



ELDERLY-FRIENDLY INCLUSIVE URBAN ENVIRONMENTS: LEARNING FROM ANKARA

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Abstract

The aging population and their expectations have become a growing concern in Turkey as in other countries. This study aims to investigate interactions/relationships between the needs, demands and expectations of Turkish elderly and inclusive urban design principles. It tries to answer the research question: how the inclusive urban life could improve elderly life and contribute to achieve an active aging process. An exploratory study was conducted with a total of 100 randomly selected elderly between the ages 65-95 (45 female and 55 male) from the City Centre of Ankara. A survey instrument based on the 'streets for life' concept (Burton & Mitchell 2006) was developed to gather data. The participants were asked to identify how important inclusive urban design features were in understanding, using and navigating within an urban environment. The findings of the study suggest that an inclusive open environment allows elderly people to feel safer, and thus encourage more regular use of urban space. Overall the results highlight two important insights, first that accessibility is inevitable for increasing the chance of the aging population to participate in the mainstream of community life and second, plain and simple signage is necessary to achieve more liveable urban environments. The study concludes the most important physical requirements and social requirements for elderly people.

Keywords: Inclusive Design, Aging Population, Accessibility, Independence, Elderly-Friendly Environment.

1. Introduction

Aging population is increasing all over the world. According to OECD Factbook 2011-12: Economic, Environmental and Social Statistics (2011), the ratio of population aged 65 and over to total population is highest in Japan, 23.1 per cent of Japanese population, while 20.6 per cent of Italian population and 20.3 per cent of the German population. World Health Organization (WHO) estimates suggest that the world total will be more than 1 billion aged 60 or over by the year 2025 (Marshall et al. 2004). Although the birth rate is higher than the ratio of aging population in Turkey, by 2025, 13 per cent of the Turkish population will be aged 60 and over and by 2050, 21 per cent, which is triple today's aging population ratio. Thus, the aging population and their expectations have become a growing concern in Turkey as in other countries. In this respect, providing a physical space and a social environment for elderly daily living becomes significant in terms of a user-friendly human-environment interface. The quality of the built environment has been said to have a significant effect on the health, comfort, satisfaction and productivity of its users. This study considers old

age and accommodating elderly as social design problems, which cannot be solved by individuals themselves. Architectural solutions informed by ethical concerns and inclusive design approach can overcome these problems. Working closely with older users and being informed on their diverse needs and demands is crucial to enable by design (Coleman & Pullinger 1993).

Reviewing the literature shows that there is much discussion and debate regarding elderly people's needs, demands and expectations among assisted living providers, designers, researchers and policy-makers. Some insight into the implications of universal design practice for these groups can be listed as follows: new housing developments for ageing populations where they have easy access to services and public transportation; universally designed outdoor gardens and parks serving elderly and people with all types of impairments; the development of government policies and laws for sustainable social development; assistive technologies to support people with dementia, etc. (Afacan & Afacan 2011). There are also a number of concepts and practices that support how an elderly-friendly environment could improve the sustainable urban experience across a broad range of commu-

nities. Lifetime homes, streets for life and lifetime neighbourhoods are the most common examples of the concepts underpinning inclusively designed urban environments (Burton & Mitchell 2006). These concepts are based on creating environments that stimulate and enhance quality of life, personal identity and human interactions throughout the lifespan (Hanson 2001).

However, accommodating special populations' needs and demands in Turkey is a highly difficult and challenging design task. In contrast to developed countries, in Turkey, old age is not yet regarded as a problem; however it is already becoming difficult to continue existing patterns. From the user perspective, in most of the cities in Turkey the physical configuration of streets and the social life are not universal and sustainable but rather are problematical for both disabled and non-disabled people. From the designer perspective, it is still not clear what a barrier-free architecture and urban design means in practice. Furthermore, real-world applications in Turkey on designing urban environments for elderly people are scarce compared to disabled people (Turel et al. 2007). Although Article 61 in the Constitution of Turkey and Municipality Law 5393 highlights right to social security and protection of life for older people, governance has not yet legislated to address the requirements of aging populations in an urban environment (Aging Platform Group Report 2010 Ankara). It is urgent to consider the implications of aging in the Turkish urban design context. In this respect, this study differs from other researches by being an initial effort to address elderly people's point of view on inclusive urban environments that could impact industry as well as governance and public design. It aims to investigate interactions/relationships between the needs, demands and expectations of Turkish elderly and inclusive urban design principles. It concentrates on possible difficulties inherent within all urban contexts. It also offers design guidance and recommendations based on evidence-based research. It searches an answer to the following research question: "how the inclusive urban life could improve elderly life and contribute to achieve an active aging process?"

