



The role of outdoor spaces in enhancing social sustainability: A case study of Dahiyat Al-Hussein in Amman

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Abstract

Designing public spaces with communities in mind improves people's quality of life and contributes to social sustainability. Parks, walkways, and public meeting places offer opportunities to socialize, form relationships, and promote a sense of community. Urban planning's ability to develop community gathering areas that foster a sense of belonging, safety, and inclusion is essential to a neighborhood's long-term social sustainability. Social sustainability refers to a community's ability to preserve and enhance its social well-being over time. This study investigates the influence of common outdoor spaces on enhancing social sustainability in residential neighborhoods by analyzing the Dahiyat Al-Hussein project in Amman as a case study. Through observations and questionnaires, significant issues affecting social sustainability were revealed. The findings emphasize the importance of designing socially sustainable communities that improve the well-being and quality of life for residents. Well-designed and well-maintained common spaces foster a stronger sense of community and more frequent social interactions among neighbors. Insights from successful international residential projects that effectively promote social sustainability are provided, offering recommendations for urban designers and architects to prioritize social sustainability in residential area planning, ensuring the long-term viability of neighborhoods.

Keywords: Social Sustainability; Outdoor Spaces; Community Engagement; Urban Planning; Neighborhood Development

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1. Introduction

The absence of social interactions can be connected, in part, to the rapid pace of modern lifestyles and advancements in technology. While social media platforms and smartphones have facilitated virtual forms of communication, they have also resulted in fewer opportunities for physical gatherings and face-to-face social interactions. Scholars such as Whyte (1980) and Gehl (1987) have identified a concern regarding relationships among inhabitants, motivating them to undertake many investigations exploring the impact of urban planning and the configuration of public areas and green spaces on social interactions.

Consequently, proponents called for a return to natural environments, emphasizing the transition from small rooms to open spaces and investigating the impact of urban open spaces on fostering social engagement among residents. People spend most of their time in closed spaces; they are rarely exposed to nature; therefore, there is an urgent need for natural recreational facilities. According to the Danish urbanist and architect Gehl (1987), 'The proper hierarchy of planning is life, space, and buildings, not buildings, space, and life.' Therefore, 'city as a park' is an important concept whereby open spaces and parks are key factors in shaping the built form and character of a community.

Open spaces are considered 'gateways' or vents for people to escape from stressful urban life, and neutral spaces are where people from different backgrounds socially mingle, forming various types of relationships or partnerships. With adequate planning for public open spaces, planners can promote a wide range of benefits to communities, such as social interaction and cohesion, thereby building social capital, which are key aspects of social sustainability.

2. Social sustainability

Concerns about sustainability in the built environment and urban planning have been raised from the perspectives of the environment, the economy, and society. The environmental movements of the 1960s contributed to the rise of many ideas for achieving environmental and economic sustainability that are still employed today. Since the turn of the millennium, there has been a broader discussion of sustainable development that incorporates the social side of sustainability, which inevitably impacts other facets of sustainability (Karimi and Suzanchi, 2021). Currently, there is a lot of focus on socio-spatial factors, which make people rethink urban surroundings (Abed and Al-Jokhadar, 2022; Akcali and Cahantimur, 2022).

Growing attention is paid to social sustainability due to its importance in fostering social integration and structures that lead to improved quality of life (Dempsey et al., 2011; Littig and Griessler, 2005). Social sustainability focuses on social inclusion, social coherence, social cohesion, and social justice. Sustainable communities stand out as desirable places to live and work for both current and future citizens. They prioritize environmental sensitivity, meeting the needs of current and future residents while improving overall quality of life. They provide a secure and welcoming environment for all people, as well as equal access to opportunities and high-quality services (Dempsey et al., 2011).

Socially sustainable communities simultaneously have a high standard of living and are democratic, inclusive, multicultural, and interconnected (Akcali and Cahantimur, 2022). Since there is no universally accepted definition of "social sustainability," the definitions that exist tend to be derived from the perspectives of fields of study (Ebekozi et al., 2023; Weingaertner and Moberg, 2014). According to Abed and Al Zghoul

(2023), social sustainability is concerned with how community members integrate and interact with each other to achieve a better quality of life. In other studies, conducted by Shareef and Ahmed (2023) and Bojago (2022), social sustainability involves measuring and enhancing human well-being for both present and future generations. This approach emphasizes the importance of considering human needs in housing design to ultimately improve the quality of the built environment.

