Journal of Namibian Studies, 33 S1(2023): 384–397 ISSN: 2197-5523 (online)

Urban Development and Walkability for the Elderly in the Historic City Centers

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Abstract

Historic city centers have undergone urban development during times, which have been accompanied by processes of change, so The problem was the development of the historical fabric of the city of Najaf and the lack of knowledge of its suitability for elderly pedestrians, especially as it is a center for religious tourism. To achieve the goal by knowing the most possible way for the elderly to walk and use it in sports as well. The structure was represented by the introduction and review of several concepts to represent the theoretical side, and the practical side, in which a random sample of 200 people was identified in the study area for elderly visitors from different countries. The results were by knowing the appropriate path for walking, inappropriate and less appropriate and showing it in the GIS program.

Keywords: elderly ,historic city centers, urban development, walkability, Najaf, Urban space.

1 Introduction

Despite the concept of development (developed to address the problem), which was one of the results of the aging phenomenon, the neglect of its dimensions and needs was an obstacle to the development process. There has been neglect of the elderly due to two reasons: 1) the disintegration of the family; and 2) the rapid changes in contemporary societies.This resulted in several problems for the elderly, some of which affected theirwalking of the elderly.

The historical city centers had a share of urban development processes, as happened to the rest of the other cities and their centers, especially since they are centers to attract tourists in addition to the presence of the original population. This research looks to find out the suitability of the main pedestrian paths for the historical city center of Najaf for the elderly, especially after the development processes that loomed in the region and the various changes.A mathematical

equation that includes a set of variables gives weights based on assessing the situation'sreality. Then, the appropriateness is known through the result of the equation. Accordingly, appropriate and inappropriate ways to walk for the elderly are then determined using the GIS program, from which the time is taken to walk and the heart rate to exploit walking as a physical sport at the same time are determined.

2 Background

There are several research questions related to the subject of research that are asked and answered by introducing several concepts dealing with the subject of research, which are the following:

Is there a relationship between urban development and walkability for the elderly?

What is the impact of urban development on walkability?

Is walkability influenced by the nature of the urban fabric of historic city centers and the urban developments located in them? And how much is this effect?

If there was a suitable walking path for the elderly, would they use it as a physical sport as well to promote their health?

Therefore, in this article, the concepts of urban development, historical cities and walkability for the elderly will be reviewed to be the first axis of research and specialized in the theoretical aspect, The second axis is represented by the practical aspect, in which a random sample of 200 people was surveyed in the study area for elderly visitors from different countries, And the questionnaire was about whether there was a path that suits their physical abilities, and if there was a suitable path for walking, would it encourage them to use it as a sport?

3 Objective of the research

The study came because of its importance of reducing the physical and psychological stress of the elderly by knowing the most possible way to walk for the elderly and the possibility of exploiting it in physical sports.

4 Literature Review

Historic City Centers

urban center is defined as the heart of the city, which represents the commercial, social and cultural center. This area is the most easily accessible part of the city, where the focus of the urban transport network, important and main offices and the best hotels of the city are located(Ibrahim & Shok, 2020, p. 149).

In depicting past extensions, Historic cities are tangible forms of civilization. It is intensively investigated in the modern field concerning designing and the possibility of addressing objectives. Furthermore, maintaining them since they integrate the new and old(Al-Yousif & Hussein, 2018, p. 2). The forms of neighborhoods in the historic cities were characterized by narrow streetsandhouses built close to each other, front balconies and the central common green area(Toljan, 2019, p. 9). Historic city centers have undergone a change that included their social structure and economic structure, which led to changes in land use, which as a result, caused a change in their urban fabric and structure, and thus in their visual vision (jawad, 2011, p. 125). Heritage areas are considered one of the most important areas of historical cities. They often represent their centers and give them civilized and social meaning. Through their religious values, prominent figures, buildings and important incidents. Figure (1) is noted as a historical area that leaves an impact on the culture of the city and the affiliations and characteristics of society, such as traditional fabric, urban spaces, andother non-urban aspects, such as customs and traditions, and social and economic activities of the population (OWIED, 2013, p. 25).These centers are defined as living urban centers linked to the present, with their civilizationalvalues and incorporating tangible and intangible components of the city's heritage.

Figure 1: Some important buildings in historic cities. Source: the researcher.

