

Toward achieving Age-Friendly public open space Case study of the upgrading of Al-Okilat park –Buraida city –KSA

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Abstract

By 2030 two thirds of the world population will be living in cities, at least one-quarter of them will be of age over 60 years, so the global graph lines of urbanism and aging are together rising. The elderly are not homogeneous groups, however, they have common general attributes and features. The elderly achieves greater satisfaction by engaging with the outdoor space every day, neighborhood open spaces may also be considered as locations that influence the well-being and quality of life of the elders. The majority of elderly people live in environments that do not respect enough their various needs, these needs are physical, mental, and social needs. The World Health Organization (WHO) defined the concept of health to a state of full physical, mental, and cultural well-being, and in 2005, WHO has introduced the age-friendly city program, which has a set of checklists to evaluate how age-friendly is the city, the research follows indicators of this program to reach the indicators of achieving an Age-Friendly urban open space which fulfills the elderly multiple needs and help elderly people to integrate with their community. The Indicators which the research produces include promoting physical needs for the elderly (physical activities, physical and psychological comfort), providing safe environment, promoting elderly people social needs (as social contact and the sense of belonging, Promoting the need for respect and choice and Promoting the need for self-realization. Finally, the paper provides an applied study to achieve these indicators in Al-Okilat park in Buride city-KSA.

The research recommend that senior citizens should be involved in all steps of the urban open space design process (planning, urban design, implementation) to improve their social participation.

Keywords:

the elderly- urban open spaces-human needs

الملخص

حلول عام ٢٠٣٠ ، سيعيش ثلثي سكان العالم في المدن ، وسيكون عمر ربع عدد هؤلاء السكان يزيد عن ٦٠ عامًا ، فخطوط الرسم البياني العالمية للتوسع العمراني والشيخوخة تشير الي ارتفاعهما معا ، كبار السن ليسوا مجموعات متجانسة ، ومع ذلك ، لديهم سمات وميزات عامة مشتركة ، وكبار السن يحققون رضا أكبر من خلال تواجدهم في الفراغات الخارجية كل يوم ، ويمكن أيضًا اعتبار المساحات المفتوحة في الحي أماكن لكبار السن أو هي المواقع التي تؤثر أيضًا على جودة ونوعية حياة كبار السن. يعيش غالبية كبار السن في العالم في بيئات لا تحترم احتياجاتهم المختلفة ، وهذه الاحتياجات هي احتياجات جسدية وعقلية واجتماعية ، و الصحة البدنية لكبار السن تستفيد من الفراغات العمرانية المفتوحة (حتى في افقر

المناطق السكنية) ، وبشكل خاص إذا كانت الفراغات العمرانية المفتوحة تحسن الشعور بالاسترخاء والأمان والشعور بالجمال لكبار السن. يكما شكل القدرة علي الاختيار والشعور بالسيطرة جزءاً من رغبة كبار السن في أن يكونوا مستقلين قدر الإمكان ، كما تكون الأبعاد الاجتماعية لاستخدام المساحات المفتوحة أكثر أهمية لدي بعض كبار السن من المرافق المادية.

في عام ٢٠٠٥ ، قدمت منظمة الصحة العالمية برنامج المدينة الصديقة لكبار السن ، ويهدف هذا المشروع إلى مساعدة المدن على معرفة كيف يمكن أن تكون أكثر ملاءمة لكبار السن ، وقد تم وضع دليل مع مجموعة من قوائم المراجعة لتقييم مدي كون أي مدينة هي مدينة صديقة لكبار السن. البحث يهدف إلى الوصول للطرق التي يمكن بها تصميم الفراغات العمرانية المفتوحة التي تكون أكثر حساسية للاحتياجات المختلفة لكبار السن والتي يمكن اعتبارها دليلاً للمؤشرات لتحقيق فراغ حضري مفتوح صديق لكبار السن ، ثم يقوم البحث بتطبيق هذا الدليل علي احد الحدائق بمدينة بريدة بمنطقة القصيم بالمملكة العربية السعودية ، وذلك بتقديم رؤية لتحويل هذا الفراغ الحضري المفتوح الي فراغ حضري صديق لكبار السن بالمدينة عن طريق تطبيق المؤشرات السابقة.

الكلمات المفتاحية

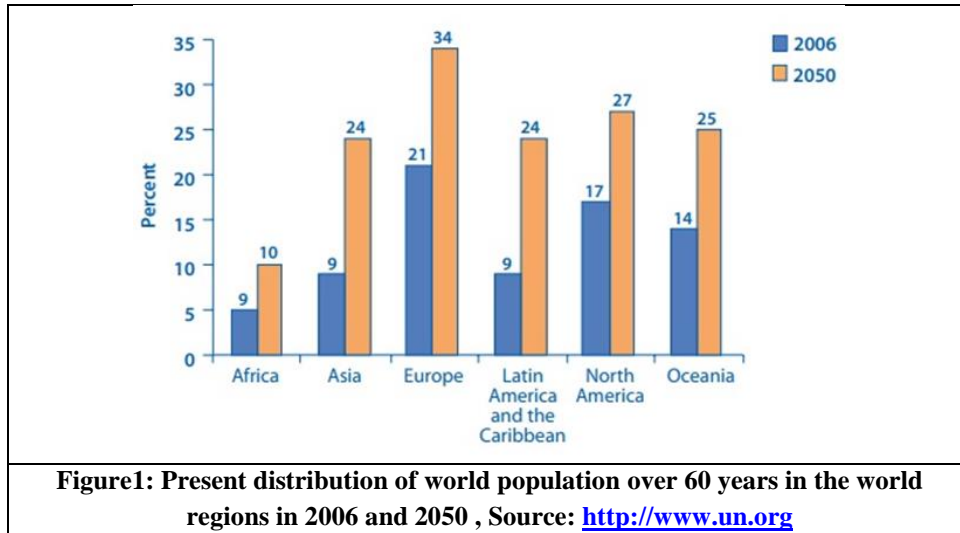
الفراغات العمرانية المفتوحة - كبار السن - الاحتياجات الانسانية

Introduction:

One million people worldwide turn 60 every month, 80% of them are in developing countries. According to United Nations estimates, the number of elder persons (60+) recently is 600 million but it will be 1.2 billion by 2025, and again, to 2 billion by 2050(fig 1) (www.who.int). The majority of older people live in environments that does not respect their needs and capacities in mind. This growth would lead to significant government budgetary pressures(www.who.int). The cost of health insurance normally rises with age because of higher health issues, physical impairments, and mental health issues. Regular physical activity (PA), like walking, has been proven to have many health benefits for older adults, if these additional years are dominated by deterioration in physical and mental abilities, the results for older people and culture are more negative (Lautenschlager, Almeida, others,2004).

The elderly are not homogeneous groups, however, they have common general attributes and features as possible changes in senses and perceptions, potential physical mobility decline decreases in muscle performance and coordination – older people usually become slower, less powerful, straightforward and confident to walk, crawl, grasp, raise, push and pull. The potential loss of perception and control, including loss of memory, confusion, disorientation, and incoherence, while the potential drop in social interaction, retirement, health deterioration, death of intimate partners, etc... Many diseases (including those connected to the central nervous system), could be cured by routine workouts (Lautenschlager, Almeida, others,2004). Mental disorder and neurodegenerative conditions including depression may be decreased by exercise. Regular and adequate physical exercise helps keep the brain and nerves functioning smoothly. Besides, many studies suggest that taking part in daily physical exercises has significant advantages for older adults' physical fitness and slows the aging process, public space in the city can also draw the elderly to do sports (Langhammer, Bergland, Rydwick,2018).