Urban social sustainability is a multidimensional concept (Abed and Al Zghoul, 2023; Larimian and Sadeghi, 2021; Dempsey et al., 2011) that encompasses various disciplines, such as urban planning, architecture, psychology, sociology, policy, and institutions (Dempsey et al., 2011; Ghahramanpouri et al., 2013). In urban settings, social sustainability involves integrating individuals, communities, and societies harmoniously; promoting positive social relationships, and fostering a shared commitment to achieving sustainable development goals in the short and long term (Karimi and Suzanchi, 2021; Akcali and Cahantimur, 2022). Researchers define urban social sustainability as a city's potential to function as a long-term hub for cultural production, social involvement, and cultural development (Bramley et al., 2011; Ghahramanpouri et al., 2013).

Table 1. Building and Social sustainability aspects within urban spaces

Researchers	Social Sustainability Aspects
Shareef and Ahmed (2023)	Functional mixed-use, social interaction, Accessibility, Security, Privacy, High quality of living environment, User needs, Residents' involvement in the design
Abed and Al-Jokhadar (2022)	Social equity, Social capital, Social interaction, Community stability, Sense of place, Safety and Security
Larimian and Sadeghi (2021)	Social participation, Safety and Security, Neighborhood satisfaction, Social interaction Sense of place, Social equity
Hagen et al. (2017)	Social capital, -networks, and -interactions Participation and active community organization Quality of life and wellbeing, Sense of community Accessibility, Sustainable urban design (energy efficiency, car-free zone), Walkability
Ghahramanpouri et al. (2013)	Social capital, -networks, and -interactions, Participation, and active community organization, Quality of life and well-being, Sense of community, Accessibility, Sustainable urban design (energy efficiency, car-free zone) Walkability
Dempsey et al. (2011)	Social interaction/social networks in the community, Participation in collective groups in the Community, Community stability Pride/sense of place, Safety and Security
Bramley and Power (2009)	Interaction with other residents or social networks, Participation in collective/ community activities, Pride or sense of place Residential stability, Security (lack of crime).

Stren and Polese (2000) stated in their book *Social Sustainability of Cities*, that social sustainability is achieved by fostering social integration, creating conditions that allow for peaceful interaction among different social and cultural groups, improving quality of life for all populations, and supporting environmental links with the sociocultural desires of groups. Urban planning is intricately linked to sustainability (Weingaertner

and Moberg, 2014), and improving the quality of public spaces can enhance social interactions and social capital (Karimi and Suzanchi, 2021). Hence, providing services and activities that facilitate social interaction is an essential aspect of social sustainability infrastructure (Itma and Monna, 2022) at the neighborhood level (Abed and Al-Jokhadar, 2022).

Some scholars choose to focus on specific aspects or criteria related to the social dimension of sustainability instead of seeking a universally agreed-upon definition. Table 1 illustrates this approach by presenting various aspects that define social sustainability in the context of urban studies, according to numerous researchers. This research focuses on social sustainability, particularly in the context of outdoor spaces. It is the intentional design and management of public spaces within neighborhoods to promote social well-being, inclusivity, and resilience. It involves creating and maintaining communal spaces that facilitate meaningful social interaction and enhance the overall quality of life for residents. Based on scholarly literature, theorists, practitioners, and specialists agree that urban social sustainability encompasses dimensions that are vital in maintaining communities at the neighborhood level. Moreover, aspects that highlight the importance of the quality of public spaces are in line with the quality of interactions and have a positive impact on social sustainability. According to the studies mentioned above, the researcher used a comprehensive set of criteria to evaluate the social sustainability of open public spaces in the neighbourhood for this study. These aspects include:

- Social equity
- Safety and security
- Sense of place
- Community participation
- Social interaction

Social sustainability can be enhanced through initiatives that improve environmental quality and physical attributes within public spaces. A city's long-term social health can be evaluated by the strength of its citizens' bonds with one another. Therefore, it is important to consider how the condition of public spaces influences people's interactions and the sustainability of society (Karimi and Suzanchi, 2021). People may gather in one place and stay there because of the accessibility, aesthetic attractiveness, and natural aspects of the location (Charkhchian and Daneshpour, 2010). The purpose of designing a public space in line with social sustainability is to bring people together in a setting that promotes communication and cooperation.

