Landscape Architecture

ARTICLE

Restricted Mobility and Restorative Park Demand in Two Jeddah Public Gardens: Al Masarah and Al Jamaa, Saudi Arabia

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Abstract

The importance of urban parks may be enhanced by mobility constraints which affect recreation opportunities, family visits and relief from the stress of the day. This paper attempts to determine whether the sharp fall in usage at two public parks in Jeddah during the COVID period indicated lack of park value or limited access to an undiminished valued resource for well-being. The data used includes park profile values, answers of 215 visitors, percentages, visit frequency and duration categories, motivation factors, place attachment items and crisis perception responses, relating to Al Masarah Garden and Al Jamaa Garden located centrally in Jeddah, Saudi Arabia. Numerical data includes park profile values, visitor responses (n=215), percentage statistics, visitor loads per hectare, shares of suppressed access, concentration of one-hour visits and a Restorative Access Demand index including restorative, proximity, social and equity sensitivity measures. Of the total responses received during the crisis period, 66% in the case of Al Masarah garden and 68% in the case of Al Jamaa garden did not report any park visits, whereas the share of visits not exceeding one hour rose to 66% and 71% respectively. However, these figures co-existed with strong restorative dependency: 67% actually missing parks, 79% feeling parks help relieve psychological stress, 81% considering that parks meet crisis period requirements, and 86% feeling that they are necessary for good mental health. Al Jamaa Garden had higher expected load per hectare, while Al Masarah Garden belonged to the category of older public gardens. Clearly, the Jeddah crisis period park usage issue revolved around accessibility of nearby, socially engaging green relief, rather than loss of public park value.

Keywords: urban parks; restorative access; mobility restriction; green-space planning; Jeddah; place attachment; mental well-being

1. Introduction

In general, a park can be considered a recreational resource, but in cases when a city experiences times of movement limitation, carefulness, restricted access to public facilities, a park gains another meaning. A park is not only a place where one can spend leisure. In times when the movement is not freely available, the park can serve as a local refuge from a lack of mobility; it gives an opportunity to move around a place, get some relief, feel continuity, get fresh air, and have brief contact with nature. In terms of the current pandemic, ordinary life patterns such as going to

Received: 06 June 2022; Revised: 22 September 2022; Accepted: 19 December 2022; Published: 30 December 2022.
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doi: 10.70517/la20221124-07

work, praying in mosques, studying in schools, shopping in supermarkets, travelling around the city, or socialising with others were disturbed. Therefore, parks were put in a peculiar role because they were outdoor spaces able to serve as a place where one could preserve health. Yet, parks needed to restrict gatherings and regulate mobility.

Lowered visitation levels in urban green-space surveys can reflect multiple things. First, the decline in numbers can speak of lowered demand on the side of local residents. However, in many cases, a drop in visitations can be caused by facility closure, fear of getting infected, restrictions on mobility, limitations concerning the ability to gather, or efforts of household risk management. The evidence of the effect of the pandemic on park usage in various regions showed a discrepancy of results in different countries and cities. In some places, visits grew because people had a lack of outdoor options while in others, there was a strong decline in park usage due to closures, restrictions, or health concerns [11, 15, 35, 37]. Thus, it is not appropriate to measure the value of a park in terms of the number of visits alone.

There is enough evidence in literature that can prove that urban green space is an essential component of the healthy urban infrastructure. Urban ecosystem services include regulating, cultural, supportive, and social components; their value relies on ecological and socio-cultural factors [7, 9, 10, 12]. Various works show that urban parks are related to quality of life, leisure activities, social interactions, physical activities, better microclimate, and environmental justice [21, 23, 26, 38]. These pieces of evidence will be especially relevant for hot cities where the main value of parks is given by shade, comfortable surfaces and routes, safe resting spots, and comfortable seating.

Place-attachment research will help to find out how people relate to parks on a deeper level. Places are important because of their value as a place of activities and social memories, place identity because of symbolic meanings, place affective attachment for the reasons of feelings, and place social attachment because of social connections [6, 17, 29, 32, 36]. A crisis period can reveal the depth of these relationships because it becomes evident how a particular place is important when regular activities are disrupted. A park where people do not usually go can have enormous value in terms of a weekend place to visit a family, a place for walking or any other activity performed repeatedly.

Another important factor in terms of public space during the pandemic period is the relationship of parks to mental health problems. The closure of public parks and reduction in the access to parks was seen as a threat to physical inactivity, psychological distress, isolation, and the unequal distribution of safe options [19, 24, 31]. Parks were regarded as essential elements in the process of relieving stress and performing physical activity because they remained an alternative to other spaces where people could go [16, 25, 39]. Other studies showed that visits decreased when there were more restrictive measures or when people preferred staying away from crowded spaces [14, 35]. All these results mean that park planning should include the consideration of various forms of access instead of merely counting visitors.

This problem can be discussed in relation to Jeddah because it is a place with unique environmental conditions. It is a coastal city that has hot-desert weather conditions; thus, the key factors in park planning are shading, comfortable walking routes, proximity, cleanliness of facilities, and a comfortable social environment. During the pandemic restrictions in Saudi Arabia, people experienced changes in public life because of limits concerning movement, gathering, and accessing public facilities. The question addressed in the case study is as follows: is the decline in park usage in Jeddah an indicator of lowered park value or the lack of safe, short, nearby access?

To address this problem, the manuscript uses a Restorative Access Demand procedure that applies to percentage data on park usage. The procedure uses various factors, which will be discussed below because they are clearly present in the Jeddah case study. These are park area, year of foundation, number of respondents, population structure, frequency of use, duration of a single visit, motives for park visitation, and perceptions of the parks' value during the crisis. The manuscript will offer an alternative analysis of parks based on values like low use, long visits, near-home preference, social losses, mental health meaning, and equity significance.

2. Background and conceptual basis

The discussion of urban green space is connected with the identification of its functions apart from just being beautiful and attractive for leisure activities. Urban ecosystems perform a variety of services, including climate

regulation, social and recreational activities, and aesthetic appreciation. Scholars working in this direction emphasise the impact that green spaces make on people [8, 9, 12]. Research on Asian, European, and North-American parks proves that parks are important elements for biodiversity, identity, activities, and overall improvement of the environment [18, 22, 34]. Yet, the main idea in parks' planning is that mere presence of green spaces will not guarantee people the possibility of obtaining benefits. They need to be accessible, safe, attractive, well-maintained, and socially suitable [21, 28, 30].

