



UNIVERSITI PUTRA MALAYSIA

**DESIGN CHARACTERISTICS OF HEALING GARDEN FOR DOWN'S SYNDROME
CHILDREN IN MALAYSIA**

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FRSB 2007 1



**DESIGN CHARACTERISTICS OF HEALING GARDEN FOR DOWN'S
SYNDROME CHILDREN IN MALAYSIA**

By

SHUREEN FARIS A. SHUKOR

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfilment of the Requirements for the Degree of Master of Science**

September 2007



DEDICATION

This thesis is dedicated to my parents, Abdul Shukor and Wan Chik Saad. Thank you for all your support. To my beloved husband, Mahayudin Mohamad and sons, Adam Faris and Addin Faris, you are the light of my life. The preparation of the theses, with the decision to study on the special children, had made me appreciate and cherish what I have and to be grateful with what Allah had bestowed upon me.

“..we are reminded that it is innocence and humility coupled with deep desire to express human thoughts and emotions that create any art of value..”

Disables Fables



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirements for the degree of Master of Science

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Chairman: Professor Mustafa Kamal bin Mohd Shariff, PhD

Faculty: Design and Architecture

Healing landscapes have always been associated with studying and planning for a specific type of population. Therefore, this study was carried out in order to identify the design characteristics of healing gardens for the Down's syndrome children in Malaysia. The behavior and disabilities of children with the Down's syndrome were studied together with the level of awareness and preferences of their parents towards healing garden. These will later determine the design characters in the healing garden that could contribute towards the wellbeing of the children. A total of 58 parents with children who have Down's syndrome and registered with the Malaysian Society of Down's Syndrome aged between 1 to 12 years old were involved in the study. Close and open- ended questionnaires with lists of landscape characters for the parents to rate were based on recommendations and guidelines for healing gardens from past studies. The parents had to identify the activities and the landscape design characters that their children most preferred when in a garden. Behavioral observation was also carried out to support this. Results from the findings have shown that for the Down's syndrome patients who are mostly affected by sensory deficits such as hearing and visual impairment, difficulty in speech and delay in socialization, the healing garden



should offer facilities that could encourage a sense of security, space for interaction and easy supervision. It should also heighten their sensory awareness and experience. The design considerations were listed into four groups that consist of the garden layout, spaces, hardscape and softscape characters based from the preferences of the parents. The result suggests that the healing garden should be considered as part of an early intervention and as a part of an out door therapy programme for children with Down's syndrome.

Keywords: healing garden, children's garden, Down's syndrome, early intervention



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**KAREKTOR REKABENTUK TAMAN BERCIRI BAIKPULIH UNTUK
KANAK- KANAK SINDROM DOWN DI MALAYSIA**

Oleh

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Pengerusi: Profesor Mustafa Kamal bin Mohd Shariff, PhD

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Landskap yang berciri baikpulih sering dikaitkan dengan kajian dan merekebentuk untuk satu populasi yang spesifik. Oleh itu, kajian ini telah dijalankan untuk mengenalpasti karektor rekabentuk taman baikpulih untuk kanak-kanak yang mengalami Sindrom Down di Malaysia. Perlakuan dan sifat kurang upaya kanak-kanak Sindrom Down ini dikaji bersama dengan tahap kesedaran ibu bapa mereka terhadap taman yang berciri baikpulih. Maklumat ini akan menolong menentukan karektor rekabentuk di dalam sebuah taman baikpulih yang dapat meyumbang terhadap meningkatkan kesejahteraan kanak-kanak tersebut. Sebanyak 58 orang terlibat dengan kajian ini yang terdiri dari ibu bapa kepada kanak-kanak Sindrom Down berumur antara satu hingga 12 tahun. Ibu bapa tersebut harus berdaftar dengan Persatuan Sindrom Down Malaysia. Borang soal selidik berbentuk soalan terbuka dan tertutup yang terdiri dari senarai karektor rekabentuk landskap yang dikenalpasti dari kajian-kajian yang telah dilakukan oleh pengkaji lain telah disediakan untuk para ibu bapa memilih. Ibu bapa perlu mengenalpasti aktiviti serta karektor landskap yang paling digemari oleh anak mereka apabila berada di taman. Pemerhatian ke atas