2. Aging and quality of life: The challenge of inclusive urban environments

WHO and Help the Aged use the age of 60 years as the start of aging process, whereas UK Office of National Statistics and Age Concern refers older people as those aged 50 years and over (Burton & Mitchell 2006). In Turkey, old age is defined as the age of 65 years and over. However, using the term 'old' and/or 'elderly' could be sometimes discriminatory and cause misunderstandings that those people are regarded as frail (Laws 1994). Nevertheless, aging process has effects on people's functional (strength, mobility, sensory) and mental abilities (dementia) so that they fail to experience urban environments efficiently as the younger population.

Urban environments are the essential part of city life to maximise independence and the full participation of elderly people in all aspects of society. A well-designed outdoor space is vital to maintain the independence and self-respect of an older person. According to Handy et al. (2002) and Saelens et al. (2003) people are more active in accessible urban environments. Although the research of physical environment on older adults began in the 1960s (Hans-Werner & Weisman 2003), due to the increasing urbanization, changes in the construction technologies and rapid growth of cities, the user-friendly nature of streets is disappearing. Urban environments become more fragmented, which causes separation of people from each other and their ecological place. These changes in physical and social structure of streets lead to the lack of a universal platform for self-fulfilment and individual dignity. There is an essential need to identify physical and social environmental features based on the perspective of elderly people (Feldman & Oberlink 2003). According to Imrie (2000: 1643) "for many people, their inability to go places or restrictions on their mobility and movement is of paramount importance in their everyday lives". For the elderly existing patterns of poorly designed urban environments, such as steps, narrow streets, uneven pavements, are critical concerns to let designers rethink the urgency of inclusive urban environments.

As mentioned earlier, the physical configuration of the urban environment as an important source of social exclusion (Hall & Imrie 1999) generates a number of reasons to adopt inclusivity, which has benefits to everyone. The inclusivity in this study is defined based on 'streets for life' concept

that is developed by Burton & Mitchell (2006) through their ongoing research at the Wellbeing in Sustainable Environments research unit at Warwick University. This concept with the six key design principles – familiarity, legibility, distinctiveness, accessibility, comfort and safety – is a mechanism for achieving the goals of inclusive design at the neighbourhood scale and enabling outdoor environments to be as dementia-friendly as possible (Burton & Mitchell 2006). *Familiarity* is defined by the extent to which urban environments are easily recognisable and understandable by elderly people (Burton & Mitchell 2006). According to Imrie (2000), the loss of familiar street markers or additions of new ones cause elderly users to feel vulnerable in a built environment. Familiar urban environments not only help to reduce confusion, but also maintain elderly independence and influence their physical activity (Booth et al. 2000). Since elderly people also experience short term memory problems, ease of recognition in street layout, alternative routes, location of services, pedestrian crossings and signs are essential to make the urban environments inclusive. *Legibility* is closely related to help elderly people to understand where they are and in which way they need to go (Burton & Mitchell 2006). Provision of accurate and intuitively understandable directional guidance is important for legibility with a minimum confusion (Preiser & Smith 2010). Lynch (1960) defined also the qualities of a good urban design as legible focal points for orientation, edges and places of congregation. However, the attitudes of elderly people toward the way finding techniques are different than the others (Passini et al. 1998, 2000). Maps, directions, signs are difficult and complex to understand by an older person regardless their mental capacity, while few use landmarks and environmental features, such as a letterbox or a favourite tree (Burton & Mitchell 2006). *Distinctiveness* is similar to legibility in terms of giving a clear image of where to be, but it distinguishes by reflecting the local character and giving distinct identity by a variety of spaces- such as high-rise buildings, parks, historic structures- colour, material, street furniture, and uses- such as play areas, recreation grounds (Burton & Mitchell 2006). Elderly people are more likely to walk along streets with pavements, front gardens and shops rather than the streets surrounded by blind walls (et al. 2009). Thus, distinctive street characteristics and urban spaces full of activities attract elderly people, even with dementia, and encourage them to experience the urban environment. In terms of the active

