A NEW READING OF Therapeutic Environments: Biophilic Elements IN Maggie’s Centres

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Abstract

This paper discusses a meta-synthesis conducted to identify, compare and synthesize the published qualitative literature on a paradigmatic example of non-institutional cancer support centres, Maggie’s centres. These centres are well known for their uniquely designed buildings and curated spaces, where architecture and gardens have been at the heart of the centres’ philosophy since their inception, with the aim to provide a clear agenda that supports bespoke healing environments. Previous research has thoroughly analysed this unique approach to therapeutic environments, not only confirming the importance of designed space as originally conceived by Maggie’s but also identifying precise values associated with specific elements within their design. The compilation and examination of all these data through the lens of biophilia contributes to our understanding of the role of nature in cancer patients’ lives. The comprehensive representation of cancer patients’ nature experiences, permitted the identification of critical values and design opportunities, crucial to guide future research and therapeutic environment development.

Keywords

Biophilic design, Therapeutic environment, Maggie’s centres

Introduction

The World Health Organization (WHO) defines health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” [1]. The concept of therapeutic environments implies that the atmosphere of healthcare facilities can affect the patient's recovery period or adaptation to particular acute and chronic conditions [2]. Healing environments are not only places where patients are treated with the most advanced medicine and technology, these should also be places that support their users (staff and patients and their families), in psychological, emotional and social terms [3].

The importance of these environments was widely accepted after Florence Nightingale, a trained nurse, asserted her observations during the Crimean War in the mid-19th century. Nightingale’s principles outlining the design of wards included considerations in relation to the natural elements, quantity of windows and daylight quality, bed placement and space layout, atmosphere and spatial quality, comfort related to heating and ventilation systems and materials and colour [4].

Nightingale’s principles were followed in the late 19th and early 20th centuries, however, with the advent of the germ theory, the environmental approach to health became exclusively focused on healing with medical interventions and surgery [5]. Today’s “mega hospitals” [4]or “mall hospitals” [6] have centred their efforts on achieveing efficiency and satisfactory hygiene standards and controlling the emergence and spread of infections, disregarding other considerations, such as the inclusion of nature in the built environment, which was historically present in the typology [5], [7]. Charles Jencks, architect and co-founder of Maggie’s Centres, described this type of health facility as a factory-hospital, where the relevant medical and technical resources are dedicated to mass health, and expressed the need for non-clinical, human-centred therapeutic centres [8]. The success of these centres together with recent research on the field, have brought to the forefront the need to include other parameters in our design briefs, where the role of nature, and with it the application of biophilic design, seems paramount.

The emergence of biophilic design as a discipline refers to the innate human connection to nature and natural processes to promote health and well-being in the spaces we inhabit [9]–[11]. The principles that define biophilic design can be examined from three different perspectives: as established in building regulations and standards, as used in design practice and as investigated in research practice. When examining each of these areas, we can find several issues and disconnections. In practice and regulatory frameworks, we can observe the use of an unbounded design framework that is not underpinned by scientific facts, do not prioritise principles or parameters, and even considers as a design intervention the use of disparate evocations of nature that do not hold a meaningful sustained connection. In scientific academic environments, there is abundant research on many of the different aspects of biophilic design, but all of this in-depth research providing scientific facts about the importance of nature on humans has happened separately or for a specific design parameter, and not in a holistic way. Thus, the ultimate goal of this research study is the redefinition of a holistic and scientifically underpinned biophilic design framework, with a focus on therapeutic environments. This research also aims to hierarchise the parameters included in the new framework in a way that can more efficiently guide designers, revealing which are the most critical for promoting and supporting human health and wellbeing in therapeutic environments.

The work presented in this paper was developed within this general framework, and will specifically discuss the role of biophilic design in therapeutic environments in the case of Maggie’s centres, as paradigmatic examples of non-institutional therapeutic centres for those who are affected by cancer. In particular, it will focus on the role of biophilia to satisfactorily affect two of the most prominent characteristics of these centres, as ‘welcoming’ and ‘relaxing’ environments.