2.1. Social sustainability within public space

Public spaces in cities serve as unofficial hubs of social activity, providing residents with a wealth of opportunities to meet new people and strengthen existing relationships, facilitating integration by fostering an environment that encourages people to interact with one another (Abed and Al-Jokhadar, 2022; Karimi and Suzanchi, 2021). Whyte (1980) suggests that social life in public spaces helps improve the quality of life of individuals and society and places significant emphasis on the importance of well-designed public spaces in promoting social interactions and fostering the active presence of individuals. Whyte also considered the factors influencing the physical aspects of public spaces and encouraging social interaction. He believed there is an urgency and sacredness for creating and sustaining public spaces. He once said, 'Small urban places are priceless, and the city street is the river of life of the city, the place where we come together, the pathway to the center.'

Lund (2003) explored the potential associations between public plazas, parks, pedestrian-friendly streets, and social interactions, even though semi-public spaces such as the paths and yards of housing complexes and pedestrian-friendly streets increase interactions among neighbors. Additionally, playgrounds are great places for parents to socialize while their children play (Marcus and Sarkissian, 1986). In the public housing projects (HUDC housing projects) Abed and Alzghoul (2023) confirmed that the built environment has an impact on the social sustainability of the community, where the urban planning of the neighborhood plays a major role in meeting the needs of the residents and in achieving a sustainable community. For instance, streets that are safe and inviting increase interaction among neighbors.

Doğu and Aras (2019) claim that feelings of safety and security might increase reciprocity and trust, leading to a stronger sense of community and place. Streets and sidewalks are both public and semi-public and can be recognized not only as paths for movement but also as social spaces in which people can engage in a variety of activities, talking, sitting, and eating (Appleyard and Lintell, 1972). According to Karimi and Suzanchi (2021), the quality and desirability of urban public space can be evaluated by the presence of appropriate physical elements and activities in the space in addition to the existence of natural components, which increase the potential for rest, pleasant experiences, and increased health. Additionally, Gehl (1987) reported that improving physical conditions in outdoor spaces increased the number of users and extended the time spent outdoors, leading to a wider range of activities. Nevertheless, Whyte confirmed that public space will be used by citizens when sitting areas are provided. However, identifying the essential characteristics that determine the responsiveness of public places is a topic of consideration for the Project for Public Places (PPS, 2023).

These strategies encompass the provision of seating areas inside an identified area as well as the planned design of central sites intended to facilitate the assembly of people, such as bus stops, playgrounds, and eating spots. Additionally, designing entrances and access points that are visually and physically appealing while also considering functional aspects and aesthetic dimensions involves planning appropriate pathways and communication systems to guide individuals into the space, ensuring readability and spatial clarity. Furthermore, this approach addresses the need to regulate vehicle access and prioritize pedestrian safety. Open space plays an important role in the daily lives of residents within a neighborhood, particularly in medium and high-density housing environments. Public open spaces, such as parks and green spaces, are key built environment elements within neighborhoods for encouraging a variety of physical activity behaviors (Koohsari et al., 2015).

According to Marcus and Sarkissian (1986), in their post-occupancy studies, the presence of open spaces between buildings in medium or high-density neighborhoods significantly influences the success of housing. Consequently, there exists a notable and positive correlation between the quality of design and social sustainability in residential neighborhoods. A higher quality of life results from "good design," which is crucial for fostering a sense of place, identity, and community within an area. Residents are more likely to engage in community activities when they feel safe and comfortable in their neighborhood (Larimian and Sadeghi, 2021). Therefore, architectural design and neighborhood planning significantly encourage people to take part in social activities. Thus, creating a plan for enhancing the aesthetics of public spaces can help neighborhoods become more socially sustainable, even though creating high-quality public places and programming that draw in a diverse range of citizens through meaningful activities is a way to foster social sustainability (Karimi and Suzanchi, 2021).

