Attitude and Perception of Residents towards the Benefits, Challenges and Quality of Neighborhood Parks in a Sub-Saharan Africa City

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Abstract: Urban parks provide various environmental, socio-cultural and economic benefits, also called ecosystem services, as well as challenges. Urban park planning and management needs to consider the perception and attitude of people towards the benefits, challenges and quality of the parks. However, such information is largely lacking for cities of Sub-Saharan Africa. The objectives of this study are to understand the perception and attitude of residents towards the benefits, challenges and qualities of neighborhood parks in a formal settlement area in Addis Ababa, Ethiopia, and to investigate whether these aspects are affected by the socio-demographic characteristics of respondents. Data were collected through a household survey (*n* = 398) and three focus group discussions. Data were analyzed using descriptive statistics and Chi-square tests. The focus group discussion resulted in the selection of 18 ecosystem services (benefits) and five challenges. Supported by a very high response rate (96.6%), the household survey shows that respondents recognize the environmental, socio-cultural and economic benefits provided by neighborhood parks, but that the socio-cultural and environmental benefits are perceived as more important than the economic benefits. The socio-demographic characteristics of age, gender and education level were found to have no significant effect on perceptions or attitudes. The cost of managing neighborhood parks and the attraction of nuisance insects were the two most important challenges, respectively. The majority of respondents rated the quality of the existing neighborhood parks excellent or good, with the existing safety condition and the presence of high plant diversity receiving the highest number of high scores. The availability of park facilities was the aspect of park quality considered poor by the most respondents. This study highlights the importance of place-based studies for assessing the perceived benefits that attract people to use urban parks, as well as the challenges that deter use. One important lesson that cities in Sub-Saharan Africa could draw from the development and management of neighborhood parks in Addis Ababa is the vital importance of public participation in urban park development and management.

Keywords: attitude; ecosystem services; neighborhood park; perception; Sub-Saharan Africa

1. Introduction

Currently, 55% of the global population is living in urban areas, and by 2050 two-thirds (66%) of the global population is expected to be urban [1]. Most of the global urbanization is taking place in Africa and Asia [2]. Africa, with an average annual urbanization rate of 3.3%, is expected to be the fastest urbanizing region from 2020 to 2050, eventually supporting 21 per cent of the world's urban population [1].

Urbanization has resulted in land use change, causing degradation of the quality and quantity of urban ecosystems [3], thereby affecting the delivery of ecosystem services [4] and human contact with

the natural environment [5]. Urban green spaces are increasingly recognized as essential components of the urban environment that provide various environmental, social and economic benefits (also known as ecosystem services), thereby contributing to the quality of urban life [6–8] and urban sustainability [9].

Urban parks are important components of the urban green space that provide benefits to urban residents and visitors, including provision of space for recreation [10], social interaction [11–13] and physical activities [14], enhancement of public health [15,16], regulation of local temperature [17,18], improvement of air quality [19], storm water management [20], biodiversity conservation [21,22] and increase in property value [23,24]. Urban parks can also provide ecosystem 'disservices' that have negative impacts on urban infrastructure and human well-being, such as tree roots disrupting pavements [25], pollen from urban vegetation causing allergies [26], and shading of houses caused by tall trees [27].

The public use of parks is related to their proximity to homes or workplaces, accessibility, quality, demographic characteristics, maintenance and perceived benefits and safety [28–30]. To ensure urban park benefits are delivered effectively, community participation in urban park planning and management is essential [31]. Participation in urban park development may depend on the level of understanding of trade-offs between various services provided by park.

Understanding the perception and attitude of users towards urban green spaces and the benefits derived from them has been the focus of socio-ecological studies in the last decades [32]. Studies have shown that positive perceptions of green and open spaces are important predictors of high levels of neighborhood satisfaction [33,34]. The attitude of local communities towards the quality of urban parks may influence their decision to visit the park [35,36]. Thus, understanding the attitude of park users towards park quality is important for urban park managers and planners [37].

The existing evidence for public perception and attitude towards urban parks comes mostly from studies carried out in Europe [38–41] and Asia [42–44]. Few studies have been conducted in North America [45], Africa [46–48] and Latin America [49].

