OBSERVATION OF TWO GENERATION USABILITYIN OPEN SPACES AT HIGH-RISE APARTMENTS

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Abstract - Increase of living in high-rise apartments brings pressure to urban dwellers quality of life. It challenges the traditional way of living especially to family with children. This study with observation methods, survey of adults and interview of children, attempts to identify two groups' usability for high-rise apartments open spaces in Tehran. The observations reveal that adults prefer landscape elements and social areas; however children prefer landscape elements and children areas and there are differences in the way adults and children perceived their open spaces. Therefore, high-rises open spaces have to be designed to meet both group needs and preferences.

Keywords - Landscape, High-rises, Open-spaces, Adults, Children.

I. 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 to urban dwellers quality of life (Home, Bauer, & Hunziker, 2009). One of the urbanization by products is high-rise apartments, and they appeared to meet urban residents' housing needs. Nonetheless, while high-rise apartments help to meets housing demands, it challenges the traditional way of living especially to the family with children (Veitch, Salmon, & Ball, 2008). It is due to the facts that high rise apartments have limited open spaces and often with limited opportunities. Therefore, this study attempts to identify adults and children's usability for high-rise apartments open spaces in Tehran.

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 (Veitch et al., 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.

Children's relationship with nature is a fundamental part of their development, which helps them to reach their full potential (Piaget, 1960). Playing with natural and man-made elements gives children valuable practice and leads them to cognitive development (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; Veitch et al., 2008).

In comparison with adults, physical activities of children are different inherently. Almost all children are naturally more activethan 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).

Children's needs are physiological rather than psychological. Moreover, when they feel open space is safe, can play there with friends and will be satisfied (Driskell, 2002; UNESCO, 1988; WHO, 2004).Furthermore, they are the main consumers of public outdoor environments, but their needs, usually, forgotten in the designing and planning processes (Kyttä, 1997).

II. RESEARCH METHOD

This study uses three techniques for data collection, respectively:

- Questionnaire survey of adults regarding their needs and factors affecting their needs from high-rise open spaces.

- Interview with children regarding their preferences for high-rise apartments open spaces.
- Observation of usability of open spaces for adults and children in high-rise apartments to validate the findings from the survey of adults and children.

The final method of this study in collecting data from the high-rise apartment complexes under the study is to observe how children and adults use the open spaces. The purpose of the observation is to record their preferred and favourite spaces and children's mobility in the open spaces. The method of observation has been used as a tool for data collection about people, cultures, and processes in qualitative research. Similar to qualitative methods like interviewing and document analysis, observation methods helps to the researcher to describe existing situations by using the five senses (Kawulich, 2005). Kawulich (2005) stated that goals for the design of using observation as a method is to study phenomena as an objective and rational way due to the limitations of the methods. Therefore, in this study, the observation methods are used as a procedure to increase the validity of the study (DeWalt & DeWalt, 2010). Bernard and Bernard (2013) suggested five reasons for observation to increase the validity of the study:

- Being on the case sites familiarizes the researcher to the community.
- It reduces the people acting in a particular way when they are aware of being observed.
- It helps the researcher to develop questions in culturally relevant.
- Observation enables to researcher for understanding the happenings
- Sometimes, it is the only procedure to collect the right data for the study.

As above-mentioned, this study attempts to observe children and adults preferred and favourite in the open spaces. It performed for involves their activities and deciding what, where and when to observe, and to write up the findings on the maps. The researcher, for observation, should become familiar with the sites and those social and cultural conditions.

2.1. Observation procedure

The observation method is recommended by Moore (1986), Heft (1988), Hart (1997), Kytta (2002)Fjortoft (2004), Chatterjee (2006), Demir (2006) and Thorleifsdottir (2008). The week after every survey period; upon earlier arrangement with both apartment managements; the adults' and children's activities in the open space were observed. The observations were made in a period of six days. The observation took place in the afternoon (12-15 P.M.), evening (15-18 P.M.) and early night (18-21 P.M.) because a random check revealed that almost all children go to open space during these times of a day. The observation process focuses on two dimensions as spatial distribution of users and frequency of user presence in open space. In each week, three days were randomly selected for the observation period. In addition, 261 adults were surveyed, and 80 children were interviewed to understand their preferences and familiarity for the open spaces.