The WHO concept of health is that health is perceived to be an overall state of sufficient physical, mental, and social health. There are three approaches to combine this concept to ensure safe outdoor experiences, nature communication, and social encounters. Many experiments have shown that environmental characteristics play a beneficial role in the maintenance of aging populations at the same time, as the Elderly is not only the population with the highest growth but also the least physically active group (Langhammer, Bergland, Rydwick,2018).



The natural environment interaction mechanism cause human health to improve and stress to be reduced, psychosocial well-being is mostly the health benefits of exposure to nature. The elderly achieves greater satisfaction by improving their social relation and sense of belonging by engaging with the outdoor space every day (Public health England,2015). Social interaction is the way the elderly gain social health, streets and public areas should minimize social alienation and provide ideal places for social activity where environmental factors can have a positive impact on communication (Public health England,2015), several studies have shown that these informal social habits can encourage certain environmental attributes, older people like to sit by activities and sidewalks to look at them (Sideris, Storms, Chin,2017).

The lives of older people are affected directly and indirectly by globalization, technological developments (for example transport and communication), and urbanization. For example, as the number of generations surviving in the community has risen, these generations nowadays are more likely to live alone than in the past. Response to public health must take account of these existing and expected patterns and then devise policies (Wilson,2002). Neighborhood open spaces may also be considered “places of aging” or locations outside of the home that also influence the well-being and quality of life of the elders (Sideris, Storms, Brozen,2007).

1-2- Research objective:

The research aims to study the elderly various needs and the domains of Age-Friendly Cities as an important global program by WHO, to reach the indicators of achieving Age-Friendly urban open space which fulfills the elderly multiple needs and help elderly to integrate with their community. This guide can be applied to any public open space, the research applies its vision

to urban open space in Buraidah city in the Kingdom of Saudi Arabia, and presents a plan to improve this space to become more efficient and suitable for the elderly.

2-Materials &Methods

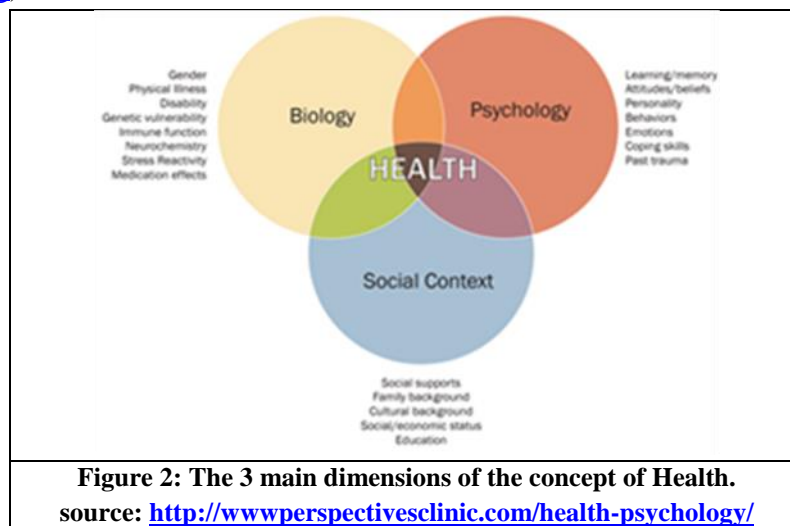
2-1- methodology:

The research follows the theoretical approach in studying concepts related to the aging population, elderly various needs, public open spaces, then following the analytical approach in studying a selected case study to extract the indicator that architects should deal with to obtain the age-friendly public open space.

The research is using the applied approach by selecting an urban open space to apply and measure the possibility of upgrading it to ensure the quality of urban life for the elderly, meet their multiple human needs.

3- The Elderly Needs

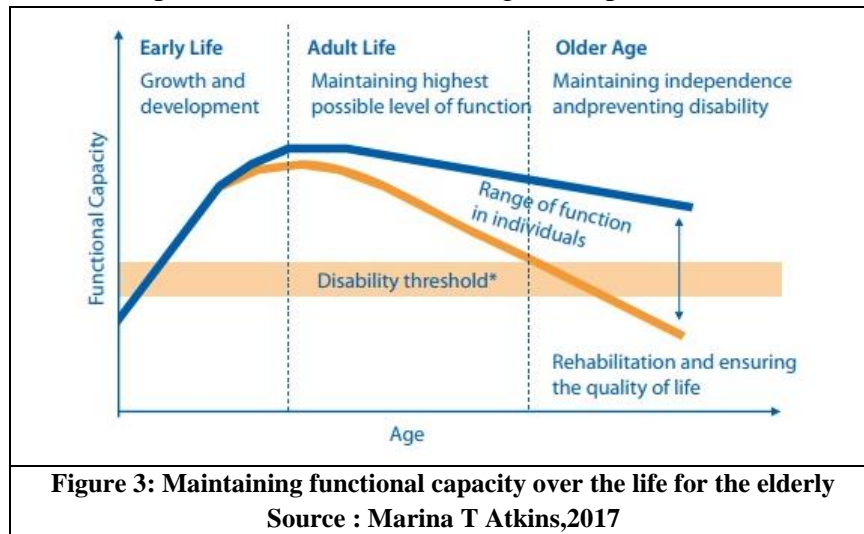
In 1946 the World Health Organization (WHO) defined the concept of health to a state of full physical, mental, and cultural well-being rather than only an absence of illness or infirmity (fig 2) (www.inf.org).



3-1- Physical Needs for the elderly

In previous studies; researchers proposed biological changes linked to age are muscle power reduction, higher fatigue levels, Agility, coordination, posture, flexibility, joint strength, and improved tendon rigidity, decline in auditory hearing and vision capacity have been addressed (fig 3)(www.inf.org). The researchers suggested the use of color comparisons on floors and benches, graphics as well as words on signage, short walks, wheelchair-optimized benches, and social interaction, component sun-shade, intermediate and low lights (Wilson,2002). Researchers discovered that physical health benefits from open areas affect even the poorest of older adults, particularly if they improve feelings of relaxation, safety/security, and aesthetic pleasure (Chamberlain, Buchanan, Hanks,1979). The elders shared a universal image of open spaces: tranquil scenery full of plants and flowers where they can enjoy fresh air and natural beauty. A study examining the elders' ability to walk to the nearest urban open space in the UK suggested that a third of the sample could not walk more than 10 yards (9 m), and only half

could walk 100 yards (90 m), only one-third had a bus stop, one-quarter had a local park, and one-third had a local shop within this distance (Hung, Crompton,2006).



3-2 Psychological Needs for the elderly

Choice and a sense of control compose part of the elders’ desire to be independent as possible. In relation to open space, elders’ priorities vary by subgroups. Distance to the park was more important than other park features and facilities among living alone elders, although having seating opportunities through the route to the park was very important to the elder (World Report On Aging and Health, WHO). Survival in old age requires durability. One approach for elderly people to retain strength is to deal with social needs while adjusting to the environment. Seniors' expectations differ by subgroups. Among the elders who are living alone, there was more distance to the park. Significant than other features and amenities of the park. Among the elders with disabilities, getting seating options on the way to the park, was the most important feature (Sideries,Storms.Lene,Brozen 2014). Engaging seniors in the planning of green space, can help planners understand what motivates them. Many older people face growing recreation restrictions due to health-related problems, so park developers will be smart to help the elderly negotiate with them, increase motivation to go to open spaces and their increasing limitations (Sideries, Storms.Lene,Brozen 2014).