There are several approaches to assessing the effects of urban green spaces on health. First, parks can encourage people to perform physical exercises through walking and engaging in active recreation. Second, these spaces can promote psychological health because of vegetation and shade as well as because of lesser crowds and a more relaxed atmosphere. Third, parks contribute to social well-being because of their ability to support contact and family gatherings [23, 27, 33]. Old age or vulnerability increases chances of parks having a positive effect on mobility, mental, and physical state of people [13]. All these processes show that the benefit comes from both a built environment and people's perception.

COVID-19 changed the picture dramatically because people started using parks less frequently or more often than before. While in some cities parks lost their popularity because of restrictions, closures, and fears, in others they became more popular than ever [11, 15, 35, 37]. These differences imply that a specific local context matters more than general recommendations in terms of parks' planning. This means that in non-Western contexts, research and analysis of local green spaces should be encouraged.

Research on parks' usage in various parts of the world during the pandemic proved that parks worked in an unconventional way, changing usual patterns of usage and activities. Usually, parks are visited for long periods of time, and activities in them are leisure activities, not urgent actions. During the emergency period, visits might become brief, limited in time, associated with risk and cautious movement, and close to home [11, 15, 35]. Therefore, frequency and duration of visits can reveal something more than just the level of park popularity.

The situation with parks in Jeddah is especially interesting for analysing the problem. As mentioned above, parks can influence people in a multitude of ways. One of the parks can provide physical activities, walking, picnic with family, relaxation, and aesthetic appreciation at once. The complexity of the problem is increased by the necessity to take into account cultural specifics. For instance, women, older individuals, caregivers, people with disabilities, and those lacking private parks can need green spaces more during the pandemic period [3, 19, 31]. This equity factor needs to be taken into account when analysing local green spaces.

Jeddah is a coastal Red Sea metropolis where people can expect hot and dry weather, with temperatures reaching 40 °C. This factor plays a vital role in terms of park usage because the comfort of park visiting is determined not only by the size of parks but also by such factors as shade, seating, vegetation structure, surface, safety, and routes. A park may be large but remain uncomfortable if it lacks shading facilities. A small park can become an extremely popular one if it ensures comfort in terms of shade, social routines, and safety.

The problem becomes even more complicated with the necessity to consider cultural and socio-economic aspects. There are four types of attachment people can develop concerning the parks: functional dependence on a place, symbolic identity, emotional attachment, and social attachment [2, 17, 29, 36]. A park may be unpopular, but at the same time, it can possess a significant amount of place attachment. If a park is familiar to local people, they are likely to feel a sense of loss when they cannot go there during the pandemic period.

3. Study setting and empirical material

Jeddah is a Red Sea metropolis, known for hot-desert climate and dense urban environment. The main characteristics of the place are hot weather, which can reach temperatures of 40 °C, and dense building. Under these conditions, thermal comfort becomes an integral factor affecting parks.

Al Masarah Garden and Al Jamaa Garden are two examples of parks located in Jeddah. According to their descriptions, the gardens can be used for walking, spending time with family and friends, visiting, physical activities,

picnicking, and socializing. The values used in the study are provided in the publication of Addas and Maghrabi [1]. The authors describe Al Masarah Garden as a 44 250 m^2 public park established in 2008 with 104 respondents and the daily visitor number above 101 individuals. Al Jamaa Garden is a 55 380 m^2 public park established in 2017 with 111 respondents and daily visitors number over 200. In total, 215 individuals took the survey, with 154 face-to-face and 61 online visits between June and mid-August of 2021.

The information used in this manuscript was gathered by the questionnaire. It included demographic parameters, park visitation frequency during normal times and restrictions, motivation of the activity, average duration of park visits, and crisis-perception questions. Among activity categories were such activities as walking, visiting a fresh environment, enjoying nature, spending time with family and friends, mental relaxation, time spent with children, loneliness relief, reading, picnicking, physical activities, sports, and socialising. Four types of place attachment were evaluated according to 15 criteria.

Table 1. Park profile.

Variable	Al Masarah Garden	Al Jamaa Garden
Park type	Public	Public
Foundation year	2008	2017
Approximate area (m^2)	44,250	55,380
Approximate area (ha)	4.425	5.538
Expected visitors per day	>101	>200
Surveyed respondents	104	111
Minimum visitor load (visitors ha^{-1})	>22.8	>36.1
Survey representation (respondents ha^{-1})	23.5	20.0

Figure 1. Study parks.

These park-profile values show why the two gardens should not be interpreted only through total area. Al Jamaa Garden is larger, but its expected visitor threshold is also much higher, producing a stronger minimum visitor load per hectare. Al Masarah Garden is older and smaller, which makes maintenance, familiar use, and comfort renewal particularly important. The contrast establishes two different planning conditions before any pandemic-period response is considered.

The visual context in Fig. 1 links the regional Red Sea setting with the two public gardens used in the analysis. The figure supports the spatial reading of Table 1: both parks are centrally accessible, yet they differ in size, age, visitor threshold, and respondent base. Those differences are important because emergency park planning must consider local access and service pressure, not only whether green space exists in the city.

