A healing environment of pediatric wards

Mohamed Yusoff Abbasa,*, Roslinda Ghazalib

aHead, Centre for Environment-Behaviour Studies (cE-Bs), FAPS, Universiti Teknologi MARA (UiTM), Shah Alam 40450, Malaysia
bPostgraduate student, cE-Bs, FSPU, Universiti Teknologi MARA (UiTM), Shah Alam 40450, Malaysia

Received January 13, 2010; revised February 3, 2010; accepted March 25, 2010

Abstract

Healing, unlike curing, is a psychological and spiritual concept of health. As perception is also psychological, it is most likely that a relationship exists between healing and the physical environment. What is the status of design trends in relation to the healing environment in Malaysian pediatric wards? Based on a pilot study, this paper evaluated three pediatric wards which depicted design trends of the last three decades. The methodology involved evaluation toolkits, photographic documentations and unstructured interviews. Despite positive design trends for the healing environment, those lacked considerations for pediatric ergonomics and audio therapies. Implications of the findings were discussed.

Keywords: Healing environment, pediatric wards, perception, evaluation tools.

1. Introduction

“Healing environment” can be described simply as the overall environment (both physical and non-physical) created to aid the recovery process. In contrast to curing, healing is a psychological and spiritual concept of health. As perception is also psychological, there is a likelihood of a relationship between healing and the physical environment. Globally, there has been an increase of interests in the creation of the healing environment (Ananth, 2008). Similarly in Malaysia, which envisioned in being a developed nation by 2010, efforts are towards the provision of first-class or optimal infrastructures.

What is the design status in relation to the healing environment in Malaysia? In particular, the quality of existing pediatric wards, as the pediatric population tended to be more sensitive than adults in the perception of the environment (Ozcan, 2006). Are the physical environment created conducive enough towards quality healing environment? What are the factors involved towards the creation of an optimal healing environment? Those questions prompted the research project that concerned the design of Malaysian pediatric wards in relation to the healing environment. Furthermore, based on initial conversations with senior hospital staffs, it seemed that Post-
Occupancy Evaluation (POE) studies had never been conducted upon existing pediatric wards in Malaysia. Hence, the relevance of the currently ongoing research being conducted.

This paper is an outcome of a pilot study done prior to the ongoing research. It aimed to chart the trend in the design of the pediatric wards. The main objective was to identify the degree of conduciveness towards healing in the environment of those existing wards. Significance of the study was in determining deficiencies that could have influenced the creation of a more conducive healing environment. The strategy of the research design was case studies upon exiting pediatric wards built in the past three decades, while the methodology for data collection involved the use of DH Estates and Facilities (2008a,b) evaluation toolkits for healthcare buildings, photographic documentation of the ambience of the wards and unstructured interviews with the hospitals’ staffs.

2. Literature Review

This section highlighted literatures reviewed relevant to the study, such as, on the creation, role and benefit about the healing environment, with elaborations on the components in the concept of Optimal Healing Environment (OHE).

There have been a certain richness and emphasis in the creation of the healing environment. For example, Oberlin (2008) opined that such environment could be created by consideration of factors such as colour, shape, lighting, smell, sound and feel. Berg (2005) meanwhile emphasized more on the contribution of nature, daylight, fresh air and quietness to such environment. The role played by the physical setting in the healing process and more importantly for improving patient outcomes and the well-being of families and caregivers had been stressed by several authors such as Moore (2000) and Visentin (2006). Joseph (2006) concurred about the influence of the physical environment on the healing process and elaborated further that the physical environment also contributed towards a better quality of life not only for the patients, carers and staffs but also the visitors.

Moran (1993) suggested that creating a more homelike family environment would give benefit to the children as it encouraged children to feel like at home, active and playful. Varni (2001) involved the “physical and cultural atmosphere created to support families through hospitalization, medical visits, healing and bereavement.” (p.30 ). Proof that such environment might influence patients’ and carers perception about their healthcare providers were based on responses about the patients’ satisfaction levels, being loyal customers and in helping to promote the healthcare to others, and the quality evaluations made.

