

Original Article

# Senior Citizens and Park Landscape Features: A Well-Being Framework

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**Abstract** - Public parks are vital for the well-being of senior citizens, offering spaces for social engagement, physical activity, and mental rejuvenation. This study explores how specific park landscape features contribute to the well-being of seniors. Using a survey of 198 elderly individuals in Noida, the research identifies key features that promote mental, physical, and social well-being. The findings reveal significant positive associations: green spaces enhance mental well-being, accessible walking paths improve physical well-being, and social interaction spaces boost social well-being. The study proposes a well-being framework for parks tailored to senior citizens. The results emphasize the importance of maintaining and enhancing green spaces, walking paths, and social interaction areas in parks. These insights provide actionable recommendations for urban planners and policymakers to design age-friendly parks that support the comprehensive well-being of senior citizens, ultimately promoting healthier and more active aging populations.

**Keywords** - Senior citizens, Park landscape features, Well-being, Urban planning, Age-friendly environments.

## 1. Introduction

Public parks are integral to urban environments, offering spaces for recreation, relaxation, and social interaction. For senior citizens, these green spaces are particularly valuable, providing opportunities for physical activity, social engagement, and mental rejuvenation. Such activities are crucial for maintaining health and well-being in older age (Chiesura, 2004). The health benefits of green spaces are widely recognized, attributed to their inherent natural features (Bai et al., 2024). Despite the acknowledged benefits of parks, there exists a lack of comprehensive research focusing on how particular landscape features within parks contribute to the well-being of senior citizens. This study aims to fill this existing gap by exploring the relationship between park landscape features and the well-being of senior citizens and designing a well-being framework for park environments tailored to their needs. The research focuses on identifying key features that promote mental well-being, assessing the association between accessible walking paths and physical well-being, and evaluating the impact of social interaction spaces on social well-being. While the benefits of green spaces and parks for the general population are well-documented, there is limited research focusing specifically on the needs and preferences of senior citizens in park environments. Most studies provide a broad overview of park benefits without examining the distinct landscape features that enhance the well-being of older adults. Furthermore, there is a paucity of empirical evidence regarding the influence of these characteristics on various aspects of well-being, such as

physical, mental, and social health (Sugiyama & Thompson, 2007; Bedimo-Rung et al., 2005). This research seeks to address the aforementioned gap through an in-depth examination of the engagement of elderly individuals with elements of park landscapes and the impact on their subjective well-being, providing specific suggestions for designing parks that cater to an aging population. To address this gap, the following objectives were proposed.

## 2. Objectives

- To identify the key park landscape features that are most beneficial for the mental well-being of senior citizens.
- To assess the association between accessible walking paths in parks and the physical well-being of senior citizens.
- To evaluate the impact of social interaction spaces in parks on the social well-being of senior citizens.

## 3. Hypothesis

The presence of well-designed park features is significantly associated with the overall well-being of senior citizens.

## 4. Literature Review

Interaction Between Natural Environments and Human Well-Being

The association between natural surroundings and human welfare has been extensively examined in academic literature.



The Biophilia Hypothesis and Attention Restoration Theory (ART) are among the theories that provide a solid framework for comprehending these connections. Wilson (1984) introduced the Biophilia Hypothesis, which proposes that individuals possess an inherent inclination towards nature, leading to a significant enhancement in their psychological well-being. Environments like parks, characterized by lush greenery, water elements, and natural scenery, foster this intrinsic bond, resulting in better mental health and emotional well-being, especially in older individuals. Further evidence indicates that individuals who have a stronger connection to nature experience lower levels of stress and anxiety with an increased frequency of visits to public green spaces. However, this association is less pronounced for individuals with a weaker connection to nature (Chang et al., 2024).

Kaplan and Kaplan (1989) formulated the ART theory, which argues that natural settings have a rejuvenating impact on mental exhaustion and stress, consequently enhancing cognitive functions and emotional wellness. This theory emphasizes the significance of nature in improving focus, mood, and overall cognitive performance. For older adults, exposure to park settings can provide revitalizing encounters that reduce stress levels and facilitate mental clarity and relaxation. Delgado-Serrano et al. (2024) highlight the necessity of a nuanced understanding of how green spaces affect public health, customized to the specific characteristics of each city. It emphasizes the importance for urban planners to consider these factors to maximize the health benefits of green spaces.

#### **4.1. Environmental Gerontology and Age-Friendly Environments**

Environmental gerontology emphasizes the importance of friendly age environments that accommodate the physical, social, and psychological needs of older adults. Well-designed environments can improve the quality of life for older adults by promoting independence, social interaction, and physical activity (Lawton, 1983). In the context of public parks, environmental gerontology suggests that certain landscape features can significantly impact the well-being of senior citizens by creating supportive and accessible spaces.

Numerous research studies have indicated that the presence of green areas and recreational parks can result in heightened physical activity, social engagement, and psychological tranquillity among the elderly demographic (Sugiyama & Thompson, 2007; Bedimo-Rung et al., 2005). Attributes such as easily reachable walking trails, seating facilities, and communal gathering spots are especially esteemed by senior individuals and play a role in enhancing their overall quality of life (Sugiyama et al., 2008). Nevertheless, a conspicuous absence exists in the academic literature concerning the specific natural environment characteristics that offer the most advantages for older adults. Current research frequently concentrates on the general

utilization of parks or the advantages of green areas, overlooking the examination of distinct features that render parks more accessible and pleasurable for the elderly population.