3. Methodology

3.1. Description of study area

The research examines the social sustainability within the Dahiyat Al-Hussein Housing project in Amman, notable as the first housing project constructed in Jordan and initiated by a government agency to provide affordable housing solutions. Within this project, various urban spaces are interspersed among residential buildings, serving as areas where residents spend their time. This project was chosen because it stands out for its abundant and diverse open spaces, making it the first housing project in Jordan to include such a high proportion of open areas. These open spaces provide an opportunity to study social sustainability among users.

Unlike other housing developments where residential buildings are designed first, and then the remaining or peripheral land parcels are allocated as open spaces, often resulting in neglected and underutilized lands that negatively impact housing, this project was designed from the beginning with the presence of green spaces and pocket parks between residential buildings in mind. In addition, planning green spaces between the residential buildings helps strike a good balance between the density and openness of the overall design. While buildings account for up to 44% of the project, open space makes up 20%. The neighborhood's design considered the presence of a park in the center, surrounded by three clusters of residential buildings, each with several pocket gardens connected by public pathways that lead to residential blocks that surround the green spaces.

The aim of studying this project is to determine the most important aspects that affect social sustainability in residential neighborhoods. This will be achieved by analyzing the project in the city of Amman to identify the most prominent issues that negatively impact social sustainability. In the 1970s, the Public Housing Corporation in Amman established Jordan's first official housing project under the supervision of the Ziad Mango Company on a surface of ninety-four dunums. The Dahiyat Al-Hussein project was chosen to provide affordable housing in a small community away from urbanization in Amman (Figure 1).

Before this initiative, Jordanians resided in single-family homes or multi-apartment buildings occupied by the same family. Therefore, the concept of an apartment complex serving as an affordable housing alternative was unfamiliar. As a result, all apartment owners in the project convened for a meeting before moving in, where they collectively assigned each other apartments. This facilitated acquaintance among residents on each floor level. This marked a transition in Jordan from low-density housing characterized by horizontal spread to medium-density housing featuring vertical development (Abed and Al-Jokhadar, 2022). Following the urban boom in Amman and the extension of urban areas, housing projects became prominent central locations in the Tla' Alali, Khalda, and Um Alsummaq Districts (Figure 2).

It was implemented in three stages on a total area of 94,000 square meters; the first and second stages (1969-1972) contain fifty-nine buildings with three floors, and the third stage (1981-1983) consists of three buildings with eight floors divided into forty-eight apartments, for Ministry of the Interior employees. The buildings comprise 476 apartments bordered by wide paved streets, many green spaces, and a central main park spanning 19,000 square meters (Figure 2).

However, this specific project has retained its distinctive characteristics and achieved recognition from various architects and experts. As a result, many professionals consider it an exemplary integrated residential development. Furthermore, the occupants of that project have maintained a strong connection to it. Moreover,

the residents of this project have formed a strong bond with it and a significant number of them still reside within its confines to this day. Furthermore, those who have moved away from the project often return to visit its renowned park, which attracts numerous visitors from Amman.



Figure 1. The location of the Dahiyyat Al-Hussein project relative to Amman city and its surrounding neighborhoods. (Source: Amman city GIS, modified by the authors).



Figure 2. Dahiyat Al-Hussein neighborhood.

This research employed a comprehensive mixed-method approach, incorporating literature reviews, case studies, observations, and questionnaires, to assess the influence of outdoor space planning and design on the social sustainability of inhabitants within specific neighborhoods. The data collection process was conducted considering both the objective aspects of public areas and the subjective viewpoints of residents. The research indicated that the characteristics of public spaces can be explained by social sustainability in terms of equity, sense of place, social interaction and participation, and safety and security.

