Rehabilitating Healthcare: Healthcare landscapes a catalyst for health, well-being and social equity

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Abstract: With increasing prevalence of mental illness and domestic violence incidents, there is an ever-growing need for supplying supportive and rehabilitative social and health services. In its current state, the healthcare infrastructure, transitional services, and communities are isolated from one another, creating physical and mental barriers for rehabilitation. Therapeutic landscape research suggests outdoor spaces can facilitate rehabilitative healing, community support, and self-empowerment. This form of preventative and rehabilitative health may bridge the gap between treatment at the institutional level, and day-to-day living, to better support the well-being of vulnerable people. The under-utilised interface between the residential landscape and Kenepuru Community Hospital in Porirua, New Zealand, is used as a case study for testing how therapeutic landscapes may enable hospital infrastructure, residential housing and transitional landscapes to coexist with mutually beneficial relationships. Results suggest that suitable urban integration of these services through therapeutic landscapes will promote well-being for future inhabitants and for the wider community, thus mediating healthcare stigmas.

Keywords: Healthcare; Urban integration; Well-being; Vulnerable people.

1. INTRODUCTION

1.1 Development of Healthcare and People

The eighteenth and nineteenth century mental health facilities were domestic-scale, charitable institutions for acute and chronically ill city-dwellers. These facilities were typically on the fringes of cities in rural areas, with plenty of open spaces and gardens for convalescence and activity. However, during the late nineteenth century these private institutions became government-led to ensure quality control and ethical standards. With minimal funding followed by overcrowding, these facilities began prioritising built infrastructure over landscaping. Developed from modernist principles, these ‘machines for healing’, epitomise sterility and efficiency of scale, producing impersonal vastness. Often these public institutions are large, complex-like buildings removed from the urban context, breeding fear and stigma around healthcare itself (Yücel, 2013).

Today, according to Marcus and Sachs (2014), hospital and healthcare environments can be one of the most uncomfortable places for people to inhabit. Often devoid of vegetation, healthcare landscapes are ‘monolithic’ due to the mass of hard surfaces dominating existing natural systems (Pouya and Demirel, 2017). As such, these public spaces are often degenerative to ecological health, with poorly managed storm water and lack of biodiversity. 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. Yet, as demand for housing grows, residential areas are expanding around the once detached healthcare facilities, enabling a greater proximity between people and healthcare. This provides an opportunity for designers to rethink the relationship between people, nature and well-being, in the interstitial spaces between residential and healthcare facilities.

1.2 Need for Accessible Supportive Services

Mental health problems are now one of the leading causes of health loss and disability, affecting one in four people globally. However, this disproportionally affects compact suburbs and city dwellers (World Health Organisation, 2001; Shanahan et al., 2015). This decrease of well-being is evident in New Zealand with anxiety and depressive disorders being the leading cause of health loss for women as of 2013 (Ministry of Health, 2016). In addition, statistical surveys have identified that half of adults are not active enough (Sport New Zealand, 2014). 20% of New Zealanders want more contact with people outside of their family (Welch, 2013), and half do not feel their neighbourhood has a sense of community (Nielsen, 2013). In addition, cultural identity outcomes are generally declining in New Zealand (Ministry for Social Development, 2016). Without sufficient
preventative and rehabilitative services, these vulnerable people may experience long-term health implications, and the volume of suffers will continue to increase.

The largest healthcare barriers are reported to be physical and mental inaccessibility, cultural inappropriateness, and high demand (World Health Organisation, 2003; Te Pou, 2010b; 2010a). Western healthcare can be unholistic, focussed on physical illness, often not considering mental, social, spiritual and environmental health relationships (Yücel, 2013; Weyer, 2017). In consequence, they can be culturally inappropriate in New Zealand, with inaccessibility to health services more common among minority populations such as indigenous Māori, Pasifika population, and those living in the most deprived areas (Ministry of Health, 2014). There is a fundamental need for design research to consider the delivery of alternative health models, to challenge healthcare infrastructure to be culturally engaging, and to mitigate debilitating stigmas.

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”, with prevention strategies equally prioritised. According to WHO, “programmes targeted at vulnerable people including minorities, indigenous people, migrants and people affected by conflicts”, through community development programmes will be an imperative strategy for improving mental health outcomes (World Health Organisation, 2018). The ‘Ottawa Charter for Health Promotion’, an international agreement curated by the WHO, suggests this 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. Yet suitable design criteria has yet to be defined.

