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Attitudes of Citizens towards Urban Parks and Green Spaces for Urban Sustainability: The Case of Gyeongsan City, Republic of Korea

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Abstract: Urban parks and green spaces support a wide array of species and play an important role in long-term sustainability. This study analyzed the needs and attitudes of citizens towards urban parks and green spaces in order to provide information for setting the future direction of urban sustainability to maximize quality of life. A questionnaire survey was conducted to analyze the general characteristics of respondents and their awareness of parks and spaces. First, the results indicate that the main purpose of visiting parks was relaxation and walking. Second, the type of parks visited most frequently by the respondents was pocket parks around home. Third, the main reason for going to the frequently visited parks was “close to home”. Fourth, the major reason for visiting parks infrequently was “improper park management”. Fifth, the desired types of urban parks were relaxation parks close to natural rivers. Sixth, citizens wanted to participate in the expansion projects of parks and green spaces through non-profit civic organizations or volunteer activities. Further research with a comparative analysis among different cities will be necessary to generalize Korean attitudes to urban parks and green spaces for urban sustainability.

Keywords: ecosystem services; green infrastructure; pocket parks; quality of life; urban green spaces

1. Introduction

Urban development has been recognized as a major cause of environmental problems, with a diversity of approaches and principles having been proposed to increase its sustainability [1–7]. Despite the inconsistent and debated literature definitions of sustainable urban development [8–11], it has become a generally accepted goal for urban planning. The term “sustainable development” has become widely used to stress the need for simultaneous achievement of economic, social and environmental development goals. Governments or international agencies have published many documents of policies, plans, and programs to implement sustainable development. The most commonly cited definition of sustainable development is probably that of the World Commission on Environment and Development [12]. It defines sustainable development as that which “meets the needs of the present without compromising the ability of future generations to meet their own needs”. However, debate on the meaning of sustainability and how it should be achieved continues. To achieve the goals of urban sustainability, international efforts mainly focus on man-made and built components of the urban environment. However, less attention has been focused on parks and green spaces of the urban structure [13]. Ample empirical evidence from researches indicates that urban parks and green spaces support a wide array of species, have a large range of functions for the human population and contribute to social, economic and environmental sustainability in cities in multiple ways [14–23].

Urban parks and green spaces play an important role for environmental services such as air and water purification, wind and noise filtering, and microclimate stabilization. They also provide social and psychological services, which are important for public well being [13,24]. The use of parks and green spaces can reduce stress, provide a sense of peacefulness and tranquility, enhance psychological and mental health, and promote the development of social ties [13,25–33]. The functions of urban parks and green spaces can provide economic benefits as well as the aforementioned social and psychological benefits [13]. The aesthetic, historical and recreational values of urban parks and green spaces increase the attractiveness of the city and promote its tourism potential, thus generating employment and revenues [34]. Modern cities have developed their own sustainability indicators to measure quality of life issues, which are central to all the various definitions of sustainability in cities [13]. Urban parks and green spaces can provide social services for quality of life and are considered a key component of sustainability [35]. Public attitudes must be understood and accounted for in natural resource management, and can help guide management strategies [36–39]. Therefore, this study aims to identify the various growing social demands for urban parks and green spaces and provide basic information to establish strategies of urban sustainability to improve quality of life.

2. Methods

2.1. Study Site

The concept of parks in Korea was established mainly by the recreational activities of ordinary people around the shade tree, community well, the surroundings of altar, community plaza and scenic valley, which all still serve as parks today. The first urban park in Korea, Independence Park, was created by a civic group in 1896, which holds a great significance in terms of the means for improvement of urban sanitation and environment and urban beautification as a bridgehead for the independence movement.

After Korea became a colony of Japan with the annexation treaty in 1910, parks were established in several regions centered on Japanese residential areas. Those parks were built to improve the relaxation and amusement of people, child education, and urban beautification. After the liberation in 1945, the established parks were not often reverted to the government due to the liquidation of vestiges of Japanese imperialism and the reestablishment of national spirit. The parks were, therefore, illegally occupied and used for other purposes. However, modernized urban parks started to be institutionalized from the 1960s with the increase in income levels and education standards arising from the economic growth over the 1960s and 1970s. In the 1970s and 1980s, as urban parks were transformed from parks of animal and plant observation into sports parks and people's awareness increased, the functions and contents of urban parks were diversified. From the 1990s, the meaning of parks started to be established with a focus on the usage of citizens and urban environmental improvement. Recently, there are growing citizens' demands for urban parks and green spaces because of the spread of well-being culture and the phenomenon of urban heat island.

