Assessment of Residents’ Socio-demographic Factors Associated with Visit to Green Infrastructure Facilities in Lagos Metropolis, Nigeria

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ABSTRACT

Despite global efforts at promoting environmental sustainability through development of Green Infrastructure (GI) facilities at urban centres; social menaces, depletion and wrong use of green spaces still persists in many developing nations. Indeed, attitude of residents towards the use of these facilities have not been commensurate to the reasons why the GI facilities were created. This study therefore examines the socio-demographic factors associated with visiting GI sites among residents of Lagos Metropolis, Nigeria. Multi-stage sampling technique was used to select 1560 participants in a questionnaire survey. Descriptive statistics was used to explore data distributions while Chi-square test was used to investigate residents’ socio-demographic characteristics associated with visit to green infrastructure sites in the study area. Participants were mostly men (58.6%) and younger than 50 years old (85.8%). Percentages of residents visiting GI facilities for either spiritual exercises (male=26.4%, female=23.8%) or joblessness (male=48.9%, female=52.1%) is higher than percentages of residents visiting GI facilities for recreation/relaxation (male=24.7%, female=24.1%) activities in Lagos Metropolis. The study suggests among others that, the Lagos State government should develop GI facilities to enhance more opportunity for job generation, while more public orientation on positive attitude toward use of GI facilities should be emphasized.

1. Introduction

Rapid and uncontrolled urbanization is greatly altering the spatial pattern of urban land use worldwide. The phenomenon is particularly recognised as one of the biggest environmental problems confronting many cities worldwide (Graham, Gurian, Corella-Barud & Avitia-Diaz 2004; Balogun, Adeyewa, Balogun, & Morakinyo, 2011; UN-Habitat, 2015; Popoola et al., 2016). Presently, urbanization is rapid worldwide and is expected to continue in the coming decades, especially in the developing world where studies by the United Nations Population Fund (UNPF-2007) projected that 80% of the world’s urban communities will be found by 2030 (Beardsley et al., 2009). Consequently, the resulting depletion of urban natural environment to cater for the increase in population at local to global level are continuously altering urban ecosystems. Recent researches on this aspect (Ward Thompson, Aspinall & Roe, 2014, Adegun, 2018, 2019) has emphasised the importance of
urban Green Infrastructure (GI) as well as their rapid losses due to geometric progression in urban growth as GI form an essential component of urban spatial elements. Urban GI helps provide a framework on which sustainable environment and development lies. The aesthetic, air quality maintenance, sense of community and therapeutic benefits that these facilities provide cannot be over-emphasized (Popoola et al., 2016).

More importantly, the positive health effects of green environments have been described across different field of study including landscape architecture, descriptive epidemiology, environmental psychology, public health, ecology and behavioural studies (Hartig et al., 2003; Takano et al., 2002; Maas et al., 2006; Bonnes, Passafaro & Carrus, 2011). Proximity to green environments has been found to be associated with a number of health benefits (De Vries, Verheij, Groenewegen, & Spreeuwenberg, 2003; Morita et al., 2007; Nielsen and Hansen, 2007). Residents in greener areas report their physical, mental and overall health status to be better than those living in less green areas (De Vries et al., 2003; Bell et al., 2008). It is pertinent to note that the developed and developing world is facing a health crisis of alarming proportions as physical inactivity, obesity, mental and emotional illness increase. Creating awareness that green environment might play a role in enhancing health, and perhaps prevent illness as well the high cost that would be needed for medical intervention, has attracted attention from policy makers and researchers (Morris et al., 2006; Ward Thompson et al., 2014). Neighbourhood GI facilities like green gardens, urban parks, street trees, urban forests, fountains, urban agriculture, public open space, sports facilities and other green spaces contribute to individual well-being, and through their social, economic and environmental attributes contribute to more liveable and attractive towns and cities (Bell et al., 2008) and as well have a role to play in promoting residents’ health and well-being (Bedimo-Rung, Mowen, & Cohen, 2005). Some of the many other benefits of urban GI are; improved air and water quality, mitigation of the impact of environmental pollution, carbon sequestration, regulation of microclimate, habitat for urban wildlife, recreational, spiritual and therapeutic value as well as social integration (Schipperijn et al., 2010; Jahdi & Khanmohamadi, 2013; Nurul Nasyiddah, Othman, & Navawi, 2014; Wolch et al., 2014; Liu et al., 2015).