aging process, a sense of a garden and/or interesting urban features to look at increases enjoyment while walking and gives a sense of belonging to the community (Michael et al. 2006). *Accessibility* is defined as the extent to which the elderly people are enabled to visit, reach, use and access all the urban facilities regardless their ability (Burton & Mitchell 2006). According to Gabriel & Bowling (2004) one of the central dimensions of the quality in later life is offering access to facilities and services in a neighbourhood. 'An accessible route of travel is the key unifying element that facilitates the safe and independent use of a site and its buildings by all people ...connects site arrival points, i.e. parking, bus stops, etc., with all exterior and interior amenities' (New Fair Multi-Family Housing, 1996, p. 13). *Comfort* is closely related to the ease of use of the urban environment, and the ability to visit places without physical or mental discomfort (Burton & Mitchell 2006). According to Imrie (2000), comfort in a built environment is associated with a calm and welcoming feeling. Michael et al. (2006) highlighted the importance of comfort in a built environment for active aging and elderly people's decision to live in a particular neighbourhood. Finding ways to reduce the expenditure of effort and to minimize repetitive actions at all scales of the environment is essential (Story 2001). Close destinations, hierarchy of streets, places to stop and rest, public seating and toilets while walking are important for seniors (Afacan & Afacan 2011). *Safety* is referred to the extent to which elderly people use the urban environment without fear of falling, being attacked and run-over. This last criterion is the result of the previous five criteria. If an urban environment is familiar, legible, distinctive, accessible and comfortable, then it is obvious that the environment is safe and there is nothing to worry about being attacked or fear of falling. The inadequate pedestrian infrastructure can limit the participation of elderly people to urban life by making them feel unsafe and increasingly isolated (Michael et al. 2006), whereas well-designed streets and public open spaces encourage walking and cycling, and have the power to make our environment safer (Turel et al. 2007). These six principles as proposed by Burton & Mitchell (2006) support sustainability and play a key role in the inclusive engagement of elderly people in socially productive activities within the urban life.



