

PERSPECTIVES OF SENSORY GOALS IN THERAPEUTIC LANDSCAPE: A REVIEW

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Received: 06 June 2024

Accepted: 04 July 2024

Published: 31 August 2024

ABSTRACT

Sensory elements play a crucial role in therapeutic landscapes, which influence individual health status in potentially positive or negative ways. The aim of this article is to explore the notion of this sensory element in therapeutic landscape that has been studied in the existing literature from 2000 to 2023 through SCOPUS database. Review of literature consisted four (4) phases which were identification, screening, eligibility, and inclusion. Then, the synthesis focused specifically on perspectives of sensory goals formed that are related to various aspects of human health and well-being. The perspectives of related literature were collected and discussed. In summary, sensory goals are divided into four (4) aspects of well-being. Accordingly, physiological health was observed as the most important thing to achieve during sensory experience in therapeutic landscape. Followed by psychological health, social interaction, and finally socio-ecological relationships. Through this process, it is clear that creating an environment should consider and cater to the users' specific sensory goals for different targeted populations based on their unique profiles and therapeutic needs in order to optimize the outcome possibilities.

Keywords: *Sensory, Therapeutic landscape, Well-being*



INTRODUCTION

In 1992, a health geographer, Wilbert Gesler was the first to formulate the term ‘therapeutic landscape’, to explore and describe the ways how people have traditionally sought salutary healing powers in certain locations. It is when an atmosphere which the physical and built environments, social conditions and human perceptions are integrated a beneficial to healing process will then be fabricated (Gesler, 1992). The concept of therapeutic landscape has been adapted throughout the years to include a much broader concept of both the therapy provided, and the landscape within which the therapy takes place. As such, it is the way of analysing both ‘health’ and ‘places’ in which certain places may influence an individual’s health status either in a positive or negative manners.

Sensory elements play a crucial role for personal’s multi-dimensional experience in therapeutic landscape. For example, soundscapes influence people's preferences and perceptions of environmental sound (Lee et al., 2022). On the other hand, according to Gorman (2017), smellscapes become essential in satisfying anticipations, imaginations, and expectations of a therapeutic interaction with the place. These immersive nature experiences are profound, contributing to variety aspects of well-being and fostering a deeper connection to the environment. Exposure to nature or calming scents could affect the individual's mental health, leading to stress reduction and mood improvement (Franco et al., 2017).

As human actively explore the environment, sensory elements became one of the key factors in designing a garden to encourage users to experience all the senses (Wajchman-Switalska et al., 2021). The eyes, nose, tongue, ears, and skin develop the five basic senses; sight, smell, taste, hearing, and touch. There are also hidden senses relatively to the body motion. According to Cullen and Zobeiri (2021), proprioceptors provide feedback about body and limb position (sense of body awareness), while the vestibular system detects and encodes head motion (control of posture and balance). Different cues and perception range features by each of the senses in the environment where nature and human mind harmoniously interact. Thus, therapeutic landscape should be intentionally crafted incorporating a variety of sensory elements such as colours, textures, sounds, and aromas. All of these elements must be selected to create a complete and immersive sensory

experience (Albuquerque, 2023).

As mentioned by Gorman (2017), the role of embodied and sensorial experiences in the development of therapeutic landscapes is an area still new for additional works. As a result, there is still room for further exploration of exactly how the sensory elements and human interaction with the natural environments contribute to experiencing a place as therapeutic. To expand on this emerging discussion, this paper presented the synthesis of 14 studies from SCOPUS database in this article, from year 2000 to 2023. The aims is on the notion of sensory element in the therapeutic landscapes. It focused on the perspectives of sensory goals related in various aspects of human health and well-being. The intention is to establish standardized goals across different settings and populations.

METHODOLOGY

There are many powerful tools for academic research offering extensive databases, citation analysis, and research metrics. This also depends on the research needs, institutional subscriptions, and personal preferences of the area of study. SCOPUS database is the primary tool used in this review article for its comprehensive and known for broad interdisciplinary coverage including science, technology, medicine, social sciences, and art and humanities.