Despite the well-established benefits of urban GI facilities, residents’ attitudes toward the use of GI facilities still remain not commensurate to the reasons why these facilities were provided and this has attracted attention of researchers recently. Although there is an increase in frequency of studies on benefits of urban GI (Bedimo-Rung et al., 2005; Benedict & McMahon 2006; Bell et al., 2008; Baycan-Levent & Nijkamp, 2009; Dipeolu, 2015; Mexia et al., 2018), there is still not a clear and consistent understanding of the factors motivating users and other practitioners towards the use of GI facilities in developing nations like Nigeria. Only a limited number of studies (Otegbu, 2011; Popoola et al., 2016) investigated and began to systematically consider questions related to this idea. This paper attempts to fill this gap by identifying the socio-demographic factors associated with visiting GI sites among residents of Lagos Metropolis, Nigeria.

1.1 Concept of Green Infrastructure

Green infrastructure includes strategically planned and delivered networks of high-quality green facilities that contribute to the protection of natural habitats, species diversity and other environmental features designed and managed with the aim of delivering ecological services and quality of life benefits to people in communities (Natural England, 2009). The concept originated in the United States in the mid-1990s with emphasis on the significance of the natural environment and its life support functions in handling land use planning issues. Sandstrom (2002) noted that the concept of GI promotes the quality as well as quantity of urban and sub-urban green areas, their multifunctional role with emphasis on interactions between habitats. Benedict and McMahon (2002) submitted that GI is an interconnected network of water features, wetlands, streams, woodlands, wildlife habitats, and other natural areas; greenways, parks, gardens, and various conservation lands; farms and forests; and other open spaces that support various native species and contribute to quality human life. It comprises all environmental resources which makes GI approaches to contribute towards sustainable planning and management.

These assertions are broadly on two aspects namely; terrestrial habitat connectivity and aquatic habitat connectivity. From the definitions, the following elements has been frequently mentioned as constituting green infrastructure strategies: ecological processes, waterways, multi-functionality, access, connectivity, human benefits, spatial variance, biodiversity and sustainability.

Green infrastructure concept took different styles and focus in its evolution in many developed nations. Beatley (2009) described these differences in evolution style as being a function of planning orientations and styles commonly practiced in those nations. In the UK for example, Howard (1985) concepts of garden cities and the special attractions of green areas at major cities gave birth to GI planning and management. Howard’s attempts at creating spaces that promote recreation and quality of life for urban dwellers through major green facilities became very prominent in these cities (Williamson, 2003). According to Beatley (2009), the development of GI in Europe could be traced to the evolution of green plantings cohesively integrated within high density landscapes in major towns. However, the North American GI evolution could be traced to early developments in landscape conservation to enhance balanced ecology in the city (Benedict & McMahon, 2002; 2006).

Generally, GI has its origin in two fundamental principles: connecting parks and other green areas for the benefit of people, and conserving and connecting natural areas to benefit biodiversity and counter habitat fragmentation. These two fulcrums enhance the multifunctional capacity of GI facilities (Pakzada & Osmonda, 2016). The concept of GI emphasizes the value of functionally and spatially connected, healthy ecosystems and the importance of ensuring that they keep providing their goods and services. GI has a vital role to play in the conservation of the Nigeria’s biodiversity and in tackling fragmentation. This implies that the role of GI in achieving environmental
sustainability cannot not be overemphasized, especially in rapidly growing cities in the Global south.