These centres are well known for their uniquely designed buildings and curated spaces. Architecture and gardens have been at the heart of the centres’ philosophy since their inception, with the aim to provide bespoke healing environments. This original belief led to the creation of a distinctive architectural brief [12], and the careful consideration of designers, to develop an extensive national and international network of centres. Previous research has thoroughly analysed this unique approach to therapeutic environments, not only confirming the importance of designed space as originally conceived by Maggie’s, but also identifying precise values associated with specific elements within their design [12]–[18].

Methodology

This research aimed to investigate Maggie’s centres architecture from the users’ and the designers’ perspectives, assessing their experiences of the building and their design intentions. There is previous research on these centres which included ethnographic studies (interviews, focus groups, observations, questionnaires) but had been done from different standpoints. Thus, a great amount of qualitative data was lying in all these publications which had not been analysed through a biophilic lens. Particularly, direct quotation speeches of users and architects, obtained via interviews and focus groups, may be considered as primary data as they have not been processed by other researchers. Although this methodology examined all the architectural and biophilic design parameters, this paper mainly focuses on the welcoming and relaxing effect of Maggie’s centre architecture on patients and their families.

The meta-synthesis methodology followed a systematic search strategy, an analytical data extraction and classification, and an interpretive result analysis. Initially, scoping searches were conducted in December 2020 to provide an overview of relevant literature and insight into the framed draft of databases. The review protocol was designed in the light of the scoping searches (Table 1).

Table 1: Searching protocol.

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|  | **Inclusion Criteria** | **Exclusion Criteria** |
| **Population** | The patients, staff, visitors who used these therapeutic spaces on a regular basis, and designers of any Maggie’s centres | Others |
| **Nature of the****Intervention** | Maggie’s Centres | Others |
| **Comparators** | Architectural and biophilic design parameters | Others |
| **Outcomes** | Direct quotations for Maggie’s architecture | Studies that examine only one or inadequate number of patterns. |
| **Cultural / Linguistic** | English | Non-English |
| **Time Period** | 1996 to current | Pre-1996 |
| **Study Design** | QualitativeAny primary comparative study | Reviews |
| **Types of Documents** | Academic journals, conference material, theses, and architectural magazines and books | Architectural news |
| **Databases** | Scopus, Web of Science, JSTOR, ProQuest, ScienceDirect and Ebscohost |
| **Searching Syntax** | "Maggie's centre" AND (architecture OR building OR design OR environment). |

The main search was conducted on 14th December 2020 on six databases decided. The language was limited only to English, and the searching period goes from 1996 (when the first Maggie’s Centre was opened in Edinburgh) to the searching date (14th December 2020). A total of 97 publications were exported to Rayyan QCRI, a systematic review software, developed by Qatar Computing Research Institute, that helps accelerate the initial screening of abstracts and titles using a semi-automatised process [19].

After removing 10 duplicates via this software, an initial screening was done by reading abstracts and checking full-texts in some particular cases. Thus, 18 studies were employed for the full-text reading stage, while 69 papers were excluded, meanwhile, five more publications were included externally for full-text reading in this stage. During the full-text reading of 23 publications, 13 documents were included: one PhD thesis, one conference poster, three conference proceedings, one book chapter, three architectural magazine papers and four academic journal papers (Figure 1). These 13 resulting documents were imported to Nvivo 12 software for qualitative analysis.

All 13 documents were analysed in the NVIVO 12 software by creating codes. Codes were created regarding the content of the data by considering biophilic design elements that were framed by previous researchers [9], [20], [21] and their outcomes on human health and wellbeing. However, this paper mainly focused on the welcoming and relaxing impact of biophilic design elements of centres, which is the most important characteristic outcome of nature-based design approaches of Maggie’s architecture.



Figure 1. Identification of included articles in the review

ANALYSIS

In order to guide the commissioned architects to design the centres, Maggie’s published the Architectural Brief [12], a document that describes emotional and design requirements based on cancer patients’ needs. Apart from the technical space requirements, the brief strongly emphasises that the centres should have a welcoming homely atmosphere where the users can benefit from natural elements. On the other hand, the architects aimed to create a homely welcoming and relaxing atmosphere based on their own research, since the main issues of people with cancer experience are related to stress, depression, and anxiety [18]. Thus, this analysis mainly focused on how the welcoming and relaxing feelings of biophilic design elements helped to deal with stress, depression and anxiety while users taking part in random activities in Maggie’s centres, such as classes (healthy lifestyle, nutrition, yoga, etc.), one by one therapy delivery, or socialising.

