UNIVERSITI PUTRA MALAYSIA

CHILDREN'S AND ADULTS' NEEDS FOR OPEN SPACE IN TEHRAN'S HIGH-RISE APARTMENTS

ALI SHARGHI

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CHILDREN'S AND ADULTS' NEEDS FOR OPEN SPACE IN TEHRAN'S HIGH-RISE APARTMENTS

By

ALI SHARGHI

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in fulfilment of the Requirements for the Degree of Doctor of Philosophy

August 2014

DEDICATION

To

My Lovely Family

Marjan, Sina and Sana

To my late mother
and
My late father-in-law

"Children face the excitement of a changing world, with many opportunities and challenges; but they also encounter formidable barriers to their health, development and well-being in the form of environmental threats. During recent decades, new knowledge has emerged about the special vulnerability of children to environmental risks in the places where they live, learn and grow. Children's exposure to chemical, physical, and biological risks at home, in school, in the playground… and needs to be recognized as an important threat to their development and survival. Action to reduce the risks is required at global, regional and national levels."

World Health Organization (WHO, 2004)

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in
fulfilment of the requirement for the degree of Doctor of Philosophy

**CHILDREN'S AND ADULTS' NEEDS FOR OPEN
SPACE IN TEHRAN'S HIGH-RISE APARTMENTS**

By

ALI SHARGHI

August 2014

Chairman: Suhardi Bin Maulan, PhD
Faculty: Design and Architecture

Dramatically increasing urbanization and population growth bring pressure on open
space within urban areas, and the issue has affected lives of urban dwellers. In the
process, significant quantities of natural resources or greenery in the urban areas
have declined. Nevertheless, significant evidences from research show that contact
with nature via open spaces is important for city dwellers, especially children. It is
argued that children's relationship with nature is a fundamental to developing their
full potential. Previous research also shows lack of playing spaces close to their
urban homes and parent-limited opportunity to play outdoors. The situation has
resulted less active children, lack of access to open spaces and less mobility in
playing places. Lack of connection between children and nature has a physiological
and psychological effect on children. Therefore, this study looks into the issue of
high-rise open spaces and specifically tries to answer research questions related to
adults' and children's needs from their high-rise apartments' open spaces. Two high-
rise apartments, Sobhan and Pas in Tehran, were selected as study areas; adult's and
children's needs from their open spaces were gauged by survey, interview and
observation. Altogether, 261 adults have been surveyed and 80 children were
interviewed. The results of the analysis show that parents and children have
differences and similarities regarding their needs from open space. Children show
high satisfaction of their needs from open spaces and would like to play in open
space and playgrounds because they feel that these areas allow them a wide range of
opportunities that are not possible in other areas such as playfield and social spaces.
Meanwhile, adults have lower satisfaction from open spaces due to their anxiety for
safety in open space. In this relation, compared to children, adults were found to
prefer social and formal recreational areas in the open spaces. Regarding the
similarity in their preferences, both children and adults like soft landscape's elements
such as trees and shrubs. The main implication of this research is that landscape
architecture education should be tailored towards understanding users' needs in order
to design open spaces in general. It is also expected that landscape designers try to
design high-rise apartments open spaces based on users' needs, especially related to
adults' and children's preferences and perceived safety. Designers also have to find
ways that can enhance familiarity with open spaces. Furthermore, designers are up to

challenge to design open spaces in high-rise apartments that capable to combine adults' and children's needs for their spaces and activities. In addition, policy and guidelines must be rectified by governments in relation to the planning and design of high-rise apartments open spaces.