3-3 Social Needs for the elderly

Elders suggested that open spaces and parks may not only be for physical activity but can also be valuable social venues. The social dimensions of open space and park use could be more important to some older people than physical facilities (Sideries, Storms.Lene, Brozen 2014). In various seasons, such as winter, this preference can be even more extreme. Elders consider open spaces as meeting spaces, some researchers referred to the social dimensions of open spaces and parks as a "normal community network (Gardner,2008). However, congestion or other social distractions could contradict with the propensity of elders to spend more time watching nature.

Mixed-use neighborhoods can give older people more access to multiple services, including open space for physical activity (Gardner,2008). For elderly adults with disabilities, the presence of walking zones, disabled parking, and public transit affect physical exercise. The

community should also be tailored to the needs of the elderly while they continue to evolve and grow.

3-4- Healthy place making

The World Health Organization refers to healthy place-making as “The place or social context in which people engage in daily activities in which environmental, organizational and personal factors interact to affect health and wellbeing” (World Report On Aging and Health, WHO). Public Health in England defines healthy place making as “place making that takes into consideration neighborhood design (such as increasing walking and cycling), improved quality of housing, access to healthier food, conservation, and access to natural and sustainable environments, and improved transport and connectivity” (Public health England, 2015), these definitions reveal that healthy placing takes multiple components (Ulrich, 1981). Nature has numerous physical and psychological healing effects for humanity as it offers the inner feeling of serenity and harmony for recovery (Othman. Ahmed, Fadzil.Fikri, 2015). The physical effects of nature and the atmosphere were examined in some researchers, it was found that the viewing of nature slides had a more beneficial impact than urban scenes on emotional and psychological problems (Ulrich, 1981). By testing alpha amplitude, heart rate, and mood, it was found that when introduced to views of the seated people they were "wakefully relaxed" rather than in urban scenes”.

3-5-Neighborhood Open spaces (NOS) and the elderly

Public open spaces are particularly important for the elderly, as they are usually less capable for mobility and have fewer social networks and exercise spaces than other ages. Older people also have memory and cardiovascular difficulties while walking and communicating (Notthoff. Nanna, Carrstensen. Laura, 2015). They often develop strongly stable walking habits to preserve well-being, and social activities can be part of these routines. Since routines typically do not require much time, it may be possible to participate in some form of social activity, such as chatting while walking. The physical environment, particularly open spaces, should have six principal qualities if it is to meet the needs of its older users. It should make sense, offer potential for exploration, Permit role choices and support new behavior, be accessible to all people, Foster independence and be economical to be built and maintained (Sideries, Storms. Lene, Brozen 2014).

4- Designing public open spaces for the elderly

4-1 The Age-Friendly Cities Project of the World Health Organization (WHO)

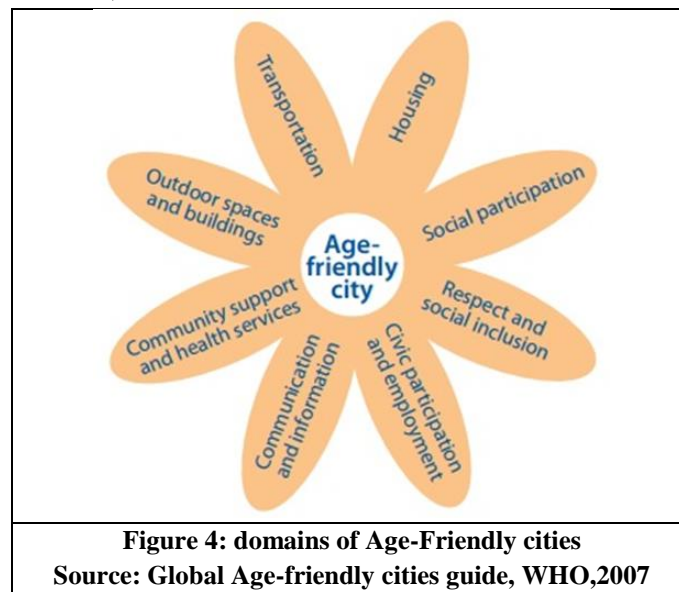
To support Governments in developing health and social policies in an ageing world, the World Health Organization (WHO) has introduced the age-friendly city program in 2005, "An age-friendly city and community is one in which policies, services, and structures related to the physical and social environment are designed to support and enable older people to “age actively” – that is, to live in security, enjoy good health, and continue to participate fully in society " (World Health Organization 2007).

The community of an age-friendly is of benefit to people of all ages, upgrading air and water quality, protects children and the elderly with environmental sensitivities. Secured neighborhoods which are safe for children, youth, women and older adults, all members of the

community benefits from the participation of older adults in volunteer or paid work and civic activities (Buffel, Boilard,2019).

This project aims to help cities to see themselves from the perspective of older people to know how can they be more age-friendly, a guide with a set of checklists has been put to evaluate how age-friendly is the city (Global Age-friendly cities guide, WHO,2007).

There are eight domains that have been identified and presented in the Global Age-friendly cities guide that was put by WHO as a checklist in 2007, this guide is the most used tools across the world to assess levels of age-friendliness in cities, these domains are (Buildings, Transportation, Housing, Social participation, Respect and Social inclusion, Civic participation and Employment, Communication and Information, Community support and Health services) (fig 4) (Buffel, Boilard,2019).



4-2- Age-friendly public open spaces design principles (Fulfillment of the elderly needs)

The architects aim to meet the living, psychological and spiritual needs of people and relies on their designs to study the needs of the different society in order for the design to become successful and appropriate. Designers of public open spaces should closely understand the physical and environmental features of the setting (topography, scale, microclimate, land use, street network, etc.) as well as the social characteristics and desires, and expectations of the users, so there are several goals that such spaces should aspire to accomplish (Abdul Malek, Mariapan, others,2010).

4-2-1- Physiological needs

A-Physical Activity

Parks and open spaces can promote outdoor exercise by creating a suitable environment for healthy entertainment and cycling. Elders are more likely than others to live a comfortable life, walking and physical activity have good health benefits for both children and adults. The inability of many older adults to participate in physical activity can be the reason for anxiety due to decreasing ability and reduced endurance, and also due to lack of sufficient space and social support for exercise. the elders usually feel embarrassment to exercise alone in the park (Sideries, Storms. Lene, Brozen 2014).

However, studies have shown that older adults flock to outdoor areas for seniors that are placed in various parts of the world and provide low-intensity fitness equipment (www.Helpguide.org). Walking is the simplest and most popular form of physical exercise for the elderly. Urban planners and designers can promote walking by designing skills-appropriate and appealing walking routes that hit entertaining destinations as a fountain, or outdoor coffee shop (National Council on aging, Jan 2021).

Facilities for walking and exercising should be promoted at various degrees of complexity to accommodate the different levels of skill of the elderly. Fitness also can be done by exercises and games that are enjoyable for certain elders, such as yoga, tai chi⁽¹⁾, also Gardening is another practice that requires movement and exercise(National Council on aging, Jan 2021). There are many steps that can help in supporting physical activities such as (fig 6):

- Walking circles and routes that are made of non-slip and rubber material which are knees friendly.
- Put destination points at the end of the pathways to encourage/attract people to meet.
- Add 1/4-mile markers for long trails and roads to assess walking progress.
- Include low-impact fitness equipment such as stationary outdoor cycles and elliptical cross-trainers.
- Have space for exercising away from heavy-traffic zones, under the shade with good views.
- Have a spacious field of grass and trees for community lessons and sports.
- Have organized lessons for senior-friendly physical exercise.
- Promote and encourage gardening (fig 5) and Create a "Walking Garden" for dementia elders.