1.2 Types of Green Infrastructure And Their Importance In The Built Environment

Green infrastructure are of different types as found in the review of literature. Generally, they can be categorized into four different groups namely; a green feature GI (e.g green roofs, green parks, gardens, sport fields), tree feature GI (e.g street trees, woodlands, community forests), water feature GI (e.g streams, fountains, rivers, flood plains) and other spaces GI that cannot fit into those earlier mentioned (e.g open spaces, Permeable pavement, cemetery, wildlife habitats) (Wolch et al., 2014; Mullaney, Lucke & Trueman 2015; Adegun, 2018). The connectivity between the different types of GI are important strategies through which GI perform their functions in ecosystem services. GI systems functions by restoring natural ecosystems thereby creating opportunity for sustainable growth and development in cities (Benedict & McMahon, 2006). In doing so, they provide a diversity of ecological, social, and economic functions and benefits, like enriched habitat and biodiversity; improved health; maintenance of natural landscape processes; provide cleaner air and water and increased recreational opportunities.

GI facilities have been reported to have the capacity to provide various environment-related benefits such as carbon sequestration, improved air and water quality, control of air pollution and urban heat island effect (Whitford, Ennos & Handley, 2001; Gómez-Munoz et al., 2010). GI provision contributes to energy conservation initiatives by insulating buildings, shading building envelopes and ameliorating the urban heat island effect. In addition to the direct energy saving benefits, they can also be built as a complement to sustainable energy generation practices. Furthermore, developments that incorporate GI practices into the initial planning and design phase are better able to take advantage on the cost-saving, climate change resilience and other benefits GI provides (Naumann et al., 2011). Nigeria and other developing world are faced with a multiplicity of challenges in addressing sustainable development but GI strategies can provide perfect solution to tackle these challenges.

Empirical evidences have also evaluated the roles of various types of GI on storm water management as well as carbon emission control (Liu, Chen & Peng, 2014; Liu et al., 2015; Pugh, MacKenzie, Whyatt & Hewitt, 2012). The roots of some trees serve as filters for underground water and thus highly improve quality of drinking water (Dong, Guo & Zeng, 2017). Well planned green space has also been shown to increase property values and decrease the costs of grey infrastructure and services, including the costs for stormwater management and water services (Benedict & McMahon, 2006; Pouydal et al., 2009; Otegbulu, 2010; Tan, 2011). The concept of GI promotes the value of functionally and spatially connected, healthy ecosystems and the importance of ensuring that they keep providing their goods and services. Therefore, residents must be aware of the concept and make use of GI sites in more positive ways that nature provides.

2. Methodology

2.1 Description of Study Area

Lagos state lies in the South-western area of the Federal Republic of Nigeria within the longitude 2°42’E and 3°42’E and latitude 6°22’N and 6°52’N (Figure 1). The Metropolitan part of the state is on low land, with about 20000 hectares of built-up area (Oduwaye, 2009). Administratively, Lagos is made up of twenty (20) Local Government Areas with sixteen (16) of these LGAs statistically classified as Lagos Metropolis (Ajose, 2010) while the remaining four (4) LGAs (Ikorodu, Epe, Badagry and Ibeju/Lekki) are in the sub-urban area of Lagos state (Figure 2). With the high urbanization and industrial growth rate, Lagos is one of the most densely populated regions on earth with a population of about 9.3 million recorded in the 2006 Census (Adesuyi, Njoku & Akinola, 2015). This figure was further estimated to have grown to about 21 million people in 2016, surpassing Cairo to become the largest city in Africa and one of the fastest growing urban centre the world over. Lagos is the centre of business and economic development in Nigeria, hosting about 70 percent of the country’s industrial establishments, 60 percent of Nigeria’s non-oil economy and more than 65 per cent of all commercial activities (Adelekan, 2010).