1.3 Potential for Outdoor Spaces

With increasing demands for mental health services, landscape architectural research has identified the importance of therapeutic outdoor spaces as a cost-effective prevention and rehabilitation strategy, due to the positive effects of nature on physical, mental and social wellness (Shanahan et al., 2015). In urban areas, there is a correlation between vegetated green spaces and the strength of community networks (Taylor et al., 1998). Furthermore, access to therapeutic outdoor spaces may promote physical activity and stress reduction for disability prevention, and for improving quality of life particularly in elderly and youth (Kershaw et al., 2017).

Yet, people affected by mental health problems struggle to access both healthcare, and public spaces. People most vulnerable are often those who struggle to remain integrated in productive society due to environmental instability, which significantly impairs their well-being. While vulnerability and transition can come in many forms, there are clear correlations between deteriorating mental health, and those suffering violations in human rights, ongoing stress or grief, and unhealthy lifestyles (World Health Organisation, 2003). As a diverse range of health determinants such as psychological, biological, socio-economic, and spiritual factors also affects mental well-being, busy public green spaces may be ill suited to support deteriorating societal mental health. Furthermore, specifically designed healing gardens in healthcare facilities are also off-limits due to referral requirements through healthcare providers causing issues with stigma, and lack of capacity. The design of peripheral or interstitial public spaces, bridging housing with existing healthcare, may enable more targeted place-based health promotion.

2. METHOD

This research draws from the therapeutic landscape literature and case studies, to develop design criteria for health promotion and a healing landscape adjacent to residential areas. The review of therapeutic landscape literature includes healthcare landscapes, restorative outdoor spaces, landscape design for vulnerable people, and traditional healing. Extracted design criteria were then compared against four areas of well-being: physical, mental, social, and spiritual. Built case studies, which employ mechanisms for healing, were critiqued against this design criteria, to determine the suitability of current landscape architectural approaches to the development of therapeutic outdoor spaces that support vulnerable people in the community.

3. FINDINGS

3.1 Mechanisms for Healing

Numerous studies in healthcare settings have identified the need and design criteria for restorative outdoor spaces (Irvine and Warber, 2002; Khachatourians, 2006; Marcus and Sachs, 2014; Marcus, 2016). Similarly, case-study evidence from numerous types of healthcare facilities demonstrate the importance of healing gardens in healthcare environments for the well-being of both patients and staff (Marcus and Sachs, 2014). Four aspects emerged from the analysis: Sensoriality, interactions, activity, and cultural appropriateness (Table 1). Sensoriality is a key theme as these people seek the stimulation and services that city-life offer, while also shying away from the hyper-intensity it can create, as the milieu is often heightened for people with mental sensitivity. For example, noise and light can be overwhelming, while predictability and legibility is essential for maintaining a sense of control in public space. Interaction relates to the ‘feel’ and ‘ambiance’ of a site,
which can determine the way people interact with public space, to be calming or not. This can correlate with rhythms of life, which sensitive people are attuned to. According to Söderström, 2017, high-paced places can be demanding, so vulnerable people often opt for routines and or occupy spaces with predictability and appropriately paced rhythms. While it is unrealistic for the design of landscapes to be prescriptive, semi-peripheral/transitional locations were frequently mentioned by participants as preferred environments for better health and well-being (Söderström, 2017). In addition, greater attention is needed to the connections between spaces for vulnerable people. These connections need to be more accessible and have less demanding social landscapes. As, while activity is essential for improving well-being, the intensity of this needs to be adjusted for varying degrees of mental and physical strength. Instead of being excessively demanding, they should attempt to stimulate curiosity and meaningful engagement.

Increasingly, the importance of culture in therapeutic landscapes has been identified (Gesler, 1991; Dyck, 2006; Andrzejewski et al., 2009). However, most of the work in this field places emphasis on western cultures. As described by Wilson,

“we must begin to explore other (non-physical) dimensions of therapeutic landscapes...those that do not solely exist ‘on the ground’ but are embedded within the belief and value systems of different cultural groups. The relationship between health and place has culturally specific dimensions but those tend to be overlooked, especially with respect to indigenous people” (Wilson, 2003).