Abstrak ini dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk bergraduat Ijazah Ke Doktor Falsafah

KEPERLUAN ORANG DEWASA DAN KANAK-KANAK TERHADAP RUANG TERBUKA BAGI PANGSAPURI BANGUNAN TINGGI DI TEHRAN

Oleh

ALI SHARGHI

Ogos 2014

Pengerusi: **Suhardi Bin Maulan, PhD**
Fakulti: **Rekabentuk dan Senibina**

Pertambahan penduduk di kawasan bandar menyebabkan pembangunan yang pesat di bandar dan memberi tekanan terhadap ruang landskap untuk juga dibangunkan. Isu ini menimbulkan suasana yang boleh menjejaskan kualiti kehidupan penduduk bandar. Terdapat bukti yang signifikan daripada beberapa kajian menunjukkan betapa pentingnya hubungan diantara manusia dengan alam semula jadi dan hubungan ini diterjemahkan melalui ruang landskap dan kawasan lapang. Hubungan ini amat penting bagi warga kota, terutamanya kanak-kanak kerana hubungan alam semula jadi dengan kanak-kanak adalah asas bagi perkembangan pembangunan minda serta potensi mereka. Kajian juga menunjukkan bahawa peluang bagi kanak-kanak bermain berhampiran dengan rumah di bandar adalah semakin terhad dan larangan ibu bapa untuk anak mereka bermain diluar juga menjadikan peluang kanak-kanak berinteraksi dengan dikawasan lapang juga adalah semakin berkurangan. Masalah ini menyebabkan kanak-kanak didapati menjadi kurang aktif dan bergerak di di kawasan lapang dan permainan mereka. Situasi ini akan menimbulkan kesan kepada fisiologi dan psikologi kanak-kanak. Oleh itu, kajian ini melihat isu berkaitan ruang terbuka dikawasan apartment tinggi terutamanya berkaitan dengan keperluan orang dewasa dan kanak-kanak. Dua kompleks apartment tinggi, Sobhan dan Pas di bandar Tehran, telah dipilih sebagai kawasan kajian kes dan keperluan orang dewasa dan kanak-kanak terhadap kawasan lapang di kediaman mereka ini telah dinilai melalui kaedah kaji selidik, temubual dan pemerhatian. Secara keseluruhannya, 261 orang dewasa dan 80 kanak-kanak telah ditemuramah. Dapatan kajian menunjukkan bahawa ibu bapa dan kanak-kanak mempunyai kehendak yang berbeza berkaitan ruang terbuka dan kawasan lapang di kompleks apartment mereka. Kanak-kanak menunjukkan keperluan yang tinggi terhadap ruang terbuka dan sentiasa ingin bermain di kawasan lapang dan taman permainan. Ini adalah kerana mereka merasakan bahawa kawasan ini membolehkan mereka melakukan pelbagai aktiviti yang tidak boleh dilakukan di kawasan sukan khusus dan ruang interaksi sosial. Sementara itu, bagi orang dewasa pula keperluan terhadap ruang terbuka adalah lebih rendah kerana mereka bimbang tentang tahap keselamatan di ruang terbuka. Walau bagaimanapun, orang dewasa didapati lebih suka terhadap kawasan rekreasi, ruang sosial dan formal berbanding dengan kanak-kanak. Namun, kanak-kanak dan orang dewasa didapati measa amat berpuashati

dengan landskap lembut seperti pokok, dan pokok renek. Implikasi utama daripada penyelidikan ini adalah, pendidikan seni bina landskap perlu disesuaikan ke arah memahami kehendak dan potensi pengguna di dalam membentuk ruang terbuka secara umum. Pereka perlu mencari jalan yang boleh meningkatkan rasa keselesaan di kawasan lapang. Pereka juga harus menyahut cabaran untuk mereka bentuk ruang terbuka di apartment tinggi yang mampu untuk menggabungkan keperluan orang dewasa dan kanak-kanak dengan aktiviti yang bersesuaian. Kajian ini juga mencadangkan supaya pereka landskap merekabentuk ruang terbuka di apartment tingi berdasarkan faktor-faktor keselamatan. Di samping itu, dasar dan garis panduan amat perlu dibangunkan oleh pihak kerajaan berhubung dengan perancangan dan reka bentuk ruang terbuka bagi kawasan pembangunan apartment tinggi.