The initial step in the research involved observations to investigate the public spaces in the Dahiyat Al-Hussein neighborhood. This entailed visiting at various times of the day and year to observe residents' behavior and collect data on the architectural elements. The aim of observing residents' activities was to assess their responses to various components of urban planning and determine the degree to which different architectural aspects influence social contact among residents in the outdoor areas. During this period, photos were taken, and notes were written. The utilization of this approach facilitated the researcher in formulating interviews and questionnaires for the subsequent phase.

Secondly, a survey was conducted to collect information about the community's profile and the attitudes of residents toward neighbors and their use of common outdoor spaces. Recognizing the significance of community engagement, the researchers developed questionnaires to collect data regarding the respondents' perspectives on the sufficiency of outdoor spaces for enhancing social sustainability aspects. The selection

process involved conducting face-to-face interviews in the Arabic language in summer semester, to ensure access to the largest number of residents using outdoor spaces, between July and August 2023. We chose this method to ensure a high response rate and to facilitate better communication with the participants. Each interview lasted approximately 7 minutes, depending on the respondent's cooperation. To ensure a diverse and representative sample, 65 participants were randomly selected from residents actively utilizing the communal areas and their surroundings. By including residents who were actively engaging with the communal spaces, we aimed to capture a comprehensive range of perspectives.

Table 2. Residents of Dahiyat Al-Hussein's responses on social sustainability.

Indicators	Questions	Mean (M)
Social Equity	The outdoor spaces are accessible to individuals of all ages, abilities, and backgrounds.	3.35
	The common spaces include inclusive amenities and services that respond to the community's different users.	3.16
	The location and distribution of common areas are equitable, ensuring that all neighborhood residents have easy access to these areas.	3.52
	The common areas are intended to meet the different requirements of the community, including families, elderly people, and those with disabilities.	3.00
	Ave=3.25	
Safety and Secure	I feel safe and secure when utilizing the common spaces during the day.	4.05
	The lighting in common spaces is sufficient, providing a sense of safety in the evening.	3.75
	I feel comfortable letting my children play in common spaces without constant supervision.	2.90
	Pedestrians can access the common spaces via separate paths from vehicles.	3.45
	Ave=3.52	
Sense of Place	I have positive feelings and memories associated with neighborhood common spaces.	3.65
	I am satisfied with the outdoor public spaces in my neighborhood.	3.16
	My neighborhood's common outdoor spaces are clean and well-maintained.	3.18
	I feel a sense of attachment and belonging, due to the presence of common spaces in the neighborhood.	3.75
	Ave=3.44	
Community Participation	I am involved in the cleaning and maintenance of common spaces.	3.34
	The common areas facilitate recreational facilities, such as sports fields and playgrounds, that promote socialization among users with similar interests.	3.96
	I actively engage in attending meetings and events that are conducted within the common spaces of my neighborhood.	3.55
	Ave=3.62	
Social Interaction	Most of my social interactions with neighbors occurred in common spaces.	3.35
	The layout and design of the common outdoor spaces stimulate spontaneous social interactions between residents.	3.75
	I like to stay with my family and friends in outdoor spaces in the neighborhood.	3.56
	Ave=3.55	

The questionnaire was designed to collect data on the socioeconomic characteristics of the respondents, such as age, and residency duration. This allows to analyze how different demographic groups perceive the social sustainability aspects of the outdoor spaces. The second part of the questionnaire aimed at assessing social sustainability aspects through 19 statements that were rated on a Likert categorical scale ranging from strongly disagree to strongly agree and assigned numerically 1–5: (1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; (5) Strongly agree.

Finally, the researcher utilized the experience as a resident in one of the neighborhoods in Romania, which is a major housing development that is regarded as one of the successful housing projects (Mitrea et al., 2016). Through observations and gathering information from residents regarding their perspectives on the neighborhood and experiences residing therein, the researcher was able to formulate recommendations that contribute to the development and improvement of public spaces in the residential neighborhood.

4. Results and discussions

According to the data obtained from residences in the Dahiyat Al-Hussein neighborhood, the percentage of females in the overall sample exceeded 67%. Among the surveyed individuals, a majority (65%) were aged 31 to 50 years. Additionally, almost 87% of the participants owned an apartment in the neighborhood. More than 60% of the respondents had been living for more than 10 years in the neighborhood.