Gyeongsan City was chosen for the study because there is an urgent need for information on citizen's attitudes towards urban parks and green spaces for a sustainable urban environment. Gyeongsan is a rapidly developing city in the Republic of Korea. Although Gyeongsan boasts an abundant natural environment, including a forest, river, and lake, its green corridors are unlinked and the quality green resources have been damaged by various urban developments. In addition, with the accelerated urbanization and modernization based upon the transition from an agriculture-focused life pattern in the past to a widespread five-day workweek system nowadays, pleasant and beautiful parks and green spaces are important for the quality of life in Gyeongsan City. Gyeongsan City is located in the central-south part of North Gyeongsang province and bordered by Daegu metropolitan city, which is the fourth largest city with over 2.5 million residents (Figure 1). Gyeongsan City has an administrative district area of 411.58 km² [40]. Its population increased by 5.7% from 228,868 in 2005 to 242,040 in 2011 [40]. Gyeongsan is within commuting distance of Daegu city, and thereby acts as a suburban farming area, a suburban university town area, and suburban residential and manufacturing areas of the large city.

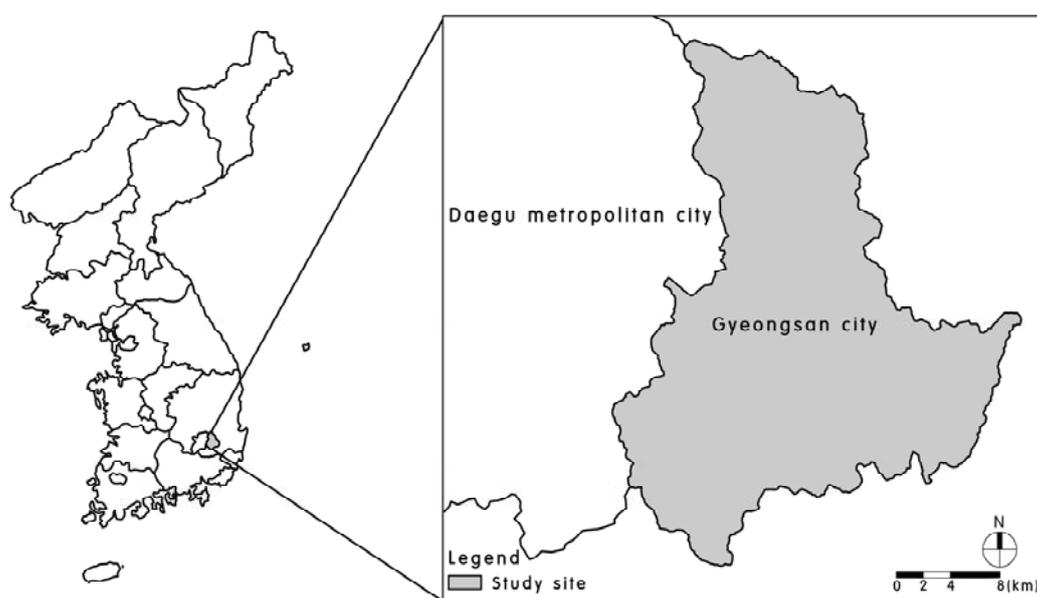


Figure 1. Location of study site.

2.2. Questionnaire Survey and Data Analysis

The questionnaire was composed of two categories to understand people's attitudes towards parks and green spaces for sustainable urban environment. The first category comprised three demographic questions on gender, age and period of residence in the region [39]. The second category comprised 10 multi-choice questions on the awareness of parks and green spaces, including the frequency of park visit, purpose of park visit, type of frequently visited parks and reasons, problems of parks, desired types of park, essential park facilities, awareness of green space, methods to expand parks and green spaces, and methods to participate in the expansion of parks and green spaces. The questionnaire survey was conducted after a one-to-one interview pilot study was initially done in 2011 with 20 citizens, in order to identify the level of understanding on the question items. The main survey was subsequently conducted in 2011. Respondents were randomly selected among the visitors of parks. Respondents were first informed about the survey's objectives and answering procedure. While visiting parks, 800 willing participants were given the questionnaire to fill out. SPSS PC + Ver14 was used to compute the frequency and percentage on each question and a 5-point Likert scale was used to analyze opinions on methods to expand parks and green spaces. For the reliability analysis, the Cronbach's alpha coefficient was used to confirm the internal consistency among the different question items. Reliability is the dispersion of the values repeatedly measured about the same concept, *i.e.*, the results become similar by measuring the subject through a comparable independent analysis method [41].

3. Results

3.1. Results of Reliability Analysis on Question Items

The reliability was identified by calculating the Cronbach's alpha coefficient on each detailed question item applicable to the subjects of survey on parks and green spaces (Table 1). The alpha value was measured as 0.60 on 10 questions for the survey. The result revealed that all question items could be considered reliable, according to Nunnally [42] who contended that an alpha value of over 0.6 was reliable in exploratory research field. Based on the reliability, the analysis results were drawn through frequency analysis on each question item.