Little is known about the attitude and perception of users towards the benefits, challenges and quality of urban green space in rapidly urbanizing cities in Sub-Sahara Africa, making effective urban green space planning difficult. Neighborhood parks (NPs) are the most accessible public green space in Addis Ababa. Such parks are usually developed by the neighborhood community with technical support from the local administration. The Addis Ababa city administration allocates land for developing NPs free of charge and neighborhood communities are expected to contribute money and labor for the design, development and maintenance of NPs. Although neighborhood parks in residential settlements in Addis Ababa are primarily developed for providing space for leisure and socialization, they also provide other environmental and economic benefits. Such parks, however, have not been used to gain optimum benefit due to challenges related largely to a lack of public participation in the planning, development and maintenance of NPs. Therefore, understanding the perception of urban park users on the benefits and challenges and attitude towards the quality of urban parks in African cities and the factors that would affect the level of perception are important for their effective planning, design and management; responding to the needs and preferences of urban communities [50].

Conceptual Framework

The conceptual framework of this study is based on the premise that urban park planning and management needs to understand the perception and attitude of people towards the benefits, challenges and quality of the parks.

Ecosystem services are the benefits that functioning ecosystems provide to human being [51,52]. Ecosystem services assessments are important tools for supporting decisions on land use because they can highlight benefits and trade-offs between different land-use options, ideally by integrating biophysical and socioeconomic methods [53,54].

There are different types of methods for assessing ecosystem services that are dependent on the aims of the assessment. The preference assessment method, which is a type of socio-cultural method, is a direct and quantitative consultative method for analyzing perceptions, knowledge and associated values of ecosystem service demand or use without using economic metrics [55]. The method is a useful approach for identifying relevant ecosystem services from the perspectives of different stakeholders. Questionnaire-based analytical methods have been successfully employed for the assessment of the public perception of ecosystem services [56] and park quality [57].

People's perception of urban green space tends to be site specific and is affected by several factors which are related to the physical features of the green space [58], demographic and socio-economic factors of users [59,60], quality of green space and presence and quality of facilities in the green space [61]. This calls for employing a place-based approach for assessing the public benefits of urban green space to better inform urban green space planners by connecting people to their places. Planning and management of urban green space is effective when it considers the diversity of knowledge of the public and stakeholders and the understanding and consideration of the users' opinions and preferences [62].

The objectives of this study were: (i) to understand the residents' perceptions of benefits and challenges in urban NPs; (ii) to understand the residents' attitudes towards the quality of NPs; (iii) to determine if there is an association between the residents' characteristics and perceptions of benefits and challenges and attitude towards the quality of NPs; and (iv) to provide recommendations for the planning, development and use of NPs in rapidly developing cities in Africa.

2. Materials and Methods

2.1. Study Area

This study took place in Addis Ababa, the capital and largest city of Ethiopia. The city is located at 8°45′ and 9°49′ latitude North and 38°39′ and 38°54′ longitude East (Figure 1), with a total land area of 520 km² and population of around 3.238 million [63]. Addis Ababa is a chartered city with three tier administrations: city, sub-city and woreda (district). Topography in the city is very variable, with mountainous and undulating terrain and a deep gorge in the north and west, and low-lying and flat terrain in the south and east. Altitude ranges from 2100 m to 3100 m above sea level [64]. The mean annual precipitation is 1100 mm, mostly falling from June to August, and the mean monthly temperature varies between 14.8 °C and 17.9 °C [64].
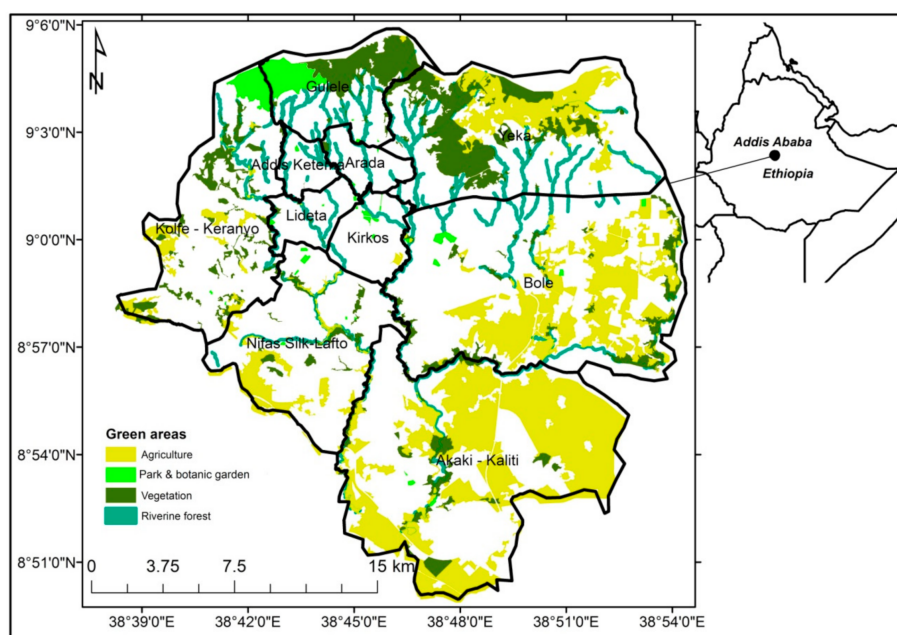