Figure 1. Aerial view of the study area taken from www.maps.google.com

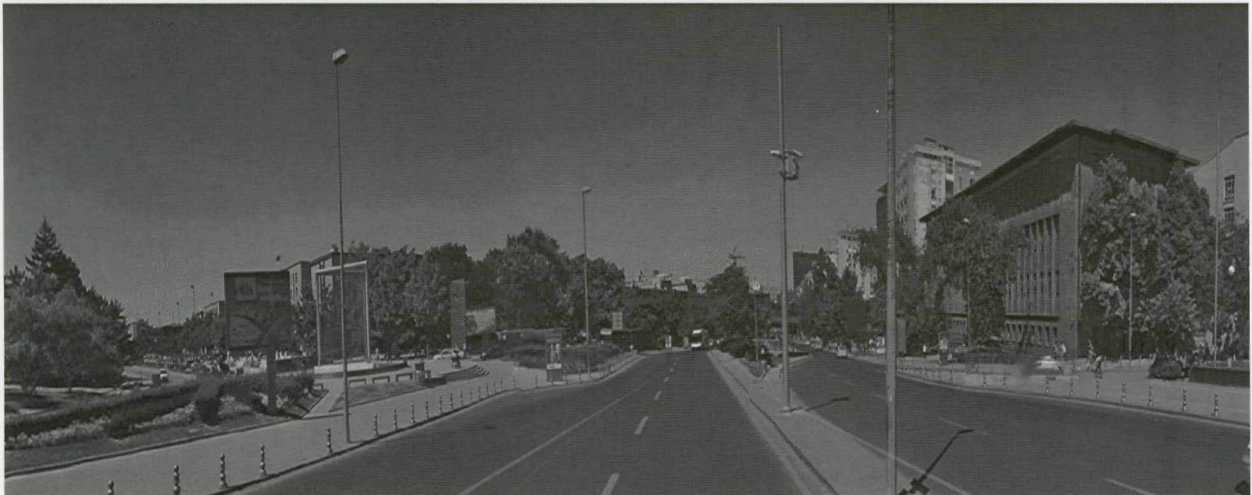


Photo 1. Panoramic view taken from the P1 location by the author.

3. Methodology

3.1 Participants and study area

A total of 100 randomly selected elderly between the ages 65-95 (45 female and 55 male) from the City Centre of Ankara participated in the survey. 58 % of the participants do not have any health problems, whereas 9% pointed out eye problems, such as low vision, cataract etc. 33% reported movement problems, such as walking, rheumatism etc. The case urban site is chosen from the most dense and popular urban area (Kizilay-Ulus region, 3km long, Figure 1) in Ankara City Centre, Turkey, which contains a well-developed infrastructure including different vehicular and pedestrian traffic patterns,

access points to public transport, pedestrian facilities, access to parks, prestigious buildings, such as embassies, plazas, diverse building and urban facilities. To provide a better context and make the analyses more readable, photographic descriptions of the Kizilay-Ulus district are shown below (Photograph 1, 2, 3, 4). The photographs were taken as panoramic views by the author, who chose critical locations that could show the different characters of the district. None of the participants are in need of any institutional care and have any mental disability. Each participant, who takes part in the structured interview process were also asked to sign a consent form to satisfy ethical procedures.



Photo 2. Panoramic view taken from the P2 location by the author.



Photo 3. Panoramic view taken from the P3 location by the author.



Photo 4. Panoramic view taken from the P4 location by the author.

3.2 Methodology

A survey instrument with a comprehensive list of 46 items was developed to gather data (Appendix A). The survey instrument includes urban design features that contribute or can be components of a promising and inclusive urban space. It is based on a structured questionnaire format with close-ended questions. The questions in the survey instrument were grouped under six categories with reference to Burton & Mitchell's (2006) streets for life principles

as explained above. During the survey, the users were asked to rate their importance level for each item on a scale of 1-5, (1 being the least important and 5 the most important) and to mark the appropriate boxes to identify how important is each of the following features in understanding, using and navigating within an urban environment. The data were collected during face-to-face surveys with all the participants in the street in a public seating area. At the beginning, a brief summary of the procedure and the aim of the study were explained. The items

Preferences				
<i>Aim</i> The purpose to use the urban space	Necessary activities	Recreational activities	Cultural activities	Other
<i>Frequency</i> Frequency of use the urban space	Once a day	Once a week	More than once a week	Once a month
<i>Independence</i> Accompanying person while using the urban space	Alone	A friend	A relative	Other
<i>Time</i> Time period of using the urban space	08.00-12.00	12.00- 16.00	16.00-21.00	21.00-24.00

Table 1. Preferences of elderly people.

that may not have been clear to participants were explained as a part of questionnaire. Further information was obtained through an unstructured interview, which helped to discuss the results of the questionnaire in a more comprehensive way. Further, to avoid any biases, participants were not allowed to listen to others while they were being surveyed.

3.3 Variables

The results of the survey were explained concerning independent and dependent variables. Independent variables were tested against dependent variables. The means of access and distance of their living environment to the study area were considered as dependent variables in all of the categories. The independent variables are age, gender, education level and physical ability. Besides, the preferences of elderly (aim, frequency, time and independence, see Table 1) are also considered as independent variable that had impact on the user attitude toward an urban environment.

4. Results: Correlations among elderly characteristics, their preferences and inclusive urban principles

The ratings of the participants on 46 items were analyzed by using the Statistical Package for the Social Sciences (SPSS) 10.1. By means of the statistical analyses, frequency distributions, cross-tabula-

tions and chi-square test for independence were calculated. The alpha coefficient for the 46 item is 0.9271, suggesting that the items have relatively high internal consistency.