Table 1. Question items in detail by subject for reliability analysis.

Survey subject	Detailed question items applicable to subject
Survey on parks and green spaces ($N = 10$)	1. How frequently do you visit parks?
	2. What is the main purpose of using parks?
	3. What type of parks do you frequently visit?
	4. Why do you visit parks often?
	5. What are the problems of parks in downtown?
	6. If various parks are created for citizens, what kind of park would it be?
	7. What is the most needed facility in neighborhood parks?
	8. What are the roles of the green spaces in downtown?
	9. What is the best way to expand parks and green spaces?
	10. If you participate in the expansion project of parks and green spaces, in what way would you join?

3.2. General Characteristics of the Survey Respondents

The demographic characteristics of the survey respondents are presented in Table 2. More than half were women (58.9%, vs. 41.1% men). Overall, 83.5% of the study population was in their 20s to 40s, with only a very low 13.6% of the respondents visiting parks being in their 50s or over.

Table 2. Demographic characteristics of the respondents.

Questions	Number (%)	
Gender	Male	329 (41.1)
	Female	471 (58.9)
Ages	10–19	23 (2.9)
	20–29	372 (46.5)
	30–39	123 (15.4)
	40–49	173 (21.6)
	50–59	94 (11.7)
	Over 60	15 (1.9)
	Period of residence	1–3
	3–6	112 (14.0)
	6–10	174 (21.8)
	10–20	170 (21.2)
	Over 20 years	111 (13.9)
Total	800 (100)	

3.3. Frequency of Park Visit

The result showed that the citizens were not using parks frequently: only 18.5% of the respondents visited parks “three to four times a week” or “almost every day” (Figure 2).

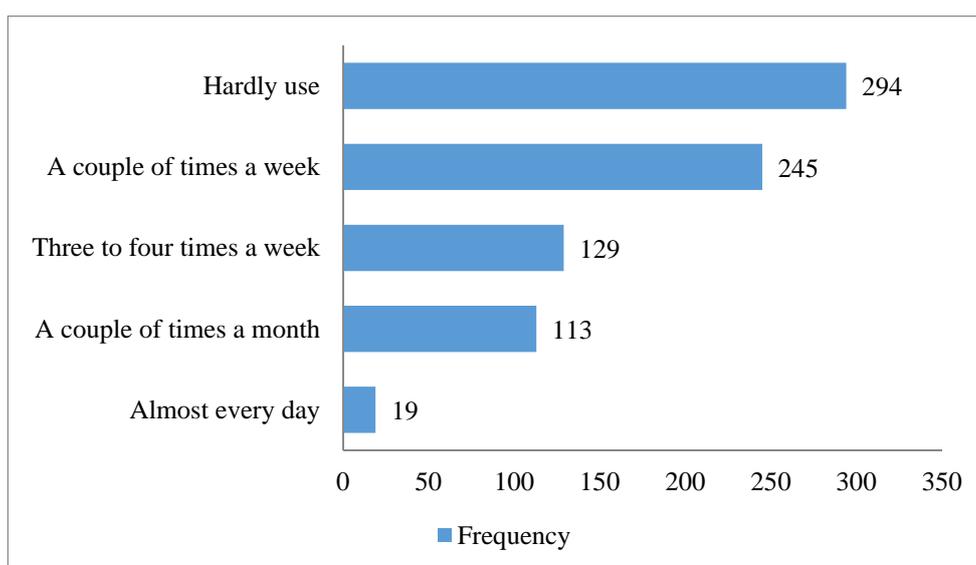


Figure 2. Frequency of park visit.

3.4. Main Purpose of Park Visit

The most common main purpose of visiting parks was “relaxation and walking” (25.8%), followed by “meeting with friends” (16.2%), “playing sports and using exercise facilities” (14.9%) and “enjoying nature” (14.4%) (Figure 3), which showed relaxation, socialization, recreation, leisure and scenery were the main purposes of visiting parks in Gyeongsan City.