For every observation day, the researcher used a draft copy of site maps and recorded presence of adults and children draft maps. Presences of users recorded on three draft maps for the site of Sobhan and also three of them for the site of Pas. In the observation process, children and adults preferred places, number and time of presence were observed and recorded, which is further explained as follows.

- The spatial distributions of children's and adults' presences were recorded on draft maps of the site plans for every observation day. It efforts to compare the spatial distribution of every group of users based on their preferences about where to be and answers in the survey or interview.
- The numbers of children and adults as recorded on maps show that the presence of children in open spaces was more than adults. However, for find and show it, study tries to record the number of children and adults presences on draft maps of site plans. Moreover, it show presences in figures for the comparison of the real presences of two groups together and their answers in the survey or interview together.
- Time of The results of the time for children and adults Presence in open spaces are important for a better comparison in this aspect.

2.2. Data Analysis of Observation

For the analyses of the observation records, the spatial distribution of adults and children and numbers of their presence in open space were collected. As this study sought to triangulate data sources including adults' survey and children interview by the observations; those are compared with the results of survey and interviews for both high-rise apartments open spaces. Therefore, observations of children and adult presences were recorded on maps of site plans. The results show that there are differences in the way adults and children perceived their high-rise open spaces.

III. RESULTS AND DISCUSSION

This study sought to triangulate data sources including adults' survey and children's interview through the researcher observations. When the results of several methods of data collection are approved, combination of data is obtained, and the finding becomes credible for adjudication (McMillan, 2004). As mentioned, the differences and similarities of children and adults presence and distribution for high-rise apartments open spaces compared together.

3.1. Usability of Open Space for Children and Adults
The results of the observation method, where the frequency of adults and children presences and spatial distribution of them at open space argued as follow.

3.2. Spatial Distribution of Users
The results of children and adults' presences recorded on draft maps of site plans for every day. The recordings were compared with the real presence and activities of the users as they had stated in the survey or interviews. In this relation, the distribution of children and adults in open spaces for both high-rise apartments (Sobhan and Pas) are recorded in draft maps.
The observation results, in both sites reveal that 49.5% of the children (N = 92) play in playgrounds, 43.5% (N = 81) play in open space and 7% (N = 13) are found to play in the play-fields (Table 1).

Table 1. Spatial and time distribution of children in open space

	Time of Day			
Area	Afternoon (%)	Evening (%)	Early night (%)	Total (%)
1 Open spaces	15	55	11	**81(43.5)**
2 Playgrounds	28	48	16	**92 (49.5)**
3 Play-Fields	3	7	3	**13 (7.0)**
Total	**46 (24.8)**	**110 (59.1)**	**30 (16.1)**	**186 (100)**

Moreover, regarding the presence of children in both study sites, the following results were gained through observations. In Sobhan, 51.5% of the children (N = 51) play in playgrounds, 47.5% (N = 47) play in open spaces and only 1% (N = 1) play in the play-fields. As for Pas, 47.1% of the children (N = 41) play in playgrounds, 39.1% (N = 34) play in open spaces and 13.8% (N = 12) play in play-fields. The results in both cases are almost similar for playing in open spaces and playgrounds. However, a major difference was found between the two cases with respect to playing in play-fields because only one child was observed in the play- field in Sobhan, compared to 12 children seen in Pas (Figure 1). It reveals that play-field areas and body tools facilities in Pas are more than Sobhan, as was observed by researcher in duration of data collection time.

