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Procedia - Social and Behavioral Sciences 30 (2011) 1951 – 1958

Procedia
Social and Behavioral Sciences

WCPCG-2011

Physical Environment: The major determinant towards the creation of a healing environment?

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Abstract

This study explored the the degree of influence of the physical environment in the creation of a healing environment in Malaysian pediatric wards. Post-Occupancy Evaluation (POE) studies were conducted eight paediatric wards located in urban and non-urban areas in the Klang Valley. Data collected adopted UK's NHS *AEDET* and *ASPECT Evaluation* toolkits, which evaluated the physical qualities and staff & patients satisfaction levels respectively. Those involved authors' evaluations, 215 nurses and 217 patients questionnaires respondents, and photographic documentations as supplementary evidences. The findings

Keywords: Environment-Behaviour relationship; healing environment, paediatric wards, post-occupancy study.

1. Introduction

The influence of the physical environment towards human behaviour is well established in the literatures, for example, Bechtel & Curchman (2002) and Cassidy (2006). The degree of influence differed with age, and more markedly upon children than adults (Kopec, 2006). He further revealed that the manner the environment affects younger children varies by circumstances and highly dependent on the children's age or stage of development. Also, as the paediatric population tended to be more sensitive than adults in the perception of the environment (Ozcan, 2006) it seemed that the quality of the physical environment of the paediatric wards would greatly enhance the creation of a *healing environment* – an environment created to aid the recovery process.

The present paper is one of the outcomes of an ongoing research project which investigated the physical environment of Malaysian pediatric wards towards the creation of a healing environment. Earlier papers by the same authors reported preliminary (Abbas & Ghazali, 2010) and progressive (Ghazali & Abbas, 2011) findings of the study. The purpose of the study was to explore the influence of physical environment towards healing. The objectives being three-fold; to chart design trends of Malaysian pediatric wards over the last three decades, to identify the degree of influence of the physical environment towards creating a conducive healing environment, and

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doi:10.1016/j.sbspro.2011.10.379

to identify other components that is supportive towards the creation of a healing environment. The present paper is an extension of the earlier papers which analysed further eight pediatric wards located in the Klang Valley.

An extensive review of the literatures in Ghazali & Abbas (2011) supported the role of the physical environment towards the creation of the healing environment. It included the conclusion made by the National Association of Children's Hospitals and Related Institutions (NACHRI) that the physical environment of healthcare settings affected the clinical, physiological, psychosocial, and safety outcomes among child patients and families (Oberlin, 2008). It should be noted that components of the physical environment included also pediatric ergonomics considerations, in particular the independence amongst the pediatric population in taking responsibility for their own health (Lueder, 2003; Lueder & Rice, 2007; Scanlon, 2007). In fact, such offer of independence is considered as "the power of the healing environment" (Leibrock, 2000). Related to the ergonomically-designed paediatric setting should be safety considerations amongst the paediatric patients (Miller & Zhan, 2004; Woods et al., 2005).

Still related with the physical environment is the role of nature or the creation of therapeutic gardens towards the healing process as reported by several studies such as on garden features (Annunziato, 2002; Whitehouse, et al., 2001) different categories of garden users (Sherman, et al., 2005), play garden - an integration of playgrounds and healing gardens located in a pediatric hospital (Turner et al., 2009).

While literatures such as those mentioned above portrayed that the physical environment is the major determinant of a healing environment, there are others who considered other components as important contributions. Those included considerations for a more conducive ambience, such as daylight, fresh air and quietness to the environment (Berg, 2005), homelike family environment (Moran, 1993), cultural atmosphere (Varni & Marberry, 2001; Yox, 2003; Holleran, 2010) spiritual (Higginbotham & Todd, 2006) and ethics (Barbara, et al., 2003). Various therapies have also proven to aid healing. Those include therapies such as Art Therapy (Mallay, 2002; Eisen, 2006), Music Therapy (Stewart, 2009), Aroma Therapy (Bonadies, 2009), Pet Therapy Braun, et al., 2009), Bibliotherapy (Briggs & Pehrsson, 2008; Goddard, 2011) and narrative medicines (Launer, 2002).