Analyses of mean scores for each survey item were calculated. The study considered the items with mean scores above 4.1 as the most important items for an inclusive urban design regardless their age, ability, gender and preference (Table 2). About half of the participants stated that they prefer familiar routes and clearly marked services and facilities, preferably at ground levels. More than half of the participants highlighted the importance of public toilets. Since they could not find a comfortable, accessible and clean toilet, they plan their routes around stores and cafes which have an inclusive toilet. Moreover, many participants were worried about being attacked and/or have fear of falling because of uneven level changes. Thus, the participants consistently emphasized the importance of wide, well-maintained and clean footways with clearly marked signs.

Representative statements on 8 items illustrated in the Table 2 were identified through the unstructured interviews. Discussions on the first three items in the table showed that participants had strong views on the ease of use and design of simple route planning techniques just as highlighted by Burton & Mitchell (2006) under familiarity and legibility principles. Simple signs, clarity in maps, tactile and visual clues on sidewalks helped users to cope with the fear of getting lost and disoriented, a factor which typically leads elderly people to become housebound. The statements on the

Items	Means	Representative Statements
Readable graphics in signs.	4.12	I have usually difficulty to interpret the information on signs because of abbreviations and stylized graphics.
Use of familiar signs for navigation.	4.15	Less familiar signs are one of the main causes for me to lose my way.
Clearly visible and obvious entrances.	4.23	I struggle to distinguish shop entrances. I need environmental cues to ensure entrances.
Stepless entrance.	4.44	Any level change creates barriers. I could not lift my feet and have difficulty to see steps.
Provision of accessible toilets.	4.51	I would love to use a public toilet in the city centre; however I could not use because of many problems and search an accessible café toilet.
Pedestrianised areas offering protection from traffic.	4.56	I enjoy walking along more in a quiet and less busy street, however busy arterials give chance to reach all the services.
Ease of manipulation in doors.	4.61	The doors are heavy, I usually have difficulty to get in and out
Level changes clearly marked with handrails and non-slip, non-glare surfaces.	4.70	I am much more confident if risers and treads are in contrasting colours and have round hand rails on both sides.

Table 2. Mean scores for the most important items.

remaining 5 items are also in line with Burton & Mitchell (2006) accessibility and comfort. Physical obstacles, such as level changes, and barriers make the urban environments inaccessible so that most of the elderly use local facilities within walking distances. Participants mentioned that getting close to the urban environment is important in terms of a positive sense of place attachment, independence, satisfaction and enjoyment. A majority of the participants stated in the interviews that they consistently look for a clean, accessible and safe public toilet in the city centre.

4.1 Towards what purpose do the elderly use the urban environment?

Analyses of frequency tables for each preference were conducted. Regarding the purpose of use of the urban environment, 44 participants stated that they use the urban environment for necessary activities, such as health needs, banking and shopping. 26 participants identified recreational activities, such as walking, wandering and hanging around, as an inevitable aim for the active aging, whereas 30 participants used the urban space for socio-cultural activities, exhibitions, theatre and cinema. There is a statistically significant relationship between the pur-

pose of use of the urban environment and elderly physical ability ($\chi^2 = 20,953$, $df=6$, $\alpha=0,02$, two-tailed). The 9 participants with vision problems and all 14 participants with rheumatism (out of 33 participants with movement problems) prefer to use the urban environment for necessary activities. However, for the participants without any health problems the ratio of purpose responses with respect to the three activities is practically identical.

Since this preference is closely related with adequate infrastructure, sense of navigation, attractiveness and comfort (Michael et al. 2006), to investigate the reasons for this relationship, the study analyzed the correlations of the participants' importance level for the inclusive urban design principles and found that legibility, distinctiveness, accessibility and comfort play an essential role in this preference. Statistical relationships between the purpose and the following survey items were found as follows: "integration with a variety of practical features such as public seating" ($\alpha=0,02$); "availability of signs at important decision points" ($\alpha=0,01$); "entrance accessibility" ($\alpha=0,00$); "well-defined and well-connected surrounding spaces" ($\alpha=0,01$).