For this article, the search strategy was adapted from The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009). The PRISMA flow diagram is typically used to illustrate the systematic process of identifying and selecting relevant sources in systematic reviews or meta-analyses. It consists of a four-phase flow diagram describes the identification, screening, eligibility and inclusion of literature that fall under the scope of study:

- 1) With the search terms of “therapeutic landscape” and “sensory” through the SCOPUS database, 64 sources were identified.
- 2) During the screening process, a total number of 47 sources were excluded;
 - 34 sources were eliminated of using the search terms solely within unrelated medical/pharmaceutical treatments,
 - 6 sources were excluded on beyond the year range of 2000 to 2023,

- 5 sources were excluded on unrelated articles' type which are book, book chapter and conference review, and
 - 2 sources were excluded which were on full-text not obtainable and non-English language source.
- 3)For the eligibility process, 13 sources of full-text articles were assessed and 4 sources were excluded on unrelated discussion of the scoping review purposes.
- 4)In the inclusion phase, 1 article is identified by new search alert and giving a total of 14 sources as the final list of selected articles to synthesize.

The process of relevant sources selection is presented in the PRISMA flow diagram (see Figure 1).

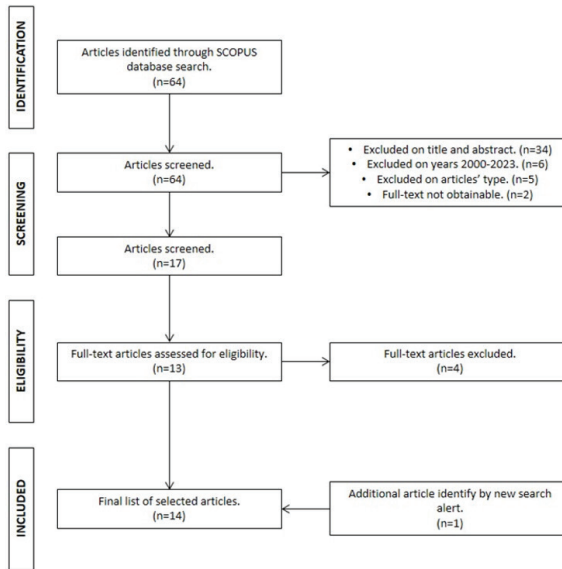


Figure 1. PRISMA Flow Diagram

Source: Author

To aid in the critical analysis, descriptive information of the relevant selected sources, including the year and country of publication, article type, study aim or approach and prominent senses mentioned were extracted and summarized in Table 1.

Table 1. Overview list of Selected Studies

No.	References (1st Author, Year of Publication, Country of Publication)	Article Type	Aim / Approach	Senses Mentioned
1.	Bell et al., 2023, United Kingdom	Review	This paper charts how the senses have been attended across the therapeutic landscapes' literature published since 2007 (the publication date of the previous edited volume on Therapeutic Landscapes).	"sight" or "visual", "sound" or "sonic", "smell" or "olfactory", "tactile" or "haptic", "taste" or "gustatory".
2.	Elbasyoni et al., 2023, Egypt	Article	Aims to study the relationship between the design qualities of landscape elements in dementia gardens and the therapeutic goals of dementia.	"seeing", "hearing", "touch", "taste", "smell", "proprioception", "vestibular".
3.	Doughty et al., 2023, Netherlands	Article	Explore the role of everyday interactions with nature for the maintenance of wellbeing, during the first and second 'wave' of infections in the Netherlands.	"sounds", "colours", "scents", "textures".
4.	He et al., 2022, Canada	Article	Investigates the management strategies, design principles, and methods related to therapeutic plant landscapes in UFP's through the lens of the five senses.	"sight", "smell", "taste", "hearing", "touch".
5.	Wajchman-Switalska et al., 2021, Poland	Article	To show that designing sensory gardens as one of the many elements of forest recreational development is a form of diversifying the infrastructure that can enrich urban forests, including the aspect of the enjoyment of all citizens (those with disability and those without any).	"sight" or "color", "sound" or "hearing", "smell", "touch", "taste".
6.	Marsh et al., 2021, Australia	Article	To explore the non-material aspects of the garden refuge as they were experienced and articulated by gardeners during COVID-19, and to theorize the potential significance of therapeutic garden landscapes for a post pandemic future.	Feeling of sensations.
7.	Kopera et al., 2020, Russia	Conference paper	Establishing the techniques of creating a sensory garden in a visual-impaired children's school area based on universal (inclusive) design concepts.	"hearing" or "auditory", "touch" or "tactile", "smell".

