

# The Role of Sustainable Development in Child-Friendly Communities to Improve Children's Health and Well-Being (Case Study: Zanjan City, Iran)

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**ABSTRACT:** Sustainable development has an important role in creating children-friendly communities especially on designing neighborhood open spaces to improve the children's health and wellbeing. This paper explores the children and their parents' ideas about the quality of residential environments with focus on a new neighborhood in Zanjan city, Iran. The research method is based on the analysis of the neighborhood open space design by observing of the children behavior and recording the parents' ideas. Random sample parents on the neighborhood were answered the qualitative questions and the children were asked to paint their cognitive maps and models about ideal healthy neighborhood. The results of the study show that natural characteristics of community design, social contacts of the children and parents with neighbors, environmental safety and security and physical activity in playgrounds have the main role in making child-friendly communities. Using sustainable design paradigm can improve the children's physical health and psychological wellbeing.

**Keywords:** Sustainable Design, Child-Friendly Community, Health and Wellbeing

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## INTRODUCTION

Sustainable development was formally presented at the independent universal commission of environment and development with a report (our common future, 1987). This commission defined sustainable development at following: eliminating the needs of current generation without destroying the opportunity of responding the needs of next generations. This simple definition was base of the 21 agenda, as an instruction for 21<sup>st</sup> century. Accordingly, sustainable urban design shapes with these three principles: 1- economizes in spending resources: decrease in the amount indispensable fuels in construction and maintain of the urban buildings. 2- Design based on the life cycle: attend to the advantages and disadvantages of life cycle from construction to the period of return to the nature. 3- Human scale design: emphasize on the biological chain systems and human survival. Thus, urban design should promote the quality of urban environments and decrease mental stress on people. Matlin has indicated these 3 principles in his book as well: priority of recycling buildings, substructures, and urban street networks by adopting them with needs and based on building regeneration in urban texture and natural landscapes.

Some of the aspects of sustainable urban design which emphasize on the communities are briefly discussed below:

**1- Sufficiency:** independency in responding the needs of the children is a significant item in sustainable urban designing which is suggested in different scales from an individual building to neighborhoods, cities, and regions. In this cycle, communities can play important role.

**2- Source capability (decrease in inter-city trips):** in nowadays metropolis, decrease in inter-city trips

in a necessity. This can be obtained by encourage people to walk, use bike, and public transportation. Local service establishment in the realm of pedestrian and equipment distribution along the neighborhood with balanced activity centers along the cities can ease this aim.

**3- Humanity needs (sociability and public sense):** this is an element of sustainable urban design as well. Sustainability not only deals with energy use and materials recycling, but also encompasses all aspects of human life to live in sound and safe environment. The role of social communication seems important specifically when people want to participate in decision-making process.

**4- Variety and choice (sense of place and identity):** Sense of place and definite identity is another factor of sustainable environments. Traditional cities communicate well with spatial structure, time, meaning, culture and communication. Recent approach which has been more common in cities related to the tradition ones, should be replaced with individual characteristics and real capabilities of a place to promote and preserve the values and positive factors in the nature, artificial and cultural environment.

Some of the main items of a community include sense of belonging, shared symbol systems, shared values, bi-sided effects, shared needs and necessity to respond them with shared history and background. Community-oriented approach in neighborhood development (planning and design) contains characteristics and factors which can:

- 1- offer plans and schemes to increase dependence to local circumstances and needs
- 2- lead increase in participation in public services
- 3- Cause increase in control of people on their life

- 4- Ease human development and increase in life quality in fact, growth and design of communities in a sustainable and dominant form are one of the sustainable urban design strategies.

### **Urban design and public health**

Urban environment design has always been associated with public health issues, but in the recent decades the shared origins of the built environment and health has been forgotten. The concept of neighborhood as a community is dynamic and has multiple cognitive, economic, geographic, behavioral, cultural and temporal dimensions but the current body of knowledge lacks an operational definition of a child friendly neighborhood environment. The new practical models of walkable neighborhoods such as the new urbanism movement, neo-traditional design, transit-oriented development, and the urban village concept are considering to sustainable and healthy qualities such as walkability and the pedestrian environments (Calthorpe, 1993).

According to these new concepts, the child-friendly neighborhood can affect the physical, mental and spiritual health of the children and parents in the community. Child-friendly neighborhood patterns that may increase children safety and security and promote their physical activity, health and wellbeing, theoretically, are those that are pedestrian oriented and mixed use. Such neighborhoods are typically found in older cities and small towns and enabling residents to perform daily activities without the use of a car. Whilst the research on child-friendly environments on international level is going to be applied on practical levels, in developing countries, more research is needed to explore the relationship between urban environment design with children's health and wellbeing.

