

ORIGINAL RESERACH PAPER

The Assessment of Quality of Life among Persons with Physical Disability in Urban Environments

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ABSTRACT: As a social creature, human seeks to connect with his surrounding space. This connection is feasible through presence in the environment, surrounding accessibility, and vital activities performance. Nowadays, the number of people with disability has been increasing due to wars, various accidents, inheriting diseases, or lack of sanitation services. These people are facing different challenges in order to be in urban spaces and to use needy services. These challenges can be divided into two main categories of mental barriers and physical barriers which cause reduction in quality of life of people with disability and their isolation especially in developing countries. In order to determine effective factors on quality of life of maimed people, Delphi technique and experts opinions are being used (62 questionnaires by the help of experts in two phases). Results show that there are 21 objective and subjective factors in four main realms of social, physical, economic and decision-making structure which impact maimed people's quality of life. On the other hand, based on the proposed frame work of this study, the capability of ranking cities based on the quality of life of people with disability would be possible. Decision making structure of the city, however, can provide strategies, goals and programs according to the results of this evaluation and afterwards, view the feedback of decisions made in the society. The outcome of the research would appear in the sustainability and vibrancy of urban systems to be used by any social groups (disables, elderlies, and children).

Keywords: *quality of life, disability, physical barriers, social groups, urban systems.*

INTRODUCTION

As a social creature, human seeks to connect with his surrounding space. This connection is feasible through presence in the environment, surrounding accessibility, and to perform vital activities. . Since 20th century, the number of people with disability has been increasing due to wars, various accidents, inheriting diseases, or lack of sanitation services. It led vast attention to this problem in international,

national and local scales to make suitable urban spaces for people with disability to show up in the society (Azizi, 2011). Human being had done various activities towards people with disability which were from wicked strategies in the past to new approaches of community based rehabilitation (Hollander, 1996). In many reconstructions of after-war ruins in European countries, people with disabilities were not in priority. Therefore, after decades, urban space capability was in the agenda of many devel-

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oped countries. However, they have been omitted from urban movement due to mental and physical barriers in fewer developing countries (Azizi, 2011, 755). Section 25 of 37th legislation of the U.N general assembly says about the people with disability's rights in this way: equality principle of people means all needs of people in society (include people with disabilities) are considered significant and they must be the fundamental of community planning.

Barriers in the movement of people with disability in urban spaces can be divided into two main categories:

- **Mental factors:** mental factors are the main factors restricting people with disabilities to move freely in the society which are caused by the interaction of people in the society. In another words, mental factors are factors that a people with disability encounters due to unawareness of the society about disability. Therefore, the person can't face the society. The factors include: prejudicial attitude, too much care, lack of equal opportunities in employment and training.
- **Physical- activity factors:** the movement of people with disabilities in urban spaces, on the other hand, encounters many different barriers. These barriers are related to the physical characteristics of people with disability and also physical appearance of urban spaces which suffer from lack of capability. Movement restriction and urban and architectural barriers are factors that annoy people with disabilities to participate in the society (Daneshpour, 2006).

In Iran, the number of people with disabilities is increasing due to war (Iran and Iraq), natural disasters, road accidents, and illnesses. This issue however is being cared in academic studies rather than performance realm. It should be mentioned that the people with disabilities can't do their activities in urban spaces because of disability in the city not disability in them. Maimed people don't have leased equipment in many urban spaces and urban centers while the number of that group is considerably high. The results of studies in Iran show the fact that not only small towns and cities suffer from the lack of equipment for people with disability, but also capital city of Iran (Tehran) includes some mental and physical barriers which can cause them to avoid participating in any routine urban activities. All of these items have leaded the quality of life of people with disability to be reduced.

2. The Methodology of Research

Citizen's quality of life evaluation is considered as one of the main concerns of urban planners and authorities in which they can easily comprehend the feedback of their management and decision making. More citizens satisfy with the urban furniture, more their quality of life will be. In another words, decision makers and decision takers are closer to their goals as citizens are more satisfied. Therefore, quality of life reporting system can be a tool to achieve favorable and sustainable urbanism and urban management.