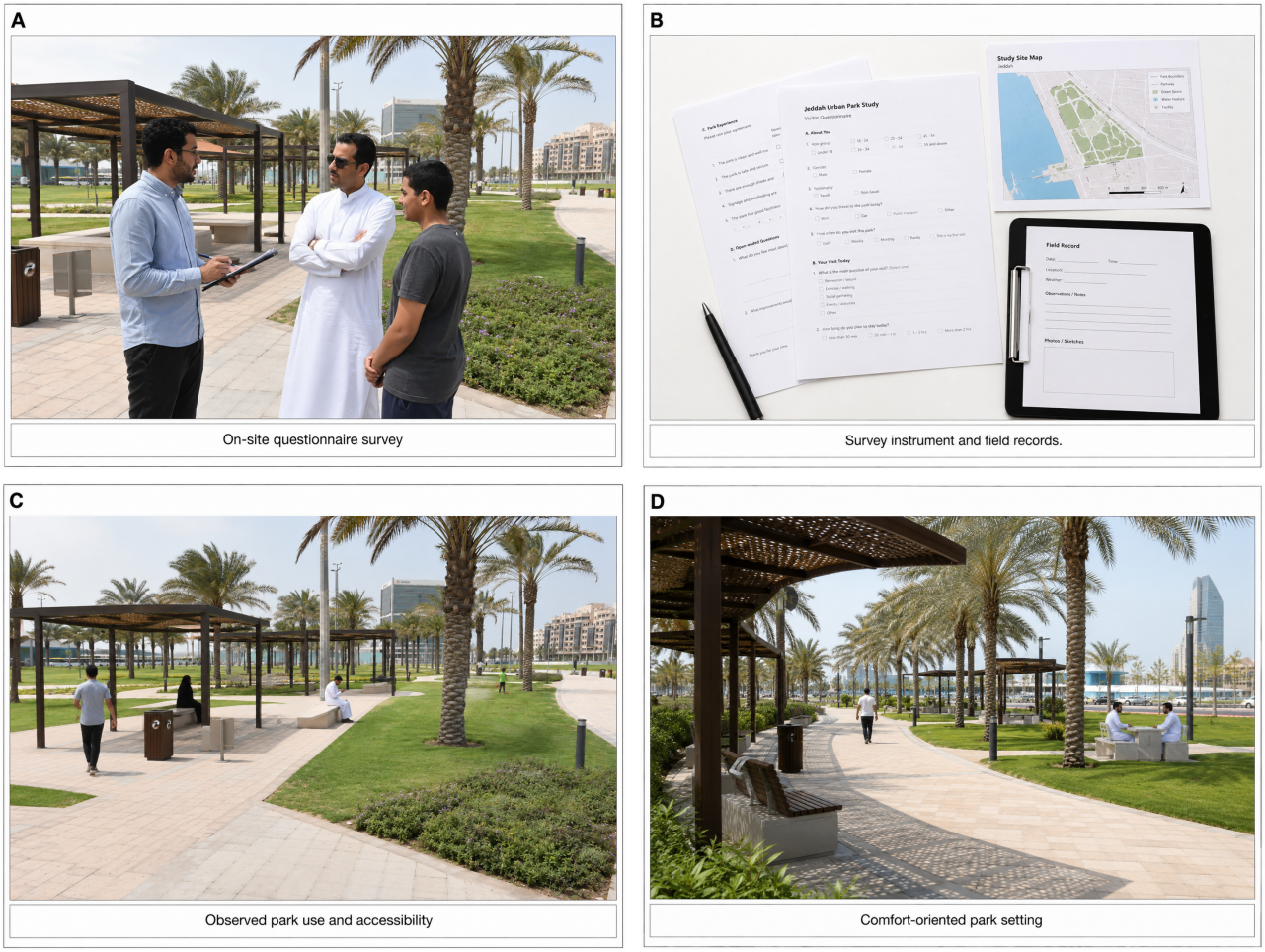

Figure 2. Survey setting.

The four panels in Fig. 2 emphasise that the numerical record is grounded in visitor contact, questionnaire materials, observed accessibility, and the physical conditions of the parks. The images are not used as statistical evidence; they help readers understand the kind of public environment represented by the survey. The presence of shaded seating, paved routes, lawns, and palm-lined areas explains why duration, comfort, and short-use capacity are central to the interpretation.

The respondent-context panels in Fig. 3 contextualize the survey variables in terms of actual field conditions. Not only does the panel sequence make visible the distinction between in-situ encounter, documentation, and the two park contexts, but it also highlights the reason why the analysis takes a practical interpretation of the park as an inhabited space instead of an abstract data set – respondents' answers have to do with real park routes, benches, shady spots, family areas, and entrance points.

Figure 3. Respondent context.

4. Analytical strategy

In order to interpret the results for the benefit of park design and management, the reported percentages need to be transformed into numerical values. The analytical procedure does not substitute statistical tests at the individual level, but it is helpful when the reported value is broken down into tables of park, time, and response category. The initial transformation involves approximating a count from the reported percentages in order to enable reading the percentages in light of the number of park respondents per park:

$$\hat{c}_{ik} = \text{round}\left(\frac{n_i p_{ik}}{100}\right), \tag{1}$$

where $\hat{c}_{ik}$ is the count estimation for park i and category k, n_i is the number of park respondents, and p_{ik} is the reported percentage. The process of interpreting percentages via Eq. 1 is simple. The reported 66% no-visit value at Al Masarah Garden reflects about 69 out of the 104 respondents. The reported 68% no-visit value at Al Jamaa Garden reflects about 75 out of the 111 respondents. Transforming the percentage in this manner reveals the social dimension of access disruption.

Park service pressure is measured by the minimum expected daily visitors per hectare:

$$L_i = \frac{V_i}{A_i}, \tag{2}$$

where V_i is the expected visitor threshold and A_i is park area in hectares. This equation results in the following estimates: greater than 22.8 visitors ha^{-1} at Al Masarah Garden and greater than 36.1 visitors ha^{-1} at Al Jamaa Garden. These are relative measurements because they do not provide exact daily attendance figures. They do,

however, show relative park pressure. It is possible that the newer and larger park will face a more sensitive situation because its visitor threshold rises quicker than its area.