#### **4.2. Specific Landscape Features and Well-Being of Senior Citizens**

Humans have evolved in natural environments over a long period and have adapted to them. In urban structures, green spaces are essential landscapes that provide natural environments and enhance various life experiences (Jabbar et al., 2021). During the COVID-19 pandemic, older adults engaged with nature through garden views, potted plants, and walks in nearby parks, providing essential opportunities for exercise, social interaction, and routine maintenance, thereby boosting their mental well-being (Guzmán et al., 2022). Natural landscape features like trees and flowers contribute to healthy aging by supporting leisure activities and social relations, enhancing health perceptions, and reducing the need for aid (Sánchez-González et al., 2018).

Many urban parks, however, exhibit a lack of age-appropriate designs, which play a crucial role in ensuring the safety, comfort, and quality of activities for older individuals (Huang et al., 2022). The incorporation of therapeutic landscape designs that combine cognitive challenges with safe, age-specific elements can further enhance psychological rejuvenation and stress alleviation (Marques et al., 2020). Visual landscape suitability of recreational areas, taking into account factors such as visibility and water ratio view, is paramount for the mental well-being of the elderly, as well-designed spaces are associated with enhanced physical and mental health outcomes (Yu et al., 2021).

Accessibility to urban parks, particularly at regional scales and via walking, significantly impacts older adults' anxiety and depression levels, highlighting the importance of spatial accessibility in park design (Marzban et al., 2022). Inclusive landscape designs that acknowledge diverse social, cultural, and ethnic orientations can facilitate better health and social connectivity for older adults (Zhao et al., 2022). Finally, a holistic approach to park quality, involving co-design with local communities, ensures that parks provide relevant benefits and foster a sense of ownership and agency among users, thereby enhancing mental well-being (McIntosh et al., 2021).

#### **4.3. Accessible Walking Paths and Physical Well-Being**

Accessible walking paths in parks are significantly associated with the physical well-being of senior citizens. Research indicates that urban parks with good walkability and accessible paths encourage older adults to engage in physical activities, which is crucial for maintaining their physical health and reducing anxiety and depression (Lin et al., 2023; Wojnowska-Heciak et al., 2022). Research conducted in Beijing revealed that the accessibility of regional parks, particularly through walking, had the most significant impact

on alleviating depression among the elderly (Zhao et al., 2022). Similarly, in Harbin, China, the accessibility of parks for walking was positively associated with increased levels of physical activity during leisure time among older individuals, especially in the winter season (Pramanik & Sharma, 2023).

Furthermore, the existence of well-maintained and easily accessible walking paths within parks can serve as a motivator for older adults to visit parks more frequently, thus enhancing their overall well-being (Petrunoff et al., 2021; Chen et al., 2022). In Finland, higher recognized walkability was connected to greater engagement in physical activities among the elderly, highlighting the significance of subjective perceptions of accessibility (Lak et al., 2023).

The quality of public open spaces, which includes appealing natural features and adequate room for social interactions, plays a crucial role in fostering emotional and psychological well-being in older individuals (Tuomola et al., 2022). Collaborative Park design involving input from older adults and individuals with disabilities can further enhance accessibility and usability, ensuring that parks are welcoming and advantageous for all users (Yuan et al., 2022). Hence, enhancing the walkability and accessibility of urban parks emerges as a promising approach to enhance the physical well-being of senior citizens, thereby contributing to their active aging and overall quality of life.

#### **4.4. Social Interaction Spaces and Social Well-Being**

Jahangir (2018) proposes that urban parks and green spaces offer elderly individuals the chance to enhance community connections and social cohesion, participate in simple physical activities, unwind, and occasionally seek solace. These public areas facilitate the gathering of elderly men in localities, creating opportunities for interaction and enhancing the potential for fostering social cohesion, which plays a crucial role in their social well-being.

He further contends that due to feelings of isolation and occasional neglect from society at large and even family members, elderly men engage in common activities in parks with their peers, making these spaces an essential aspect of their daily routines, thus contributing to a sense of well-being and positively impacting their overall health. With the escalating aging population in developing nations such as India, there is a pressing need to address the emerging challenges affecting the elderly to enhance the quality of their life and social well-being.

The evolving dynamics of family have resulted in a lack of sufficient attention and emotional support for the elderly from their relatives (Jahangir, 2018). These shifts have led to increased estrangement and seclusion of the elderly from both their families and society at large (Raju, 2011). Social isolation, estrangement, and loneliness are becoming more prevalent concerns within the changing family structure and

significantly influence the social well-being of the elderly (Girona & Lubben, 2003). These particular issues among the aging population have been linked to diminished health-specific life quality and decreased satisfaction levels with weaker community bonds (Cantor & Sanderson, 1999). Moreover, there are correlations between social isolation and various mental health issues, cognitive decline, suicide, distress, and premature mortality.

#### **4.5. Restorative Spaces and Overall Well-Being**

Urban green spaces play an important part in providing a variety of ecosystem services to urban dwellers and are recognized as a significant component of socio-environmental equity. In the context of elderly individuals, urban green spaces play a critical role in promoting health and overall quality of life by presenting openings for physical exercise as well as social engagement, being perceived as venues for social interactions.

A research endeavor conducted in Berlin, Germany, investigated the visitation behaviors of older individuals to urban green spaces by analyzing a comprehensive dataset encompassing park visitation trends, demographic attributes, and social connectivity patterns (Enssle et al., 2020). The investigation unveiled that older adults with robust social ties exhibit a higher propensity to visit urban parks on a regular basis in contrast to individuals with restricted social engagements in their everyday schedules.

