

Study on the Public Park Used by the Elderly in Old Urban Areas: Take the Survey of 3 Parks of Nanjing as an Example

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Abstract: Based on the investigation of three parks in high-density old urban areas of Nanjing, this study analyzes the current situation, characteristics, satisfaction and problems of the utilization of parks for the elderly in such area. The results show that, there is not much difference in the number of male and female elderly people in Nanjing's old urban area who use parks. The elderly usually arrive in the park within 20 minutes, and the transportation is mainly on foot, and the overall satisfaction of the park is relatively high. The main problems are park management and maintenance, sanitation and toilet installation. The findings of current studies can help relevant personnel involved in the design and park management to prioritize intervention through planning, design and management to satisfy the elderly in using the park.

1. Introduction

1.1 Research Background and Questions

After entering the 1990s, the aging process of Chinese society has gradually accelerated. It is expected that more than 20 percent of the population will be aged 65 and over by 2040. At the same time, there is a growing trend towards an aging population: the number of people aged 80 and over is increasing by 5 percent a year, to more than 74 million by 2040. ^[1]By the end of 2018, the registered elderly population aged 65 and above in Nanjing is 996, 500, accounting for 14.30% of the total population, which indicates that Nanjing has entered into a "deeply aging society". ^[2]

With the increasing degree of aging, the elderly become the main group of people who use the park. In order to spend their old age safely and enjoy their life, the elderly need to have some outdoor space for recreational activities and recreational activities. ^[3] But the existing park planning and design and facilities cannot meet the needs of the elderly. Therefore, it is necessary to study the needs of elderly people to use parks.

1.2 Previous Research

As a social welfare facility, urban parks should serve people of all levels and ages in the society. But at present, the planning and design of the garden consider the different needs of young people

and children more, and the design of the park to cater to the elderly is very rare. According to the survey results of the satisfaction degree of the elderly with the use of the park, the satisfaction degree only accounts for 39-61%,^[4] indicating that the current conditions such as park facilities and park space are far from the requirements of the elderly for the park. By studying several parks in Incheon of South Korea, Hyunsun Kim verified the effect of applying the guidelines of “elderly-friendly park design” to sites recommended by local governments, and concluded that the most inconvenient factor for the elderly in parks is the safety problem caused by walking speed.^[5]

In addition to the physical park environment suitable for aging, through the impact of the environment, researches on promoting the elderly’s positive adaptation to their aging has also obtained fruitful results. Another research perspective also extends to the social issues of fair use of green space, pointing out that parks are especially important for low-income inner-city seniors who do not have access to open and green Spaces.^[6]

2. Research Methods

2.1 Case Object

In this study, three parks in Nanjing were selected as the objects of study based on the following reasons:

- 1)The park attribute of this study is neighborhood park.
- 2)The regional population density is more than 5000 people /km, and the population over 60 years old accounts for more than 20%. They are Qinhuai district, Gulou district and Jianye district.
- 3)The year of completion of the park shall be more than 10 years, the area of the park is more than 20, 000 square meters, and there are more than three residential areas within a radius of 500m.
- 4) The environmental facilities shall meet the allocation standards of neighborhood parks.

According to this standard, three neighborhood parks, such as Zheng he park, Xiuqiu park and Nanhu park, were selected.

Table 1 Survey the Basic Situation of the Park

Park	Year	Area(km ²)	Nature park	Open time
Zhenghe Park	1985	2. 2	Community Park	All Day
Nanhu Park	2007	9. 1	Comprehensive Park	All Day
Xiuqiu Park	2004	9. 56	Comprehensive park	All Day

2.2 Questionnaire Survey

In order to understand the environmental preference and satisfaction of the elderly in using the park, a questionnaire survey was conducted. On November 3, 2019, 2020 and January 1, 2020, the survey will be conducted from 8 am to 5 PM, the inquiry method used was on-site inquiries. Considering that some elderly people are unable to complete the questionnaire independently due to the degeneration of their physical functions, a survey method combining the questionnaire distribution and on-site inquiry is adopted. A total of 300 questionnaires were issued and 300 were taken back. However, due to some elderly people's age and hearing impairment, some of the items were missing, and some of the items did not meet the requirements. A total of 283 valid questionnaires were used. The gender and age distribution are shown in Table 2. The content of the survey is the satisfaction of the park environment, divided into “satisfied”, “slightly satisfied”, “average”, “slightly dissatisfied”, “dissatisfied” five grades.