So, urban sustainable development criteria and principles for designing child-friendly communities for children's health and wellbeing in developing countries such as Iran is the main purpose of this research. We are going to find how can study the children's needs and problems in the neighborhood environment and use their parents' participation to improve the quality of playgrounds and open spaces for their physical health and social-psychological wellbeing. According to complexity of the research area between environmental planning and design with environmental psychology, we propose a combined research method for the study:

### **Research questions**

1-Does making a naturally designed physical plan which is compatible with physical- mobility needs of children, help their walking, physical health and physical activities?

2-Does social contacts in the neighbourhood open spaces; especially parents' interaction has a role on children's social-psychological health?

3-Does promotion in safety and security of neighbourhood against car accidents and crime play significant role on mental-physical health of children?

To detect general factors in landscape and urban design it should be mentioned that urban space principles can be flexible for responding the needs of the citizens specifically children if the following items are being considered:

4-Communities should be used by the various users (kids, teens). In another word, they should be sociable.

5-Urban spaces (communities) should be flexible to respond the needs of children and teenagers.

6-Urban spaces should be attractive, lively and various to absorb children.

### **Community design and the children's health and wellbeing**

Academic dictionary of Webster defines community as following: 1) a group of people who live in the same area (such as a city, town, or neighborhood), 2) a group of people who have the same interests, religion, race, etc. 3) a group liked by a common policy, 4) an interacting population of various kinds of individuals in a common location, 5) a body of persons or nations having a common history or common social economic and political interest. In fact, communities can contain various meanings. In urbanism literature community means a network of society of people with identity and same interest in local level which prepare opportunity for friendship and cooperation (Barton, 2003) community in western cities means a village, town, city, neighborhood or even universal society (with indistinct borders) includes various and scattered meaning.

So, the concept of Community and neighborhood are social and physical aspects of everyday living in local urban environments. Neighborhoods emphasize on the physical aspect and communities emphasize on social one. Neighborhood is a base to identify people and make them more active to preserve rights which is in culture, economic and energy form not in the realm of politics. Thus, neighborhood is a place that people can perform their basic activities. The borders of the neighborhood can be identified with one of the items below: 1- Official considerations: with name, borders and physical limitation, 2- aesthetics: can be identified with identity and history 3- social: perception of the residents, 4- functional: social services, 5- environmental: local street networks and environmental quality (Barton, 2003).

Creating a child-friendly community is one of the main issues of sustainable urban development in all societies. Coulton and Korbin (2007) summarize that there are tangible and intangible neighbourhood conditions that affect the well-being of children and youth, particularly housing and neighbourhood conditions, the amount of and access to green and/or open space, and the sense of neighbourhood identity and belonging".

Researches has shown that the urban form that is prevalent in many cities has resulted in an increase of many childhood disorders, including obesity, ADD/ADHD, asthma, and an increase in lead poisoning. The reliance on automobiles for child transportation to and from school and leisure activities is one of the main factors in this situation. "When taking a rights-based approach to housing and neighbourhood development, it is clear that some considerations of child and youth friendly neighbourhood design and housing development would include education, health, income, safety and protection, and the ability to gather and associate with their peer groups" (Dee, 2008).

According to Jane Jacobs, "a successful neighbourhood has three qualities, clear separation between public and private spaces, eyes on the street to

ensure safety and pedestrian friendly design, which includes the ability of child and youth to play and interact (Jacobs, 1961). Cooper and Sarkissian (1986) identified several needs of children and youth as they pertain to housing and neighbourhood. These include safe and uninhibited play, need for non-supervised outdoor interaction, housing and neighbourhoods safe from physical, social and environmental hazards, interaction with nature, peer group interaction, private spaces, and mobility. "While residential environments are central to the development of younger children, neighborhoods take an increasing importance as children mature and exrafamilial influences increase. It is within neighborhoods that children first enter upon the stage of public life, developing a narrative with adults outside their families about how life should proceed."(Sutton and Kemp, 2002)

### **The characteristics of growth in children**

In medieval era the meaning of childhood was not like what we know these days. Children were considered small adults and their upbringing was like let them to participate in adults matters. The vocabulary child means relation not an age group. In European medieval childhood was not considered different from the period of adulthood. Nowadays, there are various definitions of children and childhood, but there is no distinct definition due to the role of them in family and society. Childhood is a beginning of perception period. At the early years of life with the physical growth of the body, mental abilities of child grows simultaneously. Sense of perception grows and develops as well and leads to recognize the surrounding environment. The way a child pass to grow up makes categorizing of his growth easier. The starting point of perceiving the environment is at the age of 5, so research on the way children live in the surrounding environment should be analysed. Contemporary researchers mentioned three items below as the essential needs to grow: 1) necessity of environmental perception and vast cognition, 2) necessity of health, safety and physical activities, 3) necessity of revealing emotions. Connection with the environment emphasizes on the accessibility of children to the equipment, promote physical activities and emotional connection to the surrounding environment.

