health care. In C. Bates, R. Imrie, & K. Kullman (Eds.), *Care and design: Bodies, buildings, cities* (pp. 56–74). John Wiley and Sons Ltd.

Souter-Brown, G., Hinckson, E., & Duncan, S. (2021). Effects of a sensory garden on workplace wellbeing: A randomised control trial. *Landscape and Urban Planning*, *207*, 1–10. https://doi.org/10.1016/j.landurbplan.2020.103997

Srinivasan, S., O'Fallon, L. R., & Dearry, A. (2003). Creating healthy communities, healthy homes, healthy people: Initiating a research agenda on the built environment and public health. *American Journal of Public Health*, *93*(9), 1446–1450. https://doi.org/10.2105/AJPH.93.9.1446

Stigsdotter, U. A. (2005). *Landscape Architecture and Health: Evidence-based health-promoting design and planning* [Unpublished doctoral dissertation]. Swedish University of Agricultural Sciences.

Stigsdotter, U. A., & Grahn, P. (2002). What makes a garden a healing garden? *Journal of Therapeutic Horticulture*, *13*, 60–69.

Stigsdotter, U. K., Palsdottir, A. M., Burls, A., Chermaz, A., Ferrini, F., & Grahn, P. (2011). Nature-based therapeutic interventions. In K. Nilsson, M. Sangster, C. Gallis, T. Hartig, S. D. Vries, K. Seeland, & J. Schipperijn (Eds.), *Forests, trees and human health* (pp. 309–342). Springer.

Sturm, R., & Cohen, D. A. (2004). Suburban sprawl and physical and mental health. *Public Health*, *118*(7), 488–496. https://doi.org/10.1016/j.puhe.2004.02.007

Taylor, A. F., Wiley, A., Kuo, F. E., & Sullivan, W. C. (1998). Growing up in the Inner City: Green spaces as places to grow. *Environment and Behavior*, *30*(1), 3–27. https://doi.org/10.1177/0013916598301001

Thompson, C. W. (2011). Linking landscape and health: The recurring theme. *Landscape and Urban Planning*, *99*(3–4), 187–195. https://doi.org/10.1016/j.landurbplan.2010.10.006

Van Hoof, J., Rutten, P. G., Struck, C., Huisman, E. R., & Kort, H. S. (2015). The integrated and evidence-based design of healthcare environments. *Architectural Engineering and Design Management*, *11*(4), 243–263. https://doi.org/10.1080/17452007.2014.892471

Ward Thompson, C., Aspinall, P., & Bell, S. (2010). Innovative approaches to researching landscape and health. In *Open Space: People Space II*.

Weyer, J. (2017). Lean, green and healthy: Landscape and health. *Architectural Design*, *87*(2), 32–41. https://doi.org/10.1002/ad.2150

Williams, A. (2009). Therapeutic landscapes as health promoting places. In T. Brown, S. McLafferty, & G. Moon (Eds.), *A Companion to Health and medical geography* (pp. 207–223). John Wiley & Sons.

World Health Organization. (2001). *The world health report 2001 - Mental Health: New Understanding, New Hope*.

World Health Organization. (2003). *Investing in mental health*.

World Health Organization. (2018) . *Mental health: Strengthening our response*. Geneva.

Yücel, G. F. (2013). Hospital outdoor landscape design. In M. Özyavuz (Ed.), *Advances in landscape architecture* (pp. 381–398). InTech.