Moreover, a self-assessed state of good health was recognized as a determinant leading to enhanced frequency of park visitations. These outcomes feature the significance of amalgamating socio-environmental justice principles with urban ecosystem services to safeguard the well-being of older populations.

Landscape designs with a focus on cognitive activities and incorporating age-appropriate features play a crucial role in enhancing psychological well-being and alleviating stress, as suggested by Marques et al. (2020). The visual appropriateness of recreational areas, taking into account aspects such as visibility and water features, is vital for the mental health of older individuals, as indicated by Yu et al. (2021), where well-planned areas are associated with better overall physical and mental health outcomes.

Accessibility to urban parks, particularly at regional scales and via walking, significantly impacts older adults' anxiety and depression levels, highlighting the importance of spatial accessibility in park design (Marzban et al., 2022). Inclusive landscape designs that acknowledge diverse social, cultural, and ethnic orientations can facilitate better health and social connectivity for older adults (Zhao et al., 2022). A holistic approach to park quality, involving co-design with local communities, ensures that parks provide relevant benefits and foster a sense of ownership and agency among

users, thereby enhancing mental well-being (McIntosh et al., 2021). Parks should be designed to include a variety of natural features such as water features, trees, gardens, and wildlife habitats to create a serene and restorative environment.

Promoting activities that enhance the connection with nature, such as bird watching, gardening programs, and nature walks, can foster a sense of well-being. Creating designated quiet zones within parks, such as meditation gardens or secluded natural areas, where senior citizens can relax and experience mental restoration, and designing areas with soothing visual and auditory stimuli, such as flowing water, wind chimes, and diverse plant life, can help alleviate mental fatigue and stress.

## 5. Methodology

The study implements a mixed-methods approach, combining quantitative as well as qualitative methodologies to investigate the relationship between park landscape features and the well-being of senior citizens.

### 5.1. Quantitative Data Collection

A structured survey questionnaire was formulated to collect feedback responses from senior citizens regarding the impact of parks and natural environments on their mental well-being. The responses were collected using a 5-point Likert scale. All ethical guidelines were strictly followed, and prior consent was obtained from the participants verbally.

Data collection was conducted offline, employing a random sampling method. A minimum of 15 samples were collected from each selected park, with a total of seven parks chosen for the study based on the selected criteria. These parks were chosen based on their highest site area and diverse characteristics. There are three divisions in Noida, and a minimum of two parks were selected from each division based on the selected criteria.

The survey questionnaire consisted of 21 questions, which included three demographic questions, eight questions related to the proposed hypotheses, questions from the WHO-5 Well-Being Index, and five open-ended questions. This comprehensive approach ensured that the collected data provided a detailed understanding of the senior citizens' experiences and perceptions regarding the impact of park environments on their health.

A total of 247 sample responses were collected over a two-month period from February 7 to April 7, 2024. After data cleaning, 198 responses were selected for the final sample. Incomplete survey questionnaires were not considered for further statistical testing. Only individuals aged 60 and above were included in the final sample. The validity of the data sample was ensured by following Roscoe's (1969) 'rule of thumb,' which recommends that when the population size is unknown, an appropriate sample size should range from more than 30 to less than 500.

### 5.2. Quantitative Data Analysis

Quantitative data were analyzed using various statistical tests to examine the associations between park features and the well-being of senior citizens. Chi-square tests of independence were applied to test hypotheses regarding relationships between different park features and well-being indicators. Additionally, the Phi coefficient, as well as Cramer's V were calculated to measure the strength of associations.

To examine these links, logistic regression analysis predicted favorable well-being outcomes depending on park elements. This allowed us to control for age, gender, and socioeconomic level. We also examined whether park features affected well-being differently among senior citizen categories by introducing interaction factors in the regression models. These advanced statistical methods explain how park design can improve elderly individuals' well-being.

### 5.3. WHO-5 Well-Being Index Analysis

The WHO-5 Well-Being Index was used to measure the overall well-being of the respondents. The frequency distribution and central tendency measures (mean, median, and mode) of the responses were calculated to understand the overall well-being trends among the senior citizens who frequent urban parks.

### 5.4. Qualitative Data Collection and Analysis

The five inquiries without limitations integrated into the questionnaire facilitated participants in offering comprehensive insights regarding their encounters and recommendations for enhancing park facilities. Through the utilization of thematic analysis, these replies were scrutinized to recognize prevailing patterns and understandings concerning the influence of park attributes on the welfare of elderly individuals.

## 6. Results

### 6.1. Demographic Characteristics and Park Visit Frequency

Figures 1, 2, and 3 collectively provide a detailed overview of the demographic characteristics and park visit frequency among the surveyed senior citizens. Figure 1 illustrates the age distribution, showing that the largest group of respondents are aged 60-65 years (29.8%), followed by those aged 66-70 years (23.74%), 71-75 years (21.72%), 76-80 years (14.65%), and the smallest group being those aged 81 years and above (10.1%). Figure 2 depicts the gender distribution, where males constitute a majority of 57.58% of the respondents, while females make up 42.42%. Figure 3 presents the frequency of park visits among the respondents, with the majority visiting daily (39.39%). This is followed by those visiting 2-3 times a week (19.7%), weekly (16.16%), bi-weekly (14.65%), and monthly (10.1%). These figures collectively highlight the diverse age range and gender representation within the sample, as well as the varying patterns of park usage among senior citizens.