Figure 1. Map of Addis Ababa showing the 10 sub-cities and distribution of green space.

Over the years, the city has grown in physical size, engulfing the peri-urban agricultural lands. The central business district (CBD) of the city is found in the central part of the city and occupies 7.1% of the city area. Four of the ten sub-cities, namely Arada, Addis Ketema, Lideta and Kirkos are found in the CBD. Residential settlement constitutes the largest (53.4%) land use of the CBD and 69% of the settlement in the CBD is informal [64]. The remaining six sub-cities are found in the city periphery where formal residential settlement occupies 65.4% of the total residential area.

Green space covers 35.6% of the land area of Addis Ababa, of which field crops constitutes 63.9%, Eucalyptus dominated plantation forest 4%, institutional forest (composed of both native and exotic species) 4.2%, riparian vegetation 2.3%, botanic garden 3.8%, vegetable farms 2.3%, scrubland 1.9%, public parks 0.4% and grassland 0.5% [65].

For effective planning and development of public parks, the current Structure Plan of Addis Ababa [66] includes a park typology which is based on park size and service area radius (Table 1). Service area is determined on the basis of accessibility using public transport and walking. City, sub-city and district parks are to be developed and administered by the city, sub-city, and district administrations, respectively, while NPs are to be developed and administered by the local community.

Table 1. Urban park typology in Addis Ababa.

Park Type	Area (ha)	Service Area (km)
City park	>10	10
Sub-city park	1–10	5
District Park	0.3–1	1.5
Neighborhood park	<0.3	0.3

At present, 105.6 ha of city and sub-city parks are found in Addis Ababa and a few additional parks are being developed [65]. There is no documented information about the total size of district and neighborhood parks in the study area. Recognizing the very low public park coverage in the city and to raise the per capita green space from 0.33 m^2 to 5.2 m^2 per person, the city's Structure Plan has proposed the development of an additional 2280 ha of public parks by 2027 [66]. To increase the accessibility of public parks, the city administration followed the strategy of providing numerous small sized parks, as opposed to few large sized ones, distributed throughout the residential area of the city. Such an approach has also been advocated for enhancing social equity in New York City [67].

Neighborhood parks (Figure 2), the focus of this study, are primarily developed for recreation and social interaction by the community in the neighborhood. They are planned according to international best practice guidelines that consider that no person should live more than 300 m from their nearest area of green space [68–70]. In the formally planned residential area of Addis Ababa, especially outside the Central Business District, the Addis Ababa city administration provides land for the development of NPs for free. One such park is usually intended for use by 50–70 households. Residents typically establish a "green space committee" whose responsibility it is to coordinate the financing, development, maintenance and use of NPs.

Figure 2. A newly developed neighborhood park in Kolfe-Keranyo sub-city of Addis Ababa.

2.2. Sampling Design

A cross sectional research strategy was followed for piloting the study. Public parks in general, and NPs in particular, are unevenly distributed in Addis Ababa. Since NPs are virtually absent in the CBD, the peripheral sub-cities were selected for sampling. Sampling took place in three of the six peripheral sub-cities: Bole, Kolfe-Keranyo, and Nefas Silk-Lafto (see Figure 1). Within each sub-city, one district with a relatively greater number of NPs was selected. Several NPs in the selected districts are still under development and only fully developed NP open to the public were used. Based on information collected from the district administration, 20–30 NPs (25–40% of the total NPs in the district) were randomly selected from each district using a lottery method. One in every three households located within a 300 m radius of the selected NPs was approached for a questionnaire survey, making a total of 412 household samples across the three districts. At each household, respondents 18 years old and older were contacted for the interview.