The Restorative Access Demand Index (RADI) includes the following five dimensions: suppressed access, short-stay concentration, restorative dependence, green proximity preference, and equity-sensitive importance. Suppressed access equals no-visit share and less-than-monthly-use share. Short-stay concentration equals the share of pandemic visits of up to 1 hour long. Restorative dependence equals the average of mental refreshment, really missing parks, stress relief, sufficiency for crisis-period needs, and mental-health importance. Green proximity preference equals the average of near-home park preference and green space/preference for residential courtyard with greenery. Equity-sensitive importance re-scales reported scores of female and senior respondents from a five-point to a hundred point scale. RADI is estimated by the following equation:

$$\mathrm{RADI}_i = 0.30S_i + 0.20T_i + 0.25R + 0.15P + 0.10E, \tag{3}$$

where S_i is suppressed access, T_i is short-stay concentration, R is restorative dependence, P is green proximity preference, and E is equity-sensitive importance. Higher values of RADI signal higher coexistence of suppressed access and strong need for parks. In the case of the current study, the highest weightings of 30% and 25% are given to suppressed access and restorative dependence because the study seeks to reveal whether low use rates mask public park significance. The second highest weightings of 20%, 15%, and 10% are attributed to short-stay concentration, proximity preference, and equity sensitivity in recognition of their importance in meeting RADI value through park design.

5. Results

5.1. Park context and respondent composition

The two gardens have different service specifications in their own right. Al Masarah Garden is older and smaller, with a load per hectare over 22.8. On the other hand, the newer and larger Al Jamaa Garden generates a load over 36.1 visitors ha^{-1}. This means that the relatively newer and larger garden must be considered the more pressure-sensitive park despite its increased size. In other words, under non-restriction circumstances, higher load per hectare may cause conflicts between walking, sitting, children's play, and family gatherings. Under restriction circumstances, higher load per hectare may also lead to avoidances due to perceived crowding at the entrances, seating areas, and paths.

The distribution of respondents is diverse enough to support the social interpretation of park need. Men constituted 61% and 55% of the respondents of the two gardens, while women constituted 39% and 45%. The Saudi nationals made up 96% and 97% of the sample. The adult demographic group prevailed, especially the 30–40 age group accounting for 33% at Al Masarah and 38% at Al Jamaa. The bachelor-degree group comprised 46% and 41% of the sample, while those holding master degrees and higher accounted for 23% and 30%. There were government employees, businessmen, housewives, and students among the sample, meaning that park usage was linked to work obligations, household tasks, family duties, and recreation activities.

As seen from Table 2, this case cannot be described only by the needs of a single user. With respect to adults and families, there is likely to be a combination of walking, usage by children, socializing, sitting together with one's family, and short relaxation periods following domestic and working activities. Moreover, the high level of females (91 total), including around 52 housewives, makes comfort, visibility, seating and secure access extremely important for this group. In addition, the 34 people over 50 add smoothness of the route, shading, and possibilities to rest to the list of key criteria for planning.

Table 2. Respondent structure.

Dimension	Category	Al Masarah (%)	Al Jamaa (%)	Pooled count
Gender	Male	61	55	124
	Female	39	45	91
Nationality	Saudi	96	97	208
	Non-Saudi	4	3	7
Age	20–30 years	29	24	57
	30–40 years	33	38	76
	40–50 years	23	22	48
	Older than 50 years	15	16	34
Education	Elementary	10	9	20
	High school	21	20	44
	Bachelor	46	41	93
	Master's or above	23	30	57
Occupation	Student	16	14	33
	Government employee	32	33	70
	Businessperson	22	34	61
	Housewife	30	19	52

5.2. Visitation suppression due to movement restrictions

In pandemic times, both parks experienced a drastic fall in their visitation. Thus, 66% of participants at Al Masarah Garden and 68% of participants at Al Jamaa Garden never attended their parks. In terms of approximate number of people, these figures amount to around 69 at Al Masarah and 75 at Al Jamaa who did not visit the park. Additionally, one out of five respondents visited parks less than once a month. Thus, combining the two above-mentioned groups of respondents gives us a proportion of 86% at Al Masarah and 88% at Al Jamaa suffering from suppressed access.

A completely different picture was formed in terms of ordinary visitations. The predominant form was weekly visits; however, other forms such as monthly and several-week visits could also be observed. At Al Jamaa Garden, once-a-week visits accounted for 41%, while 19% visited two to four times a week. Also, there were people visiting parks one to four times a month (18%) and daily (12%).

Table 3. Access interruption.

Indicator	Al Masarah Garden	Al Jamaa Garden
No visits during pandemic	66%	68%
Approximate no-visit count	69	75
Less than monthly use during pandemic	about 20%	about 20%
Suppressed-access share	about 86%	about 88%
Dominant ordinary frequency	weekly use	weekly use
Main interpretation	disrupted routine access	disrupted routine access with higher park load

The values in Table 3 answer the first part of the study question. Visitation declined, but the decline should not be read as proof that parks became unimportant. The interruption affected ordinary routines at both sites and was similar in magnitude despite differences in park size and visitor threshold. Such consistency points to a restriction-related access problem rather than an isolated park preference shift.

The park scenes shown in Fig. 4 in pairs show the behavioural implication of Table 3. Normal uses tend to include more prominent activities such as family members, walks, and interaction in shared space, while pandemic uses are more diffuse and low-density uses. The contrast between images suggests that the park access was constrained and even what occurred in the parks had to have been a careful and brief use.

Figure 4. Use contrast.

5.3. High frequency and short-duration uses

Duration data show another kind of disruption. In normal periods, one- to two-hour use was the dominant use, followed by two- to three-hour and three- to four-hour uses. Shorter pandemic use made up the majority of visits. Visits within an hour constituted 66% of all Al Masarah pandemic use and 71% of all Al Jamaa pandemic uses. While the one- to two-hour visit period made up another dominant category, longer visits dropped off steeply.

These differences in visit length have significant implications for how we plan for this park type. Someone who visits a park in less than an hour requires quick access to shade, views of nature, ease of movement, rest surfaces, and entry/exit clarity. Access benefits cannot be gained by lengthy periods inside; quick benefits are needed in these short-duration visits. Given Jeddah's high temperatures, short-duration visits may be the reality of park access. Difficult entry, sunny exposure, and park design based on concentrated facility use will fail to meet these criteria.

Table 4. Short-stay pattern.

Indicator	Al Masarah Garden	Al Jamaa Garden
Pandemic visits up to one hour	66%	71%
Pandemic visits one to two hours	34%	29%
Dominant ordinary duration	1–2 hours	1–2 hours
Design reading	brief restorative visit	brief restorative visit under stronger load

The results of the duration statistics in Table 4 are clear as to why planning a park in the context of a crisis period should take into consideration its role as an attractive place for short periods. Thus, planning of short visits to

restore mental health should form the basis of the infrastructure development strategy instead of the addition of decorations.