Therefore, we are seeking to present an appropriate framework to evaluate quality of life (objective and subjective) of people with disabilities. Ro achieve that aim, literature of the study is being analyzed which consists of theories, ideologies, and challenges for people with disabilities to be in the urban spaces. Afterwards, Delphi method is being used to determine the effective factors in quality of life of the people with disabilities where it is a method of taking opinions of experts about a subject with a question (HSU, 2008) include panel feedback by keeping experts unknown (Keeney, 2001,197).

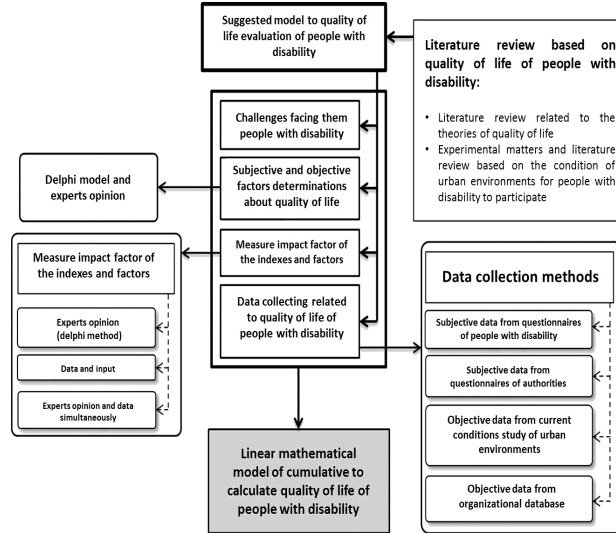
As all determined factors in the previous step don't have same weight and some of them include more weight than others, researchers used some methods about analyzing impact factors for quality of life of people with disabilities. Moreover, qualitative and quantitative factors of their quality of life are being collected which eventually are evaluated with linear math model (Fig. 1). In fact, this study is a way to rank cities based on their care about needs of people with disabilities.

3. Literature review

3.1 disabilities

There are a lot of definitions presented from international associations working with people with disabilities. These definitions include the vocabularies Disability, Impairment and Handicap which are close in meaning and sometimes confusing in the viewpoint of researchers. Therefore, various meanings are adopted from mentioned vocabularies (Daneshpour, 2006). Some of those meanings are presented as following:

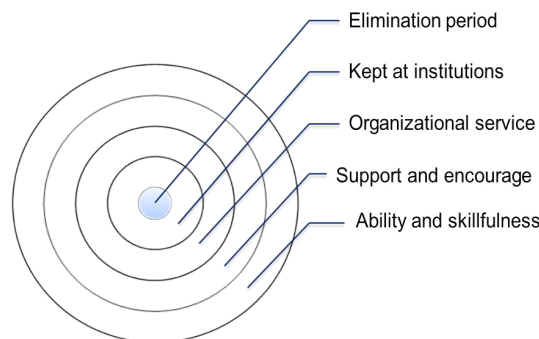
- World Health Organization 2011: disability is the disorder of the communication between a maimed person and surrounding environment which happens when social and physical barriers restrict accessibility to different social systems.

Fig. 1: proposed process about evaluating quality of life of people with disabilities.

- Robert Cowan in Urbanism Dictionary 2005: lack of justice in social life which is due to social and physical barriers for people with disability in their body.

First definition emphasizes on the disability and second one emphasizes on the barriers.

Human being had done various activities towards maimed people which were from wicked strategies in the past to new approaches of community based rehabilitation. In many reconstructions of after-war ruins in many European countries, maimed people and people with disabilities were not in priority. Therefore, after decades, urban space capability was in the agenda of many developed countries. Universal experiences show that sample strategies can easily invite people with disabilities to do their personal and public activities as shown in Fig. 2 (Hollandar, 1996).