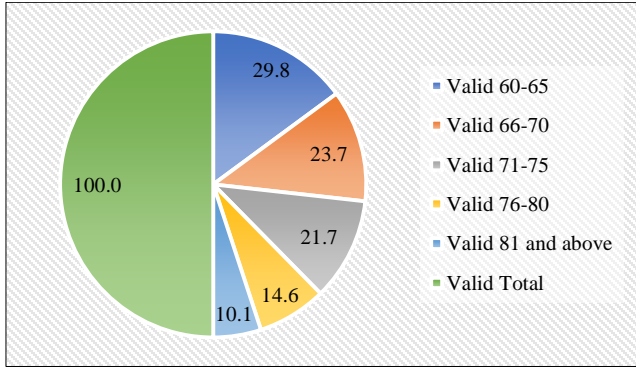


Fig. 1 Demographic information

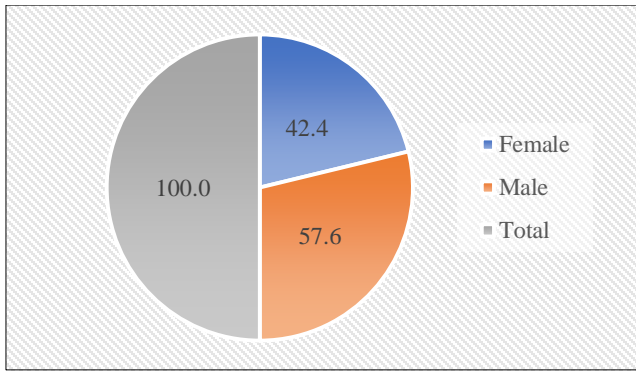


Fig. 2 Gender

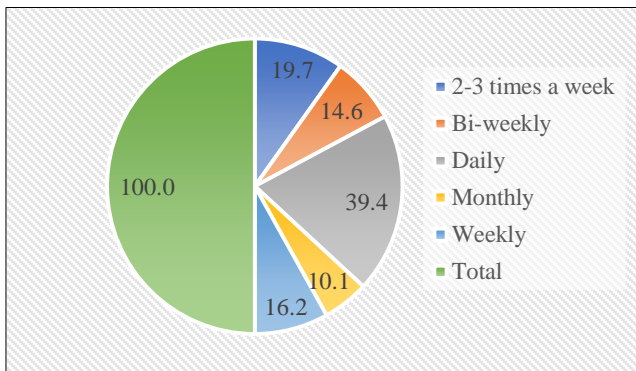


Fig. 3 Frequency of park visits

### 6.2. Green Spaces and Mental Well-Being

Null Hypothesis (H0): There is no significant association between the availability of green spaces in parks and the mental well-being of senior citizens. Alternative Hypothesis (H1): There is a significant association between the availability of green spaces in parks and the mental well-being of senior citizens.

The chi-square test results show a Pearson Chi-Square value of 44.977 with a p-value of .000 and a Likelihood Ratio value of 44.293 with a p-value of .000, both of which are statistically significant ( $p < .05$ ). These results indicate a significant association between the availability of green spaces and the mental well-being of senior citizens.

Table 1. Chi-Square tests for availability of green spaces and improvement in mental well-being

	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	44.977 <sup>a</sup>	16	.000
<b>Likelihood Ratio</b>	44.293	16	.000
<b>No. of Valid Cases</b>	198		
a. 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 5.98.			

Table 2. Symmetric measures for availability of green spaces and improvement in mental well-being

		Value	Approx. Sig.
<b>Nominal by Nominal</b>	Phi	.477	.000
	Cramer's V	.238	.000
<b>N of Valid Cases</b>		198	

Additionally, the Phi value (.477) and Cramer's V value (.238) demonstrate a moderate association, further confirming the relationship. Therefore, the null hypothesis (H0) is rejected, and the alternative hypothesis (H1) is accepted. This analysis reveals that senior citizens who perceive a good or very good availability of green spaces report higher levels of improvement in their mental well-being.

Conversely, those who perceive poor or very poor availability of green spaces tend to report lower levels of mental well-being improvement. The findings highlight the importance of green spaces in enhancing the mental health of senior citizens, suggesting that better availability and quality of green spaces in parks can significantly contribute to their well-being.

### 6.3. Accessible Walking Paths and Physical Well-Being

Table 3. Chi-Square tests for accessibility of walking paths and encouragement to engage in physical activity

	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	36.611 <sup>a</sup>	16	.002
<b>Likelihood Ratio</b>	37.940	16	.002
<b>No. of Valid Cases</b>	198		
a. 2 cells (8.0%) have expected count less than 5. The minimum expected count is 4.50.			

**Table 4. Symmetric measures for accessibility of walking paths and encouragement to engage in physical activity**

		Value	Approx. Sig.
<b>Nominal by Nominal</b>	Phi	.430	.002
	Cramer's V	.215	.002
N of Valid Cases		198	

The Chi-Square test results reveal a Pearson Chi-Square value of 36.611 with a p-value of .002 and a Likelihood Ratio value of 37.940 with a p-value of .002. Both p-values are less than the significance level of .05, indicating a statistically significant association between the accessibility of walking paths and the encouragement to engage in physical activity among senior citizens.

This statistical evidence supports the alternative hypothesis (H2) and leads to the rejection of the null hypothesis (H0). The Phi coefficient is .430, and Cramer's V is .215, both with a significance level of .002. These values indicate a moderate association between the accessibility of walking paths and the encouragement to engage in physical activity. The significant p-values affirm the strength and importance of this relationship.

**6.4. Social Interaction Spaces and Social Well-Being**

**Table 5. Chi-Square tests for availability of social interaction spaces and contribution to social well-being**

	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	56.424 <sup>a</sup>	16	.000
<b>Likelihood Ratio</b>	64.156	16	.000
<b>N of Valid Cases</b>	198		
a. 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 5.50.			