2.3. Selection of Ecosystem Services

Thirty-three benefits (ecosystem services) that could be obtained from NPs and eight challenges that could be exerted by NPs were drawn from the literature [71–74]. For the selection of ecosystem services and challenges, three focus group discussions, each lasting 1.5 h, were conducted with purposely selected planners and ecologists from the academia and experts working in the city's public institutions that deal with urban green space development, administration and regulation. Using Q-methodology, the focus group discussants selected ecosystem services and challenges. For assessing the attitude of residents towards NP quality, eight attributes of NP quality were considered [75–77]. The selected benefits, challenges and quality attributes of NPs were used for the questionnaire survey.

2.4. Questionnaire Survey

A questionnaire survey was used for household data collection. The questionnaire consisted of socio-demographic questions (age, gender and education), questions on the residents' perception of the perceived benefits, perceived challenges and questions on the attitude of residents' towards the quality of NPs. Age was coded into three categories: 18–39; 40–59; 60 and older. Education level

attained was coded into three categories: elementary (Grade 1–8); secondary (Grade 9–12) and college/university. Gender was categorized into male and female.

The survey questions were prepared in the local language, printed on paper, and trained enumerators administered the survey between January and April 2019. The survey was conducted during weekends where residents were more likely to be at home. At the beginning of the survey, the purpose of the study was explained and consent to conduct the questionnaire was obtained. The survey questions were explained to the residents to make sure that they had understood them clearly. Respondents were asked to score the importance of the benefits and challenges that a NP in their residential area provides/exerts. Perceived benefits and challenges were scored on a 4-point ordinal scale of 4 (very important), 3 (important), 2 (unknown), and 1 (not important). Survey questions on residents' attitudes towards the quality of NPs included: extent of plant diversity (combination of native and exotic species); cleanliness; availability of facilities for children and adults; park usage; attractiveness; safety; park maintenance; and park design. These were scored as excellent (4), good (3), unknown (2) and poor (1).

2.5. Statistical Analyses

The collected data were coded in MS Excel and analyzed using SPSS 25. First, descriptive statistical methods of means and percentages were used to summarize the scores on respondents' perception of the benefits and challenges and attitudes towards the quality of NPs. Scores were tested for independence among age, gender, and education level of respondents using Pearson's Chi-square test (χ^2) of independence. The Chi-square test was selected because the data were independent and normally distributed. The Chi-square test was applied to a contingency table of r (rows) x c (columns) with (r-1) (c-1) degrees of freedom, where rows represent the dependent variables (perceived benefits, challenges and quality of NPs) and columns represent the independent variables (age, sex, level of education). A confidence level of 95% was considered.

3. Results

3.1. Selected Ecosystem Services

The focus group discussion resulted in the selection of 18 ecosystem services and five challenges that were considered relevant for Addis Ababa. The selected benefits are grouped into environmental benefits (*n* = 11), socio-cultural benefits (*n* = 5) and economic benefits (*n* = 2)

3.2. Response Rate and Characteristics of the Respondents

Out of the 412 questionnaires dispatched for face-to-face interview, 398 residents were willing to respond to the questions, resulting in a 96.6% response rate. The demographic features of the respondents are presented in Table 2. About 56% of the respondents were female and 44% male. The majority of respondents (61.1%) were between 18–39 years old, 34.9% between 40–59 years old and 4% were 60 years old and above. Fifty-eight percent of the respondents had attained college/university level education, 34.7% had attained secondary education and 7.3% had attained elementary education.

Table 2. Respondent demographic and socio-economic characteristics.

Demographic and Socio-Economic Features		Number (%)
Gender	Male	175 (44%)
	Female	223 (56%)
Age	18–39	243 (61.1%)
	40–59	139 (34.9%)
	60 and older	16 (4%)
Education level	Elementary (Grade 1–8)	29 (7.3%)
	Secondary (Grade 9–12)	138 (34.7%)
	University/College	231 (58%)

3.3. Residents' Perception of the Benefits of Neighborhood Parks

In general, residents perceived the benefits obtained from the NPs as very important and important with a mean value of above 2.5 and chosen by 57% of the respondents (Table 3). All benefits (with the exception of noise abatement, shelter for animals, property value increase and provision of fruit and medicine), were scored as very important by more than 50% of respondents. On average, 87% of respondents rated the environmental benefits as very important or important. Overall, socio-cultural benefits were the highest scored (considered very important or important by 96.2% of respondents; mean score of 3.5), followed by environmental benefits (87.1% of respondents and mean score of 3.4). The economic benefits were considered least valuable (scored as very important or important by 64.8% of respondents; mean score of 2.9).