The key issue is that places to stop and rest; close destinations; presence of way finding features

and accessible local facilities while participating in urban life are important inclusive urban features, and could have substantial impact on the daily activity pattern of an aging population. The study also investigated the relationship between the gender, education and the purpose of use of the urban environment and found no statistically significant relationship between them.

4.2 How often do elderly prefer the urban environment?

The frequency results indicated that the urban environment is not always used with a consistent pattern. 30 participants use the urban environment once a day, 29 participants more than once a week and 29 participants once a month with the remaining sample using the urban environment once a week. The apparent reason for this pattern is that as the age increases, the usage of the built environment loses its regularity because of physical barriers and safety problems. Moreover, most of the participants reported that they are more willing to stay at home. In the study, all the participants who are above 85 years (27%) prefer to use the urban environment once a month. The study also analyzed the correlations between the frequency and the participants' importance level for the inclusive urban design principles. It found statistical relationships between the frequency and the following items: "ease of orientation in terms of urban form and street layout" ($\alpha=0,01$); "provision of essential information for people who are unfamiliar with a place" ($\alpha=0,03$); "readable graphics in signs" ($\alpha=0,00$); "appropriate day and night lighting to encourage usage" ($\alpha=0,00$); "availability of public seating" ($\alpha=0,00$); "provision of public toilets" ($\alpha=0,00$) and "orientation accessibility" ($\alpha=0,00$). In this context, almost all of the participants agreed that they would use the urban spaces more regularly if they could identify easily where they are and where to go. Accessibility and comfort in the urban environment are necessary to avoid fear, becoming disoriented and confused. Moreover, another criterion that affects the usage frequency is the toilet provision. Most of the respondents avoid going places without toilet facilities altogether.

4.3 Being independent or accompanied while using the urban environment?

Regarding the independence, most of the participants prefer to use the urban environment alone

(40%) or with a relative (40%) rather than with a friend (10%) or with their care worker. The study found only two correlation data between independence preference and inclusive urban design principles. There is a statistically significant relationship between the independence and the following survey items: "entrance accessibility" ($\alpha=0,00$) and "availability of security cameras" ($\alpha=0,00$). Safety emerged as a critical concern that has implications on independence and self-esteem of aging population. The participants highlighted positive benefits of open spaces with natural surveillance as well, i.e. busy road connections, short distances and clean and friendly kept areas with adequate lighting. In terms of the time period, the results showed that more than half of the participants (66%) prefer using the urban space between 12.00-16.00, 19 % between 08.00-12.00 and 15 % between 16.00-21.00. As the participants mentioned during the interviews, the main reason for this preference is that elderly feel safer during the peak hours of the day, when they could find more people to assist them, have more public transport choices without excessive waiting and find more elderly-friendly activities, such as painting, computer courses, hand-crafting services and social services by the municipality. According to analyses of the correlations between the time and the participants' importance level for the inclusive urban design principles, there is no statistically significant relationship between time preference and any of the survey items. It should be noted there would be no doubt that an inclusive urban environment, which is safe from traffic and crime, easy and pleasant to walk around, accessible to use, would allow all elderly people to participate in every facility and service during 24 hours of a day.

5. Discussion

The findings of the study suggest that an inclusive open environment allows elderly people to feel safer, and consequently could encourage more regular use of the urban space. Overall the results highlight two important insights. The first is that accessibility is necessary for increasing the participation of the aging population in mainstream community life. The second, quite simply, is that signage is necessary to achieve more liveable urban environments. Accessible urban environments must provide more than physical access, and look towards social benefits and opportunities, such as health, social life, environment and economy in

their inclusivity. An improved environment that is well-designed, planned and managed help the elderly to feel free, independent and more in control. A readable and easy recognizable street layout is important for elderly people to reduce confusion and maintain independence. In that sense, signage systems have critical implications in experiencing urban life. Reliable and clearly presented information prevent elderly from losing their way so that they are encouraged to use urban space and become less fearful of getting lost while using it. In this context, elderly-friendly inclusive urban environments can lead to the greater inclusion of many groups often neglected in the urban development process. They can provide the possibility of responding to the requirements of sustainable development and the needs of communities from childhood throughout the aging process. Otherwise, inaccessible spaces, unusable facilities with barriers and declining cities prevent the physical and social participation of elderly in the communities and lead them to being marginalized and lonely. In this respect, this article's contribution to scientific knowledge is to open ways for adopting inclusive urban design and planning principles and import creative ideas for supporting accessible urban development and inclusive design's responsiveness to the current ever-changing global environment.