### **Children, city and neighbourhood**

One of the main items in urban life is making suitable spaces for children. Undoubtedly, the center of development is human being and all today's experiments in national and international area are evidence to this issue. If the place of human being in the society is appropriately placed at the center of the development, the developing plan of that country will face suitable consequences too. Emphasis on children, families and local organizations would lead to emphasis on reinforcement plan. Here are two main points of view: The first one generally defends planning for the city and believes when we have a good city, all citizens will have a good city and therefore there is no reason to present some items like disabled people, women, and children. The second point of view, on the other hand believes two main reasons are needed for child friendly communities: At first, children's needs are specific and then the common needs that children of a

society may have. Thus, specific policies are needed to be concerned about in this matter.

### **Child and the city in the urbanism theorist's point of view**

According to ideas of Clarence Perry, if the children are treated well at home and at school, they will treat responsible without reminding them. When children are responsible, it is not necessary to tell them how to act in various situations. In this case, children can participate well on the decisions made around them and be effective. In the vicinity design scheme, prevention of entering cars into the residential neighborhoods will make there a suitable place for children to play. Therefore, it presents convenience, health and low amount of traffic to children. In addition, with primary schools between green spaces with half a mile functional radius, children can easily move from house to schools and vice versa feeling secured. Lewis Mumford argues the importance of all groups of people specially children. He emphasizes mainly on the existence of green spaces between buildings to prevent density among them. He believes parks are huge dams against frequent urban development and are inseparable items of urban life. In his idea, there should be a place for children to play freely. In the schemes of Le Corbusier, there are lots of green spaces and open spaces for children. He decreased the amount of traffic by advising 3 levels of street networks in order to decrease the danger of accidents. Jane Jacobs focuses on urban streets and believes that they are clearly effective in making social relationships. In her idea, a street should contain different land uses along it to attract people and make security with separated public and private spaces. Children connect to adults while they are on the street and therefore they can experience the bases of their life. So, streets should be a place for children's activity and play. When children grow up, the space of the building won't respond the answers. Jane Jacobs believes that in the urban society most of the children's interest are street safety, mixed land uses, lively urban spaces which is considered the key elements of eliminating all human beings concerns. Therefore, free times of children which are the majority of their time should specifically belong to their favorite activity. Marcus emphasized on the needs of different groups of the society specially children and considered mainly on playgrounds. He believed playgrounds should contain adventurous and related to water and nature. Therefore they should have adequate safety for children. He suggested that for recreational places we are not supposed to look for vast and large spaces.

## **MATERIAL AND METHODS**

The present study explores the effects of neighbourhood design on the users' behaviour in Gholshahr new town, in the city of Zanjan, located in the west-north of Iran. For this reason an experiment was design and 140 parents of the neighbourhood were participated for the study. The data were collected through random sample questionnaire. Descriptive- analytic method and document-library based and field study is used in this research. Data analysis is performed by the use of SPSS software with case study of Golshar

neighborhood in the city of Zanjan, Iran. Analyzed group consist is of 10352 people and studied group are 140 people which are chosen accidentally from families and children.

Some Practical steps of children and their parents' participation were applied in the study. Five steps of the research are presented below:

1-First step: researchers should be updated about the object. So they study books and papers about children-friendly cities, consulting with them and their participation.

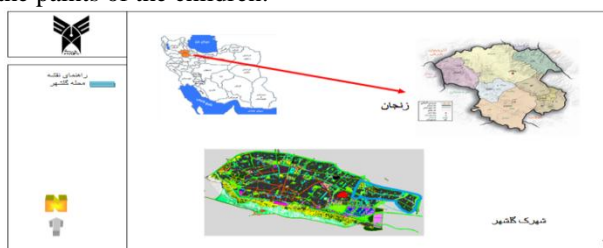
2-Second step: researchers went to the neighborhood show the maps and pictures of the neighborhood to the children and their parents to make sure that children know where they are talking about. With making close relationship with them, researchers tried to present questionnaire and ask them to write their idea about the neighborhood and then paint their dreams and model of neighborhood. Look for detailed items in the paints specifically problems presented by children.

3-Third step: children's comments should be studied and results should be summarized for the group.