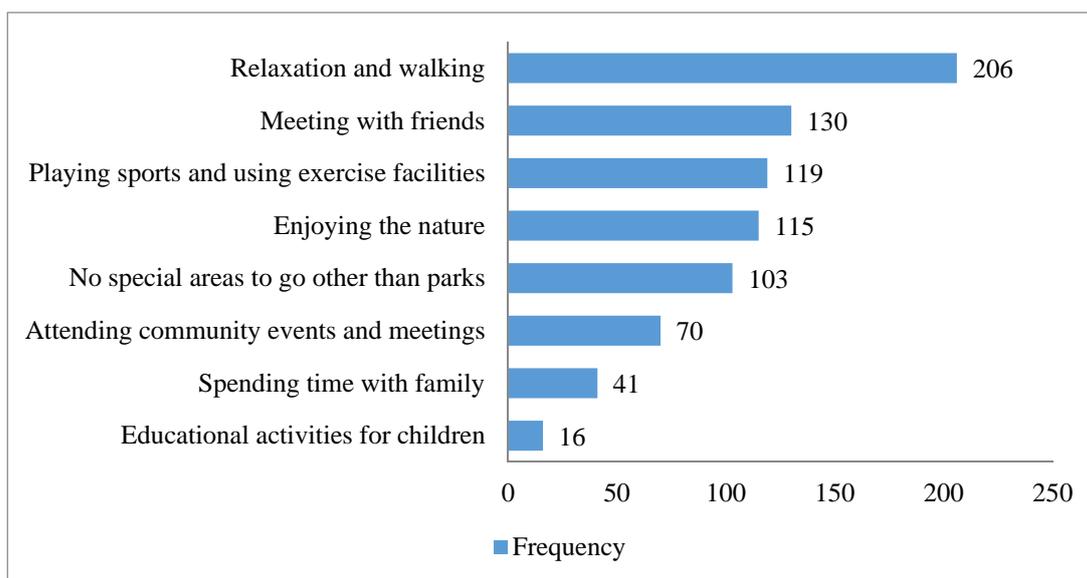


Figure 3. Main purpose of park visit.

3.5 Type of Frequently Visited Park

The type of parks most frequently visited by the citizens was “pocket parks around home” (37.7%), followed by “children’s park” (18%), “riverside and stream park” (14.1%) “performance and cultural park” (11.9%), “mountainous parks” (10%), and “sports parks” (8.3%) (Figure 4).

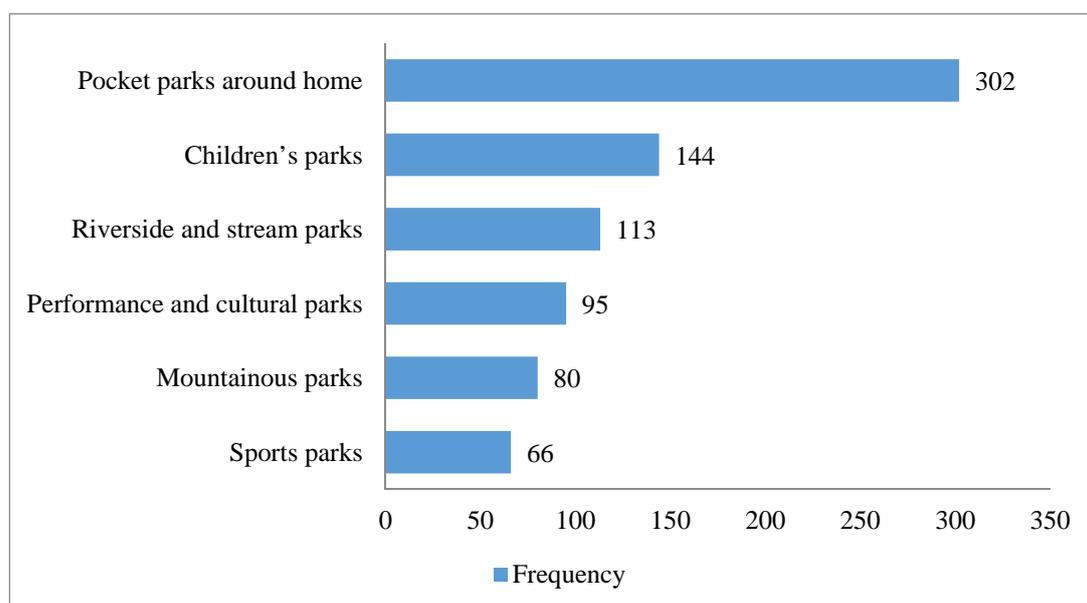


Figure 4. Type of frequently visited park.

3.6. Reasons for Going to Frequently Visited Parks

The main reason for going to the frequently visited parks was “close to home” (38.9%), followed by “no other parks to go” (23%), “various facilities and programs” (12.2%), “clean facilities and environment” (10.8%), “safe facilities and environment” (8.1%) and “good natural environment” (7%) (Figure 5). This result revealed the importance of convenience in term of distance and time when using parks.