5.4. Changes in motivations for park use

Thus, instead of focusing on the frequency of visits, it became interesting to identify what motivated people to come to parks during the crisis period. As can be seen from Figure 5, during the pandemic, 47% of visitors came to get mental refreshment, whereas the second motivation was to escape loneliness with 22%, then came experiences of natural environment with 17%, and physical activities with 14%. Therefore, it becomes obvious that visiting parks during the crisis period was not about physical fitness solely.

The information provided above allows understanding motivations in more detail from the perspective of park-specific activity statistics. Mental refreshment and family purposes were important motives for visiting Al Masarah Garden during the pandemic period. Time spent with relatives and friends and also mental refreshment motivated visits to Al Jamaa Garden, while physical activities and escaping loneliness had their meanings too. Ordinary period activities include walking, having a break in a fresh environment, reading, having a picnic, and socializing.

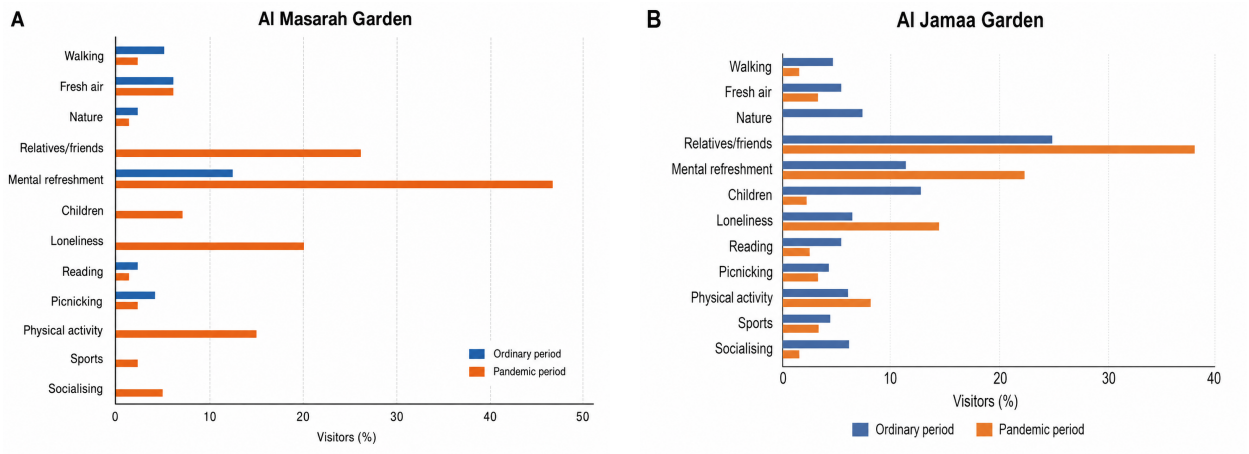

Figure 5. Activity motives.

This becomes clear from the charts comparing activities displayed in Fig. 5. The columns in the lockdown period focus on mental renewal, relation-based activities, loneliness alleviation, and physical exercises. These results reinforce the claim of recreational nature of the parks, which functioned more as socializing areas than workout places. This, in its turn, allows us to assume that the reduction in overall number of visits can correlate with the need for park activities.

5.5. Place attachment and mental-health perception

Place attachment surveys provide evidence of non-interchangeability of these parks. In regard to social attachments, 69% of respondents agree that their friends and family enjoy spending time there. Affective attachment was also relatively high: 65% admitted that they really missed going to these parks while in quarantine and 56% agreed on the feeling of attachment. 62% of respondents considered the park useful in terms of functionality. At last, 61% felt loyal to people spending time there.

Thus, we can speak about several levels of connection to the park, as respondents find it valuable due to social and emotional memories, functional benefits, and family connections. Thus, the park can be considered an important place even if one visits it not on a regular basis. However, the largest portion of disagreement is related to visiting the park on a daily basis (16%).

Table 5. Restorative perceptions.

Indicator	Reported value
Visited parks for mental refreshment	47%
Visited parks to escape loneliness	22%
Visited parks to experience nature	17%
Visited parks for physical activities	14%
Really missed parks during the pandemic	67%
Missed gathering with relatives and friends	53%
Believed parks help reduce psychological stress	79%
Preferred parks near home	73%
Preferred green spaces during crisis periods	60%
Preferred residential courtyards with greenery	24%
Believed parks were sufficient for crisis-period needs	81%
Believed parks are important for mental health	86%
Friends and family like these parks	69%
Park meets respondents' needs	62%
Emotionally attached to parks	56%

Figure 6. Restorative settings.

The values in Table 5 provide the strongest answer to the study question. High percentages for missing parks, stress relief, sufficiency, near-home preference, and mental-health importance show that low visitation did not mean low value. The public-health meaning of parks was especially visible in stress relief and mental-health responses, while the social meaning appeared in missed gathering and family approval.

The images in Fig. 6 reflect the importance of social attachment, emotional recovery, easy access to nearby green space, and reduced stress. It can be seen from the illustration that the necessary park features are rather common and straightforward: shady spots, seats, green space, visibility, and places to have time in small families.

5.6. Restorative-access composite demand index

The Restorative Access Composite Index shows the extent to which the access restriction coexists with unmet demand. The restricted access scores are roughly equal to 86% for Al Masarah Garden and 88% for Al Jamaa Garden. Short-term concentration scores are 66% and 71%, respectively. Restoration dependency score is 72.0, based on mental rejuvenation, lack of parks, stress alleviation, adequacy for personal needs, and importance of green spaces for mental health. Green proximity score is 78.5, based on home proximity score and joint preference of green space and green residential areas. Sensitivity to equity scores is 92.9, based on a scaling process of the reported 4.76 women and 4.53 older adults' scores to 0–100.

Table 6. Restorative Access Demand Index.