The Chi-Square test results show a Pearson Chi-Square value of 56.424 with a p-value of .000 and a Likelihood Ratio value of 64.156 with a p-value of .000. Both p-values are significantly less than the significance level of .05, indicating a statistically significant association between the availability of social interaction spaces in parks and the contribution to social well-being among senior citizens.

This strong statistical evidence supports the alternative hypothesis (H3) and leads to the rejection of the null hypothesis (H0).

**Table 6. Symmetric measures for the availability of social interaction spaces and contribution to social well-being**

		Value	Approx. Sig.
<b>Nominal by Nominal</b>	Phi	.534	.000
	Cramer's V	.267	.000
N of Valid Cases		198	

**6.5. Restorative Spaces and Overall Well-Being**

**Table 7. Tests for the presence of restorative spaces and feeling refreshed and stress reduction**

	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	38.214 <sup>a</sup>	16	.001
<b>Likelihood Ratio</b>	43.661	16	.000
<b>N of Valid Cases</b>	198		
a. 3 cells (12.0%) have an expected count of less than 5. The minimum expected count is 4.24.			

The Phi coefficient is .534, and Cramer's V is .267, both with a significance level of .000. These values indicate a strong association between the availability of social interaction spaces and the social well-being of senior citizens. The significant p-values further confirm the robustness and importance of this relationship.

The Chi-Square test results indicate a Pearson Chi-Square value of 38.214 with a p-value of .001 and a Likelihood Ratio value of 43.661 with a p-value of .000. Both p-values are significantly below the .05 threshold, suggesting a statistically significant association between the presence of restorative spaces in parks and the feeling of being refreshed and experiencing stress reduction among senior citizens.

Despite a few cells having expected counts less than 5, the overall significance of the chi-square test results supports the alternative hypothesis (H4) and leads to the rejection of the null hypothesis (H0).

**Table 8. Symmetric measures for the presence of restorative spaces and feeling refreshed and stress reduction**

		Value	Approx. Sig.
<b>Nominal by Nominal</b>	Phi	.439	.001
	Cramer's V	.220	.001
N of Valid Cases		198	

The Phi coefficient is .439, and Cramer’s V is .220, both with a significance level of .001. These values indicate a moderate association between the presence of restorative

spaces and the feelings of being refreshed and experiencing stress reduction. The significant p-values further validate the strength and importance of this relationship.

6.6. WHO-5 Well-Being Index Tables

Table 9. I have felt cheerful and in good spirits

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
0 At	19	9.6	9.6	9.6
1 Some	33	16.7	16.7	26.3
2 Less	32	16.2	16.2	42.4
3 More	26	13.1	13.1	55.6
4 Most	50	25.3	25.3	80.8
5 All	38	19.2	19.2	100.0
Total	198	100.0	100.0	

Table 10. I have felt calm and relaxed

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
0 (At no time)	22	11.1	11.1	11.1
1 (Some of the time)	29	14.6	14.6	25.8
2 (Less than half of the time)	37	18.7	18.7	44.4
3 (More than half of the time)	30	15.2	15.2	59.6
4 (Most of the time)	36	18.2	18.2	77.8
5 (All of the time)	44	22.2	22.2	100.0
Total	198	100.0	100.0	

Table 11. I have felt active and vigorous

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
0 (At no time)	19	9.6	9.6	9.6
1 (Some of the time)	26	13.1	13.1	22.7
2 (Less than half of the time)	35	17.7	17.7	40.4
3 (More than half of the time)	37	18.7	18.7	59.1
4 (Most of the time)	35	17.7	17.7	76.8
5 (All of the time)	46	23.2	23.2	100.0
Total	198	100.0	100.0	

Table 12. I woke up feeling fresh and rested

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
0 (At no time)	21	10.6	10.6	10.6
1 (Some of the time)	28	14.1	14.1	24.7
2 (Less than half of the time)	7	3.5	3.5	28.3
3 (More than half of the time)	37	18.7	18.7	47.0
4 (Most of the time)	61	30.8	30.8	77.8
5 (All of the time)	44	22.2	22.2	100.0
Total	198	100.0	100.0	

**Table 13. My daily life has been filled with things that interest me**

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
0 (At no time)	24	12.1	12.1	12.1
1 (Some of the time)	19	9.6	9.6	21.7
2 (Less than half of the time)	24	12.1	12.1	33.8
3 (More than half of the time)	32	16.2	16.2	50.0
4 (Most of the time)	42	21.2	21.2	71.2
5 (All of the time)	57	28.8	28.8	100.0
Total	198	100.0	100.0	

**6.7. WHO-5 Well-Being Index Analysis**

The analysis of the data collected using the WHO-5 Well-Being Index reveals insightful trends in the well-being of senior citizens who frequently visit urban parks. The frequency distribution for the item “I have felt cheerful and in good spirits” shows that a substantial number of respondents experienced cheerfulness quite frequently, with 25.3% feeling cheerful most of the time and 19.2% feeling cheerful all the time. Similarly, for “I have felt calm and relaxed,” the distribution indicates that 18.2% of respondents felt calm most of the time, and 22.2% felt calm all the time. These patterns reflect the positive impact of park environments on mental well-being. When examining the responses to “I have felt active and vigorous,” it is evident that a significant proportion of respondents (23.2%) felt active all the time, and another 17.7% felt active most of the time. This suggests that accessible and well-maintained walking paths and recreational areas in parks contribute positively to the physical activity levels of senior citizens. The item “I woke up feeling fresh and rested” shows that 30.8% of the respondents felt fresh most of the time, and 22.2% felt fresh all the time, indicating the restorative benefits of spending time in green spaces.