The rapid physical development going on in Lagos have among other things intensified the depletion of initial greens areas of the state. Various community forests, open and green spaces have been depleted in lieu of massive grey infrastructure. This has consequently increased adverse effects of various environmental sustainability challenges in the state. Thus, the need to develop strategy that can re-invent green spaces in this city. In attempt to provide solution to this, Lagos State Government established the Lagos State Parks and Gardens Agency (LASPARK) in 2011 as a parastatal under the State Ministry of Environment for the purpose of improving the quality of the environment through tree planting and maintenance of open spaces, design and beautification of open spaces and monitoring, and enforcement of compliance to protection of the existing stock of GI in the State (Dipeolu, 2017).

Consequently, the efforts of LASPARK have brought about the availability of all the four categories of GI (green, tree, water and other spaces GI) in the study area. Green spaces GI are basically of green features and mostly plant materials (such as grasses, gardens, parks, city farms and sports fields), tree GI are mostly of tree features and their assemblage (such as street trees, community forest, woodlands and horticultures). Water GI are those of water/aquatic ecosystems (such as streams, rivers, lake, floodplains and fountains), other spaces GI are those GI cannot be categorized into any of the earlier mentioned group (such as open spaces, permeable pavement, school yards and cemetery). Presently, it is not uncommon to notice street trees on major high ways in Lagos Metropolis (Figure 3) creating rhythm and serenity to observers. Also, initial slum areas in Lagos have been planted
with green plants to create parks and gardens for recreation and public gathering (Figure 4). Most of these gardens are well maintained with green grasses, trees and water bodies thus creating environment that is cool, aesthetically pleasing and habitable.

Figure 1: Map of Nigeria showing the location of Lagos in south-western Nigeria. 
Source: Federal Ministry of Environment, Maps Department, Abuja.

Figure 2: Map of Metropolitan Lagos State Showing the 16 Local Government Areas. 
Source: Lagos State Ministry of Environment
2.2 Data Collection

The data presented in this paper were sourced from authors field-work in a survey conducted between the months of March and July 2017. Totally, 1560 residents participated in the study. Participants were household heads or adult representative who can and were willing to provide the needed information.

To ensure the validity of findings of this study, the questionnaire instrument used was pre-tested in an unselected Local Government area of Lagos Metropolis and feedback incorporated into the final version of the questionnaire administered to the residents. Multi-stage sampling techniques were used in the administration of the questionnaire. First, a random sampling technique was used in selecting 4 LGAs (25%) from the 16 LGAs in the sampling frame, which was followed by another random sampling of Enumeration Areas (EAs) in the four sampled LGAs. This was achieved through the collection of list and maps of Enumeration Areas in Lagos Metropolis from the Lagos State National Population Commission (NPC). At the second stage, in each EA, households were systematically sampled from the list of numbered houses (households) until the required number allocated to the EAs was reached. For the third stage, a questionnaire was given to every consenting household head to fill. A total of 1620 questionnaires were administered from which 1560 (96.3%) were retrieved. Questions were structured to elicit responses on socio-demographic characteristics of participants such as age, marital status, household size, highest education qualifications among others and issues relating to availability of green infrastructure in their neighbourhood such as type of GI present in their neighbourhood, the location of the GI facility, reasons why they visit GI facilities/sites, distance of GI facilities to their place of residence, evaluation of government supports for GI development in their neighbourhood and the type of support they expected from the government. Others questions were on the type of housing and the type of residential neighbourhood of
respondents. The data were analyzed using both descriptive and inferential statistics and findings are presented in the subsequent section of the paper.

2.3 Data Analysis

2.3.1 Socio-demographic characteristics of the respondents

Nearly half of the participants (48.2%) were aged 30-49 years old while only 12.1% of the participants were 50 years or older. Participants were mostly male (58.6%) living in household comprising of two-four (46.9%) and more than four (41.9%) persons per household. Also, 54.7% were currently married at the time of the study, whereas 37.9% were not yet married and 4.0% were previously married but now separated or divorced. More than half of the participants (62.1%) had tertiary education while only few (5.4%) have no formal education. Some participants (31.0%) were management staff/business owners, while 26.3% were junior staff and 14.3% were senior staff in either civil services or private companies (Table 1).