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This thesis was submitted to the senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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Declaration by graduate student

I hereby confirm that:
- this thesis is my original work;
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LIST OF ABBREVIATIONS

DESA	Department of Economic and Social Affairs
UNPD	United Nations Population Division
UN	United Nations
WHO	World Health Organization
CDC	Centre for Disease Control
USDHHS	Department of Health and Human Services
UNESCO	United Nations Educational Scientific Cultural Organization
ANFPA	American National Fire Protection Association
MPS	Master Plan of Tehran
SCI	Statistical Centre of Iran
OICT	Organization of Information and Communication Technology
TV	Television
PC	Personal Computer
PM	Past of Midday
AM	After Midnight
X^2	Chi-square
CFA	Confirmatory Factor Analyses
ANOVA	Analysis of Variance
SL	Soft Landscapes
CA	Children Areas
SS	Social Spaces
RS	Recreational Spaces
UNICEF	United Nations International Children's Emergency Fund

CHAPTER 1

INTRODUCTION

For the past several decades, the population of cities worldwide has increased more than the rural population. A report from Department of Economic and Social Affairs (DESA), of United Nations Population Division (UNPD), stated that urban population has exceeded than rural population for the first time and the rate of urbanizing is faster than the past (UN, 2008). Dramatic increase of urbanization brings pressure on the landscape and has affected the lives of all urban residents including children (Home, Bauer, & Hunziker, 2009).

As a major by-product of urbanization, the high-rise apartments have appeared in urban societies to meet urban residents' needs and population growth. While building high-rise apartments helps to increase urbanization, it challenges family life with compressed units and open spaces. Especially, the children living in high-rise apartments are more sedentary than before (J. Veitch, Salmon, & Ball, 2008).

This research attempts to understand the above-mentioned issues, especially the adults and children's needs of high-rise apartments open spaces in Tehran.

1.1. High-rise Apartments, Open Spaces and Families with Children

Both from the point of view of housing and urban design, high-rise apartments are still in their infancy and have a long way to become a part of our urban life (Ghoshal, 1970). On the other hand, the evolution of high-rise buildings has a distinct relation to the growth of human civilization. As a result of technical and scientific advancement, high-rise apartments have begun to emerge as an important product of urbanized society in the modern time (Ghoshal, 1970). For the last five decades, high-rise apartments have reached a unique position in the every urban centre of the world, due to population growth and increasing land and building costs (Ghoshal, 1970).

Nevertheless, high-rise apartments do not have a definite position in modern urbanism because they are perceived as culturally inappropriate especially for families with children (Appold & Yuen, 2007). Appold and Yuen (2007) stated that high-rise apartments are more economical and help social and commercial services such as restaurants and shops to meet more customers without automobile transportation. However, they challenge family life because apartment units tend to be smaller than traditional houses and cannot provide parents the opportunity to efficiently supervise their children playing.

In the past, cities were most successful when people and buildings were in a balanced proportion to nature. However, high-rise apartments work against society because they prevent units of family, neighborhood and social importance from functioning as normally as before (Kunstler & Salingaros, 2001). In a sense, modern high-rise apartments work against nature, environment and human needs. They isolate people from others, and children suffer even more because they lose their direct contacts with nature and other children (Kunstler & Salingaros, 2001).

Todays, it is found that children in every city, especially those living in apartments are more sedentary than before (J. Veitch et al., 2008). It is hard for these children to access open spaces, or to have free access to playgrounds (J. Veitch, Bagley, Ball, & Salmon, 2006; J. Veitch et al., 2008). Almost, one-third of children are reported to have a range of access to play spaces less than 100 meters from home. Furthermore, children's opportunities to connect with active play are limited due to the lack of play spaces close to home (Roemmich et al., 2006; J. Veitch et al., 2008).

Therefore, residents of high-rise apartments, especially those with children have challenges for their connection to nature and open space; hence, this study efforts to argue concerning the issues of this connection.

1.1.1. Children, Growth and Physical Activities

Children's relationship with nature is a fundamental part of their development, which helps them to reach their full potential (Piaget, 1960). Vygotsky and Piaget are two child psychologists that believed playing with natural and man-made elements gives children valuable practice and leads them to cognitive development (Ismail. Said & Abu Bakar, 2005). While contact with nature is important for city dwellers, especially children; children's free access to play outdoor essential for their health, has been limited by the situation of contemporary cities (Wachs, 1985). Children like to play in areas with diverse vegetation; and the natural landscape allows them opportunities that are not available in other playground options (Fjortoft, 2004; Fjortoft & Sageie, 2000). However, lack of connection between children and nature in urban areas create physiological and psychological issues for their growth (Roemmich et al., 2006; J. Veitch et al., 2008).