The responses to “My daily life has been filled with things that interest me” further reinforce the positive impact of park environments, with 21.2% of respondents indicating that they were interested in their daily life most of the time and 28.8% all the time. This highlights the role of parks in providing stimulating environments that can enhance engagement and interest in daily activities. The mean values for each of the items range around 3, indicating that, on average, respondents experienced these positive feelings more than half of the time. The median values of 3 or 4 and mode values of 4 or 5 further confirm that the central tendency of responses is skewed towards positive experiences, reflecting a generally high level of well-being among the respondents. These findings are crucial for urban planners and policymakers as they emphasize the importance of maintaining and improving park facilities to support the mental and physical health of senior citizens. Enhancing green spaces, walking paths, and social interaction areas in parks should be a priority to sustain these benefits. Additionally, developing community programs and activities that encourage the use of parks can further promote well-being among senior citizens. The results from this analysis present

actionable insights that inform better park design and urban planning strategies, ensuring that parks continue to serve as vital resources for enhancing the quality of life for older adults.

**7. Discussion on Open-Ended Questions Responses**

**7.1. Importance of Park Features for Mental Well-Being**

One senior citizen mentioned, “I love the walking trails because they are well-maintained and offer a peaceful environment for my morning walks. The trees and flowers along the paths make me feel connected to nature.” This assertion emphasizes the pivotal importance of natural components in enhancing mental wellness in accordance with the Biophilia Hypothesis. This hypothesis suggests that individuals possess an innate bond with the natural world that contributes to their psychological health (Wilson, 1984). The presence of trees and flowers not only beautifies the park but also provides sensory stimuli that can reduce stress and improve mood. Another senior citizen emphasized the importance of quiet spaces for mental relaxation, saying, “The benches near the pond are my favourite spots. They provide a serene place to sit and watch the birds. This area is important to me because it helps me relax and reflect.” This preference highlights the necessity of incorporating serene, contemplative areas within parks to offer mental respite. These findings are consistent with ART Theory, proposing that natural surroundings aid in rejuvenating cognitive abilities and alleviating mental exhaustion (Kaplan & Kaplan, 1989).

**7.2. Physical Well-Being and Accessible Walking Paths**

A recurring theme in the responses was the significant impact of accessible walking paths on physical well-being. One respondent stated, “I engage in brisk walking and jogging on the park’s trails. The well-maintained paths and scenic views support my activities by providing a safe and enjoyable environment.” This aligns with Environmental Gerontology, which emphasizes the need for age-friendly environments that promote physical activity among older adults (Lawton, 1983). Accessible walking paths facilitate not only physical exercise but also social interactions, contributing to overall health and well-being. Another participant mentioned, “I do yoga in the open grassy areas. The flat, spacious lawns are perfect for



laying out my mat and practicing in a peaceful setting.” This reflects the versatility of park spaces in accommodating various physical activities, thus encouraging regular exercise and maintaining physical fitness. The importance of such features is further supported by studies indicating that physical activity in natural settings significantly enhances physical and mental health (Sugiyama & Thompson, 2007).

**7.3. Social Well-Being and Interaction Spaces**

Social interaction emerged as a vital aspect of the park experience for many senior citizens. One respondent noted, “I interact with others in the community garden. This space encourages socializing as we work on our garden plots together.” This emphasizes the role of parks in fostering community engagement and social connections, which are crucial for social well-being. Social spaces within parks, such as community gardens, provide opportunities for interaction and cooperation, enhancing social bonds and reducing feelings of isolation (Jahangir, 2018). Another senior citizen included, “I join in on group exercise classes held in the open grassy areas. These activities bring people together and foster social interaction.” This highlights how structured activities in parks can facilitate social engagement, creating a sense of community and belonging. The significance of social interaction for mental and emotional health cannot be overstated, as it helps combat loneliness and promotes a sense of purpose (Gironda & Lubben, 2003).

**7.4. Restorative Spaces and Overall Well-Being**

Restorative spaces within parks were frequently cited as essential for overall well-being. One participant said, “The shaded seating areas are very important, especially during hot days. They provide a cool place to rest and chat with friends.” This indicates that shaded areas not only offer physical comfort but also serve as social hubs where seniors can relax and interact. Such features are crucial in making parks inclusive and enjoyable for older adults, supporting their physical and social needs. Another senior citizen emphasized, “I feel physically better and mentally refreshed.

The open spaces for exercise and the clean environment are crucial for my health.” This reflects the multifaceted benefits of parks, where well-maintained environments contribute to both physical and mental health. The holistic design of parks, incorporating natural elements, exercise areas, and social spaces, aligns with theories of Environmental Gerontology and Biophilia, providing comprehensive benefits to senior citizens (Lawton, 1983; Wilson, 1984).

**7.5. Suggested Improvements and Accessibility**

Participants also provided valuable suggestions for improving park accessibility and enjoyment. One senior citizen recommended, “I would like to see more benches along the walking trails to provide resting spots. It would make the park more accessible for those who need frequent breaks.” This suggestion underscores the importance of considering the

physical limitations of older adults in park design. Ensuring adequate seating along walking paths can significantly enhance the usability of parks for seniors, promoting more frequent visits and physical activity. Another respondent proposed, “Adding more lighting in certain areas would make the park safer and more accessible in the early mornings and evenings.” This recommendation highlights the need for safety features that can extend the usability of parks beyond daylight hours, making them more accessible and inviting for seniors. Enhancing lighting in parks can also improve safety perceptions, encouraging more seniors to use these spaces regularly.