Table 2 Investigates the Age Distribution of the Elderly in the Park

Park	Age			Total
	60-64	65-74	>75	
Zhenghe park	35(38.5%)	43(47.2%)	13(14.3%)	91(100%)
Nanhu park	43(43.9%)	45(45.9%)	10(10.2%)	98(100%)
Xiuqiu park	37(39.8%)	49(52.7%)	8(8.6%)	94(100%)
Sum	115(40.6%)	137(48.4%)	31(11%)	283(100%)

3. Survey Results and Analysis

3.1 Survey on the Characteristics of Elderly People's Activities in Parks and Their Use of Parks (Table 3)

Through the investigation of the three parks, it is found that the elderly in the park activities have more in common. A large proportion of people choose to travel with friends and participate in organized group activities. It shows that the activities of the elderly have obvious agglomeration, and the park environment stimulates the enthusiasm of the elderly to participate in collective activities. Most elderly people like to spend time with their peers. For other people of different ages outside of small groups, they are also willing to be a viewer to watch other people's activities. There are rich activities in the senior citizens' park, mainly fitness activities. Social communication activities such as chatting are the main purposes for the elderly to go to the park. The park has become a place for them to communicate and express their emotions, corresponding to the “personal nature and external order compatible”, meaning beyond the physical space, becoming a poetic space. [7](P335)

Table 3 Survey of The Use of Seniors' Parks

Survey content	Park	Nanhu Park (N=98)		Zhenghe Park(N=91)		Xiuqiu Park (N=94)		Total
		Number	PCT	Number	PCT	Number	PCT	
Gender	male	52	53.1	45	49.5	49	52.1	51.6
	female	46	46.9	46	50.5	45	47.9	48.4
Age	60-64	43	43.9	35	38.5	37	39.8	40.6
	65-74	45	45.9	43	47.3	49	52.7	48.4
	>75	10	10.2	13	14.3	8	8.6	11
Family	Married or living alone	56	57.1	51	56.0	47	50.0	54.4
	living with children	38	38.8	37	40.7	44	46.8	42.0
	other	4	4.1	3	3.3	3	3.2	3.5
Time to park	<5min	11	11.2	12	13.2	9	9.6	11.3
	5-20min	45	45.9	41	45.1	49	52.1	47.7
	20-60min	37	37.8	32	35.2	33	35.1	36.0
	>60min	5	5.1	6	6.6	3	3.2	4.9
Transport	walking	67	68.4	65	71.4	66	70.2	70.0
	bicycle	10	10.2	8	8.8	9	9.6	9.5
	public transport	16	16.3	12	13.2	15	16.0	15.2
	other	5	5.1	6	6.6	4	4.3	5.3
Frequency	Once a day or more	73	74.5	71	78.0	69	73.4	75.3
	2-3 times a week	15	15.3	12	13.2	13	13.8	14.1
	1 times per week	7	7.1	6	6.6	8	8.5	7.4
	less 1times a week	3	3.1	2	2.2	4	4.3	3.2
Residence time	<0.5 hour	4	4.1	3	3.3	4	4.3	3.9
	0.5-1 hour	15	15.3	13	14.3	11	11.7	12.7
	1-2 hour	28	28.6	31	34.1	29	30.9	31.1