Table 2: References to the Welcoming-Relaxing spaces, and interrelation with the other codes referred together.

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First of all, the analysis showed that there was a very strong connection between the personal past of the users and their welcoming and relaxing perceptions of the space (Table 2). The interviewees expressed very frequently that they felt like ‘coming home’, therefore they had a feeling of being welcome and safe when they entered the centres [17], [18], [22]–[24]. One of the reasons why they associate the Maggie’s centres as a homey environment was their actual personal and cultural perception of what home means to them and their families. Therefore, there was a strong connection between the sense of belonging, a biophilic design attribute, and the feeling of welcome and relaxation.

In terms of architectural planning, the most mentioned welcoming characteristic was the entrance of the buildings. People found Maggie’s centres as non-clinical and quite welcoming since there was no reception desk, they just felt relaxed to enter the buildings without hesitation or feeling intimidated. The reassuring small entrances were considered as relaxation places that helped people to prepare themselves before entering the centre, and it slowed people down with a homely feeling [13], [16], [17], [22]. People criticized the layouts of centres a lot in a positive way, mostly associating them with relaxing safe places due to the distinguishing plan from clinical settings.

One of the most important biophilic design elements that enhanced the welcoming atmosphere was the greenery (Table 2). Plants and landscape greenery were perceived as “healing” [13], “admirable”, “fantastic”, “feels like home” [22], “peaceful”, “relaxing”, “protected space”, “feeling safe” [25], “alive and changing”, “sense of welcome”, “barrier with the outside world”, “buffer zone”, “threshold”, “place of relaxation” and “calming” [18], [26]. The garden and plants slowed people down and conforted them when they approached the buildings, and encouraged them to enter [26] It was widely accepted by the interviewees that the gardens and greenery had a powerful relaxing effect on them, even in a very short distance walk in the gardens before arriving at the entrance, it made them feel calm and relaxed.

The daylighting design was also an important factor, which aroused a homely feeling by relaxing the patients. Together with the greenery, air, and colour, the daylight engendered pleasant thoughts in the visitors. The welcoming and relaxing effect of light in the centres was indicated frequently [26].

The results also showed that bringing the outside to the inside, either through views or physically, was highly associated with the welcoming and relaxing feeling (Table 2). According to the interviewees, the inside-outside relationship made the centres ‘calming, peaceful [17], welcoming, inviting, a safe place, house-like [26], relaxing, uplifting and healing’ [27]. Viewing out, particularly to the vegetation of the gardens or the blue sky, encouraged the feeling of relaxation and a sense of comfort [16], [18], [22], [26], [28].

As cancer patients, the visitors stressed their sensitivity to the cold, thus thermal comfort was one of the important parameters, and the inclusion of the fireplace was successful at providing a welcoming feeling [22]. In some centres with interior gardens, this feature was appreciated, especially as it provided thermal comfort while allowing people to enjoy the feeling of being outside and encouraged the connection with green elements in cold weather [22]. Also, manually opening windows and sliding doors helped people to feel relaxed, since they can easily step into or incorporate an environment with different temperature and air quality [22].

Maggie’s architecture uses different natural materials to create welcoming, warm and safe places, which were also employed to attract attention and curiosity in some cases. The materials, in general, were seen as a greeting part of the centres with their texture and tactile features [16]. The wood was welcomed by many of the patients and commonly mentioned with its ‘warmth’ and ‘natural feeling’, which settled their minds [26]. The wood and timber trusses were also associated with the quality of architecture, as they attracted the people’s attraction and created a refuge space where they felt safe and relaxed [16], [26]. Even though the interviews did not specify any other particular material, the choice of material, and their textures and tactile qualities were widely appreciated, and as shown in Table 2, they created a welcoming and safe atmosphere with warmth and greeting [16].