**7.6. Overall Impact on Mental Health**

Many respondents highlighted the profound impact of parks on their mental health. One senior citizen said, “I consider spending time in parks extremely important for my mental health. The natural environment helps me de-stress and feel more at peace.” This sentiment reflects the therapeutic benefits of natural environments, which can significantly reduce stress and improve mental clarity. Parks provide a sanctuary where seniors can escape the stresses of daily life and rejuvenate mentally and emotionally.

Another participant stated, “Being in the park is crucial for my mental well-being. It provides a break from the hustle and bustle of daily life and offers a serene space where I can clear my mind and reflect.” This highlights the role of parks in providing mental respite and promoting mindfulness. The tranquil setting of parks allows for reflection and mental rejuvenation, contributing to overall mental health and well-being.

**7.7. Well-Being Framework for Senior Citizens in Parks**

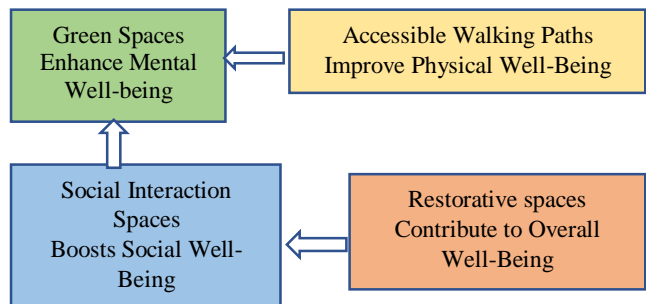


Fig. 1 Framework for senior citizens in park

**7.8. Interpretation of the Well-Being Framework for Senior Citizens in Parks**

The Well-Being Framework for Senior Citizens in Parks, as depicted in the diagram, outlines four key landscape features that significantly contribute to the well-being of senior citizens. Each feature addresses a specific dimension of well-being: mental, physical, social, and overall well-being. The interconnected nature of these features demonstrates how they collectively enhance the overall park experience for senior citizens.

### **7.9. Green Spaces**

**Enhance Mental Well-Being:** Green spaces, which include elements like trees, flowers, and gardens, are crucial for promoting mental well-being among senior citizens. The natural components offer sensory inputs capable of alleviating stress, enhancing the emotional state, and nurturing feelings of calmness and relationships with the natural world. This is in accordance with the Biophilia Hypothesis, which suggests that individuals possess a natural inclination towards nature that boosts mental well-being (Wilson, 1984).

### **7.10. Accessible Walking Paths**

**Improve Physical Well-Being:** Accessible walking paths are essential for encouraging physical activity among senior citizens. Well-maintained and easily navigable paths provide a safe and enjoyable environment for walking, jogging, and other physical activities. This physical engagement helps maintain fitness, mobility, and overall physical health, reducing the risks associated with sedentary lifestyles (Sugiyama & Thompson, 2007).

### **7.11. Social Interaction Spaces**

**Boost Social Well-Being:** Social interaction spaces, such as community gardens, seating areas, and group activity zones, are vital for enhancing social well-being. These areas facilitate social engagement, allowing senior citizens to connect with peers, participate in group activities, and form social networks. These social interactions are essential for combating loneliness and fostering a sense of community and belonging (Jahangir, 2018).

### **7.12. Restorative Spaces**

**Contribute to Overall Well-Being:** Restorative spaces within parks, which may include shaded seating areas, quiet zones, and meditation gardens, provide environments for mental and physical relaxation. These spaces offer opportunities for rest, reflection, and mental restoration, contributing to overall well-being by reducing stress and promoting a sense of peace and rejuvenation (Kaplan & Kaplan, 1989).

### **7.13. Integration and Synergy**

The framework illustrates the synergistic relationship between these features. For instance, accessible walking paths not only improve physical well-being but also lead to social interactions as individuals engage with others along the paths. Similarly, green spaces enhance mental well-being and contribute to the restorative quality of the park environment. Social interaction spaces, while boosting social well-being, also provide mental and emotional support through community engagement. By incorporating these elements into park design, urban planners and policymakers can create environments that holistically support the well-being of senior citizens. This framework emphasizes the need for a comprehensive approach to park design that addresses multiple dimensions of well-being, ensuring that parks are inclusive, accessible, and beneficial for the aging population.

### **7.14. Overall Discussion**

This investigation highlights the crucial role played by park landscape characteristics in enhancing the quality of life of elderly individuals. Through a comprehensive examination of the interactions between senior citizens and park landscape features, this study fills a research gap by delving into the specific components within parks that contribute to the well-being of the elderly population. The primary goals of this research were to pinpoint the key park landscape features that promote mental well-being, to recognize landscape features in community parks of Noida that cater to senior citizens, to evaluate the relationship between accessible walking paths and physical well-being, to assess the impact of social interaction spaces on social well-being, to determine the influence of restorative spaces on overall well-being, and to develop a well-being framework customized to meet the needs of senior citizens.

### **7.15. Theoretical Implications and Findings**

The study's findings are grounded in several theoretical frameworks, including the Biophilia Hypothesis, Attention Restoration Theory (ART), and Environmental Gerontology. These frameworks collectively underscore the importance of natural environments in fostering psychological, physical, and social well-being among senior citizens.