Inspired by the global interest and development of the healing environment, the Samueli Institute, a medical research organization with interest in investigating the healing processes has developed the concept of Optimal Healing Environment (OHE), which it defined as “one where the social, psychological, physical, spiritual, and behavioral components of healthcare support and stimulate the body’s innate capacity to heal itself” (Ananth, 2008, p. 273). The wholesome approach towards the healing process comprised both the inner and outer environment. The inner environment involved developing healing intention, experiencing personal wholeness and cultivating healing relationship, while the outer environment involved practicing healthy lifestyles, applying collaborative medicine, creating healing organization, and building healing spaces as shown in Figure 1.

In relation to Anath’s (2008) OHE, of interest to the present study related to the building healing spaces part or physical environment which enhanced sensory input. Those involved architecture (which naturally included ergonomics and safety considerations, colour, artwork, and light), aroma, music, nature, and outdoor playground. Those elements identified not only contributed towards the healing process but also helped the pediatric patients cope with pain and aggression as concluded by NACHR (2008).

The importance in ergonomic considerations for the pediatric patients and the related implications had concerned many because the requirements of the children were not the same as the adults. For example, Lueder (2003) detailed out the many differences of the physical built of children as compared to adults. Luder and Rice (2007) elaborated further that children were in continuous development - physically, perceptually, cognitively and socially. Also, Scanlon et. al., (2006) stressed that due to their nature, children during the pediatric age range were more dynamic than the adults and hence characterized many different features which resulted in more potential risks for harm amongst pediatric patients during medical care.
According to Hourcade (1997), during the course of development, the children’s physical maturation affected and limited their capabilities in accomplishing tasks at different age levels. However he argued that maturation did not guarantee that development would occur. As such, rather than the reliance on maturation he suggested that it would be better to ensure technologies (or facilities) being appropriately sized which not only provided better ergonomics but motivated the children to complete their tasks more comfortably. Also, better ergonomics was the outcome in the design details of the facilities provided which empowered patients in taking responsibility for their own health. Such offer of independence is “the power of the healing environment” (Leibrock, 2000).

Safety, a very important factor to be considered especially when involving the paediatric patients should be one of the outcomes of the ergonomically-designed paediatric setting. France, et. al. (2005) opined that the creation of a patient-centred setting facilitated safe and efficient care and as such human factors expertise were needed to be involved early in the design process. Croasmun (2004) argued that often products or services might have been designed without sufficient knowledge of the end users. As such, improved ergonomics by designing out potential flaws before the occurrence would make a safer setting for the paediatric patients and better environment for the medical carers. In addition, Miller and Zhan (2004) revealed that the prevalence of patient safety events frequently involved the very young with substantial increase in duration of stay. Similarly, Woods, et. al. (2005) cautioned that patient-specific setting increased vulnerabilities and as such patient safety risks must be accounted for in the design and improvement interventions.

In relation to colour as another important component for the OHE, Park (2007) more recently investigated the value of color in real contexts by measuring color preferences amongst healthy children, pediatric patients and design professionals. He found that the use of more color eventually created better environments for children and their families.

Artwork in children’s hospital also did provide more cheerful environment and hence contributed towards the pediatric patients’ healing process as revealed by several studies such as by Daley (1998), Mallay (2002) and Eisen (2006). The art therapy by Mallay proved to be an effective intervention in coping with ongoing physical, social, cognitive, emotional and psychological sequel of the accident/trauma.

Outdoor environment that could contribute towards the healing environment involved nature and the outdoor children’s playground. The role of nature or the creation of therapeutic gardens towards the healing process had been reported by several studies. For example, Whitehouse, et. al. (2001) revealed that garden features in order of

Figure 1. The Optimal Healing Environment
(Source: Sita Ananth (2008), Healing Environments: the next natural step, Explore, Vol. 4, No. 4, p. 274)
users’ preferences included the sound of running water, followed by presence of bright colours, flowers, plants and greenery, artwork, and the opportunity for multisensory stimulation. They also found that very young pediatric patients who were hospitalized for a longer duration or those with physical or developmental disabilities were responsive and appreciative to such gardens. They recommended in the creation of potential activities that could be done in the gardens by the different users, such as outpatient or the patients’ healthier siblings. Similarly, Sherman, et. al. (2005) observed the gardens were used differently according to the category of users or their age group. While the most used was the largest garden with direct patient access, children more than adults interacted with the garden features. They also found that emotional distress and pain were lower for all groups when in the garden as compared to in the hospital. Similar findings were also reported locally by Said (2009). In addition, NACHR (2008) concluded that those gardens could help patients to reduce anxiety.