Two main elements distinguish historic city centers from other urban environmentsare as follows:

First element: Life continuity and civilizational values. Additionally, in historical centers, life continuity is categorized into the continuity of physical life, economic, and social.The necessity to continue the social situation and connect it to the occupants' memories is one reason to preserve these historical centers. It is a translation of unique living phenomena that provide the spring continuation of civilization throughout the ages. Furthermore, it embodies historical times and events and influential personalities(Al-Yousif & Hussein, 2018, p. 5).

Second element: It isthe cultural value of these centers, which is represented by (Hmod, 2021, p. 4):

1. Value Spiritual:Understanding, perception and sense of the spirit of the place.

2. Value Aesthetic:Consistency, beauty and harmony between visual components.

3. Value Social:Social interaction, sense of identity, belonging and collective memory.

4. Value Historical:Linking to the past and considering it a document that conveys history that must be preserved.

5. Value Authenticity:Safety of the structure and preservation of its elements, components, materials and uniqueness.

6. Value Symbolic:For components and locations as storagefor conveying meaning.

In light of the above concept of historical cities, it is clear that the study area is considered a historic area with its own continuity and values.

Urban space in historic urban centers

Public spaces in historic urban centers have several characteristics, including the following:

1. The value of the fabric affects the basic value of public spaces in historical centers.Either it is of high value acquired from the value of the textile, or it is of subjective value because of its history and elements, and based on this,the type of outer space is determined.

2. The spatial style of public spaces in the urban center is closely related to the spatial style and the different functions required by the city center (Shakir, 2020, p. 12).

3. These places meet the needs ofthe type of services(Ebrahimi , Gharehbaglou , & Farshchian , 2017, p. 173). Furthermore, the concrete needs of urban public spaces are comfort, meditation, tourism, shopping, reflection and learning and are influenced by social networks and the type of users.

4. The public spaces of a typical historic city are characterized by a certain type of landscape, reflecting the development process of a particular city, its era, architecture, urban planning solutions and special natural conditions. The role of typical public spaces is to preserve the historical authenticity of these spaces during the development of the city(Shakir, 2020, p. 12).

5. The space has a special space for the type of place and a differentplace for people to stand and sit for some time.

6. Respect for people, especially the elderly and women, has led to each public place having terraces or special furniture for people to sit and rest.

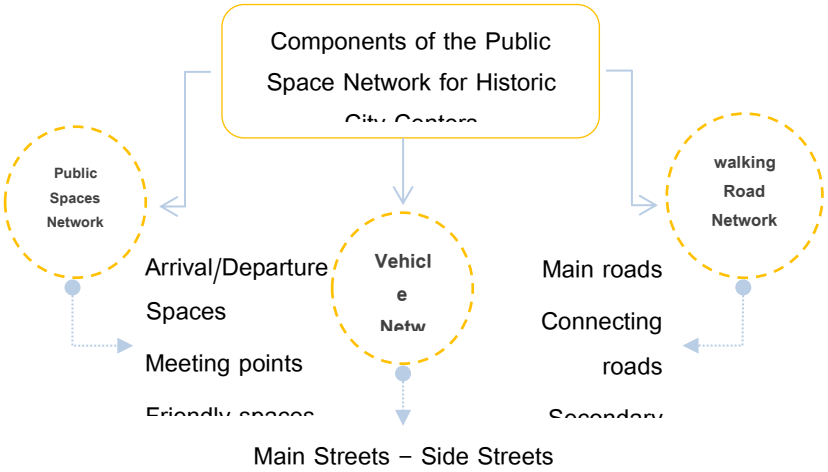
7. Simple architectural decorations in shape and according to the advice of Islam regarding good decorations.

8. Concerningthe prominent arid climate in some Islamic cities, water use, plants and trees arehighly felt in all architectural places.

9. Develop valuable positions in space according to the advice of Islam regarding the presence of the elderly in all areas of people's lives and focus especially on children and women. Additionally, the hierarchical places of architecture seek to solve any problems related to the existence of these categories(Ebrahimi , Gharehbaglou , & Farshchian, 2017, pp. 173,174).

The public space network of historic city centers consists of three networks, each of which is divided into several levels as follows. Figure (2):

Figure 2: The components of the public space network of historic city centers. Source: Theresearcher depended on (Aouf, 2019, pp. 170,171).