8.	Biglin, 2020, United Kingdom	Article	Theorizing on how spaces act therapeutically by using the lens of sensory and embodied ethnography to explore refugee place-making within an urban allotment located in the North West, UK.	"smells", "textures", "tastes".
9.	Bates, 2019, United Kingdom	Article	Explores the role of senses in the construction and experience of place, focusing on patients' experiences of hospital care.	"sound" or "noise", "touch", "movement", "taste", "visual", "smells".
10.	Gorman, 2017, United Kingdom	Article	It highlights how embodied relationships with specific scents can constitute a therapeutic encounter with place, actively influencing practices and engagement with(in) place, and the ways by which place can have a meaningful effect on health.	"aromas" or "scents" or "smells".
11.	Macpherson, 2017, United Kingdom	Article	To explore the experiences of members of specialist blind and visually impaired walking groups who visit the areas of the Peak District and lake District, notable rural locations in Britain.	"sight", "smell", "sound", "feel".
12.	Balode, 2013, Latvia	Article	To define the main development lines of health sites in Latvia, trying to answer such questions as: How we can start developing sensory gardens and what is needed for their development in the future?	"vision", "touch", "smell", "taste", "hearing".
13.	Hale et al., 2011, USA	Article	Explores gardeners' tactile, emotional, and value-driven responses to the gardening experience and how these responses influence health at various ecological levels.	"taste", "smell", "touch" or "tactile", "sight".
14.	Goodwin et al., 2005, Canada	Review	To capture the meaning of segregated summer camp experiences to youths with disabilities.	Feeling of sensations.

Source: Author

The human body relies on several prominent senses to perceive and interact with the environment. From Table 1, the prominent senses involved in therapeutic landscape study are sight (vision), hearing (auditory), smell (olfactory), taste (gustatory), touch (tactile), vestibular (posture and balance) and proprioception (body awareness). There are also two (2) selected studies which discussed the feeling of sensations in therapeutic landscape. These are relevant to be included in this review. Discussing these senses provided a comprehensive understanding of how humans engage and interpret their surroundings. For the purpose of this article, the researcher summarized the perspectives of sensory goals in therapeutic landscape. The following discussion will be structured based on the themes that were identified.

RESULTS AND DISCUSSIONS

The sources demonstrated variety of goals for integrating sensory elements into therapeutic landscapes across different settings and targeted populations. By addressing these goals, it can inform the development and implementation of evidence-based practices to improve health and well-being outcomes.

For the term of "well-being", it is common and typically incorporated from many aspects of indicators. According to Baryshev and Irina (2016), "common well-being" is a state of human physical, mental and social satisfaction in particular conditions of human activity or a sphere. It is a combination of the human internal state and the external environment. In order to respond the environmental stimuli, the term of sensory processing has been referred to as the ability to analyse, modulate, and organize sensory incoming information (Humphry, 2002). Despite the fact that humans are neuro-biologically inclined to environmental survival, each individual have reacted differently to the environment, as some people appear to have more sensitive brains (Engel-Yeger et al., 2016).

Thus, this article intended to discuss the perspectives of sensory goals encounter in therapeutic landscape studies to understand the way humans cope with their environmental information. With the intention of maintaining health or recovering to a wellness state, human tends to adapt to changes in its internal and external settings (Ayres, 2020). Access to clean air, water,

nutritious food, and a safe environment could contribute to overall well-being. A conducive environment supports and accelerates the body’s natural healing mechanisms, facilitating a smoother recovery process.

For this article, all the sources have different aims and approaches in supporting their focused on populations’ treatment process (Table 1). The sensory goals are divided into four (4) aspects of well-being: physiological health, psychological health, sociability interaction and socio-ecological relationship. The most and least discussed parts were obvious (Table 2).