As discussed by Hatton et al., 2017, in New Zealand’s indigenous Māori culture, sickness is viewed as a symptom of disharmony of nature. A traditional therapeutic landscape should therefore look to natural ecological systems as a means for delivering well-being (Harmsworth and Awaere, 2013). “The longstanding connection with the land through forests, wetlands, rivers, coastal areas and mountains provides the indigenous cultures a sense of identity, belonging and well-being” (Hatton et al., 2017, p. 2). Traditional therapists therefore make connections with the environment to empower and enable people with impaired spiritual well-being (Hopkirk and Wilson, 2014). For example, Māori therapy relies on the landscape for the preparation of herbal remedies, rongoā, therapeutic massages, haumiri, and spiritual massages, honohono (Tui Ora, 2017). Oratory healing is well-founded in tradition in cultures across the Pacific, with dominant landscape features as key characters. Other potential healing activities suggested are gardening, weaving, and umu (traditional cooking), as these instinctual cultural activities may make conversation easier, particularly in a group context (Te Pou, 2010b). Therefore, providing outdoor spaces in which people can engage with the health of their landscapes as well as their own is essential for improving the health and well-being of all.

<table>
<thead>
<tr>
<th>Key Theme</th>
<th>Article</th>
<th>Mental/ Emotional</th>
<th>Social</th>
<th>Physical</th>
<th>Spiritual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare Landscapes</td>
<td>(Marcus and Francis, 1998; Marcus and Barnes, 1999; Yücel, 2013; Marcus and Sachs, 2014; Butterfield and Martin, 2016; Marcus, 2016)</td>
<td>+Feeling of control</td>
<td>+Choices for socialness or solidarity</td>
<td>+Encourage exercise</td>
<td>+Native planting to reduce hardscape and domestic grass</td>
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<tr>
<td></td>
<td></td>
<td>+Positive distractions</td>
<td>+Sense of intimacy and containment</td>
<td>+Nature trails and education</td>
<td>+Sustainable water management strategies</td>
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<td></td>
<td></td>
<td>+Natural aesthetic</td>
<td></td>
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<tr>
<td>Restorative Outdoor Spaces</td>
<td>(Stigsdotter and Grahn, 2002; Stigsdotter and Grahn, 2003; Stigsdotter, 2005; Stigsdotter et al., 2011)</td>
<td>+Sensory experiences</td>
<td>+Varying spaces for different interactions</td>
<td>+Joyful and meaningful activity</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>+Seasonal changes</td>
<td></td>
<td>+Horticulture activity</td>
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<td></td>
<td></td>
<td>+Nature-based story and symbols</td>
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<td></td>
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<td>+Rich in species</td>
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<td>+Serene</td>
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<td></td>
<td></td>
<td>+Wild Nature</td>
<td></td>
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<tr>
<td>Vulnerable People</td>
<td>(Lygum, 2012; Lygum et al., 2013; Söderström, 2017)</td>
<td>+Opportunity to connect with nature</td>
<td>+Varying spaces for different interactions</td>
<td>+Space for play</td>
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<td></td>
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<td>+Ambivalence</td>
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<td></td>
<td></td>
<td>+Atmosphere</td>
<td></td>
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<tr>
<td>Traditional Healing</td>
<td>(Bignante, 2015; Hatton et al., 2017; McIntosh et al., 2018)</td>
<td></td>
<td></td>
<td>+Relationships with traditional healers and the environment</td>
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<td></td>
<td></td>
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<td>+Natural landscape</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>+Design with ecological systems</td>
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</table>
3.2 Mechanisms for Healing

Mechanisms for healing have been the main driver in restorative outdoor space design, through three main considerations: viewing, being-in and actively engaging with nature. Three relevant approaches summarised by Stigsdotter et al. (2011), respectively, are an ‘Evolutionary Approach’, an ‘Activity Approach’ and the ‘Mental Strength’ model.

The Evolutionary Approach as described by Kaplan and Kaplan (1989) identifies the draining effect of the complexity and unfamiliarity, common to 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, at an ‘extent’, which allows for emersion, ‘compatible’ for people and provides stimulation and ‘fascination’. These ideas are developed from the biophilia hypothesis that we have an inherent affiliation with living things, which effect the unconscious processes in the brain related to stress through the fight or flight response (Ulrich, 1993; 1999). 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.