4.1. Social sustainability aspects

The outcomes of this research provide an assessment of identified social sustainability aspects from the residents' perspective by expressing their agreement or disagreement with a set of statements related to various aspects of the open spaces within the neighborhood.

4.1.1. Social equity

Social equity measures the equitable and fair distribution of resources, opportunities, and privileges within a society. The concept of social equity in a neighborhood is closely associated with the proximity of vital services and amenities inside the neighborhood (Landorf, 2011). A mean score (M) of 3.25 out of 5 indicates that the predominant attitudes toward social equity within the open spaces, measured using a 5-point Likert scale, are primarily neutral. A rating of 1 signifies a negative attitude, while a rating of 5 signifies a positive attitude.

Similarly, the question that received the highest rating, with a score of 3.52, was related to the allocation of open spaces in the housing neighborhood. The allocation of public spaces is planned to ensure equitable and inclusive accessibility for all residents of the neighborhood. The neighborhood features a main park as its focal point, accompanied by social spaces distributed among the residential buildings to facilitate the utilization of residents from adjacent buildings to ensure fair use for all residents.

Nevertheless, when evaluating the effectiveness of public spaces in meeting the diverse demands of the entire community, there are ample opportunities for enhancement. The average rating of the responses was 3.00 out of 5, primarily due to deficiencies in offering suitable utilization options for elderly people and others with specific requirements. Public spaces exhibit inadequacies in terms of seating infrastructure, accessible

ramps, and pedestrian pathways connecting properties to the central park. Moreover, the lack of proper care and attention given to the layout and design of public areas between buildings results in a dearth of utilization of these spaces, ultimately leading to their abandonment and underutilization (Figure 3).



Figure 3. Neglected open spaces among residential buildings in the Dahiyat Al-Hussein residential neighborhood.

4.1.2. Safety and security

Safety and security in public spaces are important in fostering social sustainability. According to Maslow's hierarchy of needs, a person's sense of safety is essential to their health and satisfaction. Individuals can engage in social interactions with confidence and participate in community activities without fear when public spaces are devoid of crime and disorder. This perceived safety not only enhances the quality of life for individuals but also contributes to the overall cohesion and resilience of communities, thus promoting long-term social sustainability (Dissi and Abughanimeh, 2021).

A generally positive attitude toward safety and security in public aspects was obtained from residents, with a mean (M) score of 3.52. Additionally, residents expressed feeling safe, especially during the day, which received the highest score, with a mean of 4.0, due to the strategic placement of open spaces between residential buildings, away from main streets, and connected by pedestrian pathways. The main park is fenced, and the children's play areas are equipped with sand and grass flooring to protect the children if they fall. The main entrance is away from the children's play areas, and a guard supervises the park (Figure 4).

While the main park provides a secure environment, there is a lower level of satisfaction, with an average of 2.90 among parents regarding their willingness to let their children play in public places without supervision. This dissatisfaction stems from the presence of a main road separating the residential area and the park, as well as a lack of crossing paths. Moreover, the other public areas distributed between the residential buildings are often unusable and pose safety risks due to spontaneous plant growth and the potential presence of dangers such as snakes and insects.



Figure 4. The main central park in the Dahiyat Al-Hussein residential neighborhood.

4.1.3. Sense of place

The assessment of a sense of place is dependent on the satisfaction of residents and their sense of pride in their local community, wherein individuals reflect an interest in residing within the neighborhood and express general satisfaction with their living conditions, in a way that they would like to reside there now and, in the future, (Larimian and Sadeghi, 2021).

According to the data presented in Table 2., the calculated mean (M) was 3.44, indicating both neutral and positive responses. The data suggests that residents have positive memories and emotions towards the public spaces within their neighborhood. According to average ratings of 3.65 and 3.75, these spaces significantly

aided in fostering a sense of attachment and belonging among the residents towards their neighborhood. On the other hand, the percentage showed less satisfaction in terms of the cleanliness of those public spaces, with an average of 3.18. The current state of these locations can be attributed to inadequate maintenance and abandonment, resulting in limited accessibility due to the accumulation of rubbish and overgrown vegetation.