In a survey which involved hospital staff, parents and visitors, about perceptions and their experience of a play garden, an integration of playgrounds and healing gardens located in a pediatric hospital, Turner (2009) revealed that children’s experience during their play in the playground, strongly benefited the children’s health. He recommended that the physical environment between indoor and outdoor activity be accessible at all times. Also, the play garden should not only provide space for patients and their families, but also for staff to interact with each other in a park. He also suggested that the play garden should include a variety of approaches. Annunziato (2002) emphasized on features like a river that flows along the window wall which included trees, native plants, and whimsical animal sculptures could helped ease the fear of children and provide a space for siblings to play, as well. The evidence by Annunziato is to ensure that a sense of welcoming and playful environment appeared in the children’s hospital somehow would reduce patients and staff stress, improved patient safety and improved overall healthcare quality.

In relation to music therapy, several studies done such as by Evans (2002), Robb and Ebberts (2003), and Cooke, et al (2005) found that music is a simple and cost effective intervention in the hospital which decreased anxiety experienced while patients undergo their invasive investigation, treatment, procedures or surgery. Statistical analyzed data by Robb (2000) revealed the effect of therapeutic music interventions on the behaviour of hospitalized children. The music therapy overcome and supported the other activities typically experienced by hospitalized children. He also found that positive behavioural effect by the proposed music interventions.

Kennelly and Brien-Elliott (2001) concurred that music therapy played a role in Paediatric Rehabilitation which is becoming acknowledged in the global interest of health care as a therapy that are able to meet the expansive needs of the patient in rehabilitation. Kennelly (2000) encouraged pediatric healthcare providers to use music in their work settings and especially in order to help paediatric patients to heal faster and to achieved best practice outcomes in this field.. Other studies had shown that music therapy reduced stress levels and benefited not only paediatric patients but also others in the wards. Those were as reported for example by Routhieaux and Tansik (1997) upon visitors in a hospital surgery and intensive care unit waiting room, and Stewart (2009) upon infants, parents and caregivers. Meanwhile, Stouffer, et al (2007) suggested the use of music as therapy in the pediatric practice guidelines in order to promote in the healing process.

As regards to aromatherapy Bonadies, (2009) found that pleasant aroma in the hospital can improve health and enhance well-being, particularly through the reduction of pain and anxiety. Similarly, Holm and Fitzmaurice, (2008) reported that the effect of aromatherapy is a useful way to decrease stress and anxiety levels of parents who accompany their children in waiting area of an emergency department.

3. Research Design

The strategy of the research design chosen was Post-Occupancy Evaluation (POE) upon existing paediatric wards of hospitals within the Klang Valley region in Malaysia. The main criterion for the selection of the hospitals chosen was the year it was built which represented the design of each of the last three decades - the 1980s, 1990s and 2000s. It was envisaged that samples for such purposeful selection could depict the design trend of such building type.

The main methodology for data collection involved the evaluation of the physical environment which used DH Estates and Facilities (2008a,b) evaluation toolkits for healthcare buildings, namely AEDET (Achieving Excellence Design Evaluation Toolkit) Evolution and ASPECT (A Staff and Patient Environment Calibration Toolkit). As a supplement to the evaluation tools, photographic documentation of the ambience of the wards and informal unstructured interviews with the hospitals’ staffs were also conducted.
3.1. Evaluation Toolkits

3.1.1 The AEDET (Achieving Excellence Design Evaluation Toolkit) Evolution

This is part of a benchmarking tool which assisted in measuring and managing the design quality in the healthcare facilities. Based on the lessons learned from an academic evaluation of its use, the AEDET Evolution is the newer version to the former AEDET toolkit, a best practice guide for the evaluation of design quality published in 2001. In terms of reliability, the AEDET Evolution includes references to evidence based design literature and this is related to the criteria used in the evaluation. In terms of validity, its use is mandatory in business case submissions for major capital development.