Component	Al Masarah Garden	Al Jamaa Garden
Suppressed access (S_i)	86.0	88.0
Short-stay concentration (T_i)	66.0	71.0
Restorative dependence (R)	72.0	72.0
Green proximity preference (P)	78.5	78.5
Equity-sensitive importance (E)	92.9	92.9
Restorative Access Demand Index	78.1	79.7
Minimum visitor load (visitors ha^{-1})	>22.8	>36.1
Planning emphasis	comfort renewal and familiar access	load dispersal and short-stay capacity

The values in Table 6 show that both parks had high restorative access demand, with Al Jamaa Garden slightly higher because it combined stronger suppressed access, higher short-stay concentration, and higher expected visitor load per hectare. The difference is not large enough to suggest that one park is unimportant. Instead, it indicates different intervention priorities. Al Masarah Garden should be treated as an older familiar park requiring comfort renewal, shade continuity, and maintenance-sensitive access. Al Jamaa Garden should be treated as a higher-load park requiring visitor dispersal, multiple shaded subareas, and clearer separation between walking, sitting, children's play, and family use.

The design priorities in Fig. 7 follow directly from the reported Jeddah percentages. Shaded short loops respond to one-hour visits. Nearby access responds to the 73% near-home preference. Distributed seating responds to family and social attachment. Comfort for women and older users responds to the higher importance scores reported for those groups. The figure therefore links measurable findings to practical urban-design actions.

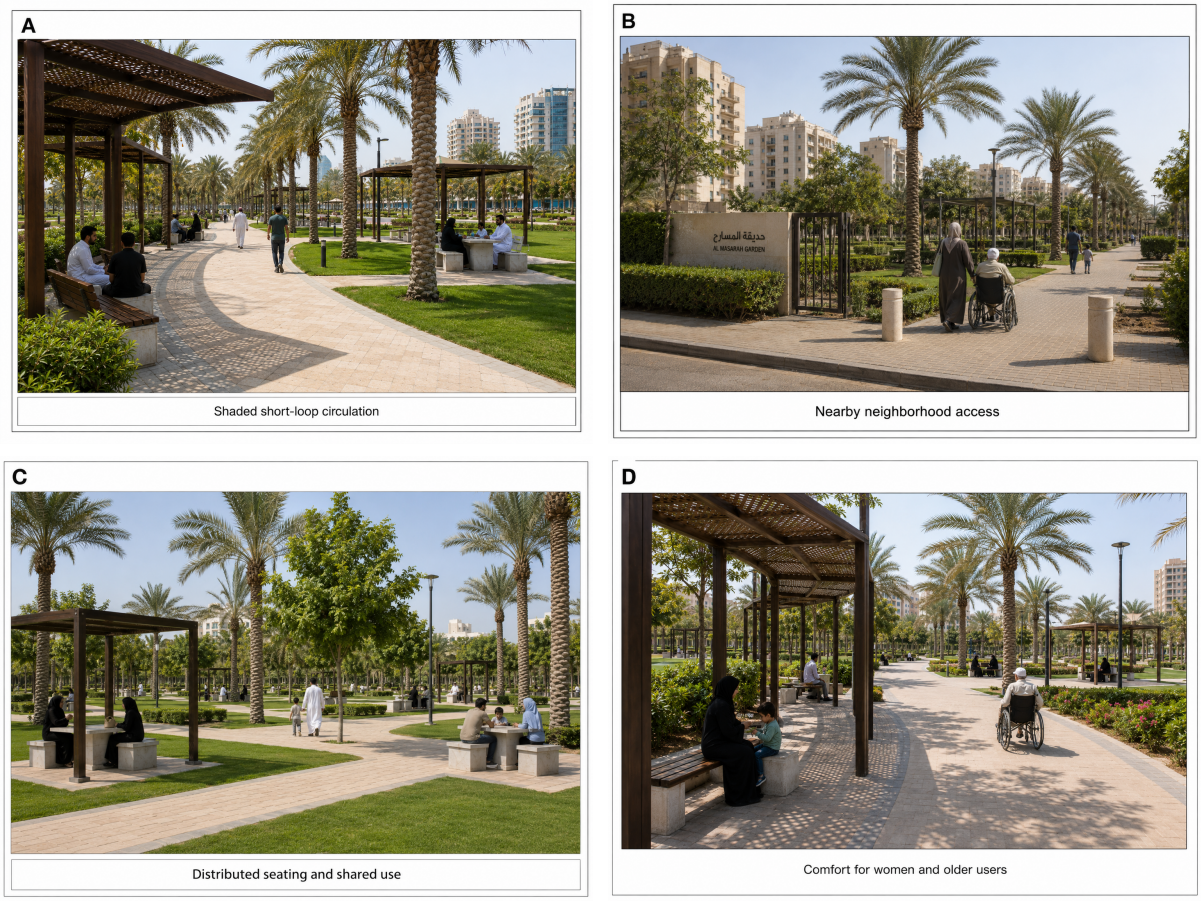

Figure 7. Design priorities.