The Activity Approach goes a step further, engaging with nature through horticulture therapy, which derives from the notion that people enjoy being active and exerting themselves for meaningful activity, and so can promote wellness through gardening (Rehfisch, 1999; Stigsdotter and Grahn, 2002; Corazon et al., 2010; Stigsdotter et al., 2011; Corazon et al., 2012; Sidenius et al., 2015). Productive landscapes can provide a feeling of security; they can challenge the body and can reward the mind. Fascination with nature and nurturing life can facilitate the desire to foster life outside of oneself. Furthermore, horticulture activity enables social interaction as having these experiences with other people makes us feel part of a community.

The Mental Strength model (Grahn, 1991) combines both passive and active interactions with nature and horticulture activity (Figure 1). It demonstrates how the person’s interactions with the physical and social environment 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 are able to engage with the surroundings through ongoing involvement. Therefore, when a person is more vulnerable they have a greater need for enclosed natural environments (Stigsdotter and Grahn, 2002; Stigsdotter and Grahn, 2003; Grahn et al., 2010).

In practice, three sites with their associated research, explored the application of these mechanisms for healing in outdoor environments [Alnarp Rehabilitation Garden (Grahn et al., 2007; Grahn et al., 2010; Ivansson, 2011), Nacadia’s Healing Garden (Corazon et al., 2010; Corazon et al., 2012; Sidenius et al., 2015), and Dannerhuset’s Crisis Garden (Lygum, 2012; Lygum et al., 2013)]. All three were developed in synergy with therapeutic programs to facilitate the healing of vulnerable people. Table 2 summarises the potential users and well-being considerations, while Figure 2 demonstrates spatial zoning which strongly correlates low mental strength and vegetated peripheral spaces.

<table>
<thead>
<tr>
<th>Garden</th>
<th>Location</th>
<th>Size</th>
<th>Designer</th>
<th>User</th>
<th>Built</th>
<th>Well-being considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alnarp Rehabilitation Garden</td>
<td>SLU Alnarp Campus,</td>
<td>2ha</td>
<td>Patrik Grahn; Sara Lundström; Ulrika A.</td>
<td>People with stress related disorders</td>
<td>2001</td>
<td>Mental / Physical / Social</td>
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<td></td>
<td>Sweden</td>
<td></td>
<td>Stigsdotter; and Frederik Tauchnitz</td>
<td></td>
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<tr>
<td>Nacadia’s Healing Garden</td>
<td>Hoersholm Arboretum,</td>
<td>1ha</td>
<td>Ulrika Stigsdotter</td>
<td>People with stress related disorders</td>
<td>2010</td>
<td>Mental / Physical / Social</td>
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<td></td>
<td>Copenhagen</td>
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<tr>
<td>Dannerhuset’s Crisis Garden</td>
<td>Danner, Copenhagen</td>
<td>0.1ha</td>
<td>Schönheit Landscape Architects</td>
<td>Women and Children Survivors of Domestic Violence</td>
<td>2012</td>
<td>Mental / Physical / Social</td>
</tr>
</tbody>
</table>

While the outcomes from these three private projects have proven their effectiveness, the application of the research cannot be immediately extended to the public arena. More work is needed to link this research with design for vulnerable people, using primary healthcare and accessing public spaces. In addition, while these frameworks have a focus on mental well-being with influences of social and physical strength, they fail to address cultural aspects of healing.

4. CONCLUSIONS

This research identified numerous evidence-based studies that outlined design criteria for healthcare landscapes for a diverse range of vulnerable groups including mental illness sufferers. Restorative outdoor spaces and associated healing mechanisms were found to be essential for supporting vulnerable people. 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 address the need for a gradient of social opportunities, gradually increasing capacity for social interaction by allowing for varying mental strength. It should acknowledge the mental and emotional aspects of well-being and provide mental restoration through sensory experience and a natural aesthetic. To accommodate physical well-being, it should provide meaningful horticulture activities, which engage with environmental restoration, healthy food production, and/or traditional medicinal and cultivation education. Finally, it should not overlook the importance of spiritual and cultural engagement, facilitating traditional healing through enabling relationships between healers and the natural environment in an ecological regenerative manner.

This research has identified a gap between the literature and practice. While researchers can define the criteria of therapeutic landscapes thorough the identification of user requirements, designers need to apply these criteria in locally appropriate applications. Design-led research combined with participatory practice can link the design criteria of therapeutic outdoor spaces with culturally appropriate mechanisms for healing. If appropriately implemented, a place-based holistic design approach could transform healthcare from a model of reactive treatment to one of preventative health.

ACKNOWLEDGEMENTS

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