Fig. 2: different phases of human society's attitude toward people with disabilities

There are a lot of theoretical viewpoints related to different social group's communication with surrounding environment like the theories of scientists. The theory of symbolic counter-action which was introduced by George Herbert believes that a society is the product of people and social groups counter-action. Based on this framework, people should engage with each other to eliminate their needs. Although environmental circumstances play a significant role in shaping human's nature, personality and behavior, but it is not considered a one-way relation. It has counter-relation with environmental and social circumstances (Coser, 2003). If mentioned counter-action encounters any interruption, it will cause isolation and misanthropy of the people with disability. Another theory being important in this realm is the theory of social order. Sociologists believing in this theory agree that social abnormalities are the results of inequality and intense changes in the community which affect the behaviors. This theory discusses that social order can take place when everyone in the society agrees on some values, norms and determined principles and surly fundamental and basic. Social disorder, on the other hand, is the result of disagreement in norms, values and principles (Epstein 2008). Thus, people with disability will approach social order only when their needs are part of community values and norms. In addition to introduced theories, the theory of social justice is more popular. Justice, in this attitude, isn't considered as a value among effective values in social system, but it's the first and primary component of social value (Rawls, 2000).

People have common and sometimes oppose benefits; and people are not unwilling about benefits coming to them by the community. Therefore, there will be justice in society when benefits and values are distributed during social cooperation (Lessnoff, 1999). Philosopher of 21st century, Rawls knows the theory of social contract an appropriate method to solve justice issue in theoretical level because justice problem arises from disagreement in portions about social benefits. He believes that human being can't live alone while he can't be unwilling about knowing the benefit goes to the others, thus, appropriate principles provision is considered essential (Lessnoff, 1999). Social justice is related to the justice in society of urban life. Justice spread, needs logic, freedom of speech, participation, regulatory, individual believes. According to theoretical framework presented here, need of people with disability and their care is considered undeniable.

3.2 Quality of life

Human thought was affected by social and political theories and ideologies in the late 20th century and forced to change methods, concepts, and thoughts fundamentally. Other needs care as well such as education, social communication, aesthetics, with economic and environmental aspects which caused reformists to replace quality of life instead of life standard in 1950s and 1960s. Urban development opposition and historical areas care, distressed areas revitalization and emphasis on qualitative characteristics (instead of quantitative ones) and multiple needs of people are most important strategies during 1960s in Europe (Smith, 1994). Quality of life is of vocabularies that doesn't have same and determined definition. Quality of life's definition-making is a complicated process. Quality of life is an issue that absorbs authorities, but due to lack of exact definition, they can't take it into account in decision-making process. It is mainly because of complicated relation between humans and environment. Therefore, the most significant discussions about quality of life is of definitions and its factors (Rogerson, 1999).

There is no accepted definition about quality of life in texts and references but some definitions about quality of life have been presented. In this research, however, quality of life is categorized based on objective and subjective aspects as following:

Subjective aspect of quality of life: mental measure-

ments arose from people perception and description from primary data or objective circumstances. Subjective quality of life is related to inside sensation of human like satisfactory. Human behavior on the other hand, is affected by mental image and the perception which he gains from the reality, not necessarily adopted from reality.

Objective aspect of quality of life: objective quality of life reflects outside circumstances of people life which is observable through objective factors, evaluating with secondary data and inputs. Moreover, it is related to social, economic, cultural, and physical welfare needs (Das, 2008).

3.3 urban planning based on quality of life improvement of people with disabilities

In practical review, quality of life represents the amount of well-being which is defined by individual's expectation of life and its quality. Quality of life is the determinant of the difference between dreams, hopes and expectation of individual and his experience of such issues that he can enjoy using that equipment for living in the society.

Life enjoyment consists of two main components: satisfactory and the level that a person loves the life. To find out it, we need to refer real emotions of people living in a community. Interesting in life would appear in three main realms of emotions and sensations, happiness and relaxation, and qualification. Mentioned realm have sub-realms which shows higher satisfactory in society (Quality of life research unit, 2005). In practice, planning can be organized based on various needs of the society in different realm that arises from interaction between individuals and the environment creating the opportunities and restrictions. Urban planners are the responsible for urban environment management. They can use their decisions to make people of a community satisfied. The outcome of the study of urban quality of life can be set of data for planning improvement and strategy-making leading quality of life of the residents to improve. On the other hand, it can be used for recognizing the main reason of unsatisfactory of people in the society (McCrear et al., 2006).

Therefore, vast interest in studying quality of life has routinely been shaped since 1960s. It should be noticed that quality of life has appeared with the issues of cities livability, and social, economic impacts. Great interest in quality of life measurement

is apparently for determining real needs of the society and positive changes toward favorable development of the cities (Hikmat *et al.*, 2009).