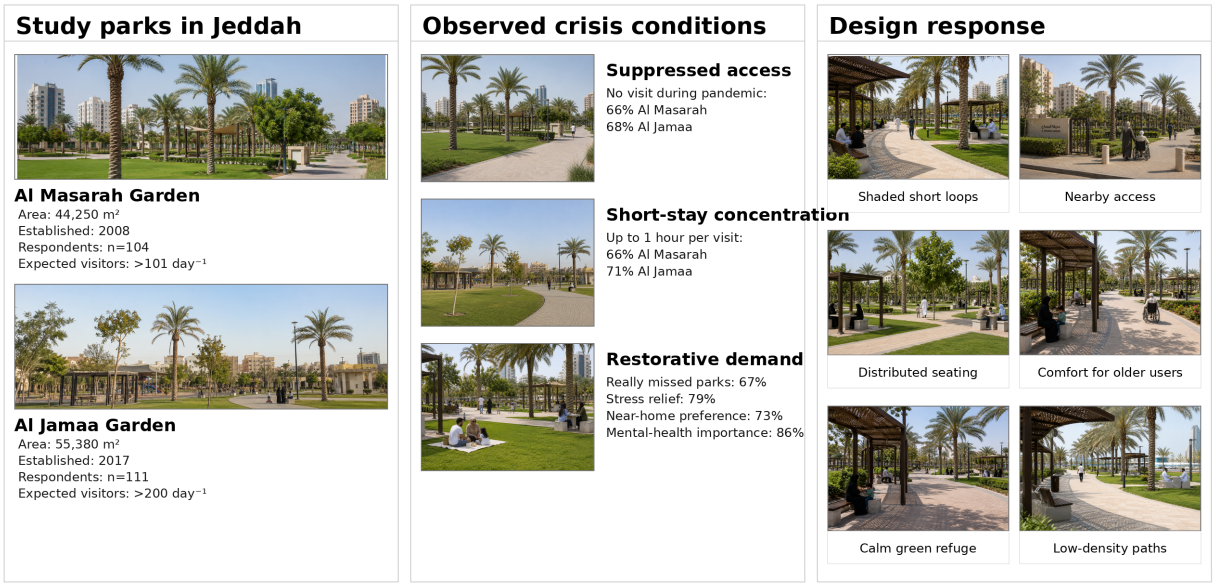

Figure 8. Jeddah park findings.

As shown in the Figure 8, the summary panel represents the main empirical finding of this paper: although both gardens have a similar size and are located in the centre of the city, the differences in age, respondent base, and expected visitor load have created a common condition – access was suppressed, but restorative dependence remained high. As can be seen in the figure above, no single intervention applies to this situation; what it requires is

a neighbourhood low-density short-visit park solution for each of the two gardens with different ages and loads.

5.7. Synthesis between the two gardens

The results presented above can be synthesized by looking at three levels: operational, behavioural, and perceptual. First, Al Jamaa Garden is the more pressured garden in terms of the load, while Al Masarah Garden is the older garden. Second, both gardens exhibit strong suppressions in access and shifts towards short one-hour visits. Third, the respondents reported a high restorative dependence on parks, associated parks with the need for relaxation, valued parks for stress relief, chose parks near home, and retained the family-friendly meaning of park use. Thus, the Restorative Access Demand Index is high due to the convergence of the three levels.

Such a synthetic interpretation is better than an isolated value. A no-visit share as high as 66% or 68% may be taken as a sign of low demand unless accompanied by the other two components. The association of parks with stress relief (79%) may be interpreted as a positive assessment, but the actual visitation remains normal. Near-home preferences (73%) could be taken as convenience unless the duration contracted significantly to less than one hour. Considering the three components together, one can conclude that there is a particular crisis condition in which the residents valued park proximity for restorative purposes, but park use decreased significantly in terms of frequency and duration. This implies a particular design and management response that should be aimed not only at the provision of adequate park space but at ensuring easy park access.

As can be concluded, a crisis-resilient approach to park planning does not require erasure of unique characteristics between different parks. Al Masarah Garden is the more established public-garden setting, which implies the importance of preserving the sense of familiarity through careful renewal. Al Jamaa Garden is the more crowded setting in the two-park sample, which implies the need for dispersal and multiple shaded zones. Therefore, a unified policy can be adopted to support different local actions. The general city-wide policy should be preservation of short restorative access; however, the implementation would rely on age, load, layout, and user mix.

6. Discussion

6.1. Interpretation of lower use as access constraint

In this section, we address the question: should lower park use during the mobility-restriction period be interpreted as a sign of reduced demand? According to our analysis, the answer is negative. Although almost two-thirds of the residents reported that they visited neither Al Masarah nor Al Jamaa garden during the pandemic, almost nine-tenths of respondents either avoided visiting or did not visit these gardens once a month. The narrow interpretation implies that lower park visitation was due to falling demands. However, the evidence presented above provides the opposite reading.

Specifically, most of the respondents missed parks, associated them with stress relief, regarded them as sufficient for meeting mental health needs, and valued them as important for overall well-being. In other words, there is a particular combination of strong value and low use, which means that we are dealing with a crisis of access to restorative greenery. This interpretation is consistent with findings in other countries suggesting that during the pandemic, park use varied depending on local conditions [15, 35, 37]. According to Jeddah's results, the city is closer to studies of reduced use due to restrictive conditions than to those of increased recreation.

6.2. Designing for brief restorative visits

Since visits in the two selected parks were concentrated mostly in one-hour durations, a planning approach is required that focuses on ensuring comfortable short visits. Long-time leisure in public spaces is a resource-intensive process involving lawns, picnic spots, playgrounds, and social facilities. Restorative visits imply the need for comfort from the first minute until departure from parks, including easy access, fast arrival at comfortable locations, comfortable paths, and a short stay with minimal exposure to sunlight.

In the context of the hot climate of Jeddah, the importance of this planning paradigm is especially noticeable. While designing the parks, the priority should be shifted from providing extensive parkland to ensuring rapid access to green areas with shade and rest. The result will be not the maximum park area per person but the most comfortable way of obtaining restorative resources in a short time.

6.3. Neighbourhood greening for proximity

In our data, almost 84% of respondents had green-space preferences, while 73% preferred parks close to home. It means that during restricted periods, local parks and nearby green spaces were especially significant as potential sites for short visits. Such a result is important for planning public greenery in Jeddah because, firstly, parks in this city are unevenly distributed, and, secondly, the high temperature in the city requires a relatively short trip to obtain restorative resources. Consequently, for crisis periods, it is necessary not only to ensure accessibility of large parks but to ensure the proximity of smaller green sites.

An important aspect of neighbourhood greening in Jeddah involves the role of residential courtyards. In this city, they occupy about 24% of green spaces and are especially appreciated in crisis periods, including those in which park visitation is low. Courtyards, however, cannot replace the traditional parks but can relieve their pressure, supplement the restorative function of parks, and be a suitable environment for elderly people. Therefore, park planning in Jeddah should include residential greening initiatives.

6.4. Family-compatible low-density sociability

Another aspect of park use during the mobility restrictions is the family-based social character of park visits. The fact is that almost two-thirds of respondents indicated that they missed the opportunity to gather with friends and family members. In addition, nearly 70% agreed that friends and family enjoyed these parks. At the same time, this result does not mean that in the pandemic, people preferred overcrowded social visits to parks. On the contrary, this implies that social connections and family-friendly environments remained essential even in conditions of restrictive measures.