The three highest scoring environmental benefits of NPs were oxygen release, reduction in air temperature and provision of shading. Provision of shelter for animals was the environmental benefit that was perceived as least important. Aesthetics enhancement, provision of space for recreational activities and provision of space for cultural and social activities were the three highest scoring socio-cultural benefits. The very important and important responses for the socio-cultural benefits range from 93.8 to 96.9% with an average of 96.2%. Less than 1% of the respondents reported that socio-cultural benefits are not important. From the two assessed economic benefits of NPs, property value increase was more scored as more important than the provision of fruit and medicine.

Table 3. Percentage value of residents' perception of the benefits of neighborhood parks.

	Perceived Benefits	Very Important	Important	Unknown	Not Important	Mean *	Standard Deviation
Environmental benefits	Oxygen release	86.7	12	0.8	0.3	3.9	0.39
	Low air temperature	78.9	19	1.3	0.3	3.8	0.54
	Shading	69.8	27	2	0.8	3.7	0.56
	CO_2 sequestration	67.1	31	0.8	0.8	3.6	0.54
	Soil erosion prevention	65.3	26	5.8	2.5	3.5	0.72
	Wind protection	55.8	36	5	3.5	3.4	0.75
	Air pollutant absorption	55.8	34	7.5	2.5	3.4	0.74
	Flood abatement	51	33	12	3.8	3.3	0.83
	Groundwater recharge	50.3	29	13	8.3	3.2	0.96
	Noise abatement	34.9	46.5	13.1	5.5	3.1	0.83
	Shelter for animals	12.6	31	51	6	2.6	0.79
	Average for environmental benefits	57.6	29.3	10	2.9	3.4	0.64
Socio-cultural benefits	Places for recreational activities	77.9	19	2.8	0.3	3.7	0.51
	Aesthetic enhancement	75.6	22	2	0.3	3.7	0.50
	Places for cultural and social activities	65.3	31	4	0	3.6	0.56
	Opportunities to know and contact nature	63.3	28	7.8	0.8	3.5	0.67
	Physical and mental health	57.8	36	6	0.5	3.5	0.63
	Average for socio-cultural benefits	69.2	27	3.7	0.28	3.63	0.57
Economic benefits	Property value increase	34.4	34	19	13	2.9	1.01
	Fruit and medicine provision	24.1	37	34	4	2.8	0.85
	Average for economic benefits	29.3	35.5	26.5	8.5	2.9	0.93

* Interpretation of mean score: >3.25 = very high, 2.5–3.25 = high, 1.75–2.5 = medium, <1.75 = low.

3.4. Residents' Perception of the Challenges of Neighborhood Parks

For the five challenges of NPs, 56% of the respondents reported that the identified challenges are not important. However, for 43% of the respondents the challenges are real concern with the very important and important responses ranging from 17.1% to 64.4%, respectively (Table 4). With a mean value of 2.9, the management cost needed for developing and maintaining NPs was the highest scoring challenge, followed by attracting insects and pests (mean value of 2.56), fear during night time (mean value of 2.54), litter (mean value of 2.47), and keeping out sunshine (mean value of 2.2).

Table 4. Percentage value of residents' perception of the challenges of neighborhood parks.

Perceived Challenges	Very Important	Important	Unknown	Not Important	Mean *	Standard Deviation
Management cost	30.2	34.2	0.25	35.4	2.9	0.82
Fear during night	9.8	34.9	0.5	54.8	2.54	0.69
Attracting insects or pests	9.05	39.9	2.26	48.7	2.56	0.67
Organic litter problem	6.03	34.2	0.25	59.5	2.47	0.62
Keeping out sunshine	5.78	11.3	0.5	82.4	2.2	0.55
Average	12.1	30.9	0.75	56.2	2.54	0.7

* Interpretation of mean score: >3.25 = very high, 2.5–3.25 = high, 1.75–2.5 = medium, <1.75 = low.