The results of the amount of people satisfactory and partial importance of each realm make planners aware of the values and problems of people. Therefore, aspects of life which include less importance to people would make authorities to pay more attention to them in public development policies. The theory of quality of life is directly connected with citizen life and lifestyle. Moreover, as the needs of people are complicated and multi-dimensioned, those are which represented by people can mainly help planners to provide better plan goals (Lee, 2008).

4. Quality of life evaluation of people with disability

4.1 The challenges of people with disability

Effective factors facing quality of life of people with disabilities are being divided into two main categories:

- Social and cultural Suitability
- Urban physical environment Suitability

In the first category, community imagination of people with disability is based on their functional and practical difference by something that the community defines it as norms. Thus, difference making in the society would seem common. When a set of norms are set for the society, anyone who is not adopted to the circumstance will be considered abnormal, so they will be banned from using certain equipment in the community which can be seen in developing countries.

Consequently, social relationship of people with disability will encounter changes and difficulties. According to the experiences, observations, and databases, the way that people communicate with people with disabilities is not logical mostly occurs with enthusiasm or ignorance (Nasiri, 2006, 23). So, the condition of host society should accept the participation of people with disabilities. In second category, movement restrictions, which are physical-oriented in an urban space, can affect quality of life of people with disability. These movement barriers cause their presence in the society face problems (Fig. 3) which has changed during decades. The concept of Suitability was first placed as the

synonym of physical barriers elimination and “barrier free environment”. In 1980s, this concept was extended by the meaning of making buildings and urban environment accessible or in another word “accessible design”. The concept of comprehensive design was introduced in 1990s which proposed issues like feasible public transportation, appropriate entrance for all, touch and voice signs on the street. As a matter of fact, making suitable is environmental reform in a way that maimed people can use the environment freely and safely in places such as public spaces, pathways, urban environment and public buildings in order to utilize environmental, social, cultural and economic equipment preserving individual independence (comprehensive legislation protecting the rights of the people with disabilities, 2007). Fundamental principles should be considered in design and Suitability of buildings and urban spaces to increase its adoptability.

- to achieve: everyone should be able to access to all buildings and public spaces
- to enter: everyone should be able to enter everywhere without the other’s help.
- to utilize: everyone should be able to use all public equipment and environmental objects

Fig. 3: physical barriers in public spaces



4.2 Effective factors determination on quality of life of people with disabilities.

In order to determine effective factors on quality of life of people with disabilities, Delphi method with expert’s opinions has been used with the previous experiments. So, 62 questionnaires have been sent to experts in the realms of sociology, psychology, economics, urban planning, urban design and architecture. In the first phase, as concerns and challenges of the researchers have been introduced, it was asked from experts to determine effective factors on quality of life of people with disabilities. These factors should include conditions as following:

- Factors should have clear practical purposes.

- Factors should help public policy-making to develop and measure plans of decision making.
- Factors should be periodic to be measured and controlled periodically.
- Factors should be based on the valid theoretical foundations.
- Indicators of factors should accompany sensitivity and validity.
- Factors should be reported numerically
- Factors should be easily understood

Factor's effectiveness is when it can be compared in various geographical regions and different social groups (Repley, 2003, 90; Hagerty et al, 2001, 4). Table 1 shows factors adopted from the opinions of the experts.

As shown in table 1, effective factors on quality of life of people with disabilities are divided in four main categories of: economic, social, physical and decision-making formation. Each realm is divided into two groups of subjective and objective. Objective indexes are those which are visible or include quantitative nature. On the other hand subjective indexes are those which are related to feeling of satisfactory in people with disabilities.

3.4 impact factor determination of the indexes

All factors don't have equal impact on quality of life of people with disability; therefore the weight of each factor shows its importance according to the evaluated issues. There is a linear connection between the value of an issue and its weight. There have been various methods and techniques to determine the weight of each factor i.e. Hierarchical multiple regression (HMR), Multi-attribute utility analysis (MUA), conjoint analysis (CA), swing analysis, pair wise comparison (Van poll, 1997,33). Weighting process (j , i) is performed based on the need of the researchers, thus it may be not accurate about other communities.