kanak-kanak Sindrom Down juga dilakukan untuk menyokong keputusan. Keputusan dari kajian menunjukkan yang kanak-kanak Sindrom Down yang kebanyakannya mengalami kekurangan upaya untuk mendengar dan melihat, kesukaran untuk bercakap dan lambat dalam bersosial, sebuah taman baikpulih haruslah berciri menjadikan mereka berasa selamat apabila berada di dalamnya, sebagai tempat untuk berinteraksi dan mudah untuk diawasi. Ia juga harus berupaya meningkatkan keupayaan deria mereka dan memberi pelbagai pengalaman baru. Cadangan untuk rekabentuk telah disenaraikan di dalam empat kumpulan yang terdiri dari susunatur taman, ruang taman, landskap kejur dan lembut yang telah disusun menurut kepentingan mereka berdasarkan dari pemilihan ibu bapa. Kesimpulannya, didapati yang taman berciri baikpulih boleh dianggap sebagai sebahagian dari program intervensi awal dan sebagai terapi yang dijalankan di luar bangunan khas untuk kanak-kanak Sindrom Down.

Katakunci: taman berciri baikpulih, taman kanak-kanak, sindrom Down, intervensi awal.



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I certify that an Examination Committee has met on 10th September 2007 to conduct the final examination of Shureen Faris A. Shukor on her Master of Science thesis entitled “Design Characteristics of a Healing Garden for Down’s Syndrome Children in Malaysia” in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the student be awarded the degree of Master of Science.

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DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations in which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UPM or other institutions.

SHUREEN FARIS A. SHUKOR

Date:



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CHAPTER 1

INTRODUCTION

In the twentieth century, several disciplines began to explore the intimate human connection to the outdoors. As society becomes increasingly urban, and problems such as suburban sprawl and pollution increased, the interest in nature, gardening and the outdoors increased dramatically. Environment and behavior experts within the field of psychology as well as designers and health care professionals have been researching the intimate connection that exists between humans and the natural world (Davis, 2002).

In addition to complementary medicine, experiences with nature were also being explored. Having a view of greenery has been attributed with restorative influences that result in faster patient recovery (Ulrich, 1991), and associated with improved concentration, better coping skills and lowered aggression (Taylor, Kuo & Sullivan, 2001). Healthcare environment studies by Marcus and Barnes (1999) wrote that gardens are exterior spaces with natural features that possess restorative properties to recuperate people including children with illness or physical and mental impairment. The restoration could be achieved through play therapy, (with parent's active cooperation) for ill children (Ismail, 2002).

Previous research has shown the therapeutic benefits of gardens. Roger Ulrich (1991), found that viewing natural scenes or design characters fosters stress recovery by evoking positive feelings, reducing negative emotions, effectively holding attention/ interest, and blocking or reducing stressful thoughts. When viewing



vegetation as opposed to urban scenes, test subjects exhibited lower alpha rates, which were associated with being wakefully relaxed.

Further research by Ulrich (1991) showed surgical patients with views of nature had shorter post-operative stays, fewer negative comments from nurses, took less pain medication and experienced fewer minor post-operative complications than those with a view of a brick wall. Although more research is necessary, results based on those researches thus far indicate the healing effects of natural design characters such as gardens.

In Malaysia, health facilities began to incorporate the idea of therapeutic or healing or restorative gardens in hospital and health care facility designs during the 1990's (Malaysian Ministry of Health press release, 27th. January 2003). Realizing the potentials and benefits of the healing garden, the Health Minister proposed in 1998 that hospitals under the Malaysian Ministry of Health (MOH) should have healing gardens in their facilities. In his speech to officiate the healing garden at the Kuala Lumpur General Hospital in 2003, the Minister mentioned that there were 115 hospitals under MOH that had built such gardens in their grounds (Malaysian Ministry of Health press release, 27th. January 2003).