It evaluated a design through a series of statements which encompassed the three areas listed as follows:-

a) Impact Area
This deals with the degree to which the building created a sense of place and contributed positively to the lives of the users and its neighbours. It involved four sections as follows:-

i) Character and Innovation
This deals with the overall feeling of the building. Items evaluated concerned design concept, degree of interesting character portrayed, degree of caring and reassuring atmosphere and whether the design is influential.

ii) Form and Materials
This deals with the nature of the building in terms of its overall form and materials. Items evaluated concerned about the human scale, sense of welcoming, sunlight availability being maximized, whether prevailing winds are sheltered, entrance being obvious and logically positioned, external materials detailing of high quality, appropriateness and attractiveness of external colours and textures.

iii) Staff and Patient Environment
This deals with how well an environment complies with best practice as indicated by the research evidence. Items evaluated concerned allowance for privacy / dignity, good views internally and externally, good outdoor access for patients/staffs, comfort, control of comfort, building clearly understandable, attractive interior, good bath/toilet and other facilities for patients, good facilities for staff including convenient places to work and relax.

iv) Urban and Social Integration
This deals with the way the building relates to its surroundings. Items evaluated concerned whether the height, volume, skyline of the building relate well to surrounding environment, whether the building and hard/soft landscape contributes positively to its locality, and whether the building is sensitive to neighbours and passers-by.

b) Build Quality Area
This deals with the physical components of the building rather than the spaces and involved three sections as follows:-

i) Performance
This concerned with the technical performance of the building during its lifetime. Items evaluated whether the building is easy to operate, clean, of durable finishes, and weather and age well.

ii) Construction
This concerned with the technical issues of actually constructing the building and with the performance of the main components. As such, this is not applicable for the present study.

iii) Engineering
This concerned with those parts of the building that are engineering systems as opposed to the main architectural features. As such, this is also not applicable for the present study.

c) Functionality Area
This deals with issues on the primary purpose of the building and involved three sections as follows:-

i) Use
This concerned with the way the building enables the users to perform their duties and operate the healthcare systems and facilities housed in the building. Items evaluated involved whether the brief requirements were satisfied, layout were of optimal circulation, flexible, and whether it facilitates security and supervision.

ii) Access
This focuses on the way the users of the building can come and go. Items evaluated involved accessibility, adequate parking, and appropriate ambulance access, circulation for services good and segregated, pedestrians’ route obvious, pleasant and inclusive, and outdoor safe lighting.
iii) Space
This concentrates on the amount of space in the building in relation to its purpose. Items evaluated involved appropriate space standards, good ratio of usable space, minimised circulation distances, gender segregation, and an adequate storage space.

3.1.2 The ASPECT (A Staff and Patient Environment Calibration Toolkit)

This measures the manner the healthcare environment can impact both on the satisfaction levels to patients, and provision of facilities to staffs. It evaluates eight sections as follows:-

a) Privacy, Company and Dignity
This section deals with the way patients were able to control their privacy and their interactions with others. Items analyzed were upon visual privacy, possibility for private conversation or being alone, with toilet/bathroom located logically, conveniently and discretely.

b) Views
This section deals with the extent to which both staff and patients can see out of and around the building. Items analyzed were upon availability of windows where they spend their time, both the sky and ground can be easily seen, and that the view outside was calming and interesting.

c) Nature and Outdoors
This section deals with the extent to which patients in particular have contact with the natural world. Items analyzed included upon possibility for patients to go outside, and that both patients and staff not only can see but have access to usable landscaped areas.

d) Comfort and Control
This section deals with the comfort levels of the staff and patients, and the extent to which they can control those levels. Items analysed included upon variety of artificial lighting patterns for day and night, natural daylight, temperature, easily open windows/doors, and design layout which minimised noise.