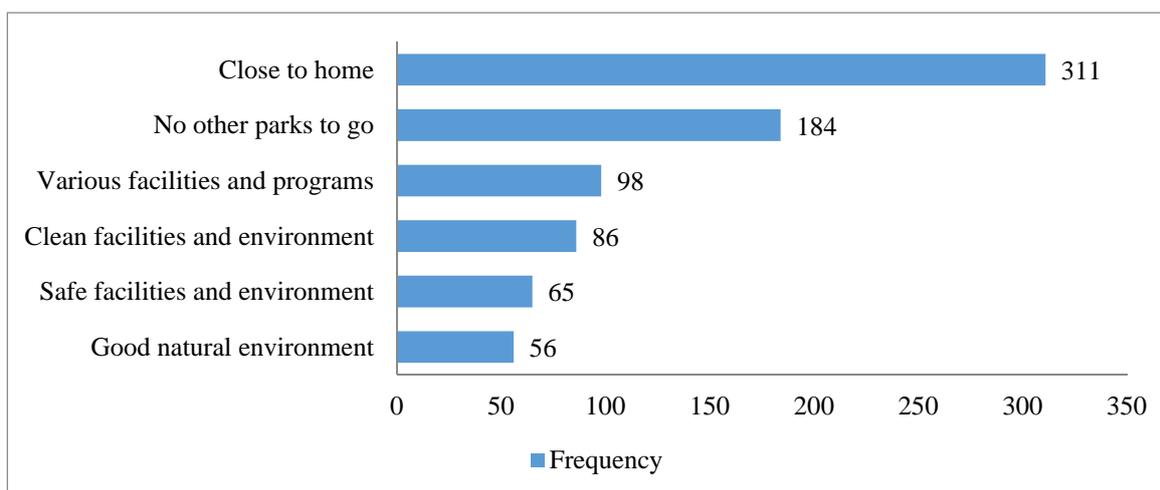


Figure 5. Reasons for going to frequently visited parks.

3.7. Reasons for Visiting Parks Infrequently

The major reason for visiting parks infrequently was “improper park management” (39.8%), followed by “absence of characteristics of parks” (22.9%), and “lack of interesting facilities and programs to use within the parks” (17.7%) (Figure 6). Other reasons were “far from home” (10.2%), and “lack of green spaces in parks” (9.4%).

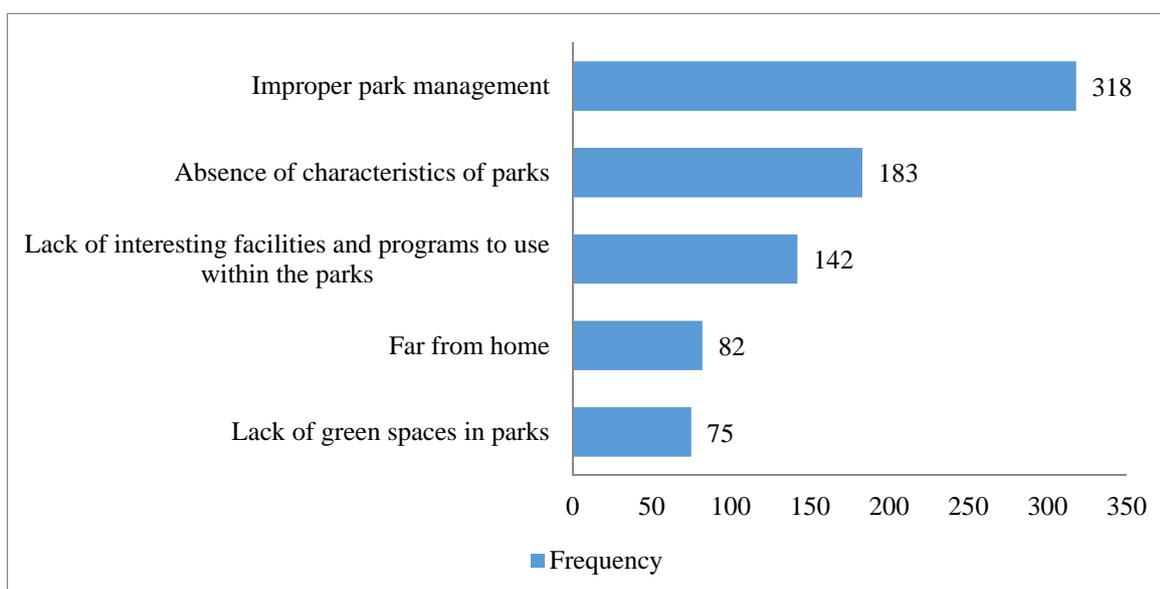


Figure 6. Reasons for visiting parks infrequently.

3.8. Type of Urban Parks Desired by Respondents

The respondents desired various kinds of urban parks such as “riverside recreational park” (16.8%), “wetland ecological park” (16.1%), “sports facility park” (15.4%), “amusement and recreational park” (13.8%), “urban plaza park” (13.2%), “cultural experience park” (10.2%), “mountainous natural ecological park” (8.1%), and “agricultural experience park” (6.4%) (Figure 7).