### **7.16. Key Park Landscape Features and Mental Well-Being**

The first objective was to identify key park landscape features that benefit mental well-being. The findings revealed a significant association between the availability of green spaces and the mental well-being of senior citizens, supported by the Biophilia Hypothesis, which suggests that human affinity for nature enhances psychological health (Wilson, 1984). The chi-square test results (Pearson Chi-Square value of 44.977, a p-value of .000) and the Phi and Cramer's V values (.477 and .238, respectively) indicated a moderate association. These results confirm that senior citizens who perceive good availability of green spaces report higher levels of mental well-being, aligning with ART, which posits that natural environments help restore cognitive function and reduce mental fatigue (Kaplan & Kaplan, 1989).

### **7.17. Senior Citizen-Friendly Landscape Features in Community Parks of Noida**

The second objective was to identify senior citizen-friendly landscape features in the community parks of Noida. The study found that specific park features such as green spaces, accessible walking paths, social interaction areas, and restorative spaces significantly contribute to the well-being of senior citizens. This aligns with the Biophilia Hypothesis and ART, which suggest that natural environments foster psychological health and restore cognitive function (Wilson, 1984; Kaplan & Kaplan, 1989). These findings emphasize the importance of these features in making parks more accessible, enjoyable, and beneficial for older adults.

### **7.18. Accessible Walking Paths and Physical Well-Being**

The third objective was to assess the association between accessible walking paths and physical well-being. The study found a significant relationship between the accessibility of walking paths and the encouragement to engage in physical activity among senior citizens. The chi-square test results (Pearson Chi-Square value of 36.611, p-value of .002) supported this hypothesis, with moderate association values (Phi value of .430 and Cramer's V value of .215). These findings emphasize the importance of well-designed walking paths, which facilitate physical exercise and social interactions, contributing to overall health and well-being, consistent with Environmental Gerontology literature (Lawton, 1983).

### **7.19. Social Interaction Spaces and Social Well-Being**

The fourth objective was to evaluate the impact of social interaction spaces on social well-being. The findings demonstrated a strong association between the availability of social interaction spaces and social well-being. The chi-square test results (Pearson Chi-Square value of 56.424, a p-value of .000) and the symmetric measures (Phi value of .534, Cramer's V value of .267) indicated that social interaction spaces significantly enhance social cohesion and reduce isolation among senior citizens. This aligns with existing literature highlighting the critical role of social interaction in promoting mental health and community ties (Jahangir, 2018).

### **7.20. Restorative Spaces and Overall Well-Being**

The fifth objective was to determine the effect of restorative spaces on overall well-being. The findings supported this hypothesis, showing a significant association between the presence of restorative spaces and feelings of being refreshed and experiencing stress reduction. The chi-square test results (Pearson Chi-Square value of 38.214, p-value of .001) confirmed this, with moderate association values (Phi value of .439 and Cramer's V value of .220). These results align with ART, suggesting that natural environments restore cognitive resources and reduce mental fatigue (Kaplan & Kaplan, 1989).

### **7.21. WHO-5 Well-Being Index and Open-Ended Questions**

The WHO-5 Well-Being Index analysis revealed insightful trends in the well-being of senior citizens who frequent urban parks. The majority of respondents reported high levels of cheerfulness, calmness, and feeling refreshed, indicating the positive impact of park environments on mental well-being. The mean values for each of the items ranged around 3, reflecting that, on average, respondents experienced positive feelings more than half of the time. Open-ended questions provided additional qualitative insights, emphasizing the importance of natural elements, accessible walking paths, social interaction spaces, and restorative areas. Respondents highlighted the benefits of trees, flowers, quiet spaces, and well-maintained paths for their mental and physical health. Social interaction areas like community

gardens and group exercise spaces were particularly valued for fostering social engagement and reducing feelings of isolation.

## **8. Key Findings**

- **Key Park Landscape Features and Mental Well-Being:** There is a significant positive association between the availability of green spaces in parks and the mental well-being of senior citizens.
- **Senior Citizen-Friendly Landscape Features in Community Parks of Noida:** Specific features such as green spaces, accessible walking paths, social interaction areas, and restorative spaces significantly contribute to the well-being of senior citizens.
- **Accessible Walking Paths and Physical Well-Being:** The presence of accessible walking paths is significantly associated with the physical well-being of senior citizens, encouraging physical activity and reducing anxiety and depression.
- **Social Interaction Spaces and Social Well-Being:** The availability of social interaction spaces in parks significantly enhances social cohesion and reduces isolation among senior citizens.
- **Restorative Spaces and Overall Well-Being:** Restorative spaces within parks are significantly associated with overall well-being, contributing to feelings of refreshment and stress reduction.

## **9. Implications**

- **Urban Planning and Policy:** Urban planners and policymakers should prioritize the inclusion of green spaces, accessible walking paths, social interaction areas, and restorative spaces in park designs. These features are crucial for creating age-friendly environments that support the well-being of senior citizens.
- **Community Engagement:** Involving senior citizens in the design and planning of park features can ensure that their specific needs are met, fostering a sense of ownership and increasing the usage of these spaces.
- **Public Health:** Enhancing Park features to promote physical activity, social interaction, and mental relaxation can have significant public health benefits, reducing healthcare costs associated with aging populations.

## **10. Limitations and Future Research**

While the study provides valuable insights, it has limitations that should be addressed in future research. The sample size, though adequate, was limited to parks in Noida, which may not represent the diversity of experiences in different geographical locations. Additionally, the study relied on self-reported data, which can be subject to biases. Future studies should consider a larger and more diverse sample and incorporate objective measures of well-being.

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