4.1.4. Community participation

Community participation can be determined based on the level of engagement and involvement exhibited by residents in various community activities conducted within the neighborhood. The neighborhood's absence of resident groups limits the organization of cooperative activities and the frequency of events and meetings among residents. The presence of playgrounds within the main park makes it possible for children and youth to participate in sports and playing activities, which in turn promotes residents' involvement and collective engagement in the park. A positive mean of 3.96 for open space users supports the idea that playgrounds and children's play facilities in public spaces play a significant role in fostering social cohesion among community members who share common interests.

In contrast, engagement in the cleanliness and maintenance of public spaces was slightly lower, with a mean of 3.34. This was generally observed in the neighborhood, where residents lack a culture of interest in what is public and prefer to own an area to maintain it. This can be seen in the open spaces between the residential buildings. Several of these gated areas have become implicitly associated with residential buildings, especially ground-floor apartments, and are thus clean, landscaped, and cared for (Figure 5). Unfortunately, the areas that are located outside of a building's fence or not associated with a building are particularly neglected and uncared for, which has a significant impact on the image of the residential neighborhood in general.



Figure 5. Conversion of public spaces to private courtyards by ground floor residents.

4.1.5. Social interaction

One of the most important aspects of open spaces is that they encourage social interaction (Akcali and Cahantimur, 2022). Social interaction is assessed by examining the engagement between individuals residing in a specific neighborhood and their neighbors. Residents' feedback reveals that there are good relationships between neighbors. As illustrated in Table 2, the residents showed a positive attitude towards social interaction, with a mean rating of 3.55.

Based on the feedback provided by the residents, the primary factor contributing to their satisfaction is the arrangement and layout of the open spaces, which effectively fosters spontaneous social engagement among residents, scoring it 3.75 out of 5. This finding indicates that inhabitants possess a favorable attitude towards engaging in outdoor activities within their local community, which promotes regular contact that can ultimately facilitate the development of friendships. Common interests play a vital role in uniting neighbors and encouraging them to spend time together, ultimately enhancing their quality of life and ensuring long-term social sustainability.

As confirmed by residents' feedback, well-planned outdoor spaces that contain playgrounds, seating areas, and landscape features serve as catalysts for these social interactions among residents.

4.2. Recommendations to promote social sustainability within residential development

Following a comprehensive analysis of public spaces in the Dahiyat Al-Hussein Neighborhood, notable challenges were identified that impacted the social sustainability among residents. Considering these findings, the researchers proposed solutions that align with the principles of sustainability to enhance the existing conditions and promote social sustainability within the neighborhood.

- i. Create public spaces with specific purposes and functions. For instance, areas designated for children's play, transitional spaces between residential buildings and streets, spaces separating main streets and buildings, and corridors and passages between residential buildings all contribute to the creation of an integrated and socially interactive community.
- ii. Create transitional spaces between residential buildings and streets. Such spaces consist of a public area accessible by all residents of the surrounding residential neighborhood, a semi-public area belonging to the residential building, and a semi-private pedestrian corridor for residents to access the residential building. It should be noted that the area designated for the building is a shared space, especially by the residents of the building. By clearly defining these spaces and their intended uses, residents are more likely to respect the property and take an active role in its maintenance. This not only contributes to the aesthetic appeal of the neighborhood but also fosters a sense of appreciation and belonging among residents.
- iii. Design communal spaces that in addition to serving as barriers between main streets and residential buildings, encourage daily interactions and community engagement through activities such as gardening, which contributes to increased community participation and community interaction, which are aspects of social sustainability.

- iv. Incorporate designated play areas for children within the neighborhood, in strategically secure locations in the middle between residential buildings. These designated zones should be isolated from primary roads and strategically positioned within the line of vision of neighboring buildings to facilitate parental oversight and safeguard the safety of children while participating in recreational activities. Consequently, these spots serve as an optimal daily place for children to engage in recreational activities while being monitored by their parents. This practice significantly enhances the standard of living within the neighborhood, as it underscores the significance of outdoor play for children (Figure 6).