Hence, it seemed that there are other non-physical factors that are of equal importance in contributing towards the creation of the healing environment. As such, perhaps a more holistic approach should be adopted in achieving such an environment more successfully, thus the proposed *Optimal Healing Environment* (OHE) framework (Ananth, 2008). The OHE, described as "the social, psychological, physical, spiritual, and behavioral components of healthcare support and stimulate the body's innate capacity to heal itself" (p. 273) involved both the Inner and Outer Environment comprising of seven components as shown in Figure 1. The Inner Environment comprised three components - Developing Healing Intention, Experiencing Personal Wholeness and Cultivating Healing Relationship, while the Outer Environment comprised the other four components - Practicing Healthy Lifestyles, Applying Collaborative Medicine, Creating Healing Organization, and Building Healing Spaces.

The OHE framework provided a wholesome and inclusive approach towards the healing process. However, both the present authors (of architectural background) opined that the 'Building Healing Spaces' component, the focus of the present study, required further modification and refinement. The OHE modified version framework proposed, which also formed the framework of the present study is as shown in Figure 2. In the modified model, Architecture comprises both Interior and Exterior Environments, with the various influencing factors towards healing being sub-categorised accordingly under those environments.

2. Research Design

The research design repeated the manner done as was elaborated in detail in (Abbas & Ghazali, 2010). Briefly, the strategy chosen was the Post-Occupancy Evaluation (POE) upon the additional five more pediatric wards in hospitals in the Klang Valley, Malaysia. To chart the design trend of the pediatric wards, the setting chosen purposely represented hospitals built over the last three decades – 1980s, 1990s and 2000. Data collection involved documentation retrieval of patients records; use of UK's NHS evaluation toolkits – *AEDET* (Achieving Excellence Design Evaluation Toolkit) *Evolution* (DH Estates & Facilities, 2008a) for measuring quality of the physical environment which was evaluated by the authors; and *ASPECT* (A Staff and Patient Environment Calibration Toolkit) (DH Estates & Facilities, 2008b) for measuring users' satisfaction levels. 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.

The *AEDET Evolution* toolkit, a self evaluation form evaluated three main areas of the physical environment – Impact Area (Character and Innovation, Form and Materials, Staff and Patient Environment, Urban and Social Integration); Build Quality Area (Performance, Construction and Engineering – were not relevant in the present study); and Functionality Area (Use, Access, Space). Evaluations were score-based, with zero being the lowest and six being the highest. As such a score of three/ four would be considered as average, while that of five / six as above average. The *ASPECT* toolkit, in questionnaire format to users (staffs and patients' carers) evaluated their satisfaction levels based on eight sections – Privacy, company and dignity; Views; Nature and outdoors; Comfort and control; Legibility of place; Interior appearance; Facilities for users; and Facilities for staffs. Evaluations were score-based, similar to AEDET Evolution.

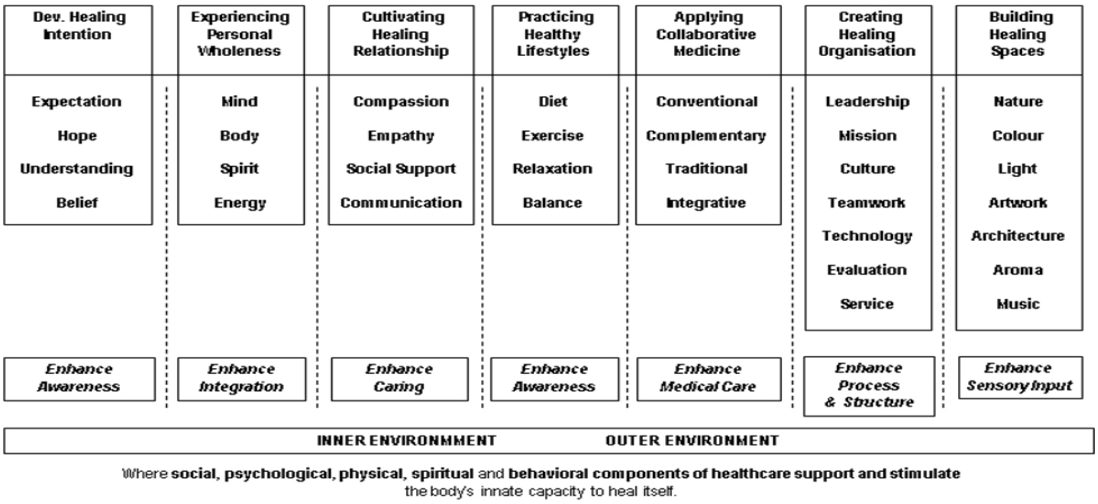


Figure 1. The Optimal Healing Environment (OHE) Framework (Source: Sita Ananth, 2008, p. 274)