Table 2: Sensory Goals in Therapeutic Landscapes

No.	Sensory Goals	Properties	Author(s)
1.	Physiological health.	Physical well-being health.	Bell et al. (2023), Elbasyoni & Gammaz (2023), Doughty et al. (2023), He at al. (2022), Wajchman-Switalska et al. (2021), Marsh et al. (2021), Biglin (2020), Bates (2019), Gorman (2017), Macpherson (2017), Balode (2013), Hale et al. (2011), Goodwin & Staples (2005)
		Recovery & restorative qualities.	Biglin (2020), Bates (2019), Balode (2013), Goodwin & Staples (2005)
		Behavioral management.	Elbasyoni & Gammaz (2023), Hale et al. (2011)
		Interactive & aesthetic pleasure.	Balode (2013), Goodwin & Staples (2005)
		Maximized accessibility.	Kopera et al. (2020)
2.	Psychological health.	Emotional feelings.	Elbasyoni & Gammaz (2023), Doughty et al. (2023), He at al. (2022), Wajchman-Switalska et al. (2021), Marsh et al. (2021), Kopera et al. (2020), Bates (2019), Gorman (2017), Balode (2013), Hale et al. (2011)
		Mental health.	Doughty et al. (2023), He at al. (2022), Wajchman-Switalska et al. (2021), Marsh et al. (2021), Macpherson (2017)
		Personal symbolic dimension.	Bell et al. (2023), Gregory (2022), Marsh et al. (2021), Bates (2019), Goodwin & Staples (2005)
		Peace & spiritual balance.	He at al. (2022), Balode (2013), Hale et al. (2011)

3.	Sociability interaction.	Social communication.	Bell et al. (2023), Elbasyoni & Gammaz (2023), Bates (2019), Gorman (2017), Macpherson (2017), Goodwin & Staples (2005)
		Sense of community.	He et al. (2022), Marsh et al. (2021)
4.	Socio-ecological relationship.	Ecological awareness.	Doughty et al. (2023), He et al. (2022), Kopera et al. (2020), Balode (2013)
		Sanitary & hygienic.	Kopera et al. (2020)

Physiological Health

Firstly, physiological health holds a crucial part in sensory goals in therapeutic landscape. It is related to the internal, functional processes and mechanisms of living organisms (Ayres, 2020). The factors related to physiological health are physical well-being health, recovery and restorative qualities, behavioural management, interactive and aesthetic pleasure, and maximized accessibility.

The physical aspect encompasses the tangible and observable attributes of the human body (Ayres, 2020). 13 out of 14 sources mentioned the physical well-being health as the most desired result to achieve during sensory experience in therapeutic landscape. It is one of the tripartite of sensory qualities experienced in therapeutic encounter (Bell, 2023; Bates, 2019; Goodwin & Staples, 2005). According to Elbasyoni and Gammaz (2023), physical health therapeutic goals mainly are based on supporting mobility, relaxation, safety and security, supporting abilities and promoting exercise. These goals were analysed and categorized accordingly for dementia patients. The research addresses the interrelationship between therapeutic goals of dementia and the design qualities of outdoor sensory spaces used by them. From the experiences, it affects their behaviour due to sensory challenges faced in their physical environment. Correspondingly, sensory experiences could be facilitated for positive impacts (Doughty, 2023; Macpherson, 2017) as it actively influences the ways in which places are meaningful for well-being. For example, engaging with the sense of “aromas”, “smell”, and “scents” can provide opportunities for a person to be fully engaged with the sensory richness of places (Gorman, 2017). The other benefits studied are from functional and natural landscapes (He, 2022), garden therapy or hortitherapy (Wajchman, 2021), garden space (Marsh,

2021), rehabilitation and healing gardens (Biglin, 2020; Balode, 2013), community garden landscape (Hale, 2011), and summer camp (Goodwin & Staples, 2005).