As impact factor (weight) of each factor shows its importance rather than other factors, accurate choosing of the factors helps to reach the aims of the study. Weighting process of the factors includes:

First- Experts knowledge use (Delphi):

Appropriate factors are determined and introduced by the use of the experts opinions about discussing issue. The simple way of this method with documented nature of it, turned it to one of the most popular methods

in planning and decision-making. It includes some disadvantages as well such as the probability of mistakes by the experts in weighting in addition to standardization difficulty in the mind of the experts. The software of expert choice can be useful.

Second- input knowledge use:

Input knowledge is mainly based on the current data about satisfaction which is gathered through questionnaire. The weight of each factor is measured with the answer and regression calculation. Although the probability of mistake is high in this method, but its accuracy is due to the validity of primary answers. Another problem and difficulty is in weighting of the factors in a case that objective factors can't be determined by weighting system. The software of SPSS is useful in this method.

Third- input knowledge and experts knowledge simultaneously:

The weights of the factors are being distributed by the use of experts opinions and current data. in this case, weights are being calculated by the experts opinions separately then appropriate weights would be the accompanied by comparison. Therefore, the probability of fault and mistakes will decrease dramatically. Both methods mentioned above are going to lead impact factor realms determination (i) and factors (j) (Azizi, 2012).

4.3 Data collection

There are a lot of different methods about data collecting in quality of life of people with disability which are related to subjective, objective nature of the research and its goal. Some of the methods are as following:

A) Subjective data extraction from the questionnaire of people with disabilities

Questionnaire design evaluates satisfactory amount of people with disabilities which are mostly subjective such as educational satisfactory, career satisfactory etc.

B) Subjective data extraction from the questionnaire of authorities

These sorts of questionnaires are based on the interview with urban managers and authorities. They which participation factors can be adopted from need deep analysis in order to provide plans and designs.

C) Objective data extraction from questionnaires

Table 1: effective factor on quality of life of people with disability

realms	factors		Indexes / descriptive
Social (1)	objective	Education (1)	The ratio of literate disabled people to people with disabilities over 6 / educational space per capita for people with disabilities.
		Welfare and social support (2)	The ratio of insurance usage by people with disability / their financial matters associated with people with disability
		Misanthropy and injustice (3)	Satisfactory about injustice elimination in the community /
	subjective	Suitable family communication (4)	Satisfactory about family members behavior /
		Social participation (5)	Willing to participate in NGOs / awareness of various NGOs
		Inquire welfare and social support (6)	Satisfactory of the people with disability about sanitation
		Inquire security (7)	Satisfactory of the environment safety felt by people with disability
Physical (2)	Objective	Accessibility to inside of spaces (1)	Access to the inside of the land uses such as: educational, service, sanitation, office, commercial, transportation
		On foot (2)	The ability to move in sidewalks / ability to use urban furniture / the number of accidents caused to people with disabilities
		Accessibility to the inter-space pathways	The possibility to use public transportation / the location of people with disability in the vehicle and special parking lot / the number of accidents caused to people with disabilities
	subjective	Environmental legibility (4)	Satisfactory about distinctive urban spaces / satisfactory about urban signs for path finding
		Accessibility (5)	Satisfactory about land uses buffer / satisfactory about reaching various land uses
Economic (3)	objective	Employment (1)	The ratio of employed disables to the whole people with disability at the working age / the ratio of academic unemployed disables to the whole unemployed in this group
		Income and life expenses (2)	The average of income to expense / the ratio of house rent to the average income of people with disability
		Job satisfactory (3)	Satisfactory of physical aspect of the workplace
	subjective	Income and life expenses satisfactory (4)	Satisfactory about life expenses / amount of money being saved monthly
		Financial support satisfactory (5)	
Decision making structure (4)	objective	Decision maker organizations attention (1)	The number of plans done related to the people with disability by organizations in public and private sector
		Laws (2)	Satisfactory about supportive laws about people with disability
	subjective	Participation (3)	Satisfactory about participation in various urban plans and programs
		Plans and laws possibility (4)	Satisfactory about performance of urban plans related to the people with disability

studying urban environments Suitability. These questionnaires can give the data of quantitative information about urban environments Suitability and mostly emphasize on physical factors of quality of life educational spaces for instance. This type of research needs field study of each land use in the city which the results can be used in urban spaces Suitability in order to help people with dis-