Figure 5: elderly gardening in the public space
Source: www.naturesacred.org



Figure 6: senior-friendly physical exercise in the public space, Source:www.naturesacred.org
Source: www.naturesacred.org

B-physical and psychological Comfort

Urban designers should achieve physical and psychological comfort for the neighborhood park users as they are reluctant to enter space and invest more time in it if they feel anxious, physical comfort will be offered not only to the elderly but also to other guests of the park (National Recreation and Park Association).

-Physical Comfort

Location: Place the park away from road noise and other pollution.

Trees: provide significant improvements in thermal comfort mainly at noon and in the early afternoon as they provide shading, and attenuate solar radiation. In addition, trees increase the environmental quality of outdoor space and provide thermal and visual comfort (Gherraz, Guechi, Benzaoui,2018).

Seating:

- Provide rest stops and seating every 25 feet along main routes, comfortable seats with ergonomic design and with arms and sides. Seats should be at least 16-17 inches away from the ground and the sides of the chair should be at least 10 inches above the seat.
- Movable seats should be of sturdy but still light materials so that they can be moved easily. Allow sufficient space for people on wheelchairs and walkers around benches and tables. Immediate areas surrounding benches should be free of uneven surfaces.

Protection from Sun, Wind, Rain, and Glare:

- Place seats and tables under large trees or other items that can provide shade, defense against the light, the breeze, the rain, and the glare.
- Parks in cold weather should have an environment with ample exposure to sunshine. Trees and plants strategically distributed to shield from direct sunshine and minimize glare, include element that can shield from the sun, and provide seating with overhead protection.
- Orient parks or park features against wind direction in windy areas, lead the park in a manner that allow cool breezes in hot climates.
- Choose natural fabrics seating, such as wood or stone, which are more resistant to heat and avoid materials that hold unnecessary heat, such as metal. Elders are more susceptible to glare, prevent seating surfaces that are bright and shiny and can create glare as aluminum and white surfaces.

Amenities

Include accessible water fountains, tidy and spacious bathrooms including toilets with disabled access, several garbage cans. Provide aesthetic illumination at minimal or intermediate light levels to prevent glare. Have both fixed and movable tables so people can have a picnic or lunch. Have water fountains and electrical outlets near the seats and promote food stalls in the park.

Comfortable Movement

Provide a pavement that does not impede mobility, choose curvature and smooth routes that are easier to negotiate for elderly in wheelchairs. The ramps should have a maximum pitch of 1:20 (instead of the 1:12 standard). If steps are required, they should not be more than 4 inches' high, and should include handrail along the paths.

3-2-2-Safety and security needs (Providing a safe environment for the elderly)

The need for protection is more apparent among older adult, this fear may cause them to limit their use of the park, they even face the stress of tripping and slipping and the need to cross busy streets, so to encourage the elderly use of local parks it should provide safety from crime or falling (Sideries, Storms.Lene, Brozen 2014).

A safety from crime

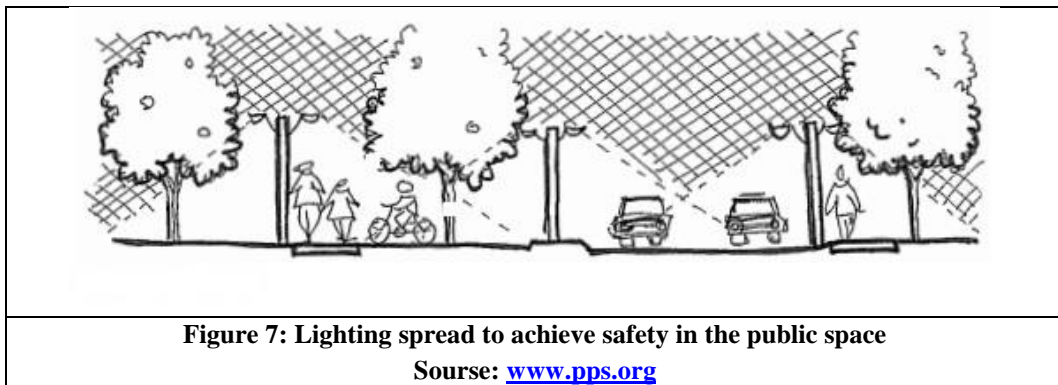
Open spaces must be designed to reduce antisocial and criminal behavior for all people, but Elders may worry much more about being victims of violence in it (Preventing youth violence Report, WHO,2015).

The following concepts are important to achieve crime prevention through environmental design. Crimes are less when people are around, when People in adjoining buildings and spaces can see what is happening, and when giving people choices about responding to problems (Park design guideline, city of Gold Coast,2018).

- Promotion of passive surveillance

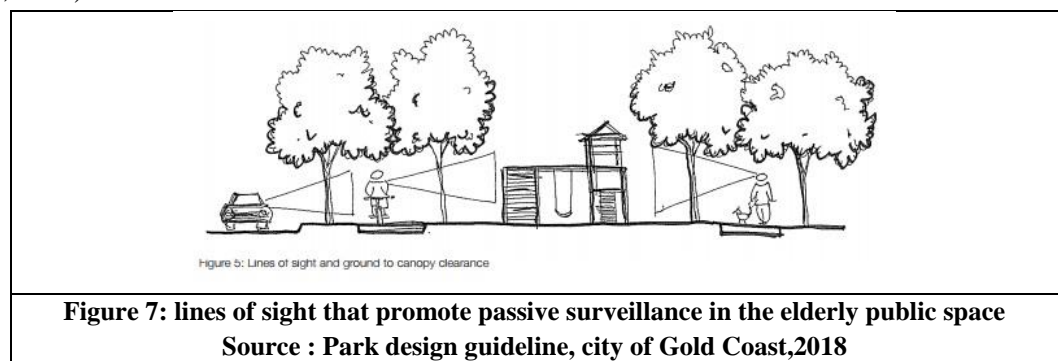
Neighborhood parks must be designed to promote the visibility of users and avoid the creation of vulnerable settings, Passive surveillance in Neighborhood parks can be achieved by:

- Locating parks along road frontages and residential boundaries.
- Clear lines of walking paths and park setting, avert rich foliage and bushes that block the view.
- Enclose the park with a translucent fence that can give a sense of enclosure but does not block street visibility (Sideries, Storms.Lene, Brozen 2014).
- Areas associated with more defensible space features such as clear boundaries between public and private spaces, low-rise buildings, and good illumination have a lower level of fear of crime (fig 7) (Ceccato, Bamzar, 2016).
- Include emergency telephone boxes and technical advances that improve protection as motion-activated lighting, surveillance camera coverage, emergency reporting services.
- Have single-seat benches to discourage people from camping in the park.
- Mobilize volunteers in the neighborhood to oversee protection.



- Visibility in public spaces and along routes

Public spaces, pedestrian and bicycle paths should be designed to provide good visibility of spaces or routes by all users, the user of the space is visible by others through surveillance and maximum street frontage with clear sightlines along other edges (fig 7). Opportunities for passive surveillance shall be maximized by adherence to the following criterion in local parks: unobstructed line of sight is 50 meters, no concealed spaces, no entrapment spaces, no steep changes of grade, ground to canopy clearance is 1.8 meters (Park design guideline, city of Gold Coast, 2018).