Urban Development

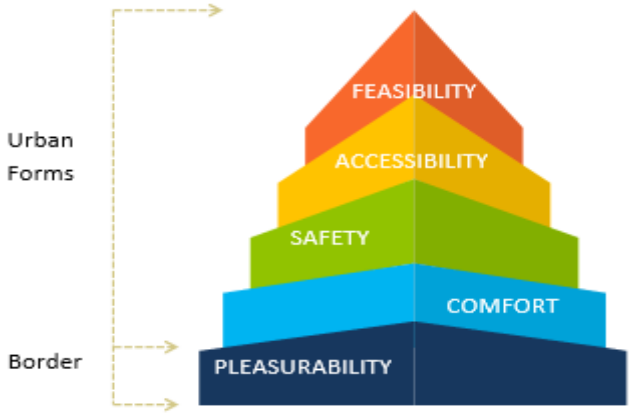
Urban development consists of several processes consisting of a set of actions that occur inlarge cities, especially in the old or traditional centersof their own, which may be among the historic and sacred cities. These actions affect the urban system of the city, followed by the urban fabric, bringing the impact to the level of a single heritage building. It is an act that addresses the accumulations of transformation in the human system that is accustomed to its surrounding environment as a result of being influenced by other values (Attia, 2009, p. 36،35).Sustainable urban development is defined as: an integrated strategic approach that aims to enhance the quality of urban life through optimal planning and city design to create a safe environment, and by raising the level of the local economy to increase the city's attractiveness, in the social aspect through the honest translation of the aspirations and conditions of the population, and the environmental aspect by reducing the negative effects of human activities on the natural environment, itsdevelopment that aims to establish sustainable cities (Al-Ardawi, Al-Shedidi, & Al-Mousawi, 2021, p. 1325). Urban development has several policies, including urban renewal. With rapid economic growth, many cities are witnessing uncontrolled development leading to decay, especially on their historical nuclei. The city's historic centeris the heart of its urban identity, so once abandoned, its identity tends to diminish as well. As a result, urban renewal projects focusingon city preservation for historic city centers are critical to salvaging this identity (Ertan & Eğercioğlu, 2015). It includes several strategies, including urban redevelopment. Itis a comprehensive program that aims to reorganize the urban, functional and demographic structure of the existing urban area. This can be performed by removing the old, dilapidated buildings that occupy a large proportion of the existing urban fabric. Additionally, rebuilding the areas according to a new comprehensive plan that reflects long-term policies for population distribution and land use(Alkinani, 2019, p. 3).

Walkability

In fact, street activities attract many visitors who are concentrated in a very limited space for short stays, especially in historic cities with a large number of visitors, as events lead to the commodification, overuse and overcrowding of public spaces. Thus, the possibility of walking in this urban area plays a key role in visitor experience and satisfaction(FERNÁNDEZ & ESCAM, 2019, p. 573).Pedestrians are people of all ages who canwalk directly or with the help of a stick or any kind of assistance (Local Government NSW, 2012, p. 97).Walkability is defined as the suitability of the built environment for people who walk. It benefits the residents'health and increases the

city'slivability(Alves , Cruz, Ribeiro, Silva , Martins , & Cunha, 2020, p. 8).Therefore, urban structure often plays an essential role in increasing walkability through planning and design of appropriate urban density, shorter distances to non-residential destinations, and mixed land use (Hoof, Marston, Kazak, & Buffel, 2021, pp. 8,9).Also,there are walking needs, whichare depicted in Figure (3).

Figure 3: The hierarchy of walking needs. Source: The researcher depended on (Abdulla, Abdelmonem, & Selim, 2017, p. 165).



Pedestrian mobility is essential for the purposes of active aging and quality of life by enabling the social participation and independence of the elderly. The health benefits resulting from the daily walking routine are an important topic in the context of urban renewal processes, and when planning pedestrian movement, several factors are studied (Alves , Cruz, Ribeiro, Silva , Martins , & Cunha, 2020, pp. 1,13):

1. Formal distribution and urban landscape.

2. Urban tissues.

3. Safety.

4. Environment.

5 Materials and methodology

The center of Najaf Governorate, represented by the old historical city, was chosen to represent the study area in which the main pedestrian paths are to be evaluated and which is suitable for the elderly.Najaf Governorate is located in the Middle Euphrates region of Iraq, 160 km south of Baghdad (the capital of Iraq)(Alrobaee, 2021, p. 61).The population is 1220145 with a 28,824 km2 area. The average temperature varies between 42°C (in July) and (14°C) (in January)

(NGO, 2015, p. 1).The historic city centeris within coordinates of about 31°59’45“N, 44°18’52“E, above sea level (FARHAN, ANTÓN, AKEF, ZUBAIDI, & HASHIM, 2021, p. 366).