e) Legibility of Place
This section deals with how understandable healthcare buildings are to the staff, patients and visitors who use them. Items analyzed included obviousness of main entrance/exit and in finding staff, layout of building being easily understood, logical hierarchy of places, different parts of building being characterized differently.

f) Interior Appearance
This section deals specifically with the interior of healthcare buildings and in particular what they look like. Items analyzed included upon homely feeling, interiors light and airy, variety of texture, colour and view, clean, tidy and cared for, provision for art, plants and flowers, interesting ceiling design, display space available for personal items, and suitable floor finishes.

g) Facilities
This section deals with a number of facilities that have been found to be important for the users of healthcare buildings, particularly patients. Items analyzed included bathrooms with seats, handrails, of non-slip flooring, availability of shelf for toiletries and somewhere to hang clothes within easy reach, choice of bath/shower and assisted/unassisted bathrooms, space where religious observances can take place, place where live performances can take place, easy chairs, tables and desks in the patients’ spaces, facilities to make drinks, easily accessible vending machines for snacks, facilities for patients’ relatives/friends to stay overnight.

h) Staff
This section is concerned with those aspects of healthcare building provision that relate specifically to staff. Items analysed included on convenient place to change and securely store belongings and clothes, to concentrate on work without being on demand, where staff can speedily get snacks and meals, can rest and relax in places segregated from patient and visitor areas, easy and convenient access to IT, convenient access to basic banking facilities and can shop for essentials.

In terms of reliability and validity, the ASPECT is based on a database of over 600 pieces of research.
3.2. Procedure

Prior to the site visits, consents were first obtained from the directors of the hospitals identified through formal applications. Preceded by initial briefings about the setup of the hospitals, representatives from the hospitals accompanied the site visits and provided responses to spontaneous general enquiries about the physical environment of the wards. Data collected involved personal observations made with notations and photographic documentations about the facilities provided and the ambience. The AEDET Evolution and ASPECT evaluation toolkits were then filled. Due to confidentiality, permission was not granted to interview patients and view patients’ medical records. That required approval from the Ministry of Health. Visits to the hospitals which were done once each, lasted about 4 hours per hospital. Security was noticeably tight with security personals stationed immediately outside all the wards.

4. Summary of Findings

The pediatric wards identified for the study involved hospitals KG (built in 1985), PA (built in 1999) and SG (built in 2005). In each of the sections evaluated in both the AEDET Evolution and ASPECT, apart from the evaluation score between 0 (lowest) and 6 (maximum), options are available in putting a double weightage for factors considered to be of utmost importance. For the purpose of discussion, the scores analysed were categorised as follows:- a maximum score of 6 points as Excellent, Score 5 points as Very Good, Score 4 points as Good, Score 3 points as Average, Score 2 points as Poor and Score 1 point as Very Poor.

4.1 Summary of AEDET (Achieving Excellence Design Evaluation Toolkit) Evolution Analysis

Findings of the AEDET Evolution analysed are as summarised in Figure 2. Overall, there seemed to be a positive trend in relation to all the three areas that concerned Impact, Build Quality and Functionality, which involved eight sections analysed. Most notable was in the Impact Area in Figure 2.1(c), where the Staff and Patient Environment had improved greatly from Below Average in KG to almost Very Good in SG. Similarly, in both Figures 2.1 (a) and (c) that evaluated about the Character and Innovation, and Form and Materials, respectively where provisions had improved from Average in KG to Very Good in SG. The section on Urban and Social Integration in Figure 2.1 (d) revealed a slight improvement from Good in KG to Very Good in SG. Similarly, gradual improvement was revealed in relation to the Build Quality Area as shown in Figure 2.2 (a), and in the sections on Access and Space in relation to the Functionality Area as shown in Figures 2.3 (b) and (c) respectively. Of concern is the section on Use where KG is slightly better compared to the newer wards as shown in Figure 2.3 (a).