As gardens were included in these designs, further research is needed to determine how effective they are, and how they can be better designed to meet patient needs. The researcher observed that simple landscaped area, entrance beautification and having stepping stones and pebbles for reflexology purposes as mostly found in healthcare facilities in Malaysia, must not be thought of as healing spaces.



The specific needs of the patients should be considered by understanding their abilities and social patterns as the type of facility and therapy program may determine design characters based on specific needs of the patients (Tyson, 1998). Stigdotter (2002) in her journal “What Makes a Garden a Healing Garden” wrote that when designing a healing garden, it is fundamental to focus on the people or patients for whom the garden is intended. For the purpose of this study, the group of special population chosen was the children with Down’s syndrome.

1.1 Background of Study

Research by the World Health Organization (WHO) reported that in every culture or country the disabled community makes up 10% of the total population. According to the Malaysian Department of Social Welfare (2001), Malaysia has 112,624 people with disabilities who has registered with the department. The department has categorized the disabilities into four groups. These were mental retardation (39,150), people with physical disabilities (38,053), hearing disability (20,443), and visually impaired (13,968).

The largest group, which is the mental retardation, includes autistic, Attention Deficit Hyperactivity Disorder (ADHD), slow learners and Down’s syndrome sufferers. The Down’s syndrome has been chosen as the study group as a majority of them have display the symptoms and having some of the disabilities in the four groups stated in the disability categories. Further to this, they are also easily recognizable due to their facial appearance compared to other disabilities in the mental retardation group such as autistic, hyperactive and slow learners.



Toddlers and pre-schools between the ages of 1 to 5 and primary school children ages between 6 to 12 years old suffering from the Down's syndrome were chosen as these are the groups that would benefit from an early intervention program. Ismail (2002) used same age groups in studying the effectiveness of healing gardens for hospitalized children. Puschel (1992) also recommended this as like all children, Down's syndrome can benefit from sensory stimulation by exploring the environment beyond the home.

For the Down's syndrome patients affected by sensory deficits such as hearing and visual impairment, difficulty in speech and delay in socialization (Trumble 1993), the healing garden should offer facilities that could encourage a sense of security, space for interaction and easy supervision and it should also heighten their sensory awareness and experience (Ousset, 1998).

Their therapy includes the occupational therapy. Part of the occupational therapy program involves the movement of their limbs and usage of all senses (M.N. Norsilawati, pers. comm., 2005). The performance components consist of sensory motor components where the program exposed the children with Down's syndrome to a wide variety of sensory inputs including visual, touch, hearing, smell, taste and movement in order to enhance the development of the child (Leshin, 1992, M.N. Norsilawati, pers. comm., 2005).

Three percent of infants with Down's syndrome have cataracts. The design solutions will include visual stimulations whereby bright colors are used as orientation. Other eye problems such as cross-eye, short sightedness, long sightedness and other eye



conditions are frequently observed in children with Down's syndrome (Puschel, 1992). Children with Down's syndrome are also attracted to art and music (S.Y. Sharifah, pers. comm., 2005). Thus, the healing garden should incorporate artworks that they could touch and experience. Some the children with Down's syndrome are also sensory deficits. The design characters introduced into the healing garden should encourage them to feel the different textures of the element in the garden.

The healing garden includes sound producing design characters to trigger the sense of hearing such as water and wind chimes. Children with Down's syndrome would benefit from the exposure to these design characters as 60 to 80 percent of children with Down's syndrome have hearing deficits (Puschel, 1992). Approximately 15 percent of people with Down's syndrome have atlantoaxial instability (where two neck bones are not well aligned due to loose ligaments). This includes other skeletal problems such as kneecap subluxation (incomplete or partial dislocation) and hip dislocation. The design characters in the healing gardens should be sensitive to these needs especially in the selection of the paving materials. The placement of benches and size of street furniture should take into considerations the physical size of the children with Down's syndrome as they mostly are short in stature with shorter hand or feet due to their under developed bones.