The city’s planning and urban design reflect the commitment to the principles of the Islamic religion and responding to the environmental requirements of the climate, topography and others. Therefore, the general fabric of it was the organic fabric centered on the shrine of Imam Ali(peace be upon him) surrounded by monolithic houses, roofed markets, mosques, religious schools and recently hotels, as the city, in addition to its residents, is a center for religious tourism visited by many visitors from outside the municipal borders and from outside the country from different countries.

For the purpose of completing the research requirements, a random sample of 200 people was identified in the study area for the large size of elderly tourists, which exceeds ten thousand people, And the questionnaire was for several different countries of the elderly category, to assess the extent of satisfaction with the main reality paths in the study area, which are shown in the figure (4)(5). The questionnaire was about whether: 1) There is a path that suits their physical abilities; and 2) If there was a suitable path for walking, would he encourage them to use walking in it as a physical exercise, And then the possibility of walking for the elderly in these paths was evaluated based on one of the mathematical equations, To know the extent of possibility in each path, promote positive ones, develop other paths, and address obstacles.

Figure 4: The lengths of pedestrian paths. Source: The researcher captured it from the GIS10.5 program.

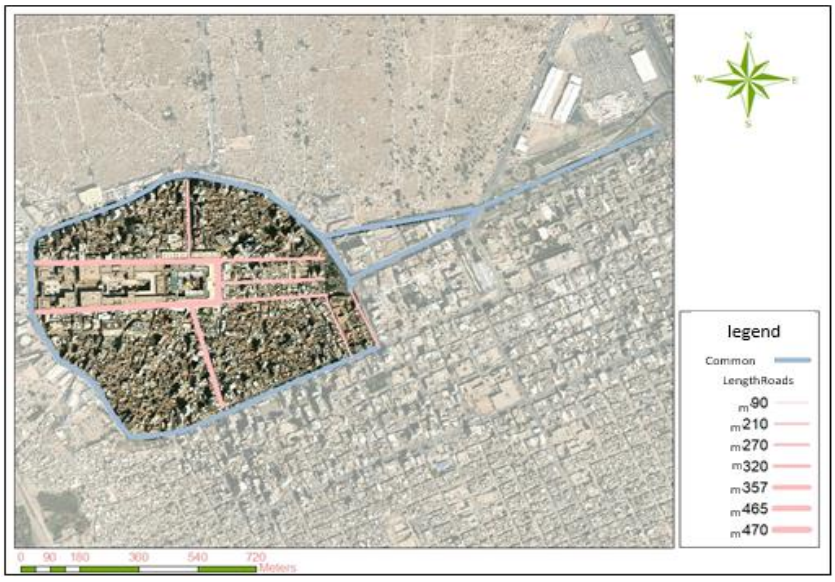
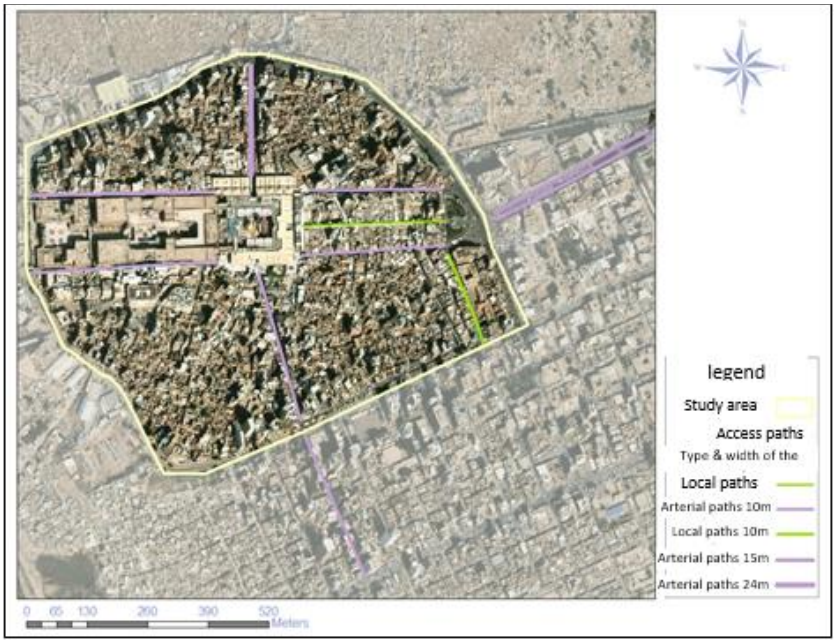


Figure 5: The type and width of pedestrian paths, Source: Researcher based on GIS10.5 program.