B- Safety from falls

Falls are the second leading cause of unintentional lethal injuries worldwide and injuries that are requiring hospitalization increase with age (65 years) and the biggest reason for them is falling (fig 8) (www.who.int, falls, april 2021), designer can provide falls safety by using non-slippery pavement materials to have a proper grip on walking surfaces, ensure that the pavement and concrete control joints are not larger than 1/8 of an inch and have no beveled or squared edges to avoid the catching of canes, crutches, wheels, or high heels (Ryan, Allen, Rand, 2000). Having routes that are smooth or have a very gentle slope (less than 2%) and do not have any steps, even and unpatched sidewalks (fig 9), paying special attention to the interface between paved and unpaved surfaces, having handrails on stairs, bridges, and pathways, and having decent illumination along all pathways. Keeping the pathways free from garbage to prevent risks (Ryan, Allen, Rand, 2000).



Figure 8: wide walkways needed for elderly in the open space , Source : www.lewis.ucla.edu



Figure 9: walkway to focus groups
Source: www.lewis.ucla.edu

C-Traffic safety

Neighborhood park designers may consider some considerations that can help to achieve traffic safety to the elderly such as having an alternate entrance to the smaller residential streets, If the park is surrounded by a busy highway (Ryan, Allen, Rand, 2000). Consider approaches to the park from the local city and maintain safe crossings at intersections with easily identifiable and audible crosswalk signals (fig 10), (fig 11). If there are signalized intersections near the park, the designer should provide more time to cross the street, he also may suggest traffic calming measures on the streets surrounding the park, such as sidewalk extensions sidewalk refuge islands where pedestrians can pause if they cannot cross both sides of the street (Ryan, Allen, Rand, 2000).



Figure 10: Raised crosswalks to calming traffic near the public space , Source: www.sfbetterstreets.org



Figure 11: curb ramps for safe crossing
Source : www.sfbetterstreets.org

d- Danger safety

A park perimeter has multiple access/exit points, so the elderly and other people have multiple escape routes, the park has a main entry point which can assist elderly with disabilities, the park can have maintenance vehicle access to reduce vehicle pedestrian conflict (Ryan, Allen, 2000).

4-2-3-Social needs**Social Support**

When architects design public open spaces well, that can enhance urban quality of life, and affect the city's livability and sustainability (Mumcu, Yilmaz,2016). Community identity and social networks are indicators of health and well-being, they are linked with the sense of urban spaces (Sinha ,2018).

Reasonable architects can make environments known as socio-petal which allow the seniors and younger adults to engage in entertainment and educational events (Tymkiewicz ,2019).

Social support refers to the human desire to be linked and cared about and assisted by other human beings. Parks and events in the park can promote engagement and socialization among the elders and between elders and other groups, also individual activities that happened in the park can connect elders to their communities (Aroogh, Shahboulaghi,2020), there are many steps that can help in supporting social activities such as:

- Seating arrangements that encourage social contact and allow people to observe human movements, such as seats at right angles or in a circle facing each other and movable seats, also the presence of several seats along the routes (fig 13), (Aroogh, Shahboulaghi,2020).
- Including support for social engagement and small-group activities such as barbecue pits and tables used in playing chess or other games.
- Providing a flat area for meetings, large-activities and outdoor courses as yoga classes, also providing architectural, natural or landscape elements that can gather people around a common focus as water fountains and flowers (Sideries, Storms. Lene, Brozen 2014).
- Organize neighborhood events that can gather people as annual cultural events and regular events as music concerts and movie nights. Also simplify community exchanges as food banks and neighborhood photo exhibitions taken by the elders (Yu,2021).
- Create a node for local information exchange, and a little free library where community members can donate and read books (fig 12) (Sideries, Storms. Lene, Brozen 2014).



Figure 12: little free library
Source: www.readingoartners.org



Figure 13: a shade and seats to support social relations
Source: www.jstor.org

4-2-4-The need for appreciation and respect

A- Choice

All park users respect choice so they should have a range of places, a variety of items to look at, and a variety of events and services for passive and active enjoyment, providing flexibility to the design of the park and providing a range of options in the way a park can be enjoyed (Park Design Guideline, City of Gold Coast,2018), that can be achieved by the following points: The park has subareas which provide diverse opportunities as walking trails, exercise stations and barbecue areas, offer a range of choices for people to sit in as spaces in the sun and shade, more accessible and more enclosed spaces (Sideris, Storm, others,2016).

Give different viewpoints and views and different objects (flowers, birds, etc) to see and enjoy. Designing walking paths that provide diverse visual and sensory experience, these paths have varying lengths and difficulty levels (Sideris, Storms. Lene, Brozen 2014) , active recreation equipment that can handle varying types of physical activity, and provide flat, grassy, multipurpose areas that can support several different activities (fig 14) (Parker,Burns, 2009).

Have a range of seating choices for people, by Providing moveable chairs, rectangular seats to allow interaction between a few people, circular inward-facing seats that fit larger groups, and more individual seats for more privacy. Features and materials that can be transferred, controlled, and updated to the maximum possibility (Sema, Serap,2016).



Figure 14: Sport zone for different type of physical activity for senior citizens, Source: (Sideris, Storms. Lene, Brozen 2014).

B- Privacy

Even in public spaces, people frequently desire a certain degree of privacy, tranquility, and silence. Parks will provide an escape from the high-speed urban atmosphere that surrounds people and acts as a tiny urban oasis inside the hustle of busy city life. Many seniors in the focus groups, who lived in small urban apartments, frequently stressed their desire for a quiet park climate. Open space design should have a sufficient degree of privacy in some of the open spaces sub-areas, enabling people to escape social contact if they desire so.

There are many steps that can help in supporting privacy such as: Locate the park in a quiet neighborhood location, screen outside noises with natural sounds as water and wind flowing through tree leaves and put seating areas away from the noise of the street, and use buffer planting to reduce street noise. Provide a sub-park that allows guests to enjoy a degree of physical and visual privacy. Use shield planting to create a sense of enclosure around the quieter

and more intimate sub-areas of the park. Reserve certain parts of the park for more individual use, such as personal garden beds or personal bird feeders (Wiedman, Salama, others,2016).

C- Aesthetic and Sensory Delight

Parks should provide an aesthetic respite in the area and an outlet for sensory pleasure. Parks built having the elderly in mind, should take into account that older adults move with slower speed and shorter distances than younger adults. Sensory fascinating elements can be positioned at shorter intervals than would be appropriate for areas intended for the general public. However, attention should be given to the sum of visual variation so that it does not result in visual clutter.

- Put fixed seats and paths in ways that take advantage of interesting views and take advantage of pleasant views beyond the park also, screen or transform unpleasant views through vegetation, wall painting, or art placement.
- Choice of gently curving paths instead of straight paths.
- Choosing plants and flowers carefully to ensure different sizes, the contrast of colors, appealing fragrances, and texture, and seasonal variation.
- Identify and use plants that have specific significance for particular cultural or ethnic groups living in the vicinity of the park.