abilities to participate in the community. D) Objective data extraction from current databases in organizations and institutions The quality of these type is strongly depends on the development circumstances of the communities. In fact, more developed a community and decision making system is the stronger and coherent the databases would be. The data related to the people

with disabilities can be found in statistics center of Iran, municipality, police office etc. which accompanies objective data about quality of life of people with disabilities like working age, insurance etc. All data gathered must be categorized in a standard scale in order to analysis coherently. The data of subjective factors, for instance, can be analyzed by five point likert scale while objective factors data will be analyzed by mathematical models of 5 scales. It will cause standardization in quantitative amounts of each factor.

4.4 The evaluation of quality of life in people with disabilities

Effective factors in quality of life of people with disabilities which is adopted from both quality of life experiences and urban spaces improvement can make the possibility to evaluate quality of life of people with disabilities in subjective and objective aspects. The factors which are categorized in various realms contain different impact factors weighting due to their objective or subjective nature.

Linear mathematical model of cumulative considers the impact factors and measures the relations between quality of life factors of subjective and objective simultaneously. Quality of life of people with disability can be calculated by the formula below:

In this way, the quality of life of people with disabilities is two distinct values, one of which is meeting each index and the other is the relative importance (influence coefficient) of the concerned index; and the important point about it is the way of weighing the indices, which is sometimes done based on expert (using the Delphi technique) or disabled persons' opinion and sometimes based on the opinion of both groups. But it is unlikely that the influence of all parameters on the quality of life of people with disabilities is the same in different countries; hence, in this model, it is assumed that each index has a different effect on the quality of life of people with disabilities. The obtained qualitative value suggests the quality of life of people with disabilities in that society. If we assume that the qualitative value of all the indices is in a standard 5-point range, the closer the value of DQOL is to 5, the quality of life of people with disabilities will be higher and the closer it is to zero, the quality of life will be lower.

Given the level of development of the society, access to a set of these indices to measure the qual-

ity of life for people with disabilities is possible. In other words, if more comprehensive database of information about people with disabilities is accessible, there is the possibility of more accurate and more comprehensive measurement, and vice versa. The decision structure based on the results of measuring the quality of life of people with disabilities in society can adopt proper objectives, policies and action of programs to enhance the quality of life these segments of society. On the other hand, it can observe the feedback its decisions in the society.

5. The conclusion

The issue of making urban environments suitable for people with disabilities has become a serious issue in the less developed countries in recent years and is considered among many experts in urban planning and public and non-government organizations' officials of these countries who are active in the fields of urban planning, designing and construction. The main motivation for proposing this project in the world is the need of a large portion of the population to take advantage of services and facilities that are not able to use due to the lack of coordination of the physical environment with a range of human physical capability. The program aims to promote effective measures to prevent disability, rehabilitation and the realization of the goal of "full participation" of disabled people in public life, developing countries and their equal rights. This means equal opportunities for all members of society and enjoyment of the same contribution of the economic and social development to improve their living conditions.

Urban planners are responsible for managing the urban environment. They can use the fact that how their decisions affect citizens' satisfaction of urban life. Output of studies of the quality of urban life can be used as information to improve planning and developing strategies that will lead to the improvement of quality of life of residents. They can also be used as information to help diagnosing the reasons for the dissatisfaction of citizens and determining the contexts in which citizens are willing to participate in (McCrea, 2006).

Quality of life of people with disabilities is under the influence of objective and subjective aspects of their lives. In fact, the services available in the host society determine the quality of life of disabled people. Accordingly, the structure of decision-

making and the deciding must provide conditions to be responsive to the needs of disabled people. The feedback of such an approach will also affect the quality of life of the elderly, children, pregnant women and even all citizens.

The proposed model for measuring the quality of life of people with disabilities is a combination of objective and subjective indices of quality of life. The results of the proposed model for measuring the quality of life of people with disabilities indicate that various indices affect quality of life of people with disabilities in four social, physical, economic and decision structure areas. By using this model in various cities and measuring the quality of life of persons with disabilities in those cities, ranking cities will be possible. The structure of the urban decision-making and deciding can take the most ideal decisions based on the identified problems in order to solve problems.

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