4-Fourth step: it should be assured that the scheme contains all activities needed by the children

5-Fifth step: Children's comments and their group discussion about the project were measured.

Most of traditional methods of gathering information are not capable to get information from people specially children. Thus, various methods of participation have been used in the present research such as: painting, questionnaire, and direct conversation and of course another questionnaire for the parents. Painting is one of the most common ways to have children participation in urban design process (children as partners in neighborhood place making). As many children tend to paint and find painting a suitable place for their dreams, painting is considered as the most fundamental method for children to participate. In this method, children were asked to paint about the object; the paints were analyzed afterwards to get appropriate results. Questionnaire was prepared and proposed to children and they had been asked to answer them in various field. Children-friendly designs seek to make children participate in shaping their surrounding environment. So, steps and practical phases of children participation performed in order to gather data plan and analyze for sustainable communities. Case study group were the children of Golshahr neighborhood. As data collecting and categorizing them for our proposal have different ways and methods, educating children can help us better to get objective and effective results. Therefore, phases and steps of children participation in creating children-friendly communities are presented. The following results are obtained based on the analyses from the paints of the children:



**Figure 1.** the location of Gholshahr new town in the city of Zanjan, west-north of Iran

## RESULTS AND DISCUSSION

The findings of the study showed these items in the painting of the children: 1- bikeways, 2- green spaces and planted places with sitting spaces on the sidewalk, 3- fountain at the center of the neighborhood, 4- walking ways for daily shopping, 5- cleanness of the neighborhood, 6- crossing to cross secured, 7- specific furniture for parents at the playground, 8- edges of the building and their facades, 9- separated mounted and pedestrian way, 10- favorite shops such as : ice cream, confectionary, fruits shop, restaurant, fast food, department store, flowers shop, 11- road signs and colorful pavements and facades, regular skyline and center of the neighborhood.



**Figure 2.** Favorable neighborhood characteristics from the children's point of view

The other finding from the painting analysis show that, 1- Shared playgrounds of the children (boys and girls) existence at early ages with tidy places. 2- Hills existence for children to play on. 3-green spaces between the buildings along the path. 4- Soccer field, badminton court and swings by the residential buildings. 5- Green spaces in front of the houses which are managed by the children. 6- Place for in-line skating. 7- TV existence at the park to watch kids program on together. 8- Trees at the sidewalk and benches along them. 9- Separate mounted and pedestrian way, school and mosque at the neighbourhood and suitable ways for going to school with public transportation system like taxi and bus, statues of animals and safe playground between houses.



**Figure 3.** Neighborhood design for children (Source: authors)

The findings of the parents' qualitative questionnaire revealed that most of the residents complains that parents had were mainly about the lack of schools at the vicinity that force children to go far way to reach their schools by car. They claimed that if there were schools in the vicinity it was easy for children to go to school with their friends that may have positive consequences like walking, communicating, bike riding, and physical activities which cause mental and physical wellbeing. Strong points of the neighborhood from the parent's points of view are deadlocks at the end of alley to avoid entering cars, police, close relationships between residents, and width of the streets.

In toll of the children: 64.5 percent of children were boys and 35.5 percent were girls which this statistic should be noticed in the period of neighborhood physical design in open spaces. 78 percent of houses were 1-3 floored private home and 22 percent were apartment

74 percent of children tend to live in a house with the reasons below: because they can play at the yard without blaming the neighbors. They can plant flowers; they have more safety there without cars concern. Favorite color of boys was green and girl's was red. Children expressed items about playgrounds including cotton, grass, plastic, foam, and tile (because it is flat). They prefer soft playgrounds at all. 12 years old girls complain about lack of suitable spaces for their age. Children rather have playgrounds by their house so that their families allow them to play out. 39 percent of boys prefer to play computer games, 28 percent tend to play with friends and 32 percent both. 35 percent of girls prefer computer games and 67 percent of them like to play with their friends.

Favorite land uses of children in the neighborhood are different:

Girls prefer doll shop, department store, supermarket, boutique, toy shop, stationary, sports shop, chain store and hyper market and boys prefer club, bakery, supermarket, bike shop, snack bar, boutique, bike repair, sport shop and carpentry.

According the questionnaires, Problems of the neighborhood from the children point of view are:

Lack of playground, library, school, educational classes, park, lack of green spaces, lack of sidewalks, bikeways, abundant intersections in the neighborhood, lack of suitable furniture and dirty environment, dog existence, lack of safety and suitable pavements on sidewalks, bumpy sidewalks and unsatisfactory asphalt colors (they like cheerful colors for pavements with pictures on them).