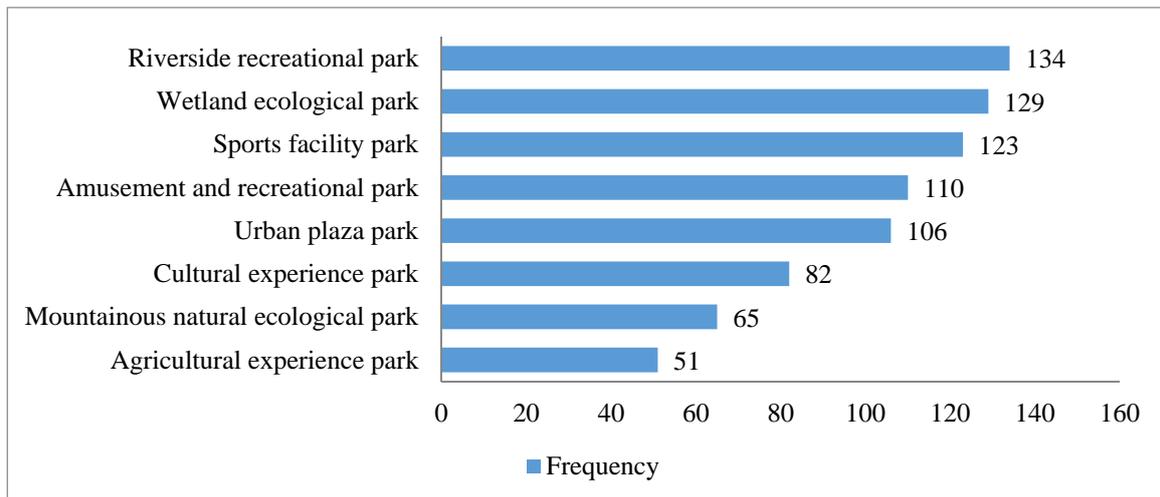


Figure 7. Type of urban parks desired by respondents.

3.9. Most Necessary Park Facility

The most requested park facility (19.9%) was “sports facility”, which reflected the high interests in health in their daily lives (Figure 8). The other necessary facilities were “lighting and gardening” (17%), “cultural educational facilities including performance and exhibition” (15.1%), “natural experience facility” (14.4%), “children’s playing facility” and “seniors’ lounge” (each 11.6%), “traffic and parking facility” (5.3%), and “sales facility” (5.1%).

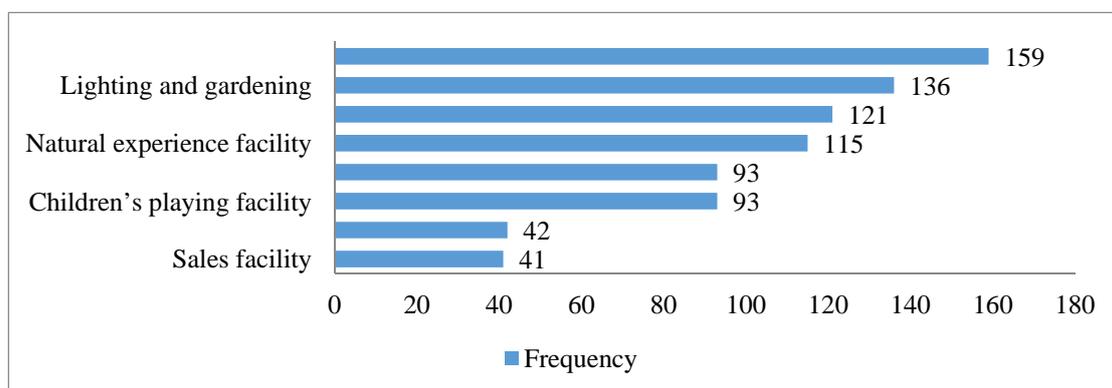


Figure 8. Most necessary park facility.

3.10. The Role of Green Space

The highest proportion of respondents (30%) recognized the role of green spaces as “providing leisure space” (Table 3). This result indicated that a green space means the “state of greened space”, allowing

people to engage in various leisure activities in the physical state. On the other hand, 18.5% of respondents regarded the role of green space as “giving mental stability”, followed by “reducing air and environmental pollution” (17.6%), “making scenery beautiful” (12.8%), “maintaining healthy natural ecological state” (9.3%), “preventing indiscriminate urban development” (4.9%), “raising real estate prices in the surrounding area” (3.8%), and “preventing natural disasters” (3.1%). The result indicated that the citizens believe that green spaces play a wide variety of roles ranging from psychological stability to natural purification.

Table 3. Role of green space.