4.2 Summary of ASPECT (A Staff and Patient Environment Calibration Toolkit) Analysis

Findings of the ASPECT analysed are as summarised in Figure 3. Overall, based on the eight sections evaluated, five sections showed a positive trend. Those involved Privacy, Company and Dignity (a), Views (b), Nature and Outdoor (c), Facilities (g), and Staff (h). Most marked improvement revealed was on the sections on Nature and Outdoor where it improved tremendously from below Very Poor in KG to Good in SG, and Privacy, Company and Dignity, where it improved from Very Poor in KG to Excellent in both PA and SG. Sections that showed negative trends involved Comfort and Control (d), Legibility of Place (e), and Interior Appearance (f). Most marked was the section on Legibility of Place where it had slipped from Excellent in both KG and PA down to Very Good in SG. Both sections on Comfort and Control, and Interior Appearance had initially improved from Average in KG to Good and Very Good respectively in PA, but deteriorated to Average and just Very Good respectively in SG.

5. Discussion

The aim of the pilot study was to chart the design trend of Malaysian paediatric wards in relation to the physical healing environment over the last three decades. Paediatric wards of three hospitals were specifically selected which depicted the design of each of the past three decades. Physical components which could influence the healing environment as identified in the literatures reviewed were considered in both the evaluation toolkits of AEDET Evolution and ASPECT used in the post-occupancy evaluation of the three paediatric wards.
Figure 2: Achieving Excellence Design Evaluation Toolkit (AEDET) Evolution – Summary of Findings

Figure 3: Summary of Findings - A Staff and Patient Environment Calibration Tool (ASPECT)
Overall, results of the analysis suggested a positive design trend in Malaysian paediatric wards towards the creation of a better healing environment. In relation to the design quality of the wards, most marked was in the tremendous improvement that concerned the staff and patient environment. Similarly, of notable improvements were in sections that concerned both the character and innovation, and form and materials of the wards designed. Slight improvements were observed in sections that involved urban and social integration, building performance, and access and space of the wards. In relation to the impact of satisfaction levels upon both staffs and patients, most marked in improvement concerned the provision of nature and outdoor, and matters that concerned privacy, company and dignity.

Despite the positive design trends in most of the sections considered, there still remained matters of concern on some sections, the trend of which tended to depreciate slightly in amongst the newer wards. In relation to the design quality, in particular on the section which concerned the way the building enabled the users to perform their duties and operate the healthcare systems and facilities housed in the building.

Similarly, pertaining to the impact of satisfaction levels upon both staffs and patients were on sections on legibility of place, comfort and control, and interior appearance. The layout of the building should be easily understood for the convenience of all users. Also, patients should be provided options to control in attaining their comfort. In addition, the interior appearance and ambience should be conducive towards healing.

Other matters of concern relate to best practices that involved ergonomics, and the provision of art therapy, music therapy, and aromatherapy.

Ergonomic considerations for the paediatric population were observed in all the three hospitals in the provisions of beds, chairs and tables in the mini library, and counter top at the registration section. However, surprisingly those were not considered markedly in the facilities provided in the bathrooms which suited only the adults. Another surprise was that the staffs opined those to be not an important provision as most of the patients were in diapers, and that the bathrooms were mainly used by the patient’s parents or carers. While that might be the case, perhaps an optimal situation could have been achieved if provisions in the bathrooms were ergonomically designed for the pediatric population, particularly for the more independent older age group of 12-year olds and older.

Notable absence even in the newer wards was the provision of art therapy, music therapy, and aromatherapy. Those provisions require serious considerations by the healthcare providers if an optimal healing environment was to be attained.

6. Conclusion

In conclusion, there seemed to be a positive design trend towards the creation of healing environment in the newer paediatric wards built. However, there seemed to be a startling lack in consideration on ergonomics for the paediatric population and the absent in the provisions of art therapy, music therapy, and aromatherapy. Those should be seriously considered not only in the design of newer paediatric wards, but also in upgrading the older wards for the benefit of the paediatric population.

Acknowledgement

Our heartiest gratitude to Universiti Teknologi MARA, Malaysia for the continuous support in making this study possible.

References