3.5. Residents' Attitude towards the Quality of Neighborhood Parks

Table 5 shows the residents' attitudes towards the quality of neighborhood parks in the formal settlement areas of Addis Ababa. 77.3% to 98.2% of respondents rated the quality of the existing NPs as excellent or good with an average of 90%. Of the selected attribute of NP quality, safety was the most scored as excellent (66.4%), followed by aesthetics (59.1%) and existence of plant diversity (58.6%). The availability of park facilities for children and adults was the aspect of park quality that received the highest number of poor responses (22%). Park maintenance and park design received the largest percentage (8.1% each) of unknown responses, followed by plant diversity (4.8%).

Table 5. Percentage value of residents' attitude towards the quality of neighborhood parks.

		Excellent	Good	Unknown	Poor	Mean *	Standard Deviation
1	Safety	66.4	31.8	1.5	0.3	3.6	0.52
2	Aesthetics	59.1	28	1	12	3.4	0.75
3	Plant diversity	58.6	35.6	4.8	1	3.5	0.64
4	Park design	55.3	35.4	8.1	1.3	3.4	0.70
5	Park maintenance	53	38.6	8.1	0.3	3.4	0.65
6	Cleanliness	50	47.7	2	0.3	3.5	0.55
7	Availability of park facilities for children & adults	45.7	31.6	0.3	22	3.2	0.81
8	How well are the parks used	45	37	17	1	3.3	0.78
	Average	54.1	35.7	5.3	4.8	3.4	0.7

* Interpretation of mean score: >3.25 = very high, 2.5–3.25 = high, 1.75–2.5 = medium, <1.75 = low.

3.6. Association of Respondents' Socio-Demographic Characteristics and the Perceived Benefits, Challenges and Quality of NPs

The association of the socio-demographic characteristics (age, gender, level of education) with the perceived benefits, challenges and quality of NPs were assessed one at a time. The Chi-square (χ^2) test of independence result is presented in Table 6. The results shows that there is no statistically significant association ($p > 0.005$) between gender, age, and level of education and perceived environmental, socio-cultural or economic benefits. Similarly, there is no statistically significant association ($p > 0.005$)

between the respondents' characteristics and the perceived challenges and quality of NPs. In other words, the perceived environmental, socio-cultural and economic benefits that are provided by NPs and the perceived challenges and quality of NPs are equally recognized by both male and female individuals, by all age groups and by individuals with different education levels.

Table 6. Chi-square value of the respondents' characteristics and perceived benefit and problem and attitude towards the quality of NPs.

	Environmental Benefit		Socio-Cultural Benefit		Economic Benefit		Challenges		Quality of NPs	
	χ^2	*p* Value	χ^2	*p* Value	χ^2	*p* Value	χ^2	*p* Value	χ^2	*p* Value
Gender	0.03	0.99	1.83	0.4	3.77	0.288	1.31	0.052	0.17	0.92
Age	3.82	0.43	1.87	0.76	1.99	0.921	5.04	0.284	6.12	0.19
Level of education	4.63	0.327	0.64	0.959	5.80	0.446	2.43	0.658	4.55	0.34

4. Discussion

The widely accepted importance of urban parks is reinforced by the results of the study. Neighborhood parks are increasingly recognized as important green structures that could contribute not only to neighborhood ties but also provide important environmental and economic benefits. Because of their accessibility, neighborhood parks are the most frequently used green space in Addis Ababa, and therefore members of the neighborhood communities well recognize the benefits, challenges, and quality of such green spaces.

The very high response rate (96.6%) is due to the fact that face-to-face interviews were conducted during the weekends when residents were mostly at home. In the study area, women typically stay at home during the day time more than men, explaining the relatively higher number of responses from females. Similar studies reported more female than male respondents [37,57], more male than female respondents [30,78], as well as an equal proportion of male and female respondents [72,79,80]. The high proportion of respondents in the age group 18–39 (61%) corresponds to the proportion of individuals in the same age category in the city as a whole (65%). Similar studies also reported a higher proportion of individuals in this age category [48,78]. With 58% of the respondents having a university/college degree, the respondents in this study have a relatively high level of education. This is in line with the findings of studies elsewhere [45,48,80] but higher than figures reported in other studies [30,72,78]. In the last two decades, higher learning institutions, both private and public, have increased by several folds in Addis Ababa, providing good access to higher education for the city's residents.