	>2 hour	51	52.0	46	50.5	50	53.2	52.3
Reason	convenient	22	22.4	24	26.4	19	20.2	23.0
	close	49	50.0	47	51.6	51	54.3	51.9
	good facilities	9	9.2	7	7.7	11	11.7	9.5
	recreational activities	11	11.2	9	9.9	7	7.4	9.5
	environment beautiful	5	5.1	4	4.4	5	5.3	4.9
	other	2	2.0	0	0.0	1	1.1	1.1
Satisfaction	satisfied with the	59	60.2	62	68.1	47	50.0	59.4
	a little satisfaction	19	19.4	17	18.7	17	18.1	18.7
	general	13	13.3	9	9.9	16	17.0	13.4
	a little unhappy	6	6.1	3	3.3	11	11.7	7.1
	discontent	1	1.0	0	0.0	3	3.2	1.4

3.2 Gender Status

According to the survey, the proportion of male elderly people who use parks is only 4% higher than that of women, indicating that there is little gender difference in the use of parks by elderly people in Nanjing. This result is most likely due to changes in lifestyles and concepts. As professor Yongji Piao said, “with the change of the times, the change of ideas and the change of life style, the status and role of women in a country's political, economic, cultural and other social fields have been continuously improved, and women's social participation has been increasingly deepened. So in the future the gender gap in park use for the elderly will be smaller and smaller.”^[8]

3.3 Age Composition

The age groups in this survey are divided into three groups: 60~64 years old, 65~74 years old, 75 years old and above. The proportion of people aged 65-74 who use the park is much higher than those aged over 75. Zhenghe Park, which has the highest proportion of people over 75 years old, also accounts for only 14.3%, which is relatively low, with an average of only 11.1%. This result shows that physical activity ability will limit the use of parks by the elderly.

3.4 Family Composition

In this study, the elderly family composition was divided into three categories: husband and wife living together or one living alone, cohabitation with children and other. The survey results show that the proportion of the above three types of household composition is 54.4%, 42.0% and 3.5% respectively. More than half of the elderly family composition is a couple living or living alone, indicating that most elderly family structure is relatively simple.

3.5 Time and Transportation Required to Visit the Park

In this study, the time required for the elderly to come to the garden was divided into four categories: less than 5 minutes, 5-20 minutes, 20-60 minutes, and >60 minutes. 59% were under 20 minutes and 4.9% over 60 minutes. In terms of transportation, most elderly people come to the park on foot, accounting for 70%, followed by public transportation, accounting for 15.2% of the total number of people. Regardless of the mode of transportation used, more than 95% of the survey subjects spent less than one hour in the park; less than 5% of the survey subjects spent more than one hour. Elderly people who are close to the park mostly reach the park on foot or by bicycle. Most of the elderly who live far away from the park use public transportation to reach the park.

3.6 Reasons for Visiting

According to the previous literature research, it is found that the needs of the elderly for parks are diversified. But they mainly favour convenient transportation, extremely close, complete facilities, recreational activities, beautiful view and other aspects. It has not been determined which factor is the main reason for the elderly to come to the park, this option only allows the elderly to make a single choice. The results showed that proximity and convenient transportation were the main reasons for the elderly to visit the park, accounting for 74.9 percent of the total. “proximity” and “ease” became the key words for the elderly to choose the park.

3.7 Frequency and Duration of Visit

In terms of frequency and retention time, 75.3% of the elderly come to the park every day (except for severe weather such as rain). More than half of the elderly come to the park every day and stay in the park for more than 2 hours. Weekly and less than weekly rates were lower, at 7.4% and 3.2%, respectively.

3.8 Satisfaction Levels

Among the three parks, 78.1% are slightly satisfied with the park. 86.8% among the visitors to Zhenghe Park are satisfied with the park, indicating that the elderly in Nanjing are highly satisfied with the use of the three parks. Those who chose “slight dissatisfaction” and “dissatisfaction” were 7.1% and 1.4% respectively, indicating that a small number of elderly people were not satisfied with the use of the park.