Figure 6. An example of a playground for children between the residential buildings.

- v. Integrate outdoor seating areas close to the buildings, to provide opportunities for individuals to sit and enjoy the outdoors or engage with their neighbors, this also enhances the relationships between the neighbors and fosters a sense of belonging which enhances social sustainability (Figure 7).
- vi. Designated areas for playing various sports and recreational activities within the neighborhood, which are among the important spaces needed by any residential neighborhood. Highlighting their value in improving public health and social cohesion which in turn improves residents' quality of life and promotes social sustainability.
- vii. Establish resident committees, elected by the residents, responsible for managing building maintenance and shared spaces. This promotes community participation and fosters social interaction among building occupants. The regular meetings of this committee confirm that the

residents of the same building know one another, the residents are well acquainted with one another, and can easily identify any strange individuals in the vicinity, which contributes to a sense of security.

- viii. Design a neighborhood with a focus on prioritizing pedestrian movement. Therefore, the areas of the neighborhood should feature connected pedestrian pathways separate from vehicular streets. Additionally, the main streets within the neighborhood should feature designated pedestrian crossings to further enhance pedestrians' safety and accessibility. The pathways should be constructed to respond to the needs of all residents, including elderly individuals and those with children in strollers, by ensuring the presence of ramps and railings for accessibility purposes (Figure 8).

However, it's important to acknowledge that some potential challenges may arise in promoting social sustainability within residential development. For example, the lack of available land poses a significant challenge to creating new public spaces, as existing structures and infrastructure may limit possibilities without costly redevelopment. Additionally, designers may encounter resistance from residents who fear disruption to their established neighborhood dynamics, hindering progress. Overcoming this resistance requires extensive community engagement efforts to exemplify the benefits of revitalizing public spaces. Furthermore, sustaining any improvements over the long term requires ongoing investment in maintenance and programming to prevent deterioration and ensure continued community use. Overall, a comprehensive approach is needed to promote social sustainability, as any adjustments should keep in mind balancing spatial constraints, community concerns, and the imperative for enduring sustainability.



Figure 7. Open spaces equipped with sitting furniture between the residential buildings.



Figure 8. Strategies to enhance pedestrian paths in the neighborhood.

5. Conclusion

In conclusion, this study emphasizes the effect of well-designed public spaces in promoting social sustainability within residential neighborhoods. This study examines the Dahiyat Al-Hussein project in Amman as a case study to demonstrate the significant impact of common open spaces on residents' quality of life and sense of community. The study emphasizes several significant aspects of promoting social sustainability, including social equity, safety and security, a sense of place, community participation, and social interaction. The findings highlight the need for prioritizing social sustainability in the planning and maintenance of public places, which can contribute to maximizing the positive influence of green spaces on community well-being and the overall quality of life within residential neighborhoods.

Well-designed and well-maintained public spaces play a role in accommodating people of all ages and meeting diverse community needs, ranging from leisure activities to health enhancements. Therefore, this study emphasizes the link between the physical environment and social dynamics within neighborhoods. Recognizing the importance of public spaces as hubs for social activity and community involvement allows policymakers and urban planners to make progress toward developing inclusive and dynamic neighborhoods that foster social cohesion and resilience throughout time.

Furthermore, the study emphasizes the importance of green spaces for enhancing residential areas, which extends beyond mere quantity. The diversity and purpose of green spaces are equally essential considerations. Thoughtful design and multifaceted utilization, including designated areas for various activities, are crucial for maximizing the positive impact of these spaces on community well-being.

Ultimately, embracing a human-centered approach to neighborhood design that encompasses considerations for individuals of all ages and abilities is essential for enhancing social sustainability. This includes thoughtful planning of pedestrian paths, integration of green spaces, and accessibility features to foster inclusivity and facilitate community interaction. The social dimension emerges as a key determinant of well-being, with connected communities significantly enhancing residents' sense of belonging and contentment. In essence, by nurturing social cohesion and investing in inclusive public spaces, we not only enhance the livability of residential areas but also cultivate environments where residents thrive socially, emotionally, and physically, ensuring long-term sustainability and quality of life for all.

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