Answers:	Number (%)
Providing leisure space	240 (30.0)
Giving mental stability	148 (18.5)
Reducing air and environmental pollution	141 (17.6)
Making scenery beautiful	102 (12.8)
Maintaining healthy natural ecological state	75 (9.3)
Preventing indiscriminate urban development	39 (4.9)
Raising real estate prices in the surrounding area	30 (3.8)
Preventing natural disasters	25 (3.1)
Total	800 (100)

3.11. Opinions on Methods to Expand Parks and Green Spaces

Regarding the methods to expand parks and green spaces for sustainable urban environment, the highly ranked opinions were “expanding pedestrian paths (3.65)” and “expanding bicycle paths (3.59)”, followed by “greening rooftop, walls of building and fence (3.55)”, “expanding natural parks in forest areas (3.54)”, “making parks with public buildings and schools (3.48)”, “making parks with relocated site of factory (3.44)”, “conservation of wet and dry field as a green space (3.42)”, “making parks with legally protected trees and empty lots in the neighborhood (3.41)”, “making waterfront and ecological parks with surrounding areas of river and reservoir (3.40)”, and “making parks with areas of cultural assets (3.39)” (Table 4).

Table 4. Opinions on methods to expand parks and green spaces.

Answers:	Order	Average Likert scores
Expanding pedestrian paths	1	3.65
Expanding bicycle paths	2	3.59
Greening rooftop, walls of building and fence	3	3.55
Expanding natural parks in forest areas	4	3.54
Making parks with public buildings and schools	5	3.48
Making parks with relocated site of factory	6	3.44
Conservation of wet and dry field as a green space	7	3.42
Making parks with legally protected trees and empty lots in the neighborhood	8	3.41
Making waterfront and ecological parks with surrounding areas of river and reservoir	9	3.40
Making parks with areas of cultural assets	10	3.39

3.12. Methods to Participate in Expanding Parks and Green Spaces

The highest rate for methods to participate in the expansion of parks and green spaces was “do not want to engage” (28.8%), followed by “joining or assisting non-profit civic organizations” (20.4%), and “participating in volunteer works of cleaning and management” (20%) (Table 5). In addition, the 14% response of “approval for politicians favorable to the policy for parks and green spaces expansion” indicated a stronger intention to participate in the expansion overall in any form, which suggests the potential for a high level of indirect participation. On the other hand, the low response frequency of 12.2% for “agreement with paying more tax” and 4.6% for “donation in cash or real estate” suggested that most citizens would engage in the activities through volunteer works or civic organizations as methods to participate in the expansion project of parks and green spaces for sustainable urban environment.

Table 5. Methods to participate in expanding parks and green spaces.

Answers:	Number (%)
Do not want to engage	230 (28.8)
Joining or assisting non-profit civic organizations	163 (20.4)
Participating in volunteer works of cleaning and management	160 (20.0)
Approval for politicians favorable to the policy for parks and green spaces expansion	112 (14.0)
Agreement with paying more tax	98 (12.2)
Donation in cash or real estate	37 (4.6)
Total	800 (100)

4. Discussion

This study identified the citizens’ social demands for and attitudes towards urban parks and green spaces in order to provide relevant information for setting the future strategies of urban sustainability to improve quality of life. The study results are as follows.

First, park patronage appeared to be very low among citizens older than 50 years, accounting for only 13.6% of the respondents. Korea has a rapidly aging population with a 20% increase in the senior population expected in 2026 [43]. Gyeongsan City has also become an aging society with 10.7% of the total population being seniors over 65 [44]. As the senior population increases in the study area, various programs and facilities to encourage seniors to visit parks and green spaces might be needed in the near future. The seniors’ needs and demands such as easy accessibility, large green space, availability of intergenerational facilities, security of space for events that make the elderly feel a sense of belonging and interest, and program arrangements linked with social support should be considered in planning and management of elderly-friendly parks [45].

Second, more than a third of the respondents frequently visited pocket parks around home and the most common reason (37.7%) for going to the frequently visited parks was “close to home”. These results indicated that citizens are more likely to visit pocket parks with easier access from their home. Providing parks for citizens is increasingly challenged by the limited amount of available park space in urban areas where land is very expensive. Pocket parks are the only option for creating new public spaces in cities in this urban condition. Although pocket parks might be too small for physical activities, they meet a variety of social needs and functions, including small event space, children’s playground, and

spaces for relaxing. To improve quality of life in cities, local park agencies should find vacant building lots, small and irregular pieces of land, unused areas, abandoned spaces, and rooftops for conversion into pocket parks.