4. Conclusion

4.1 The Conclusion

Through the investigation of three parks in Nanjing, it is found that the proportion of men and women in parks used by the elderly tends to be balanced, which reflects that the gender difference between men and women is not obvious. In terms of family composition, parks are mainly visited those who live with their spouses or those who live by themselves. Those who live together with their children come next, which reflects that the elderly still pursue a relatively independent and free space. Those living together with their children still occupies a large proportion (42%). It on the one hand reflects that the elderly are still liable to help their children to look after children; on the other hand, it also reflects that the old people’s reliance on their children. The relative independence and freedom of the elderly give the elderly more time to go to the park for exercise, enjoying leisure and making friends. Support for children (looking after children, etc.) encourages older people to bring their grandchildren to the park. The walk-based transportation mode and the time spent on the way to the park within 20 minutes reflect that the park conforms to the appropriate distance within the service radius of 1km, which proves that the proximity and convenient transportation are the main reasons for coming to the park, so as to meet the expectation that the neighborhood park is mainly used by the surrounding residents. The proportion of elderly people who come to the park every day is as high as 75.3%, and the duration of stay is more than 2 hours. The higher frequency and longer use reflect the elderly people's dependence on the park and going to the park has become a kind of normal life for them. The high satisfaction of the elderly to the park reflects that the park better meets the needs of the elderly. But there are still such deficiencies as safety, sanitation, facilities and maintenance management that need to be further improved.

Parks should not only meet the basic needs of the elderly, but also should in line with ideas such as “Poetic rich, profound connotation, elegant environment “ to expand the aesthetic space of the

park and promote the interaction between the space and people's mind. ^{[7] (P48)} However, sustainable development can only be realized if the original environment and ecology cannot be destroyed by excessive development. As professor Soobong Kim said: the most basic principle and philosophy of sustainable design is respect and care for the site and nature.

4. 2 Reflection on Park Construction

4. 2. 1 Improve the Planning and Layout of Parks and Green Spaces Suitable for the Elderly

It can be seen from the survey data that the accessibility and convenience of parks are the main factors restricting the elderly people's use of parks, which means that reasonable service radius of parks should be determined when planning. According to the survey, most of the elderly people come to the park on foot within 20 minutes, and the distance from the park is within 500m. Therefore, the neighborhood park should be close to residential areas, with a service radius of 500m as the best, and the layout planning should not exceed 1000m.

4. 2. 2 Build a Safe and Convenient Transportation and Improve Park Facilities

The elderly are sluggish and inconvenient to walk. They should not travel on busy urban arterial roads on their way to the park. We should adhere to the concept of universal design, ensure that sidewalks are safe, unobstructed, and barrier-free, reduce opportunities for people and vehicles to meet on the way to park activities for the elderly, and increase the accessibility and safety of park green spaces. The guiding and warning function of signage should be strengthened in the park construction, and the CPTED theory should be reasonably used for safety prevention. The signage should be set at the prominent places where the main entrance of the park is located, showing the regulations, prohibitions and opening hours. ^[9] There is a lack of park facilities and maintenance is one of the problems accounting for less visits. Even it is because the facility does not meet the use requirements of old people. Therefore, it is necessary to improve the park facilities and improve the selectivity, amenity and satisfaction of the elderly in using the park.

4. 2. 3 Diversification of Space and Site Layout and Enhance Park Management

It can be seen from the gender of the research objects that the gender ratio is basically balanced. But in the use of the park, men and women are different; Old people of the same sex also have different hobbies and habits. It is the site with rich spatial levels that is most popular among the elderly ^[10], we should actively create a multi-level communication space with both publicity and privacy for them, guide the elderly in the park green space in their enjoyment of leisure. ^[11] People should be the fundamental starting point, the park environment should serve people, remember that “the world is beautiful because of people, it will be cold and dead “. ^[12]

Parks need good management and maintenance, in order to realize a positive cycle of park use. Only in this way can the virtuous cycle of park use be realized and the landscape performance be maximized, so that the park environment can truly become “praise for the brilliance of limited life”. ^{[7](P249-256)}

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