4-2-5-The need for self-realization

The sense of control

Orientation is especially important for older people who may have cognitive impairments. It is related to other items which are the sense of security, choice, and accessibility (World report on aging and health, WHO,2015). People believe like they have a strong sense of control if they can comfortably enter public open space on their own, easily understand how to use its services, walkabout without barriers, and feel safe. Orientation is especially important for older people who may have cognitive impairments (Espino, Johnston,1998), it can be achieved by:

A noticeable sign that marks the entrance to the park, effective route-finding signage in the neighborhood from which the park is not visible. Build a legible park plan that can be easily understood from the main entrance (Sideries, Storms.Lene, Brozen 2014), a map of the configuration of the park at the entry and in other places within the park, and a simple layout of the pathways to the park. In large parks with several settings there are several highly noticeable elements that can be used for orientation as a clock tower and a fountain, stop building dead-end routes. Informational signage at the park, such as guidance for how to use equipment and services, put signs in Braille, use visual graphics on a sign and use other visual cues for the exploration of important destinations (Legge, Beckmann, others,2013). Add attractive boxes or newsstands near entrance of the park with information flyers about park services and events in various languages (Sideries, Storms.Lene,Brozen 2014).

Contact with Nature

Neighborhood parks bring nature to the city and offer people environmental features that improve emotional state, may block worrisome thoughts, and foster beneficial changes in physiological systems (Barton, Rogerson ,2017). Several studies confirmed that separation from nature is detrimental to human development, health and wellbeing, and that regular contact with

nature is required for good mental health (National Recreation and Park Association). The integration of biophilic design may provide a cost-effective public health intervention, which promotes the evident positive links between green spaces and mental health (National Recreation and Park Association).

There are many steps that can help in achieving contact with nature such as:

Prioritizing trees, natural habitats and plants ('soft landscapes') over concrete pavements ('hardscapes') throughout the park, a mix of 30% hardscape and 70% vegetation is recommended (Sideries, Storms.Lene, Brozen 2014).

Planting mature trees that can provide shade for visitors to the park. Place flowers in multi-level plant beds in small parks to conserve space (National Parks Board,2019). Involve slow-flowing features of water such as lakes, waterfalls. Consider the park a setting for endangered species as birds, butterflies. Instill the sounds of nature as water, birds, and promote planting options for flowers and vegetables (National Parks Board,2019).

Accessibility

Older people often move around on foot, they highly value walking as their main form of exercise. For female older people particularly, safety of access is a primary consideration, particularly at night (Sarkissian, Stenberg,2013).

A-Entrance to the site

- The ability to access the park securely, conveniently and without impediment, affects the choice of individuals to visit it. The proximity of the park to the place of residence is a significant determinant for the visit to the park, especially for older adults. The ease of arrival to and from the park, as well as the ease of mobility and orientation at the park are also very important (Ryan, Allen, Rand,2000).
- Accessibility has physical and social aspects, the park design characteristics and location enhance its physical accessibility, also the supportive activities promote psychological accessibility. Propose locating the park at other sites of community organizations sites that are used by seniors such as Mosques. Link the park to the wider city, both functionally and programmatically, through community gatherings and programs that cater for seniors. The park can be near transit stops (fig 16). There are adequate, barrier-free pathways around the park (Park design guideline, city of Gold Coast,2018).
- Provide ADA (Americans with disabilities act) accessible and universal design for all sidewalks leading to the park and all paths at the park.
- For the elderly in wheelchairs, grade changes should be restricted and provide ramps with a softer pitch (A high pitch of 1:20 instead of 1:12) is recommended (Ryan, Allen, Rand,2000).
- Pathways should be flat (grade less than 2%) and wide enough (5-7 ft.) for the ease of use for walkers or wheelchairs and also add seating along traditional pathways to the park.
- Provide a hard surfaced pathway that traverses the park and links into embellishments such as shelters, seats (fig 15). This allows unassisted equitable access by all people into the park (California Building Code,2013).



5- Examples of age-friendly Urban open spaces

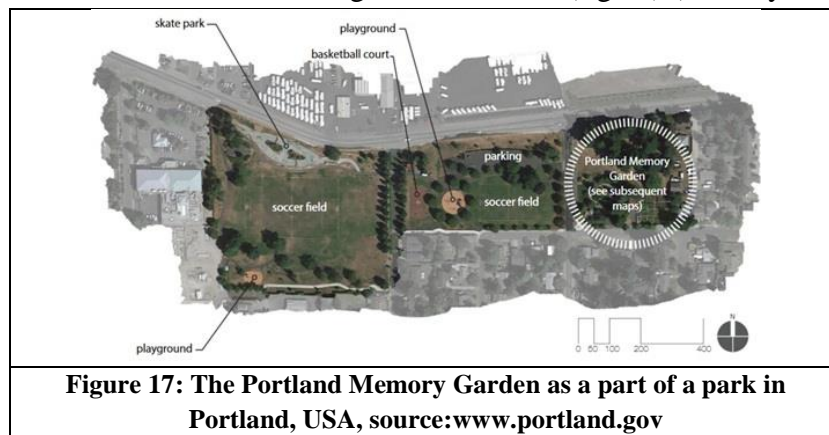
5-1-The Portland Memory Garden -USA

4-1-1-Location and Context

It is a garden and park in Portland, USA, it is a part of a Park that is designed for people with Alzheimer's disease and other memory issues, but it is available to all people. It was a collaboration of the Alzheimer's Association, the American Society of Landscape Architects, and Portland State University, in May 2002 (www.Portland.gov).

4-1-2 Goals

The garden was designed to guide the community on how to deal with elders and people with disabilities, it addresses the psychological needs of people with Alzheimer's disease, their relatives, protect the health and well-being of older adults (fig 17) (Cassidy, HTR,2013).



5-1-3 Design characteristics

Planning of the garden: It should be planned to stimulate the senses, as botanical collection is designed to provide sensory stimulation all year, plants create an interesting smell and are pleasing to look at and touch. Also, there are colored birdhouses and feeders, wind chimes, and a bubbling water fountain (www.centerofdesign.org).

The entrance: There is one entrance in an enclosed space that makes it easier for the elderly to walk freely without the fear of getting lost and it is considered a landmark for the place (Boult, Sullivan,2010).

Circular Paths: They were created in a circular shape with no dead ends to minimize getting lost and disorientated as the visitors will always find their way to the main gate (fig 18).

Main pathways are eight feet wide and one foot edging enhancing that with a change in materials, so it promotes easy moving for elders with wheelchairs. The path is made with gravel to help the users identify main paths from smaller trails(www.Portland.gov).

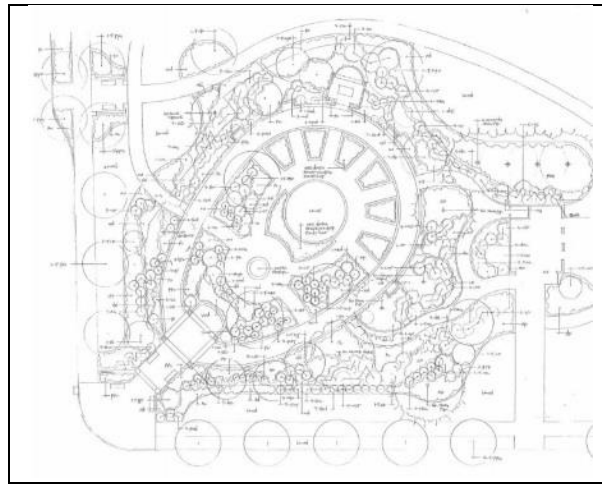


Figure 18: Layout of Portland Garden

Source: www.portland.gov

Seating: The design of benches in the garden is focusing on the comfort of the attendees and providing multiple resting options for them. The benches have high and flat armrests to help the elderly to sit down or stand up (Cassidy, HTR,2013). They are installed back from the main paths to prevent any obstruction in traffic, some space was left next to the benches for wheelchair users (fig 19).