Some responses referred to the interior paintings and natural colours too. The splash of warm colours and tactile texture of materials at the entrance were also stated as engendering elements of feeling welcome and the warmth of the greeting [16], [26]. A response indicated that colourful decoration had a sense of family and immersed them with feelings of welcoming and relaxing.

The multisensory experience offered by natural elements was one of the most effective ways to create a welcoming and relaxing environment. The gardens enabled the users to experience a variety of fragrances, sounds and textures, stimulating all their senses, which enhanced the feelings of relaxation, greeting, safety and encouraged them to stay there and fight death. In the building, the visitors were smelling the spiritually rising natural fragrances of plants or the wood-burning fireplace rather than the smell of medicine, so this olfactory experience triggered again a sense of being relaxed or a sense of belonging by recalling memories from personal past [26].

The sounds had a similar impact as the smells in terms of recalling memories back, which helped to improve feelings of welcome and relaxation. The most mentioned sounds were originated from the gardens: the moving and rustling tree leaves, branches, and plants [15], [26]; patterns of rain on the huge leaves [29], the joyful singing and chirping of birds [15], the bumble of bees [26] or chickens crowing [18]. The gardens were “never dead” with all these movements and sounds, this aliveness made the cancer patients feelings go up while they were endeavouring to survive [26]. Also, the people enjoyed the sound of water elements, which gave them relaxation and welcomed them by calming down. The water elements also had a visually welcoming impact by slowing down the visitors [15].

According to all these examined studies, the architects were substantially successful about the auditory experience and they created a welcoming, changing and alive atmospheres in Maggie’s centres.

Prospect and refuge, another of the space parameters of biophilic design [20], successfully encouraged welcoming and relaxing feelings in Maggie’s centres as well. The centres provided safe environments where the users had the impression of refuge while allowing them a strong visual connection with the outside. This balance triggered the relaxing and welcoming feelings [16], [17], [22], [26], [28], [30]. Thus, the staff stressed the importance of the welcoming and safe atmosphere that comes from the possibility of using the centre privately but without being isolated [17]. The kitchen table and the atmosphere of the kitchen had a powerful effect on the feeling of safety and refuge on patients,. It was claimed that this space was very successful at immediately calming down most angry and worried patients, as the place was safe enough to socialise with the mind at peace [22]ocialising opportunities enabled in the centre also enhanced the feelings of welcome and relaxed, since people became more open for socialising with each other when they felt relaxed and welcomed.

Conclusion

The results showed that creating a welcoming and relaxing environment was the most important of all architectural features of the therapeutic environment in the context of Maggie’s centres. The welcoming-relaxing code was referred to in 71 responses, not only reflected in the interventional elements but also in the outcome elements referred to this code.

Analysis of welcoming and relaxing characteristics of biophilic design elements in therapeutic environments revealed that some biophilic design parameters had a powerful effect on dealing with stress and anxiety by creating this welcoming and relaxing atmosphere that can not be ignored. Sense of belonging, as a biophilic design attribute [21], was the most outstanding parameter for creating a welcoming and relaxing atmosphere, followed by other biophilic design elements: greenery, light, multi-sensory experience, inside-outside effect, view, prospect and refuge, colour, material, thermal comfort, and water consecutively.

Apart from biophilic design elements, the architectural form, layout, furnishing and fittings were the main tool that the designers used for creating a welcoming and relaxing place as the ultimate design goal. Although all the other codes had their specific aims and outcomes, almost all of them either supported welcoming and relaxing impact or were supported by this feature. Also, design features that supported the generation of socialising spaces had a great impact on relaxing and greeting people to fight stress and anxiety.

Overall, it is stated that the buildings were clever with their design, colours, fittings and natural features, all together made the visitors feel safe and welcomed [16]. Particularly, the biophilic elements clearly successfully supported the welcoming and relaxing perceptions of the space while dealing with cancer.

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References

[1] “Constitution of the World Health Organization,” *American journal of public health and the nation’s health*, vol. 36, no. 11, pp. 1315–1323, Nov. 1946, doi: 10.2105/AJPH.36.11.1315.