Through research, particular kinds of natural environments are recognized to be able to restore and improve physiological health. These qualities help to assist in improving the person's health and well-being with the help of interaction with natural environment (Balode, 2013; Goodwin & Staples, 2005). However, different potential qualities achieved in relation of the variety of user needs for an ideal environment. For instance, as for refugees, exploring and understanding the spaces of restoration and healing are important (Biglin, 2020), while in hospital patients' accounts hospital as a place primarily in relation to illness and recovery (Bates, 2019). It is observed that as one sensory capacity declines, others will heighten. Besides, the medical sensescape is diluted through the entrance of "sounds", "smells", air and other senses which are associated with the non-institutional world.

Apart from that, behavioural management therapeutic goals are based on improving mood, pleasant activities and support hobbies (Elbasyoni & Gammaz, 2023). It aims to modify and improve individual's behaviour, fostering positive changes in their daily functioning. Additionally, therapeutic qualities of the community garden landscape have a role in shaping behaviours (Hale, 2011). Providing a place that fosters positive aesthetic and sensory experiences of "taste", "smell", "touch", and "sight" will improve how a person's behaviour or action. These goals are often been employed in behavioural therapies like Cognitive-Behavioural Therapy (CBT) in which to empower individuals to manage challenges, improve their quality of life, and foster personal growth.

In creating health gardens and parks, it is important to take into account the qualities of aesthetic pleasure (Balode, 2013) and interactive (Goodwin & Staples, 2005) to interpret the qualities as therapeutic landscapes. It can serve as a source of inspiration, providing tranquil space for contemplation and creative thinking. According to Balode (2013), most gardens are designed to be aesthetically pleasing He further explained that sensory and therapeutic gardens are created to functionally reveal all five (5) of the human senses which are "vision", "touch", "smell", "taste" and "hearing". Thus, it is important to carefully consider the outdoor site's

design so that visitors are motivated to explore the garden until they reach the last plant and trail. In addition, the aesthetical and sensory enjoyment of the rehabilitation and therapeutic gardens help these people to return to social life. Besides, interactive elements in gardens and parks encourage community's participation and engagement. Spaces designed for interaction could foster a sense of community, bringing people together and promoting social connections.

Finally, the universal design techniques should be applied in sensory gardens to create a maximized accessibility for different users. It promotes inclusivity and equal participation for all individuals. In essence, applying these techniques promotes a more comprehensive and sustainable world, where everyone can participate freely and enjoy a higher quality of life. Sensory gardens also can assist visually-impaired individuals as they are instrumental in restoring visual perception through using retained analysers senses of "hearing", "touch", and "smell" for the visually-impaired individuals (Kopers, 2020).

Psychological Health

Next is psychological health. Psychological health is another crucial part to be gained while experiencing the sensory element. It is because these experiences have a direct and often immediate impact on emotions, stress levels, and overall mental well-being. A study in healthcare facilities Malaysia has proven that patients who spend time in the courtyard garden or therapeutic garden have shorter recovery period and decreasing level of stress and anxiety (Tyng & Abdul Samad, 2021). As a result, the health factors discussed include emotional feelings, mental health, personal symbolic dimension, and peace and spiritual balance.

In general, psychological and emotional therapeutic goals are based on managing stress, self-confidence, self-esteem, ownership, sense of belonging, and reminisces (Elbasyoni & Gammaz, 2023). Sensory and emotional experiences heightened feelings of connection with nature (Doughty, 2023; Wajchman, 2021; Marsh, 2021; Kopera, 2020; Bates, 2019; Balode, 2013; Hale, 2011). Specifically, He (2022) mentioned that plants provide people with direct sensory effects ("sight", "taste", "hearing", "smell" and "touch") to alleviate people's emotional and psychological

pressures. Apart from that, a perspective from Gorman (2017) discussed that smellscape drawing on the links between “smell” and “taste” in the emergence of places offer therapeutic potentials and emotional benefits for those who are involved.

Furthermore, sensory experiences in therapeutic landscapes facilitate positive impacts on well-being and mental health of people (Doughty, 2023; Marsh, 2021; Macpherson, 2017). The garden of “color”, “sound”, “smell”, “touch”, and “taste” are important elements in influencing the plants and other elements on certain senses (Wajchman, 2021). By integrating diverse sensory stimuli, such as sensory aspects of plants will improve the individual’s mental health and condition (He, 2022; Wajchman, 2021) to a more balanced and positive mental state. These experiences may help to reduce stress, improve mood, and enhance overall well-being through a sense of calm and mindfulness.