Some researches show that Children's neighborhood place making activities can enhance social and cognitive skills, while increasing participants' sense of connection to other people and the nature. By learning to influence their surroundings, children can develop greater environmental competence and through activities that promote a sense of control they may experience enhanced well-being and quality of life (Sutton and Kemp, 2002).

Based on the analyses on the pictures, interviews, and questionnaires, following strategies are proposed to increase sustainable children-friendly communities to achieve physical and mental wellbeing in children-friendly communities Table 1:

1- Residential complex design related to natural symbols and recyclable energies which can prepare variety of activities for children with adequate flexibility.

2- Social and cultural communication increase via appropriate strategies such as planting and visual architecture in the residential neighborhood to promote livability.

3- Physical activity and pedestrianism are patterns of healthy urban life which sidewalks walk able shopping centers, and bikeways are the bases of them.

4- Modern urban planning patterns and residential neighborhood design like new urbanism- neo traditionalism- naturalistic design base on public transportation network and pedestrian oriented neighborhoods are the noticeable approach in order to promote public wellbeing which should be concerned based on the space and time.

5- Mixed and dense patterns of land uses will lead to variety and density in activities and present people in urban spaces.

6- Safety and security matters in urban spaces via street lightening and frequent planning of life in open spaces in quiet hours like late at night can extend the presence of people in such spaces.

7- Public and civil space design which is the realm of civil communication via public participation attraction will lead to society management.

8- Favorable spaces design from the authentic and architectural points of view and street users which may enjoy favorable public sense and tend to use the space.

**Table 1.** proposed strategies for sustainable children-friendly communities

Design local and open spaces	
Pedestrian oriented spaces	
Dense neighborhoods with mix uses	Proposed strategies for sustainable children-friendly communities
Physical and visional access to the nature	
Social-cultural and commercial-recreational possibility making by the residential neighborhood	
Decrease in the dependence of urban life to autos and public transportation mixed to pedestrians	

## CONCLUSION

There are strong public-health arguments for the incorporation of greenery, natural light, and visual and physical access to open space in neighborhoods, residential and other environments (Jakson, 2003). Environmental health crisis in mental, physical and environmental dimensions at contemporary urban spaces shows the lack of safety for children against accidents, unsecured urban and residential spaces, loneliness, sadness and social gaps in urban neighborhoods and their sedentariness as the main problems of urban life. So, neighborhood location of living environment in city and village effect environmental communication of the children and youth. The first type of the effect of environment on children's health and wellbeing is considered directly. These problems include low quality of urban life, air pollution, miss-management of urban garbage, noise pollution, harmful toxic effects of various chemicals and materials. Moreover, urban life affects human wellbeing and health with some items such as environmental, cultural, economic and social issues,

indirectly. Urban runaway development, increase in vehicles and environment spoilage and traffic can affect physical-environmental structure of a city and therefore health and wellbeing of the children that include:

1-Heavy traffic decrease autonomous movement of children.

2-Unplanned play possibilities is limited due to the traffic

3-a study about children who were endanger on gasoline smoke of the school bus suggested that the density of oil based fuels are more than measured density at the inspecting stations.

4-Low but intense traffic noise can cause stress, blood pressure, heart beat, stress hormones in children

5-Almost 25 to 30 percent of children who survive from a car accident will suffer from stress afterwards unless they are being cured. These disorders may be sadness, frequent nightmares, disorders in school assignments and car panic.

So, unfavorable effects detection of urban development and housing on children wellbeing and health seem significant. High quality urban spaces, prepares circumstances for communicating and individual skills in minor and major scales of the city.

The concept of child-friendly environment may be an important way to promote the health-enhancing physical activity and walking of the neighbourhood residents especially in children and parents (Jackson and Kochtitzky, 2001; Hart, 1995). According to sustainable development principles, child friendly neighbourhoods in the social, economic and environmental aspects can be achieved by urban design strategies. This goal can improve the liveability of the residential environment with human scale design, land use mix and diversity and enhancing different activities. Increasing social security and safety with creating vital and dynamic open spaces and identity of local places and preserving the urban biodiversity and environmental resources are of the other results of creating the environment for children. This approach can improve the sense of residential identity in parents and children around the neighbourhood and can improve their participation in the community and social contact among the residents with sense of security, comfort and safety that may leads to active participation in the neighbourhood community, physical health and psychological wellbeing. The results of the study show that natural characteristics of community design, social contacts of the children and parents with neighbors, environmental safety and security and physical activity in playgrounds have the main role in making child-friendly communities. For the next studies, exploring the practical solutions design guidelines with using sustainable design paradigm can improve the children's physical health and psychological wellbeing.

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