Third, the study indicated that the most common purpose (25.8%) of visiting parks was relaxation and walking. This result demonstrates some similarities in citizens' attitudes towards urban parks and green spaces between South Korea and other countries. For example, the main reasons for visiting urban green space in the UK are enjoying the environment, social activities, walking activities, passive and active enjoyment (including dog walking), and attending events [46]. In the USA, Americans use the parks for stationary activities, sports activities, social and relaxing benefits, walking and jogging [47,48]. Walking, relaxing, children, and sports activities are the main reasons in using urban parks and green spaces in Budapest [49]. To experience greenery, nature, peace and quiet, and to participate in stationary activities are the main reasons in Denmark [50]. Like other countries in the world, the citizens of Gyeongsan City wanted to use the urban parks and green spaces for multiple purposes including active and passive outdoor activities such as relaxation, walking, exercise and socializing.

Fourth, the types of urban parks desired are relaxation parks close to natural rivers, recreation parks close to residential areas and experience parks, which suggests the necessity of creating a grand green park that may satisfy the various demands of citizens. It is very difficult to create various park types to meet the needs of citizens in small and medium cities due to financial constraints. In addition, the designated park sites for the future are in danger of disappearing. In 1999, the Korean Constitutional Court ruled that the unexecuted park sites designated for a long time run counter to the constitution if such unexecuted planned urban facilities violate the private property rights. Therefore, if the parks that were determined and publicly announced prior to 1 July 2000 are not established within 20 years, the designation of the site will be lifted. Therefore, the "Sunset Regulation of Planned Urban Facilities" will be implemented to withdraw any legal protection of long-term unexecuted facilities in July 2020. The area of unexecuted park sites in Gyeongsan City is around 2,281,000 m², which is 58% of the total park area of the city in 2012. If they fail to be compensated by 2020, many of the urban parks are expected to disappear as their designation as parks will be lifted. The urban parks and green spaces used to be established by the government in the past. However, with the introduction of a development charge system, housing site developers create urban parks and green spaces and donate them to the relevant local governments. This system reduced government expenses but caused an imbalance in urban parks between old and new cities [51,52]. Most of the urban parks and green spaces were mainly located in new housing development sites in Gyeongsan City. To solve the shortage of urban parks and green spaces, caused by the imbalanced arrangement of urban parks, feasible target areas need to be selected to expand parks and green spaces through systematic and prioritized analysis. The conversion of linear shaped, unused lands of roadside, riversides and railway areas into green spaces is also expected to provide pleasant urban spaces for citizens and improve quality of life [53]. For creating large areas of parks and green spaces, large-scale sites should be used, such as relocated factories or facilities. In addition, the creation of a national grand park in Gyeongsan City by the central government and its management by relevant local governments is the best method for meeting a variety of citizen demands and for resolving the issue of the sunset policy. Fifth, this study indicated that citizens want to participate in the expansion projects of parks and green areas through non-profit civic organizations or volunteer

activities. While urban parks and green spaces have been entirely created and managed by the government so far, an increasing incidence of autonomous participation of independent organizations or citizens in creating and managing urban parks and green spaces can be expected. Methods involving civil participation in parks and green spaces started to be proposed in the late 1990s and specific activities were undertaken in the early 2000s. Various programs have been developed and a variety of non-profit independent organizations have been established to participate in the creation and management of parks and green spaces through domestic and international best case studies [13,54,55]. For effective and continuous creation and management of urban parks via the participation of many such non-profit organizations, the awareness of policy makers on urban parks needs to be changed and legal and institutional assistance is required. The demands of the citizens to participate in expanding parks and green spaces suggest that urban parks and green spaces are not just a physical environment to increase people's quality of life but also an avenue to make a huge contribution to improving people's psychological lifestyle and sense of citizenship which are two of the objectives in urban sustainability.

5. Conclusions

The study presented here can only be considered a first step in collecting more comprehensive information on urban parks and green spaces for setting the future direction of urban sustainability to improve quality of life. The study findings can be summarized as follows. First, the main purpose of visiting parks was relaxation and walking. Second, the type of parks most commonly visited by the respondents was pocket parks around home. Third, the main reason for going to the frequently visited parks was "close to home". Fourth, the major reason for visiting parks infrequently was "improper park management". Fifth, the desired types of urban parks were relaxation parks close to natural rivers. Sixth, citizens wanted to participate in the expansion programs of parks and green spaces through non-profit civic organizations or volunteer activities. These results, therefore, should be taken into account in future parks planning and management to maximize quality of life in cities. However, due to the limited study site and statistics used, and the small sample size analyzed, the present research results should be generalized only with caution to Korean citizens' overall attitudes to urban parks and green spaces when compared to other countries. A comparative analysis among different regions of citizens' attitudes towards urban parks and green spaces for achieving objectives of urban sustainability in Korean cities should be included in future study.

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Author Contributions

The two authors contributed equally to the data analysis and writing up of the study. All authors have read and approved the final manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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