Symbolic dimension is one of the tripartite of sensory qualities experienced in therapeutic encounter (Bell, 2023; Bates, 2019; Goodwin & Staples, 2005). It involves the subjective and unique significance that certain spaces hold for a person based on their personal experiences, beliefs and emotions. The space functions as a therapeutic environment for certain individuals. For example, a garden space was experienced as symbolic form of Covid-19 refuge (Marsh, 2021). On the other hand, the summer camp experiences provided a personal space for youth with disabilities from which to learn more about their own capabilities, capabilities of others, and their physical potential (Goodwin & Staples, 2005). In addition, refuge notes on the “physical sensations” from gardening activity will allow for therapeutic mental escape. Feeling of sensations experienced by the youth at the summer camp contributed in the development of independence during and after the camp experiences.

Finally, it is necessary for the design and implementation of therapeutic landscapes to combine science and art based on five senses theory in order to find peace and spiritual balance, which can optimize people’s experiences (He, 2022; Balode, 2013; Hale, 2011). For instance, through the garden's regular cycles, gardens serve as spiritual and therapeutic spaces that aid in emotional processing, provide gardeners a sense of purpose, and promote stability (Hale et al., 2011). This will promote tactile experiences. The

“tactile” experiences of gardening can be related to the emotional state and mental health of participants. They also mentioned that the gardeners’ experiences in gardens provide metaphor for other values in their lives, such as insights about cycles that are part of the human condition (health/illness, birth/death).

Sociability Interaction

Thirdly, sociability interaction between users. The factors discussed were social communication and sense of community.

Social is another one of the tripartite of sensory qualities experienced in therapeutic encounter (Bell, 2023; Bates, 2019; Goodwin & Staples, 2005). This context plays a crucial role in shaping and influencing individual sensory perceptions. The realm of senses could identify and explore the sociability benefits (Gorman, 2017; Macpherson, 2017). Engaging in sensory-rich activities, such as group outings, shared meals, or collaborative artistic endeavours, can enhance social bonds. Social support, participation and support activities, are communication and interaction therapeutic goals (Elbasyoni, 2023) that foster a sense of connection and shared pleasure.

Besides, direct sensory involving “sight”, “taste”, “hearing”, “smell”, and “touch” will improve overall sensory experiences, and life qualities that strike a balance between the natural and urban environment, as well as create a sense of community (He, 2022; Marsh, 2021). In addition, participating in communal sensory activities, like celebrations, rituals, or cultural events, creates a shared narrative and emotional bond among individuals. Thus, it contributes to the formation and strengthening of social ties, ultimately building a cohesive and interconnected community.

Socio-Ecological Relationship

Lastly is the socio-ecological relationship. In the context of sensory experience, it involves the dynamic interplay between social and environmental factors that influence how individuals perceive and engage with sensory stimuli. For instance, soundscape aids in reducing noise pollution that includes the perception and preference of people on environmental sound (Lee, 2022). Thus, from the selected literature, factors

contributed in socio-ecological relationship were ecological awareness and, sanitary and hygienic.

Feelings of interaction with nature were heightened during sensory experiences, turned awareness on the importance and pre-carity of our socio-ecological relationships (Doughty, 2023; Balode, 2013). It modifies the way people interact with their surroundings, share sensory moments, and collectively shape their sensory preferences. Hence, the design of therapeutic landscapes should emphasize ecological functions and requirements of the “visual”, “auditory”, “tactile”, “olfactory”, and “gustatory” aspects (He, 2022; Kopera, 2020). This perspective in considering the complex interdependence between social and ecological aspects of sensory engagement is valuable.

According to Kopera (2020), sensory gardens should be sanitary and hygienic to ensure the well-being and health of individuals who visit the garden, particularly those with compromised immune systems or sensitivities to allergens. For instance, the blind and visually-impaired people depend highly on “tactile” and/or “auditory” perception as a way to transform visual images. This shows it is vital to include the needs of these group of people. Furthermore, a clean and sanitary environment contributes to the overall enjoyment of the sensory experience. For example, unpleasant odours or the presence of pests can detract from the positive aspects of the garden, diminishing the therapeutic or relaxing effects it aims to provide.