In comparison with adults, physical activities of children are different inherently. Almost all children are naturally more active than adults. *"Adults stimulate the central nervous system by a variety of activities, but children rely exclusively on movement; this suggests children have an innate biological necessity of being active in normal growth and development"* (Mazzardo Jr, 2008, in page 12). Children's patterns of physical activities are, usually, demonstrated by irregular physical activities rather than continuous physical activity ones (Bailey et al., 1995). Furthermore, physiological evidences show that more than 95% of the rest period for children is shorter than 4 minutes 15 seconds. During which they attend to short and sprint type exercise of 5 to 10 seconds. Because of differences in the metabolism was limited their performance in dynamic physical activities for a long time (Brooks, Fahey, White, & Baldwin, 2000).

Bodies of youth are more capable of doing vigorous physical activities, but children are less likely to meet the same level of contribution in physical activities. As a result of which it is against children's body mechanism to cause a disorder in their natural growth (Welk, 1999). Therefore, the World Health Organization (WHO) recommends that children have to take part in at least 60 minutes of moderate physical activity in every day. Adults have to provide the opportunities for children by installing almost 12 different facilities and playing tools in open spaces to fill one hour of physical activity for them in every day.

Nonetheless, over the past three decades, the number of obese or overweight children has doubled, from 15% in the 1970s to nearly 30%. Today, the decrease in children's physical activity is one of the principal reasons for childhood obesity (Ellaway, KirK, Sally Macintyre, & Mutrie, 2007). The situation has reached epidemic level worldwide (Elamin, 2010). Accordingly, Centres for Disease Control (CDC) in the USA reported that 19% of children 6-11 ages old and 17% of children 12-14 ages old are overweight (CDC, 2006). In Tehran, it was found that 20-30% of children are obese or overweight (Rashidi, Mohammadpour, Vafa, & Karandish, 2005). Because of Tehran's children do not have enough physical exercise (Maddah, 2010). In additions, the children also watch television for more than two hours per day (Hamidi et al., 2006).

Obesity in children is significantly associated with diseases such as hypertension, cardiovascular issues, and orthopaedic conditions. Additionally, the Department of Health and Human Services (USDHHS) in USA reported that obese children are at more risk of becoming obese in their adulthood (USDHHS, 1999). Children's overweight is a serious problem in the worldwide cities, which is related to genetic and behaviour (lack of physical activities) problems (Roemmich et al., 2006; WHO, 2000).

On the other hand, Sallis and Glanz (2006) found that lack of sidewalks in built environment condition discourages walking and biking in open areas and consequently decreases children's physical activities. They suggested to numerous aspects of the built environment that promote obesity and reduce rates of children's physical activities (Sallis & Glanz, 2006).

Therefore, physical activity is essential for promoting the growth, development, and health of children's. United Nations Educational Scientific Cultural Organization (UNESCO) has recommended following stages for designing children's play spaces (Driskell, 2002; UNESCO, 1988):

1- Physical development
2- Intellectual development
3- Social development and,
4- Emotional development

To designing play spaces as four dimensions above-mentioned can enhance the children physical activities.

According to psychological studies, younger children need to be active and play more than older children and teenagers. Piaget in his cognitive development theory (Piaget, 1960) argued that there are four stages of children growth. He emphasized those children in second and third stages, aged between 2 and 11, need more physical activities than the two other stages (Barbel, 2000). During these two stages, children develop motor skills and are excited to experience different types of movement. Despite understanding the importance of nature for children growth, most children in urban cities have limited outdoor plays. Therefore, the issue of obesity and lack of access to open spaces are still increasing (Kohl & Hobbs, 1998). Why does this happen? This study attempts to search the reasons and solutions for this issue.

1.2. Problem Statement

According to Gifford (2007), high-rises are less satisfactory than other forms of housing for most people and particularly those adults who are parents of small children, because of high-rises couldn't fulfill their needs. Gifford also mentioned that it is difficult to find evidence showing high-rises are suitable for children and several studies suggested parents' dissatisfaction about their suitability for children (Gifford, 2007).