4.1. Residents' Perception of the Benefits of Neighborhood Parks

The result has demonstrated that residents have a good understanding of the multiple benefits (environmental, socio-cultural and economic) obtained from neighborhood parks. Among the environmental benefits of NPs, oxygen release, low air temperature, shading, and CO_2 sequestration were recognized as particularly important. While the creation of low air temperature and provision of shading are benefits that residents could easily recognize, the perceived importance of NPs for oxygen release and CO_2 sequestration was less expected.

Similar to other studies [12,13,47], the present study has shown that socio-cultural benefits of NPs are perceived as more important for the neighborhood communities than the environmental and economic benefits. The presence of green space near residential areas provides the opportunity for relaxation and socialization for adults and playing space for children and teenagers, while the greenery provides aesthetic benefit to the residents. The shade provided by the trees and the fresh air provided by the vegetation are other reasons for which residents perceive NPs to be important. The NPs were not considered important for the provision of fruits and medicines because residents in the study area use their private gardens for planting economically important plants (medicinal, spice, fruit) [65].

4.2. Residents' Perception of the Challenges of Neighborhood Parks

The most important challenge that respondents mentioned is the cost related to the management of the NPs. Management costs of urban parks are related to the cost of land acquisition, cost of development and cost of maintenance. Land acquisition is an important factor for the development of urban parks. In Ethiopia, urban land is owned by municipalities and citizens only have the right to use the land. Municipalities allocate land for private investment through lease agreements and for public investment (e.g., for urban park development) free of charge. Therefore, the management costs of NPs in the study area are related to the development (design and construction) and maintenance only. Since management of NPs in Addis Ababa is the sole responsibility of the local residents, availability of resource (time and finance) has been the major obstacle for the management of NPs. The neighborhood level "green space committee" is a group of willing individuals that coordinate fundraising from local households and employ laborers for land preparation. Seedling plantation, watering of plants and weeding is usually done by the residents.

NPs as source of insect and pest attack were rated as the second most important challenge. During the rainy season, NPs act as a breeding site for certain flies which create a nuisance to residents in the evening. Moreover, residents sometimes encounter house rats during their visit to NPs and during the rainy season house rats migrate from parks to residential houses causing damage to household articles and foodstuffs.

Perception of safety is an important factor that could affect park usability [47]. In this study, fear during the night was the third most important challenge that hinders the use of NPs. During nighttime women do not feel safe to use the NPs for fear of vandalism and theft. Studies in Guangzhou, China [30] and central Scotland [81] reported vandalism and incivility as a problem that deters people from visit urban parks. Studies [82,83] indicate that women have higher levels of fear of crime than men.

The effect of NPs on keeping out sunshine was not considered an important challenge in the study area. This is because houses are at least 8 m from the boundary of the parks, thus the crowns of trees in the NPs do not shade the houses. The majority of trees in NPs are evergreen, thus organic litter production is minimal.

4.3. Residents' Attitude towards the Quality of Neighborhood Parks

The respondents' attitude towards the quality of NPs was generally positive, with safety, plant diversity, and cleanliness of the NPs receiving the highest rating. In the study area, NPs are fenced with mesh wire or metal tubes to protect the plants from damage by domestic animals. Furthermore, the use of the NPs is usually limited to residents of the neighborhood, rendering safe usage of the parks.

Addis Ababa is located in the central highland of Ethiopia which is known to harbor some important native plant species, e.g., *Juniperus procera*, *Olea europaea* supsp. *cuspidata*, and *Podocarpus falcatus*. Since the climatic and ecological condition of Addis Ababa is conducive for the growth of these native tree species, residents and park administrators include a reasonably large number of these trees when they develop NPs. A study [65] of one of the urban parks in Addis Ababa reported that 58% of the plants were exotic and 42% native. The high rating of cleanness of NPs is because the residents consider the NPs as their own, thus feel a sense of responsibility for maintaining the cleanness of the NPs. The attitude of residents towards the presence of park facilities for use by both adults and children is generally poor. This is because the "neighborhood green space committees" prioritize the money contributed from the neighborhood residents for fencing the parks and for the plantation of seedlings. Studies [84,85] have indicated that the presence of park facilities, natural features, and good levels of park maintenance, safety and cleanliness are factors that attract visitors to parks. Therefore, to enhance the use of the NPs by all age groups, consideration should be given to the installation of park facilities.