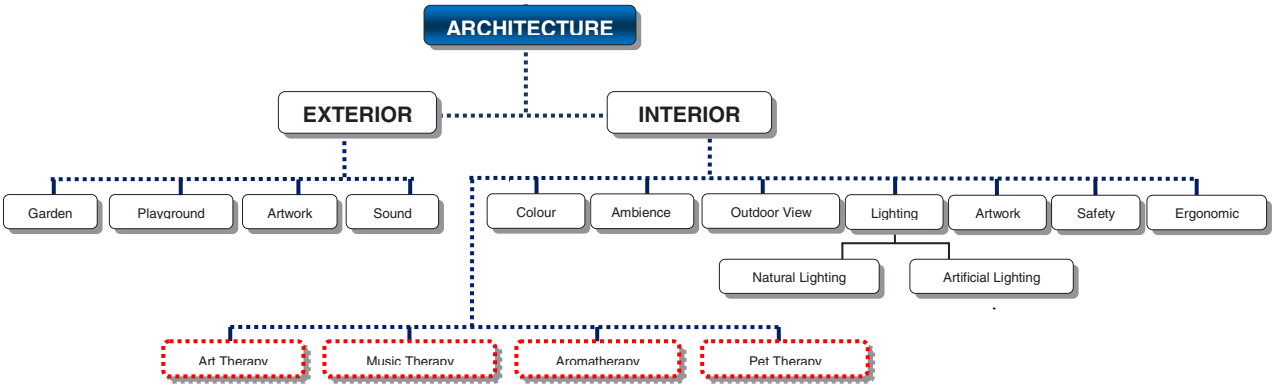


Figure 2. Author's modification of Ananth's (2008) Optimal Healing Environment framework

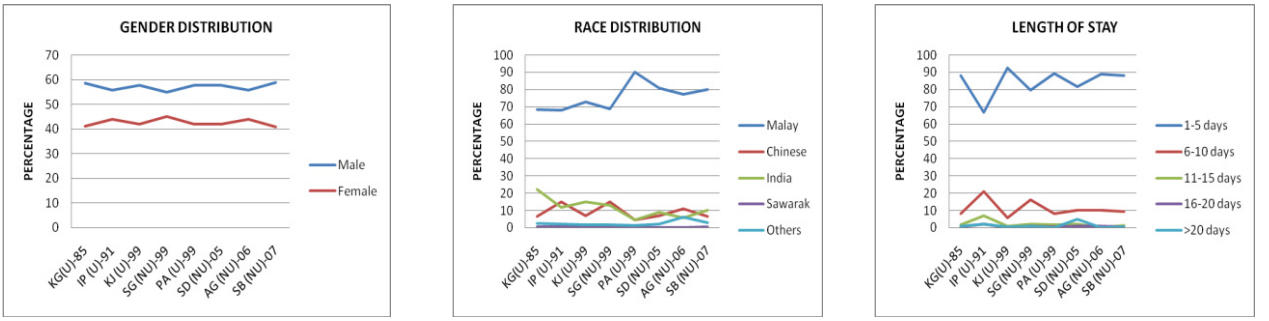
3. Findings

Overall, the data obtained involved eight pediatric wards equally distributed in both urban (U) and non-urban (NU) locations. One was built during the 1980s, four in the 1990s and the remaining three in the 2000s. Due to confidentiality, the eight wards and the year built were labeled as KG(U)-85, IP(U)-91, KJ(U)-99, PA(U)-99,

SG(NU)-99, SD(NU)-05, AG(NU)-06, and SB(NU)-07. All the non-urban wards were with 28 beds, while those in the urban areas varied – 36 for KG, 32 for IP, 40 for KJ and 28 for PA.

3.1 Summary of Findings: Pediatric Patients' Records

The pediatric patients records retrieved from the eight hospitals were based on the 2009 year data. Focus of the present study were upon those ages between three to six years old. Overall, gender distributed was 57% boys and 43% girls, majority (75%) of the patients were Malays, and 80% stayed between the duration of 1-5 days, with the longest duration recorded at IP(U)-9, followed by SG(NU)-99 and SD(NU)-05. The shortest duration was recorded at KJ(U)-99, which slightly edged PA(U)-99, AG(NU)-06, SB(NU)-07 and KG(U)-85 as shown in Figure 3.1.



a) Gender distribution b) Racial distribution c) Length of stay

Figure 3.1. Pediatric patients distribution amongst the eight wards

The varied duration of patients' stay amongst the wards seemed to suggest of a relationship between a more conducive healing environment with the shorter stay.