Parents have an important role in supporting children involvement in outdoor activities and built environmental designs as well as in the time children spent playing outdoors (Bringolf-Isler et al., 2010). Bringolf-Isler et al. (2010) stated that it is difficult for parents to supervise their children in outdoor. Therefore, parents of high-rises apartments keep their children at home; even if facilities of open spaces cover much of their needs (Huitt, 2007; Maslow, Frager, & Fadiman, 1970).

Therefore, there is a probability that issues about urban children obesity and lack of access to open spaces relate to their needs from open spaces. Accordingly, it is important to understand the adults and the children needs of open spaces of high-rise apartments.

1.3. Research Questions

This research attempts to answer the questions about adults and children's needs of high-rise apartments open spaces in Tehran. Therefore, the main research question deals with adults and children's needs of open spaces in high-rise apartments of Tehran. In addition, the research sub-questions are as follows:

1. What are the adults' needs regarding high-rise apartments open space?
2. What are the children's needs regarding high-rise apartments open space?
3. What are the differences and similarities between adults and children needs with regard to high-rise apartments open space?
4. What are the factors that affect both groups' needs?

1.4. Research Goal and Objectives

The goal of this study has been set to understand children and adults' needs of open spaces in high-rise apartments in Tehran and the objectives of the research are outlined as follows:

1. To identify adults needs regarding high-rise apartments open space
2. To identify children needs regarding high-rise apartments open space
3. To identify adults and children similarities and differences regarding their needs for open spaces in high-rise apartments

1.5. Significance and Scope of Study

This study tries to answer research questions related to adults and children's needs of high-rise apartments open spaces. In addition, the research will try to find their differences and similarities regarding their favourite places in high-rise open spaces

and those qualities. It is expected to find an information base for architects and landscape architects to plan and design residential high-rise apartments open space to increase adults and children needs, especially for to enhance children's physical activities.

In addition, according to vroom Need-Fulfillment theory, the difference between people level of needs and the environment resulted in the level of their satisfactions (Smith, 2011; Vroom, 1964). Therefore, this research attempts to measure people needs in the open spaces of high-rises to understand their satisfaction.

Furthermore, this research tries to expand the knowledge of design in high-rise open spaces to support residents' physical activities especially children. The results of this research will contribute to a better understanding of the positive and negative spatial parameters of open spaces, which produce connection or disconnection of adults and children to open spaces. The final aim of this study is to optimize operational open spaces in residential high-rise condominium to prepare an adequate area for residents, especially children with physical activities.

1.6. Organization of Thesis

This study is organized into six chapters as follows:

Chapter One gives an overview of the background and significance of children's connectivity to nature and open spaces, adults and children's needs of high-rise apartments with a focus on Tehran, the capital of Iran. This chapter also provides the statement and significance of the research problem and finally summarizes the importance of the study.

Chapter Two presents the literature review, which defines the research direction by providing a theoretical understanding of open spaces at high-rise apartments for children and adults. Chapter two are also discussed the social and cultural conditions of the apartments in European and North American countries and also Tehran, the capital of Iran, in specific. This chapter also highlights high-rise apartments and the rules of housing designing in Tehran. Furthermore, a review of literature helps to identify factors that potentially affect children and adults needs of open spaces.

Chapter Three describes what methods are used and how the study is designed and the data are analysed. In this chapter, the procedure of choosing site cases is explained and the methods of data collection regarding adults survey, children interview and researcher observation are discussed as well.

Chapter Four describes the results and findings of the research related to the adults' needs of open spaces in high-rise apartments.

Chapter Five is similar to chapter four, in that it describes the results of the research findings regarding children's needs of high-rise apartment's open spaces. Furthermore, this chapter discusses the observation of children's activities and adults presence in open spaces.

Chapter Six discuss the differences and the similarities between adults and children's needs of open spaces in high-rise apartments. Then, the important factors at high-rise apartments open spaces that affect the varying needs of adults and children are described. Furthermore, this chapter summarizes the significant findings of this research and discusses the implications of the findings for high-rise apartments open space planning and designing in an urban context. Finally, chapter six concludes with recommendations for future studies.

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