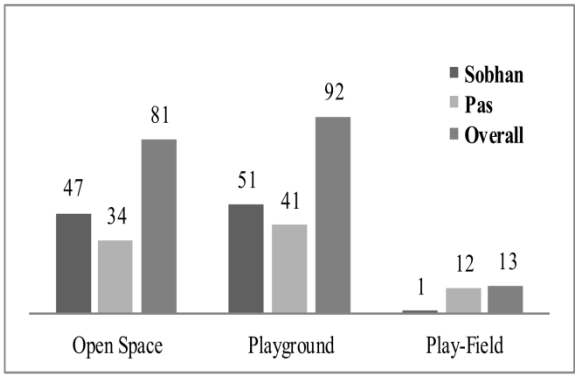


Figure 1. Areas where children play

Apart from slight differences, the results of children observations are almost similar to the results of their interviews, because children use every area for every type of play. For instance, they play hide and seek in open spaces and in playgrounds. As Heft (1988) and Kytta (2002) stated children are able to use everything and every area to play so they are readily satisfied. However, regarding adults' presence and distribution in open spaces, observations show that 52.7% of the adults (N = 49) were in social and open spaces, 22.6% (N = 21) close to children playgrounds and 24.7% (N = 23) in play-field spaces (Table 2).

3.3. Number of users and time of visit
The results show that 59.1% of the children (N = 110) were present in open spaces in the evenings, 24.8% (N = 46) in the afternoons and only 16.1% (N = 30) at early nights (Table 1). With regard to adults, the result of observations demonstrates that 47.3% of the adults (N = 44) is observed in open spaces in the evenings, 34.4% (N = 32) at early nights and only 18.3% (N = 17) in the afternoons (Table 2).

Table 2. Spatial and time distribution of adults in open space

	Time of Day			
Areas	Afternoon (%)	Evening (%)	Early night (%)	Total (%)
1 Social and open spaces	10	21	18	**49 (52.7)**
2 Close to children's playgrounds	5	11	5	**21 (22.6)**
3 Play-fields and recreational spaces	2	12	9	**23 (24.7)**
Total	**17 (18.3)**	**44 (47.3)**	**32 (34.4)**	**93 (100)**

3.4. Comparison between adults and children observation
This study attempted to explain observation results about children and adults distribution in open space. It was observed that children presence in open spaces was twice of the presence of adults (186 versus 93 as are shown at Figure 2). This result is supported by Farver, Ghosh, and Garcia (2000) stating that children spend more time outdoors than their parents or adults.
However, the presence of adults at early night is more than children (32 versus 30). It was found that the presence of children in the afternoon (46 versus 17) and evening (110 versus 44) are twice more than that of adults. As it was revealed, early night time is a free time for adults, so they use open spaces, whereas this is the time for children to rest and sleep.

As summarized, this study argued about the results of observation, where the adults and children presences in open space were checked through observation methods. Accordingly, the main observation findings are as follows: 1) Presence of children in open space is almost two times more than adults. 2) Children's presence in open spaces at early night is less than adults. Those finding were supported with Maslow and Vroom theory were mentioned to relationship between people needs and environment (Chapman,

2012; Huitt, 2007; Maslow, Frager, & Fadiman, 1970; Smith, 2011; Vroom, 1964).

The observations reveal that the popular time for both children and adults to use the open spaces are mostly the afternoon and early nights but in term of the volume, more children are using the open spaces. It is also observed that the children mostly play in every part of the open spaces, but the adults are found to use the spaces for mostly socializing and sports activities. The children also were found to use the open spaces more than the adults. Meanwhile, the survey results show that the adults prefer soft landscape elements, social areas and sports facilities. However, for children, the interview results reveal that they prefer landscape elements and children play area more than sports and social spaces.

CONCLUSION

The results and findings of the survey for adults' needs, interview for children's needs and observation of their activities in open space were then described. The differences and the similarities between adults' and children's needs from open spaces were explained, and both group needs was compared. Accordingly, the principal factors at apartment open spaces which affect the varying needs of adults and children were described and discussed. As observed, adults prefer social spaces because they use it for their needs more than children do. However, children mostly prefer recreation spaces such as playfield (first rank for adults and children) because they can to use these spaces for play and adults allow them to use it. This study concludes and summarizes the significant finding of the adults' and children's observation at open spaces of two high rise complexes. And also the implications for this study proposed that the high rises open spaces have to be designed to meet both group of adults and children needs and preferences. In addition to it should be challenging because the limited spaces available at the high rise apartments.

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