6. Conclusion

Additional findings can be concluded from this study. Public toilets and public seating need to be considered to create a good quality street environment. Table 3 summarizes all the findings under a checklist to establish an elderly-friendly inclusive urban environment model, to adapt existing urban environments or create new ones. This checklist is composed of the most important physical requirements and social requirements for elderly people that are discussed within the study. It can provide guidance to a number of guidelines and future research issues to increase designers, architects, planners and policy makers' awareness and positive attitude towards inclusive urban environments. However, it should be noted that there are limitations of the study. Since the sample size is small and the study area is limited, it is not possible to generalize the results. Further research should include more participants from different urban areas. A comparative cultural study could also be considered as a future goal of the author to focus in more detail on the importance of inclusive urban environments and elderly needs in terms of social, health, environmental and economic benefits and opportunities that are provided by urban spaces.

In summary, it is apparent that additional emphasis on inclusive urban design is required. An elderly-friendly inclusive urban environment model, illustrated in Table 3, embodied with inclusivity can

Physical Requirements
<p> Readable graphics in signs. Use of familiar signs for navigation. Stepless entrance. Provision of accessible toilets. Pedestrianised areas offering protection from traffic. Ease of manipulation in doors. Level changes clearly marked with handrails and non-slip, non-glare surfaces. Well-defined and well-connected surrounding spaces Entrance accessibility. Provision of essential information for people who are unfamiliar with a place. Availability of public seating. Availability of security cameras. </p>
Social Requirements
<p> Sense of familiarity. Sense of safety. Sense of independence. Avoidance of getting lost. Avoidance of being disoriented. Avoidance of being attacked. Avoidance of fear of falling. Feeling cosier and less threatening. Feeling comfortable Interesting and understandable places. Enjoying peace and quiet. Welcoming places with a variety of facilities. </p>

Table 3. Checklist for an elderly-friendly inclusive urban environment model.

be treated as a design response to elderly-friendly environments through which designers, planners, policy makers and government can eliminate social exclusion, address the needs of the whole population, reduce timescales and produce better designs and increase user satisfaction. This model takes a bottom-up approach, involving municipalities to respond to the needs of the aging population, rather than the top-down. Moreover in reality, the true costs of poorly conceived, unusable and inequitable designs emerge later on in the life cycle and/or occupation phase of the built environment, and have the potential to exclude people, cause irreparable damage and unsustainable environments. Post-occupancy evaluations can be too late to remedy the mistakes related to inclusive design and social inclusion. To avoid a diffused link between people and cities, there is a need to embark on design strategies, checklists and methods for revitalisation, requalification and renovation of existing built environments. Therefore, achieving a sustainable performance within cities is highly correlated with implementing an appropriate design strategy along an overall consideration of a range of environmental design concerns, such as design checklists, ergonomics guidelines, accessibility standards, building codes and urban planning specifications. In this context, inclusivity within urbanism can lead to the greater inclusion of many groups often neglected in the sustainable development process.

7. References

AFACAN, Y and AFACAN, S O. 2011, *Rethinking social inclusivity: Design strategies for universally designed sustainable cities*, P I Civil Eng - Urban Design and Planning, 164, 93–107.

Aging Platform Group Report, Aging Workshop I, March 19, 2010 Ankara, Turkey.

BOOTH, M L, OWEN N, BAUMAN A, CLAVISI O and LESLIE, E. 2000, *Social-cognitive and perceived environment influences associated with physical activity in older Australians*, Preventive Medicine 31, 15–22.