3.2 Summary of Findings: AEDET EVOLUTION Analysis

Based on the AEDET Evolution evaluation upon the physical qualities of the eight pediatric wards, generally, a positive trend was observed in the last three decades since the 1980s. Amongst the most marked positive trends analysed were the Staff & Patient Environment, and Space sections. The Character & Innovation, and Form & Materials sections seemed to have not stabilised, nevertheless showed improvement in the newest ward. The Performance section seemed to have improved only from 2006 after being idled over the previous decades. However, those that initially showed a positive trend but somehow declined from 2005 were the Urban & Social Integration, and Access sections. The Use section which had not stabilized showed one of a decline in trend in the newest ward. Amongst the eight pediatric wards, the most outstanding with higher scores in all the eight sections analysed was PA(U)-99, followed by SD(NU)-05 as shown in Figure 3.2.

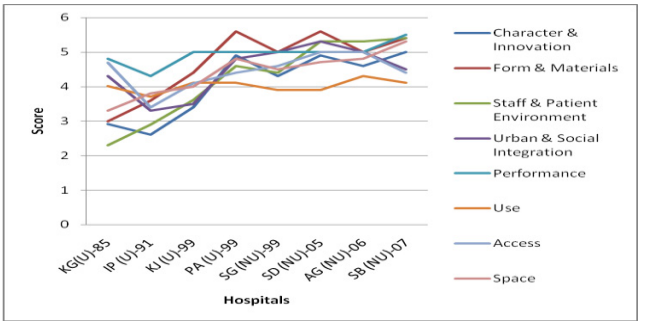


Figure 3.2. The AEDET Evolution analysis

3.3 Summary of Findings: ASPECT Analysis

Feedbacks of satisfaction levels on provisions and facilities available from the questionnaire respondents involved in the eight wards were received from an overall total of 215 staffs (nurses) and 217 patients' carers. Feedbacks requested from staffs involved four main categories (with several criteria per category) - View to Outside; Nature & Outdoor; Comfort & Control; and Staff Facilities. Feedbacks requested from patients involved the first there categories, with the addition of four more categories – Privacy, Company & Dignity; Legibility of Place; Interior Appearance; and Facilities for Users. Results of the findings in the form of colour patterns to indicate their satisfaction levels for the staffs and patients are as shown in Figures. 3.3.1 and 3.3.2 respectively.

From the findings shown in Figure 3.3.1, it seemed that the overall staffs' satisfactory levels was highest for the older KJ(U)-1999 hospital and followed by the newer AG(NU)-2006 hospital. While it was not surprising for the oldest KG(U)-1985 hospital to be rated the lowest, most surprising was the newest SB(NU)-2007 hospital given below average rating in three categories – Nature & Outdoor, Comfort & Control and Staff Facilities.

Similarly, the patients' satisfactory levels were highest for not the newest SB(NU)-2007 hospital but rather for the PA(U)-1999 hospital, and then with continuous positive trends for the other newer hospital over the decades in only the three categories – Legibility of Place, Interior Appearance, and Facilities for Users, as shown in Figure 3.3.2.

In comparing the satisfactory levels between the staffs' and the patients' in the three categories – View to Outside, Nature & Outdoor, and Comfort & Control, it seemed that overall, the patients were more satisfied than the staffs with the facilities and provisions, although not necessarily in correlations with the ascending years the hospitals were built.

4. Discussion and Conclusion

It is standard Malaysian medical practice to ward pediatric patients between durations of one to five days for medical observation purposes. Hence, despite whatever quality of healing environment in supporting the recovery process which existed in a particular ward, a minimum duration of patient's five days stay is expected.

Although the recovery process would depend on the illness of the patient, there might be a possibility of the existence of a relationship between the quality of the healing environment and the duration of stay, as indicated by the varied percentages of the minimum five-days stay amongst the wards. Meaning, a shorter patients' stay could be the outcome of a more conducive healing environment, a possible hypothesis for discussion.

As was shown in the sample of settings for the present study, newer pediatric wards were located in non-urban areas. Based on the hospital records, amongst the shortest duration of patients' stay were located in both urban and non-urban areas. As such, it can be argued that quality of the healing environment of the wards is not influenced by the location of the wards.