CONCLUSION

This article contributes to an overview of existing knowledge from year 2000 until 2023 obtained in SCOPUS database and has provided valuable insights into the relationship between therapeutic landscape and its sensory elements. The researchers explored the perspectives of sensory goals into the four (4) aspects of well-being: physiological health, psychological health, sociability interaction, and socio-ecological relationship. These goals have been applied and the applications are relevant and useful towards the earlier therapeutic landscape concept of Gesler’s foundational work. The concept includes dynamic and subjective nature experiences that can change over time due to environmental, social and economic factors.

Identifying the sensory goals in an outdoor environment can benefit people. This can be achieved by leveraging natural stimuli to enhance therapeutic outcomes. Besides, engaging with nature can provide sensory experiences like feeling the warmth of sunlight, hearing the rustle of leaves, or smelling fresh air, which can promote relaxation, reduce stress, improve mood and increase sensory integration (Bentley et al., 2023). Thus, tailoring outdoor activities to specific sensory goals can optimize therapy sessions and facilitate holistic healing experiences to variety of target users.

While this review article cherished the perspectives of sensory goals in therapeutic landscape, there are limitations to be considered. This review article was primarily based on SCOPUS database. Secondly, the goals obtained highlighted individual's preferences and perceptions of nature, which can be difficult to measure and quantify. Therefore, future research should aim to address these limitations by seeking broader insights in variety of existing research databases and develop more robust qualitative or mixed-method approaches to capture a better understanding on the subjective experiences. The researchers believe the concept of therapeutic landscape is an emerging conversation nowadays that could be expanded into different perspectives associated with other health domains. This can create a more holistic understanding and fulfil the needs of the targeted population.

ACKNOWLEDGEMENT

This review paper was undertaken as part of the researcher's Master of Science (Architecture) at Universiti Sains Malaysia (USM). Thank you to Dr. Nor Fadzila Aziz for her supervision and guidance in exploring the sensory and concept of therapeutic landscape. Also, special appreciation to the reviewers for their constructive comments on the earlier version of this manuscript.

FUNDING

This study was funded by a research grant from the Ministry of Higher Education Malaysia for Fundamental Research Grant Scheme with Project Code: FRGS/1/2020/SSI0/USM/02/8.

AUTHOR CONTRIBUTIONS

Both authors have contributed for the paper. Both authors have read and approved the final manuscript.

CONFLICT OF INTEREST

The authors declared there is no conflict of interest.

REFERENCES

- Albuquerque, Ciro F. H. (2023). *Neuroarchitecture and Lansdcaping: Healing Spaces and the Potential of Sensory Gardens*. ArchDaily. Retrieved on November 20, 2023, from <https://www.archdaily.com/1007972> .
- Ayres, J. S. (2020). The Biology of Physiological Health. *Cell*, 181(2), 250-269.
- Balode, L. (2013). The Design Guidelines of Therapeutic Sensory Gardens. *Research for Rural Development*, 2, 114-119.
- Baryshev, A. A. & Irina, K. (2016). Socio-Economic, Psychological and Ecological Aspects of Lifelong Well-Being. *SHS Web of Conferences*, 28, 01118.
- Bates, V. (2019). Sensing Space and Making Place: The Hospital and Therapeutic Landscapes in Two Cancer Narratives. *Medical Humanities*, 45(1), 10-20.
- Bell, S. L., Hickman, C. & Houghton, F. (2023). From Therapeutic Landscape to Therapeutic ‘Sensescape’ Experiences with Nature? A Scoping Review. *Wellbeing, Space and Society*, 4, 100126.
- Bentley, P. R., Fisher, J. C., Dallimer, M., Fish, R. D., Austen, G. E., Irvine, K. N. & Davies, Z. G. (2023). Nature, Smells, and Human Wellbeing. *Ambio*, 52(1), pp. 1–14.