BORST, H C, VRIES S I, GRAHAM, J M A, VAN DONGEN J E F, BAKKER I and MIEDEMA H M E. 2009, *Influence of environmental street characteristics on walking route choice of elderly people*, Journal of Environmental Psychology 29, 477–484.

BURTON E and MITCHELL L. 2006. *Inclusive Urban Design: Streets for Life*, Oxford, Elsevier.

COLEMAN R, PULLINGER D J. 1993, *Designing for Our Future Selves*, Applied Ergonomics 24, 3.

FELDMAN, P H, OBERLINK, M R. 2003, *Developing community indicators to promote the health and well-being of older people*, Family and Community Health 26, 268–274.

GABRIEL, Z. and BOWLING, A. 2004, *Quality of life from the perspectives of older people*, Aging and Society 24, 675–691.

HANDY, S L, BOARNET, M G, EWING, R and KILLINGSWORTH, R E. 2002, *How the built environment affects physical activity: views from urban planning*, American Journal of Preventive Medicine 23, 64–73.

HANSON J. 2001, *From 'special needs' to 'lifestyle choices': Articulating the demand for 'third age' housing*, In *Inclusive Housing in an Ageing Society*. Peace SM and Holland C (eds.). Bristol, Policy Press, 29–55.

HANS-WERNER, W and WEISMAN, G D. 2003, *Environmental gerontology at the beginning of the new millennium: Reflections on its historical, empirical, and theoretical development*, The Gerontologist 43, 616–627.

IMRIE, R. 2000. *Disability and discourses of mobility and movement*, Environment and Planning A, 32, 1641–1656.

HALL, P. and IMRIE, R. 1999. *Architectural practices and disabling design in the built environment*, Environment and Planning B, 26, 409–425.

LAWS, G. 1994, *Aging, contested meaning, and the built environment*, Environment and Planning A, 26, 1787–1802.

LYNCH, K. 1960, *The Image of The City*, Cambridge, MIT Press.

MARSHALL R, CASE K, PORTER J M, SIMS R, GYI D E. 2004, *Using HADRIAN for Eliciting Virtual User Feedback in 'Design for All'*. Proceedings of the Institution of Mechanical Engineers Part B: Engineering Manufacture 218, 1203–1210.

MICHAEL, Y L., GREEN, M K and FARQUHAR, S A. 2006, *Neighborhood design and active aging*. Health and Place 12, 734–740.

New Fair Multi-Family Housing. 1996, *A Design Primer to Assist in Understanding the Accessibility Guidelines of the Fair Housing Act*. North Carolina, North Carolina State University Press.

OECD Factbook 2011-12: Economic, Environmental and Social Statistics. 2011, DOI: 10.1787/factbook-2011-en.

PASSINI, R, RAINVILLE, C, MARCHAND, N and JOANNETTE, Y. 1998, *Wayfinding and dementia: some research findings and a new look at design*, Journal of Architectural and Planning Research 15, 133–151.

PASSINI, R, PIGOT, H, RAINVILLE C and TETREAUULT, M H. 2000, *Wayfinding in a nursing home for advanced dementia of the Alzheimer type*, Environment and Behavior 32, 684–710.

PREISER, W F E and SMITH, K S. 2010, *Universal design at the urban scale*, In Universal Design Handbook (Second Edition) W.F.E. Preiser and K.S. Smith (Eds.) New York, McGraw-Hill, 20.1–20.11.

SAELEN, B E, SALLIS, J F, FRANK, L D. 2003, *Environmental correlates of walking and cycling: Findings from the transportation, urban design, and planning literatures*, Annals of Behavioural Medicine 25, 80–91.

STORY, M F. 2001, *Principles of Universal Design*, In F E W Preiser and E Ostroff, eds., Universal Design Handbook. New York, McGraw-Hill, 10.1–10.11.

TUREL, H. S., YIGIT M. E. and ALTUG I. 2007, *Evaluation of elderly people's requirements in public open spaces: A case study in Bornova District (Izmir, Turkey)*, Building and Environment 42, 2035–2045.

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