6 Results

The results of the questionnaire indicated that there were no traffic paths in the study area that were suitable for the physical ability of the elderly and the time required for their arrival at most, as in Figure (6),While most agreed that the appropriate path for walking the elderly encouraged him to use walking in it as a physical exercise, as in the figure (7).

Figure 6: The percentages of the questionnaire concernthe movement paths in the study area that suit the physical ability and the time required to arrive. Source: The researcher.

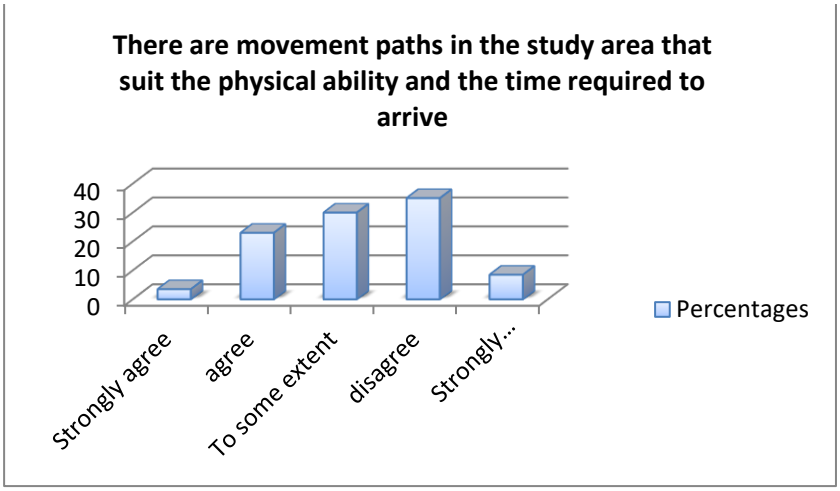
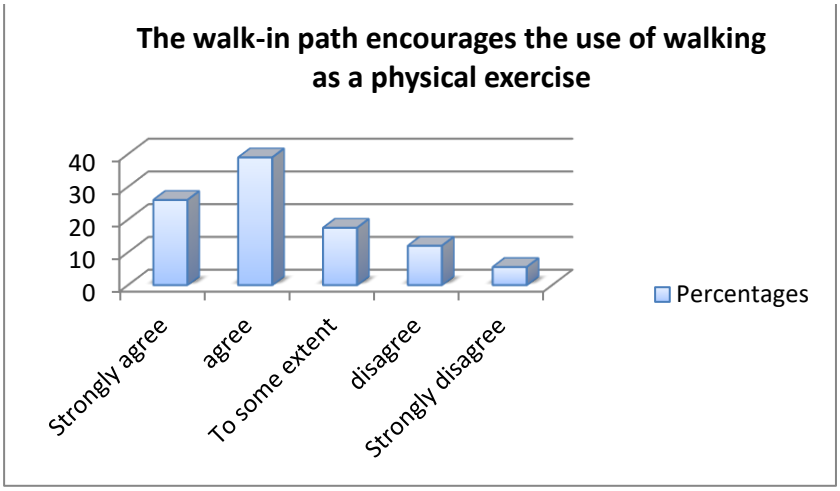


Figure 7: The percentages of a questionnaire encourage the appropriate path for walking to use walking as physical exercise. Source: The researcher.



Through the mathematical equation below, walkability was evaluated in the main pedestrian roads of the study area and the results were as shown in Table (1) and Figure (8).

isw = Urban tissue variables × 60% + Urban scene variables × 16% + Safety variables × 24%

isw = (PSQ × 0.08 + SE × 0.06 + SW × 0.06 + TSI × 0,12 + EoS × 0.08 + EoO × 0.12 + LUM × 0.08) + (ETV + EUF) × 0.08 + (SLQ + DIS) × 0.12) (Alves, Cruz, Ribeiro, Silva, Martins, & Cunha, 2020, pp. 14-16).

(DIS)	Diversity of information signs
(SLQ)	Street lighting quality
(EUF)	Existence of urban furniture
(ETV)	Existence of trees/vegetation
(LUM)	Land use mix
(EoO)	Existence of obstacles
(EoS)	Existence of stairs
(TSI)	Traffic street intersections
(SW)	Sidewalks width
(SE)	Sidewalks existence
(PSQ)	Pedestrian surface quality

Result	(isw) Indicator values
Inappropriate	1.5-1
Less convenient	2-1.5
appropriate	2.5-2
More appropriate	3-2.5

Table (1): The walkability assessment in the study area's main pedestrian roads.