The Down's syndrome was therefore chosen for this study due to their disabilities and needs. By taking considerations their special requirements, the children with Down's syndrome can benefit from being in healing gardens that are designed as a supporting environment by aiding the triggering of their sensory organs.



Therefore, the primary purpose of this research attempts to investigate the design characters that contribute to the healing process of the Down's syndrome children. The term "early intervention" that was mentioned throughout this study, refers to an array of specialized program and related resources that are made available by health care professionals to the child with Down's syndrome. These health care professionals may include special educators, speech therapists, occupational therapists and social workers (Leshin, 1992). According to Sharifah (pers. comm., 2005), early interventions also consist of any program aimed at rehabilitating individuals with the outcome of improving the quality of life. Therefore, a healing garden has the potential of becoming part of the intervention program and Landscape Architects could be one of the contributors as part of the trans disciplinary team. The term trans disciplinary is explained further in Chapter 2 under the topic of Early Intervention.

1.2 The Problem Statement

Studies conducted over the past two decades have revealed the benefits of gardens (Marcus, 1995; Ulrich, 1991; Kaplan and Kaplan, 1989). However, research is needed to determine how best to design garden spaces that have enough restorative properties for rehabilitation of certain patients. According to Tyson (1998), Landscape Architects need a greater understanding of health care and the hospital environment in order to be able to design not just gardens in health care settings, but gardens for specific patient populations.



Humphrey (2005) stressed that it is important to develop knowledge of the type of patient you are designing for in order to plan an environment that will support the therapy objectives. Research by most cited authors on healing gardens such as Tyson (1998) and Morris (2003) added that there is a significant lack of research dealing in people with disabilities.

As the benefits of healing gardens had been proven by many researches, it is high time that the disable community in Malaysia benefited from the exposure to this type of gardens. This study had chosen the Down's syndrome sufferers due to majority of them have traits found in the found four disability group as listed by Malaysia Department of Social Welfare. This researcher believed that this could pave the way for other research dealing with healing gardens related to other disabilities in Malaysia.

Furthermore, the people who are related to organization dealing with Down's syndrome are most likely to have a child with Down's syndrome. From the researcher own observation, less attention was given in terms of design recommendation for this type of population unless the designers or administrators have family members with this syndrome. The urgency from other professionals, especially designers, was not apparent.



1.3 Research Questions

The following research questions have been identified as important for this study:

1. What types of design characters specifically contribute to the healing process?
2. Are the parents of the Down's syndrome children aware of the existence of healing gardens?

1.5 Research Significance

This study has been stimulated by the lack of research concerning outdoor environment for the disabled. Currently, no study has been carried out to identify the design characteristics of a healing garden for Down's syndrome patients. A number of references and projects can be cited where the physical environment was credited with reducing stress levels, shortening recovery periods, decreasing hospital stays, containing and reducing psychopathology, decreasing pain medication dosages and improving staff attitudes and quality of care (Coryell, 2003; Ulrich, 1991). These studies included on those who were hospitalized, disabled or with chronic illness such as Alzheimer, AIDS, cancer and Attention Deficit Hyperactive Disorder (ADHD). This study is the first attempt to investigate the design characteristics of a healing garden for the Down's syndrome sufferers in Malaysia.

The knowledge gained from this study will improve future facility-user relationships as well as provide the necessary empirical data to convince health administrators, non- government organizations (NGOs) and insurance providers of the value of landscape design in health care facilities and therapy centers.



The Malaysian Medical Association (MMA) in 2002 noted that,

“We need to help the disabled person to live the fullest life possible within the society and the environment. This requires not only the rehabilitation of the disabled but also changes in the attitudes of people and modifications in the environment.”

1.6 Research Goal

The goal of this research project is to investigate the design characters that contribute to the healing process of the Down’s syndrome children.

1.7 Research objectives

The following objectives were established towards achieving the goal.

- i. To gauge the level of awareness and preference of parents with Down ‘s syndrome children towards healing gardens,
- ii. To understand the behavior patterns and disabilities of children with Down’s syndrome,
- iii. To identify the design characters of the healing garden that contributed towards the comfort of Down’s syndrome children.