Amongst the literatures reviewed, the OHE (Ananth, 2008) seemed to be the most wholesome and holistic framework towards the creation of a healing environment. The framework subdivided into seven components took into consideration all aspects of the environment, both the inner and outer environment inclusive. One of the components of the OHE is the physical environment. As revealed earlier, there have been a lot of emphasise in many literatures pertaining to the physical environment being the major determinant towards the creation of a healing environment. If that is true, it could be hypothesized that a shorter patients' duration of stay or recovery period is the result of a better quality physical environment, as per the hypothesis proposed.

There seemed to be a correlation with this fact as shown by amongst the shorter duration of patients' stay in PAU(U)-99 where the AEDET Evolution score was amongst the highest in all the eight sections categorized. However, KJ(U)-99 which recorded the shortest duration of patients' stay, scored much lower than PAU(U)-99 in all sections of AEDET Evolution. Worst still of SD(NU)-99 which scored amongst the highest in all the AEDET Evolution sections however recorded also the longest patients' duration of stay. Hence, based on this contradictory fact alone it seemed that that the quality of the physical environment need not necessarily be the major determinant of a healing environment.

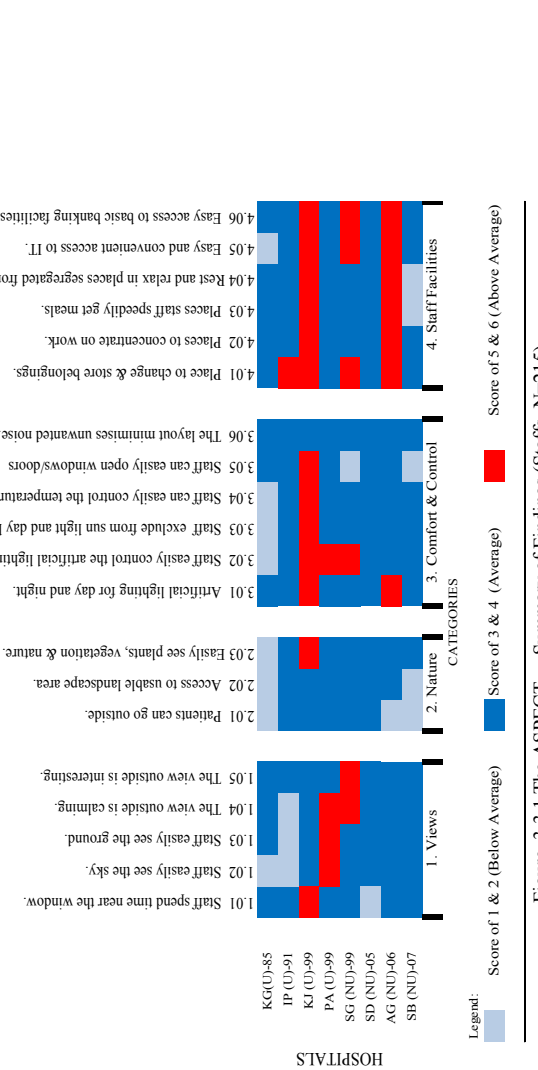


Figure. 3.3.1 The ASPECT - Summary of Findings (Staffs, N=215)