[2] J. F. Stichler, “Creating healing environments in critical care units,” *Critical Care Nursing Quarterly*, vol. 24, no. 3. Aspen Publishers Inc., pp. 1–20, 2001. doi: 10.1097/00002727-200111000-00002.

[3] Ron Smith and Nicholas Watkins, “Therapeutic Environments | WBDG - Whole Building Design Guide,” 2016. https://www.wbdg.org/resources/therapeutic-environments (accessed Jun. 17, 2021).

[4] S. Verderber and D. J. Fine, *Healthcare architecture in an era of radical transformation.* Yale University Press, 2000. [Online]. Available: https://liverpool.idm.oclc.org/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=cat00003a&AN=lvp.b2806681&site=eds-live&scope=site

[5] M. Murphy and J. Mansfield, “Can architecture heal? Building as instruments of health,” *Architectural Design*, vol. 87, no. 2, pp. 82–89, Mar. 2017, doi: 10.1002/ad.2156.

[6] D. C. Sloane and B. C. Sloane, *Medicine Moves to the Mall*. Baltimore, UNITED STATES: Johns Hopkins University Press, 2002. [Online]. Available: http://ebookcentral.proquest.com/lib/liverpool/detail.action?docID=3318068

[7] A. Silverstein, “A history of immunology,” 2009, Accessed: Jul. 18, 2021. [Online]. Available: https://www.google.com/books?hl=tr&lr=&id=2xNYjigte14C&oi=fnd&pg=PP1&dq=Arthur+Silverstein,+A+History+of+Immunology,+Academic+Press+(Boston,+MA),+1989,+pp+40%E2%80%9341&ots=\_l0chAl9F2&sig=Q8mee6OQESdqA8ILm78Nt8FXBy8

[8] C. Jencks, “Maggie’s architecture: The deep affinities between architecture and health,” *Architectural Design*, vol. 87, no. 2, pp. 66–75, Mar. 2017, doi: 10.1002/ad.2154.

[9] S. Kellert and E. Calabrese, “The PracTice of BioPhilic Design,” 2015. Accessed: Mar. 23, 2021. [Online]. Available: www.biophilic-design.com

[10] S. R. Kellert, J. Heerwagen, and M. Mador, *Biophilic design : the theory, science, and practice of bringing buildings to life.* John Wiley & Sons, Inc. [Online]. Available: https://liverpool.idm.oclc.org/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=cat00003a&AN=lvp.b5499817&site=eds-live&scope=site

[11] S. R. Kellert and E. O. Wilson, *The biophilia hypothesis.* Island Press, 1993. [Online]. Available: https://liverpool.idm.oclc.org/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=cat00003a&AN=lvp.b1667370&site=eds-live&scope=site

[12] “Maggie’s Architecture and Landscape Brief Maggie’s Centres Background.”

[13] M. Annemans, C. van Audenhove, H. Vermolen, and A. Heylighen, “What makes an environment healing? Users and designer about the Maggie’s Cancer Caring Centre London,” *8th International Conference on Design and Emotion: Out of Control - Proceedings*, no. 2010, 2012.

[14] M. Annemans, E. Karanastasi, and A. Heylighen, “Inclusive Designing,” *Inclusive Designing*, pp. 189–200, 2014, doi: 10.1007/978-3-319-05095-9.

[15] A. Butterfield and D. Martin, “Affective sanctuaries: understanding Maggie’s as therapeutic landscapes,” *Landscape Research*, vol. 41, no. 6, pp. 695–706, 2016, doi: 10.1080/01426397.2016.1197386.

[16] D. Martin, S. Nettleton, and C. Buse, “Affecting care: Maggie’s Centres and the orchestration of architectural atmospheres,” *Social Science and Medicine*, vol. 240, no. September, 2019, doi: 10.1016/j.socscimed.2019.112563.