Thus, the planning implication is the necessity to ensure the ability of families to communicate in parks while observing social distancing measures. Designing separate family spaces and family-friendly pathways with sufficient spacing is crucial to ensure sociability without crowding and discomfort.

6.5. Equity-sensitive comfort of green spaces

From an equity perspective, it is important to mention higher importance ratings by females and older residents in Jeddah. The female respondents gave parks an average rating of 4.76 on the five-point scale, whereas male respondents gave parks only 4.26. In addition, the age category rated parks quite high, giving a median rating of 4.53. All these results indicate that green spaces are very important not only for entertainment but for many other functions, especially in cases of restriction periods.

From an equity perspective, the park planner should pay special attention to comfort aspects that are important for women, older residents, and caregivers. Specifically, it includes shading, benches, smooth surfaces, visibility, lighting, clear boundaries, clean surfaces, and other amenities that increase the comfort of green spaces. The median regression also allows us to identify specific functions of parks for women, elderly individuals, and educated residents. Women valued walking, experiencing nature, and staying in a fresh environment. Elderly individuals rated walking, experiencing nature, and feeling refreshed highly. Finally, educated individuals associated spending time with children in greenery and walking in it positively.

6.6. Alignment with international evidence

The results obtained in this paper may be considered a part of the broader literature on green spaces and pandemics. The results of studies conducted in Oslo and peri-urban Europe showed that park use increased when people sought

a natural environment [11, 37]. However, international and city-specific research also indicated that in cases when the government imposed restrictions or the risks associated with visits increased, park use decreased [14, 35]. Our results are also associated with the second group but with an additional nuance.

Specifically, in Jeddah, as in some other cases, people continued to appreciate the value of green spaces and their functions despite decreasing mobility. People continued to perceive parks as important and valuable for their health. The problem is that the parks became inaccessible under health restrictions because the distance and heat made visits more complicated. Thus, the Jeddah case shows the need for careful consideration of park accessibility during emergencies.

6.7. Operational considerations for managing future mobility restrictions

The data obtained allow us to draw some conclusions concerning the future management of green areas when mobility is again restricted. In our opinion, during such events, opening hours should be extended to the cool parts of the day: early morning and evening. In addition, it is recommended that seating opportunities be distributed throughout the park, not concentrated around its entrances. In addition, park planners should ensure a good condition of shade-covered trails in parks so that residents can take a restorative walk along shaded paths.

During the period of restrictions, communication with park users also requires specific planning. Residents should be provided with information about accessible and comfortable entry points, seating opportunities, and family-compatible zones. Complex rules should be avoided because they may decrease mobility. If the park is crowded and highly loaded, such as the Al Jamaa Garden, temporary measures can be taken to make entrances more numerous and distribute the zones for family activities. In the case of old parks, such as Al Masarah Garden, routine cleaning and maintenance can contribute greatly to park visits.

6.8. Restorative capacity beyond park area

One of the issues that park planners face regularly is the need to calculate green provision. Traditionally, such planning is based on calculating the park area per person. However, the results of the analysis of Jeddah indicate that this approach should be revised in emergencies when a large amount of park space becomes less important than usability. Restorative capacity is a term that is more appropriate to emergency park planning. Usability means that parks are easy to enter, there is sufficient shaded area, seating is plentiful, and paths are unobstructed.

In Jeddah, for example, large parks are crowded and poorly equipped. Small parks often lack green space due to their density. Nevertheless, parks that offer sufficient shade cover and seating options may become valuable green spots for rest. Thus, the concept of park usability in an emergency context should take into account not only the park size but also its design features and management decisions.

6.9. Park-specific planning implications

As follows from the obtained data, Al Masarah and Al Jamaa Gardens require distinct management approaches. In the case of the former, which is an older and less large garden, attention should be paid to ensuring usability and comfortable visits through shading, surface maintenance, bench provision, and safe access. Since the garden has existed since 2008, changes should be made in such a way as to preserve its image, which contributes to attachment.

The case of the latter requires a more intensive response because the load is larger. Therefore, more shading loops, alternative entry points, dispersed family-friendly zones, and clearly hierarchical pathways would be useful solutions to prevent excessive crowding. In addition, since 71% of pandemic visits to this garden were not longer than one hour, the management should promote such short stays. Consequently, this garden may require not large green spots but rather shaded resting spots for short visits.

Finally, this case requires a shift in the city's approach to park planning and management. The usual practice is planning parks after they become crowded or restricted. In Jeddah, park planning should not wait for such emergencies. Rather, green spaces should be designed with the ability to meet the restorative function during

crises. In this sense, urban parks in Jeddah can be considered public infrastructure, which performs the function of absorption of restorative demand when social and recreational activities are restricted.

6.10. Limitations and future research

It should be noted that the analysis in this paper relied on summarized data. This technique is suitable for identifying a strong signal in the data, but it cannot help with measuring the probability of multivariate interaction or calculating the confidence interval. In addition, the two-park sample restricts the generalization of the data to peripheral green areas and various settings. To overcome these limitations, future research should combine questionnaire surveys with GIS analysis, direct observation of visitors, heat mapping, and longitudinal indicators.

7. Conclusion

As can be concluded, the reduced park visitation during mobility restrictions does not reflect lower public demand. On the contrary, the findings presented in this paper indicate that park access is significantly impaired by mobility restrictions. The no-visit shares reached 66% for Al Masarah and 68% for Al Jamaa Gardens. Pandemic visits were characterized by short one-hour stays. The psychosocial dependence on parks was manifested in 67% of the surveyed residents' strong feelings about missing parks, 79% of respondents associating them with stress relief, 81% believing that they are sufficient for needs, and 86% thinking that parks are important for mental health.

The high values of the Restorative Access Demand Index imply that both gardens have high park planning urgency during restrictions. Specifically, the Al Jamaa Garden has a slight advantage due to higher load and shorter visits. The Al Masarah Garden, which is older, has high importance due to familiarity and attachment. Thus, the main conclusion to be drawn is not that only one park requires action. Both of them require particular measures aimed at ensuring comfortable short-term visits.

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