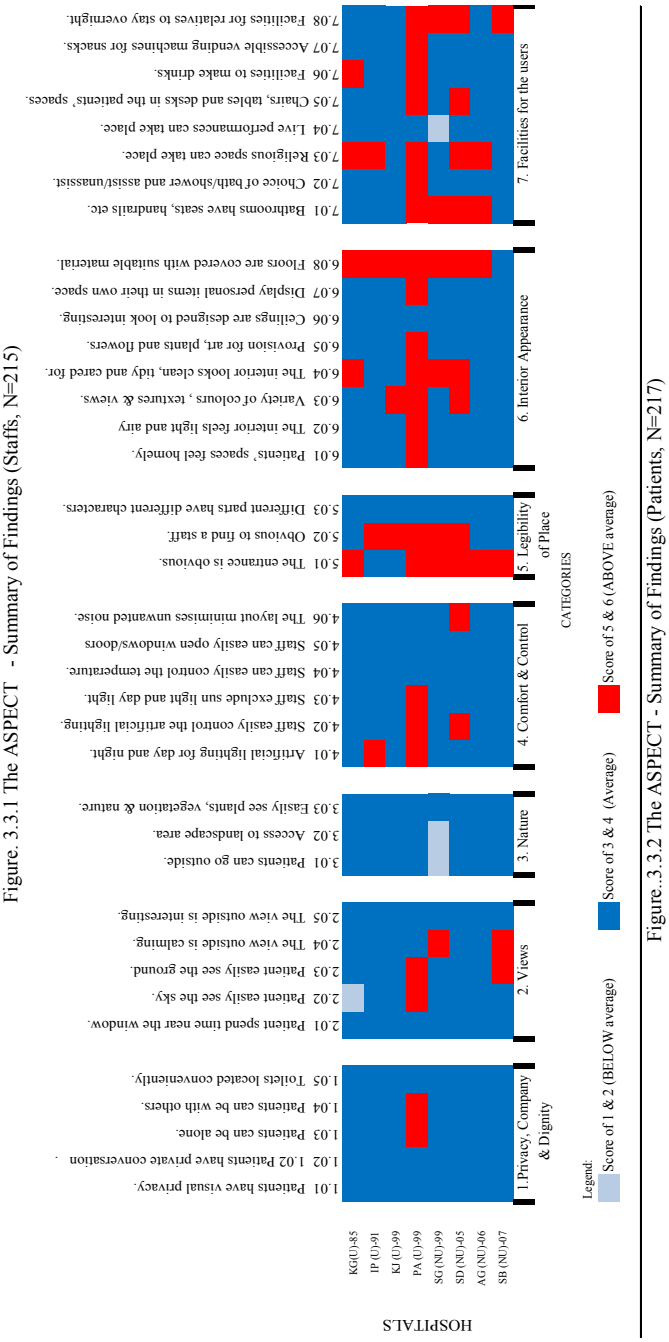


Figure. 3.3.2 The ASPECT - Summary of Findings (Patients, N=217)

5. Discussion and Conclusion

Based on the OHE framework a wholesome social, psychological, spiritual, and behavioral components of healthcare support satisfactions levels amongst users (both staffs and patients) in the wards have direct bearing towards the creation of a healing environment. The users' satisfaction levels were measured using the ASPECT evaluation. Based on the evaluation, the most favoured pediatric wards amongst the staffs and patients differed. While the staffs most favoured KJ(U)-99, it was PAU(U)-99 for the patients. Though the choices for the wards differed, however both wards recorded amongst the shorter duration of patients' stay. This clearly suggests that a high degree of satisfaction levels amongst users – both staffs and patients inclusive, contributed towards the creation of a healing environment.

It can be argued that the evaluations of the scoring for AEDET Evolution and ASPECT were done by different evaluators, - the AEDET Evolution by the authors, while the ASPECT by the users, hence the possibilities of discrepancies in the scoring. However, there seemed to be some agreement in the evaluation between those different evaluators as both PAU(U)-99 and KJ(U)-99 favoured by both patients and staffs respectively, were also amongst the better wards evaluated by the authors in the AEDET Evolution analysis.

The various therapies mentioned in the review of the literatures were clearly non-existence in all the settings of the study. Those were also omitted in both the AEDET Evolution and ASPECT evaluation toolkits. Since those therapies had been proven to support the healing environment, perhaps both the evaluation toolkits should have been modified to include them.

Hence, it can be concluded that the creation of a healing environment in paediatric wards do not solely depend on just the seemingly more conducive physical environment. Other components, wholesomely acted in tandem. Hence it is recommended that the design of future paediatric wards do not just emphasise on the physical environment but also to satisfy other components, such as the social, psychological, spiritual, and behavioral components of healthcare support. Suggestion for best practices in the design of newer wards include understanding the behavioural needs of end users and in the provisions of other additional therapies such as art, music, pet, aromatherapy, bibliotherapy, and narrative medicines - in the design brief.

Acknowledgements

This study was made possible by the Fundamental Research Grant Scheme (FRGS) provided by the Malaysian Ministry of Higher Education (MOHE) and the continuous support of Universiti Teknologi MARA (UiTM), Malaysia.

Special Note

This paper was developed further from the paper published by the same authors in Paediatric Wards: Healing environment assessment, *Asian Journal of Environment-Behaviour Studies* (ajE-Bs),2(4)January 2011, 63-76; and Healing Environment of Pediatric Wards, *Procedia - Social and Behavioral Sciences*, 5, 2010, 948-957, Elsevier, available online 21 September 2010.

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