[17] V. van der Linden, M. Annemans, and A. Heylighen, “‘You’d want an energy from a building’: User experience of healing environment in a Maggie’s Cancer Caring Centre,” *Proceedings of the Third European Conference on Design4health 2015*, p. 1, 2015, [Online]. Available: https://search.proquest.com/docview/1952066470?accountid=13552%0Ahttp://primo-direct-apac.hosted.exlibrisgroup.com/openurl/RMITU/RMIT\_SERVICES\_PAGE?url\_ver=Z39.88-2004&rft\_val\_fmt=info:ofi/fmt:kev:mtx:journal&genre=conference&sid=ProQ:ProQ%3Apqrlalumni&at

[18] V. van der Linden, M. Annemans, and A. Heylighen, “Architects’ Approaches to Healing Environment in Designing a Maggie’s Cancer Caring Centre,” *Design Journal*, vol. 19, no. 3, pp. 511–533, 2016, doi: 10.1080/14606925.2016.1149358.

[19] M. Ouzzani, H. Hammady, Z. Fedorowicz, and A. Elmagarmid, “Rayyan-a web and mobile app for systematic reviews,” *Systematic Reviews*, vol. 5, no. 1, pp. 1–10, Dec. 2016, doi: 10.1186/s13643-016-0384-4.

[20] W. Browning, C. Ryan, and J. Clancy, “14 Patterns of Biophilic Design: Improving Health & Well-Being in the Built Environment,” *Terrapin Bright Green,LLC*, pp. 1–60, 2014, doi: 10.1016/j.yebeh.2008.04.024.

[21] S. Kellert, J. Heerwagen, and M. Mador, *Biophilic design: the theory, science and practice of bringing buildings to life*. 2011. Accessed: Mar. 23, 2021. [Online]. Available: https://books.google.co.uk/books?hl=tr&lr=&id=FyNer\_nQrW4C&oi=fnd&pg=PT9&dq=Kellert+et+al.+2008+Biophilic+Design:+the+Theory,+Science+and+Practice+of+Bringing&ots=y-b5dnKPNM&sig=ifBWWMOYcjJtbxeeCdNaQrDvDhQ

[22] A. Birch, C. Jencks, and I. Harbour, “A home from home,” *Architects’ journal, 00038466*, no. 8-FEBRUARY-2014, p. Vol. 239, Issue 15, 2014. doi: 10.3828/mc.19.3.113.

[23] P. Stacey, “Empathic Service Systems : ‘ Designing ’ Emotion in a Cancer Care Service System Elif Bascavusoglu-Moreau,” pp. 1–10, 2011.

[24] K. Watson, *Building Knowledge: pathways to post occupancy evaluation.*, vol. 1. 2016. [Online]. Available: http://www.architecture.com/-/media/gathercontent/post-occupancy-evaluation/additional-documents/buildingknowledgepathwaystopoepdf.pdf

[25] A. Butterfield and D. Martin, “The silent carers: Exploring the role of architecture and gardens at the maggie’s cancer care centres,” *Psycho-Oncology*, vol. 23, no. 2007, pp. 318–319, 2014, [Online]. Available: http://onlinelibrary.wiley.com/doi/10.1111/j.1099-1611.2014.3696/pdf%5Cnhttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed16&NEWS=N&AN=71675582

[26] A. Butterfield, “RESILIENT PLACES ? HEALTHCARE GARDENS AND THE MAGGIE ’ S CENTRES By in fulfilment of the requirements for the degree of Doctor of Philosophy ( PhD ),” no. January 2014, 2014.

[27] P. Stacey, E. Bascavusoglu-Moreau, and B. Tether, “Empathic service systems: ‘Designing’ emotion in a cancer care service system,” *Proceedings of the Annual Hawaii International Conference on System Sciences*, pp. 1–10, 2011, doi: 10.1109/HICSS.2011.185.

[28] L. Mark, “A man-friendly Maggie’s,” *Architects’ Journal*, 2013.

[29] P. K. Stacey and B. S. Tether, “Designing emotion-centred Product Service Systems: The case of a cancer care facility,” *Design Studies*, vol. 40, pp. 85–118, 2015, doi: 10.1016/j.destud.2015.06.001.

[30] C. Foges, “Lighting : the human factor : inspired design teams use the latest lighting technologies to promote a sense of well-being in the occupants of their buildings Maggie ’ s Centre Barts , London : Steven Holl Architects L ’ Observatoire International,” pp. 1–5, 2018.