Result	DIS	SLQ	EUF	ETV	LUM	EoO	EoS	TSI	SW	SE	PSQ	Variable	street
1.82	1	3	1	1	3	1	3	2	1.5	1.5	2	Evaluation	1
1.74	1	3	1	1	2	1	3	2	1.5	1.5	2	Evaluation	2
1.8	1	3	1	2	1	1	3	2	3	1	2	Evaluation	3
1.71	1	2	1	1.5	3	1	3	2	1	1.5	2	Evaluation	4
1.91	1	2	2	1	3	2	2	3	1	1.5	2	Evaluation	5
1.50	1	1	1	1.1	2	1	1	3	3	2	1	Evaluation	6
2.30	1	3	1	1.2	3	2	3	3	3	2.5	3	Evaluation	7

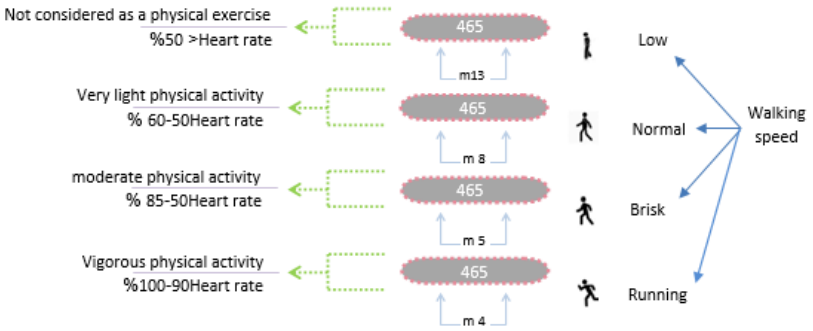
Source: The researcher.

Through this table reached by the researcher, it was concluded that Street No. (7) is the appropriate path, and thus the figure (8) below was reached, which shows the road evaluations for the possibility of walking for the elderly.

Figure 8: The study area's main pedestrian roads and the walkability assessment. Source: The researcher depended on the GIS10.5 program and the field visit.

Since the course (7) is the appropriate path for walking, which is (465 m), it is the appropriate path for physical exercise at the same time, The speed of walking, the time taken and the heart rate are as in Figure (9) below:

Figure 9: Walking speed and heart rates (exploiting walking as a sport). Source: The researcher depended on (Alves, Cruz, Ribeiro, Silva, Martins, & Cunha, 2020, p. 7).



7 Conclusion

1 Road No. (7) is the appropriate road for the elderly to walk, but not the most appropriate, according to the evaluation, and roads (1, 2, 3, 4 and 5) are considered less suitable, while Road (6) is not suitable for walking for the elderly.

2 Route (7) is also the appropriate path for physical exercise because it is suitable for walking and the heart rate of the elderly during normal walking is (50-60%).

3 Through the evaluation, it is clear that the lighting is well available as well as safety, and one of the reasons for this is the continuous movement in this area.

4 The paths are also often lacking for afforestation, and there are physical barriers such as encroachments on sidewalks and street vendors, poor infrastructure services in some places, in addition to the presence of visual distortion in some citizens due to the overlap of modernity with the old style, and the lack of guidance signs and the weakness of some of them.

8 Recommendations

This study motivated us to seek further ideas to do. We recommend the following main ideas:

1. Reinforce the values found in historical centers that have been addressed in previous studies and that overlap with the needs of the elderly.

2. Review whether urban jobs for built-up areas are relevant to older adults.

3. The need for the elderly to participate in the planning processes.

4. Adopting the urban development policies that were addressed in previous studies when developing solutions, especially the urban renewal policy and its strategies, one of which is urban redevelopment.

5. Studying the factors that were mentioned in previous studies, represented in the formal distribution, urban landscape, safety, environment, and urban tissues, to plan pedestrian movement and develop other paths, with the importance of studying the walking needs, which were previously mentioned in the concept of walkability, to develop the area concerned.

6. Allocating a lane seven for the elderly according to what has been presented, especially since this street is within the area to be rehabilitated, although this street is suitable for the elderly, so taking advantage of this rehabilitation process can be developed and made suitable for them.

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