- Biglin, J. (2020). Embodied and Sensory Experiences of Therapeutic Space: Refugee Place-Making within an Urban Allotment. *Health and Place*, 62, 102309.
- Cullen, K. E. & Zobeiri, O. A. (2021). Proprioception and the Predictive Sensing of Active Self-Motion. *Current Opinion in Physiology*, 20, 29-38.
- Doughty, K., Hu, H. & Smit, J. (2023). Therapeutic Landscapes During the COVID-19 Pandemic: Increased and Intensified Interactions with Nature. *Social and Cultural Geography*, 24(3-4), 661-679.
- Elbasyoni, M. E. M. & Gammaz, S. A. (2023). A Qualitative Therapeutic Design Approach for Sensory Design for People with Dementia. *Civil Engineering and Architecture*, 11(4), 2110-2122.
- Engel-Yeger, B., Muzio, C., Rinosi, G., Solano, P., Geoffroy, P. A., Pompili, M., Amore, M. & Serafini, G. (2016). Extreme Sensory Processing Patterns and Their Relation with Clinical Conditions among Individuals with Major Affective Disorders. *Psychiatry Research*, 236, 112-118.
- Franco, L. S., Shanahan, D. F. & Fuller, R. A. (2017). A Review of the Benefits of Nature Experiences: More Than Meets the Eye. *International Journal of Environmental Research and Public Health*, 14(8), 864.
- Gesler, W. (1992). Therapeutic Landscapes: Medical Issues in the Light of the New Cultural Geography. *Social Science & Medicine*, 34(7), 735-746.
- Goodwin, D. L. & Staples, K. (2005). The Meaning of Summer Camp Experiences to Youth with Disabilities. *Adapted Physical Activity Quarterly*, 22(2), 160-178.
- Gorman, R. (2017). Smelling Therapeutic Landscapes: Embodied Encounters within Spaces of Care Farming. *Health and Place*, 47, 22-28.
- Hale, J., Knapp, C., Bardwell, L., Buchenau, M., Marshall, J., Sancar, F. & Litt, J. S. (2011). Connecting Food Environments and Health through the Relational Nature of Aesthetics: Gaining Insight through the Community Gardening Experience. *Social Science and Medicine*, 72(11), 1853-1863.

- He, M., Wang, Y., Wang, W. J. & Xie, Z. (2022). Therapeutic Plant Landscape Design of Urban Forest Parks Based on the Five Senses Theory: A Case Study of Stanley Park in Canada. *International Journal of Geoheritage and Parks*, 10(1), 97-112.
- Humphry, R. (2002). Young Children's Occupations: Explicating the Dynamics of Developmental Processes. *American Journal of Occupational Therapy*, 56(2), 171-179.
- Kopera, A., Khrapko, O. & Ivanova, O. (2020). Landscape Organization of a Sensory Garden for Children with Disabilities. *IOP Conference Series: 2020 Materials Science and Engineering*, 753(2), 022028.
- Lee, J. S. L., Hosni, N., Rusli, N. & Abdul Ghani, N. (2022). A Review on the Soundscape Indicators of Parks. *Malaysian Journal of Sustainable Environment*, Special Issue, 61-85.
- Macpherson, H. (2017). Walkers with Visual-Impairments in the British Countryside: Picturesque Legacies, Collective Enjoyments and Well-being Benefits. *Journal of Rural Studies*, 51, 251-258.
- Marsh, P., Diekmann, L. O., Egerer, M., Lin, B., Ossola, A. & Kingsley, J. (2021). Where Birds Felt Louder: The Garden as a Refuge During COVID-19. Wellbeing, *Space and Society*, 2, 100055.
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G. & PRISMA Group. (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med.* 6(7): e1000097. Retrieved on November 22, 2023, from <https://doi.org/10.1371/journal.pmed.1000097>.
- Tyng, W. C. & Abdul Samad, M. H. (2021). Integration of Landscapes in Healthcare Facilities to Heal Users' Body-Mind Health. *Malaysian Journal of Sustainable Environment*, 9 (1), 267-284.
- Wajchman-Switalska, S., Zajadacs, A. & Lubarska, A. (2021). Recreation and Therapy in Urban Forests – The Potential Use of Sensory Garden Solutions. *Forests*, 12(10), 1402.