Figure 19: seating in Portland Memory garden

Source: www.portland.gov

Circular Paths: The paths are in a circular shape with no dead ends to minimize getting lost. Main pathways are eight feet wide to ease the movement of elders with wheelchairs, paths are one foot edging enhancing that with a change in materials, paths are made with gravel to help the users identify main paths from smaller trails.



Figure 20: Raised and sloped planters in Portland Memory garden , Source: www.portland.gov

Cognitive Benefits: The garden Improves the orientation and the brain capacity. Gives experience to follow clear instructions. Social Benefits communicating by facilitating debate of shared interest, and many leisure events as clubs, garden socials are offered.

Psychological Benefits: Provides a secure, familiar atmosphere. Chances for release of anxiety, anger and hostility, and it also offers a context to get together with friends for social support (Boults, Sullivan,2010).

6- Results (Findings of the theoretical and analytical study)

6-1 A guide line to indicators to achieve Age-Friendly urban open space

From the previous theoretical and analytical studies, we can deduce necessary indicators to reach an urban open space that fulfills the multiple elderly needs and help them integrate with the community. Through the following analysis in table (1), we can summarize the axes of achieving Age-Friendly urban open space by which the research guidelines in providing a vision for upgrading Al-Okilat park –Buraidah city, to become more successful and suitable for the elderly, the design principles provided by the research can be a useful checklist for evaluating the urban design for open space in cities, specially Age-Friendly cities, to ensure that elderly various needs and considerations are included.

Table (1) A guide line for indicators to achieve Age-Friendly urban open space

Source: the researcher

A guide line for Indicators for achieving Age-Friendly public open space	
Promoting physical needs for the elderly	
Promoting physical activities	Promoting walking, Promoting gardening, Fitness equipment , Promoting games and exercises
Promoting physical comfort	Location ,Seating ,Thermal comfort ,Comfortable movement
Psychological comfort	
Providing a safe environment for the elderly	
Crime safety	Passive surveillance ,visibility
Falls safety	Pavement, paths
Traffic safety	Traffic calming, safe crossing
Danger safety	Exit points, entry point
Promoting the elderly social needs	
Promoting social contact	Cultural events, seating arrangement
Elderly sense of belonging	Social participation
Promote the need for respect and choice	
Promoting Choice	Sub-areas, walking paths, features
Promoting Privacy	Location, outside noise, open sub-areas, sense of enclosure
Promoting Aesthetic	Sensory elements, pleasant view, paths
Promote the need for self-realization	
Sense of control	Signs, elements of orientation
Contact with nature	Sounds of nature, plants, slow flowing water
Accessibility	Link with city, ease of mobility

6- Discussion

(Achieving Age-Friendly public open space in Al-Okilat park –Buraida city-KSA)

6-1- Al-Okilat park –Buraida city-KSA

Qassim region is one of the thirteen administrative regions defined by the Saudi regional system. It is an Emirate that is located in Burayda, its population is 693515 persons, and the per capita green area is 12.8 square meters per person. The ratio of parks and gardens in the city is 1%, and the proportion of the population over 65 years of age is 5% (General Authority for Statistics, KSA,2019). The Percentage of elderly with disabilities among Saudi elderly (65 years and over) is 52.7% (General Authority for Statistics report, KSA,2019).

6-2-Achieving Age-Friendly public open space in Al-Okilat park –Buraida city-KSA

The park is located in the city center and is visited by a large number of city residents frequently. It has a walking path, a children's play area, 3 sports playgrounds for youth, green spaces and pedestrian paths.

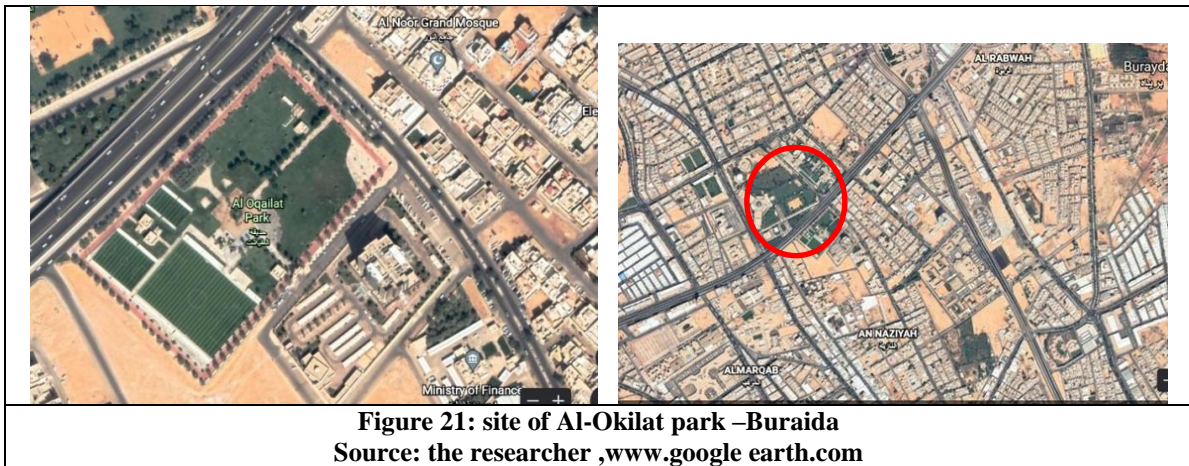


Figure 21: site of Al-Okilat park –Buraida
Source: the researcher ,www.google earth.com

6-3-Promoting physical needs for the elderly

6-3-1-Promoting physical activities

- Promote walking: there is a walking path in the park that has suitable width and finishing material (fig 22), (rubber).

- Promote exercises: there are fitness equipment, but there are no instructions to how to use them so they should be added with low-impact fitness equipment.

Promote games and exercise: customize a large space to exercise with shade and good view near the residential areas.

Promote gardening: allocate space for gardening for the elderly and provide gardening tools.



Figure 22:the walking path in the park , Source : the researcher

6-3-2-Promote physical comfort

- Comfort location: the elderly open space should be allocated away from the kids' area in the park
- Comfort seating: there is not enough seating (fig 23), there must be more seating with arms and sides.
- Thermal comfort: there must be larger trees with seats under it, seats must be in natural fabric with no bright surface, and provide more shields.
- Comfort movement: the existing walking path is straight lined shape, new routes for elderly must be curved and smooth.



Figure 23: the lack of seating in the park , Source: the researcher

6-3-3 Promoting psychological comfort: there are some food stalls but there are no water fountains, disabled toilets, so they should be added, in addition to electric outlet near seats.

6-4-promoting safety needs for the elderly

6-4-1 Promoting crime safety

- Passive surveillance: The park location provides this as it exists along road frontage and near residential areas, but it needs more lighting units (fig 24), emergency telephone boxes could be added.
- Visibility: This is achieved as there are no concealed spaces or entrapment at the park.



Figure 24: lighting in the park , Source: the researcher

6-4-2 Promoting falls safety

This is achieved as the paths materials are non-slippery, with gentle slope and unpatched sidewalks, paths are away from garbage. Stairs in the entrance need handrail as it is not existed.

6-4-3 Promoting traffic safety

There is an alternative entrance to the park from the residential areas, but there should be safety crossing at the intersection and raised crosswalk curb ramps and side walk extension to calm the traffic as they are not existed.

6-4-4 Promoting danger safety

The park has main entry and 2 additional exit points which will achieve danger safety (fig 25).