4.4. Association of Respondent Socio-Demographic Characteristics and the Perceived Benefits, Challenges and Quality of NPs

The findings from this study show that socio-demographic characteristics had no significant effect on residents' perception of the benefits and challenges and attitude towards the quality of NPs. Addis Ababa is characterized by mixed settlement without segregation by socio-economic or ethnic factors. The literature on the influence of socio-demographic factors on the perceived benefits and challenges of urban parks is variable. Some studies [30,50,86,87] have indicated that age, gender and level of education tend to influence people's perception of the benefits and challenges of urban parks. However, a study of two metropolitan areas in the eastern United States [87] found no significant gender variation in the perceived benefits of parks. Furthermore, a study of the perception of urban green spaces in Karachi (Pakistan) [88] showed no relationship between socio-demographic factors and perception of green space benefit. Similarly, a study in two Ethiopian cities reported that most demographic and socio-economic factors have no significant influence on people's perception of the environmental, economic and socio-cultural benefits of green infrastructure [48]. Variability in the relationship of socio-demographic variables in the perception of urban green space was also reported from southeast European cities [34]. It is understood that people perceive their heterogeneous natural and artificial environment differently in different regional settings [88] and cultural contexts [78].

5. Conclusions

The current research examined the attitude and perception of neighborhood communities towards the benefits, challenges, and quality of NPs in a formal settlement area in Addis Ababa, a rapidly urbanizing Sub-Saharan African city. The empirical analysis has been based on a questionnaire survey conducted in several neighborhood parks developed by local communities. The results indicate that residents not only gain socio-cultural benefits when they visit NPs, but also perceive several environmental benefits which may not be associated with direct visitation. Economic benefits were perceived as less important. This study thus recommends that urban park planning needs to focus not only on the provision of cultural ecosystem services (such as health benefits and social cohesion) but also regulating ecosystem services (such as reduced air temperature and improved air quality). The fact that the neighborhood communities have invested their time and money in developing and maintaining NPs might have contributed to the largely positive perception of the benefits and quality of NPs.

The lack of facilities for children, youth and adults in the NPs is something that neighborhood green space committees should rectify by installing facilities to maximize the perceived benefits for all age groups.

One important lesson that cities in Sub-Saharan Africa could draw from the development and management of neighborhood parks in Addis Ababa is the vital importance of public participation in urban park development and management. Cities in Sub-Saharan Africa are already crippled by lack of finance for urban development. Urban green space financing is not prioritized relative to other sectors of urban development (e.g., road construction, provision of potable water, provision of housing), rendering a reduced allocation of municipal finance for urban park development. Public mobilization for urban green space development and subsequent management is thus of utmost importance in order to increase the quantity and quality of accessible green space in Sub-Saharan African cities. However, more research is needed to better understand how to involve diverse community groups of Sub-Saharan African cities in urban park planning, development and management.

People can only participate in urban park development and maintenance if they have a positive perception of, and good attitude towards, urban parks. Sub-Saharan African cities are characterized by the presence of diverse communities that differ in culture, social structure and economic conditions. Therefore, place-based studies for assessing the perceived benefits that attract people to use urban parks, as well as the challenges that deter people from using them, need to consider urban communities of different socio-cultural and economic conditions. This type of information is useful for municipal and

local authorities, urban park planners and managers in cities of Sub-Saharan Africa for successful urban park planning and management activities to meet the increasing needs and demands of the ever-growing urban residents. The approach followed in this study could thus be followed or adapted in investigating the perception of users towards other type of urban parks (e.g., city parks, sub-city parks and district parks), as well as other urban green space types (e.g., street trees, institutional forest, and wetlands). The selection of urban park benefits, challenges and qualities for attitude and perception studies need to involve not only academics and experts, but also local residents who may have different understandings of these aspects of urban parks.

To provide additional information for effective urban park planning and management with the aim of developing good quality urban parks that reflect residents' needs and preferences, further investigation is needed into the motives of people for visiting urban parks, the factors that most influence the frequency of park use, the public preference for future urban park development, and the objective benefits and challenges of urban parks.

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