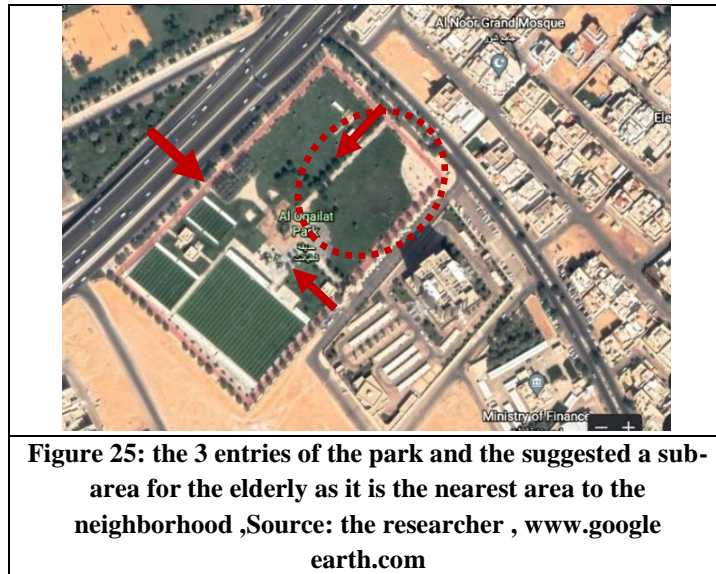


Figure 25: the 3 entries of the park and the suggested a sub-area for the elderly as it is the nearest area to the neighborhood ,Source: the researcher , [www.google earth.com](http://www.googleearth.com)

6-5-Promoting social needs for the elderly

6-5-1 Promoting social contact

More seats can be added to the park; arranged in right angle or circle facing along routs. Small group activities as barbecue pits and tables can be added to gather people. The flat area in the center of the park can be used for activities and cultural events and a little free library.

6-5-2 Promoting social participation

It can be more achieved by involving the elderly in all steps of the park upgrading process (planning, urban design, implementation).

6-6-Promoting the need for respect and choice for the elderly

6-6-1 Promoting the need of choice

Adding new walking paths that provide diverse visuals, choose types of plants and trees that help in achieving that. Fitness equipment in the park does not support varying types of activities, the only activity that is promoting for elderly in the park is sitting on the grass, so subareas with diversity in activities and opportunities (reading, playing chess,) should be added to the park, and movable seats should be added as well.

6-6-2 Promoting the need for privacy

- There is no buffer planting in the park, so they must be added specially at the areas near the surrounding streets, so they will work as a screen from the outside noise.
- Some private open sub-areas must be added to the park.
- Reserve some individual uses to the park as gardening, and bird feeders.
- Create a sense of enclosure by using shield planting.
- Locate the seating areas for the elderly on the side streets overlooking the park, the distance between seats must provide auditory privacy.

6-6-3 Promoting the need for Aesthetic and sensory delight

Pleasant views: The unpleasant view for the toilets should be screened by trees. There are some pleasant views at the entrance of the park, so there should be fixed seats to let the elderly enjoy this view (fig 26).

Paths: There are no gently curving paths, so they should be added.

Plants: Trees and plants at the park are not enough to achieve pleasant views, so plants with different sizes, colors, fragrances and texture should be added.

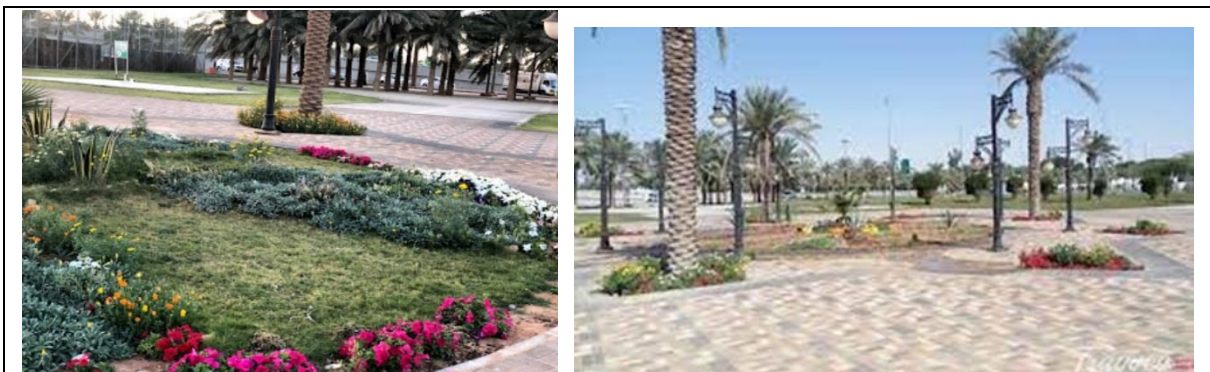


Figure 26: plants in Al-Okilat park, Source: the researcher
Source: the researcher

6-7- Promoting the need for self-realization

6-7-1-Promoting the need for sense of control

Signs and Elements of orientation: There are no signs at the entrance, there are no route finding signage in the near neighborhood, there is no legible plan near the entrance so they should be added to the park.

Signs in braille should also be added.

There is no information signage to how to use fitting equipment in the park, so they should be added.

6-7-2 Promoting the need for contact with nature

There is not sufficient plant at the park, so flower and vegetables planting should be promoted so 30% of the park will be hardscape and 70% of it will be vegetation, add planting mature trees and multi-level plant beds.

Sound of nature are not existed at the park, there are no water elements at the park, so slow flowing features of water should be added, the park may become a place for endangered birds and butterflies.

6-7-3 Promoting the need for accessibility

The places designated for the elderly should be close to the places of residence to improve the accessibility to the park.

7 – Conclusion

7-1 Research results

- Older adults face great risks of health deterioration. Urban open spaces offer more than just means of leisure for the elderly. Designers of public open spaces should closely understand the physical and environmental features, the social characteristics and desires, and the expectations of the elderly.
- Public open space is desirable for the elderly to gather, as a place to meet friends and socialize, well-shaded large open space is more popular especially when being close to amenities although well-designed open space can make the elderly more tolerant of the thermal conditions.
- World Health Organization has introduced the Age-Friendly City program, which has a set of checklists to evaluate how age-friendly is the city, in this city policies, services, and structures related to the physical and social environment are designed to support and enable older people to age actively.
- Age-Friendly urban open space fulfills the elderly multiple needs and helps the elderly to integrate with their community.
- Age-Friendly Public open space Indicators include promoting physical needs for the elderly (physical activities, physical and psychological comfort), providing a safe environment, promoting elderly social needs (as social contact and the sense of belonging, promoting the need for respect and choice and promoting the need for self-realization.
- The elderly concentrate in areas of good thermal environment with a tendency to large well-shaded areas especially those which are close to amenities, which are key locations of elderly activity space.
- Public open space is desirable for the elderly to gather as a place to meet friends and socialize.
-

7-2 Research recommendations

- All the steps of the process of achieving an Age-Friendly urban open space should be comprehensive and should consider the various needs of the elderly (physical needs, physiological needs, social needs, the needs for appreciation and respect, and the need for self-realization.
- The senior citizens should be involved in all steps of the urban open space design process (planning, urban design, implementation) to improve their social participation.
- As the whole world faces the risk for infection from Covid-19 and other diseases, we can design areas of the public space for the exclusive use of the elderly with safely apart benches for socialization.

- Some of the city streets can be dedicated to pedestrians and cyclists to offer safe walking, also benches can be added for resting and comfort of the elderly.

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The goals of [Tai Chi for Arthritis and Fall Prevention](#) are to Improve movement, balance, strength, flexibility, immunity and relaxation, Decrease pain and falls and good for socialization and sustainability.