2.3.2 Socio-demographic factors associated with visit to GI facilities

To further investigate other issues related to the objective of this study, chi-square test was carried out to assess participants' socio-demographic characteristics in relation to their reasons for visiting the available GI facilities in Lagos Metropolis. Chi-square test was employed based on the nature of data generated by the study and to also be able to select among others, those factors that motivate the residents toward the use of GI facilities in Lagos Metropolis.

In Table 2, compared with any other household size, the proportion of participants visiting GI for spiritual exercise was significantly higher among those with only one person (29.5%; p=0.020) in the household while the proportion visiting GI due to joblessness was significantly higher among participants with two-four persons in the household (53.8%; p=0.020). Similarly, the proportion visiting GI sites for relaxation was significantly higher among respondents with more than four persons in the household (27.9%; p=0.020). On the other hand, among participants with only one person in the household, proportion visiting GI due to joblessness (50.0%) was significantly higher than any other reasons for visiting GI facilities. Actually, joblessness accounted for the major reasons why people visit GI facilities in the study area (Table 2).

Also, results from the rank in occupation/income level shows that the proportion of participants visiting GI for spiritual exercise was significantly higher among management staff/business owners (30.2%; p=0.007) while the proportion visiting GI due to joblessness was significantly higher among the junior staff participants (54.9%; p=0.007). Similarly, the proportion visiting GI sites for relaxation was significantly higher among respondents who are senior staff in their various organisations (28.6%; p=0.007). Proportion of participants visiting GI due to joblessness continued to be significantly higher (54.9%) than any other reasons for visiting GI facilities. So, joblessness can be confirmed to be the major reasons why people visit GI facilities in the study area.

Table 1: Socio-demographics Characteristics of Respondents N=1560

| Variables                  | Frequency | Percentage (%) |
|----------------------------|-----------|----------------|
| Sex                        |           |                |
| Male                       | 646       | 41.4           |
| Female                     | 914       | 58.6           |
| Current age                |           |                |
| <30                        | 189       | 12.1           |
| 30-49                      | 752       | 48.2           |
| ≥50                        | 587       | 37.6           |
| Not Reported               | 10        | 0.6            |
| Marital Status             |           |                |
| Never Married (Single)     | 592       | 37.9           |
| Married                    | 896       | 57.4           |
| Previously Married         | 62        | 4.0            |
| Not Reported               | 10        | 0.6            |
| Household Size             |           |                |
| One person                 | 166       | 10.6           |
| Two persons or more        | 731       | 46.9           |
| More than Four Person      | 654       | 41.9           |
| Not Reported               | 9         | 0.6            |
| Religious Affiliations     |           |                |
| Christianity               | 1004      | 64.4           |
| Islam                      | 471       | 30.2           |
| Others                     | 80        | 5.1            |
| Not Reported               | 5         | 0.3            |
| Ethnic group               |           |                |
| Yoruba                     | 1102      | 70.6           |
| Others                     | 457       | 29.1           |
| Not Reported               | 1         | 0.1            |
| Highest Educational Qualification |     |                |
| No Formal Education        | 84        | 5.4            |
| Primary Education          | 108       | 6.9            |
| Secondary / Technical Education | 166   | 25.1           |
| Tertiary Education         | 966       | 62.1           |
| Not Reported               | 5         | 0.3            |
| Profession                 |           |                |
| Unemployed                 | 173       | 11.1           |
| Self employed              | 704       | 45.1           |
| Private/Public employees   | 439       | 28.1           |
| Students and Others        | 244       | 15.6           |
| Rank in Occupation / Income level |        |                |
| Junior Staff               | 410       | 26.3           |
| Senior Staff               | 223       | 14.1           |
| Management staff / Business owners | 483 | 31.0 |
| Not Reported               | 444       | 28.3           |

Source: Authors’ field work, 2017
Table 2: Socio-demographic factors associated with visit to GI facilities

| Socio-demographic Characteristics | Reasons for visiting Green Infrastructure sites | Chi-square | P value |
|----------------------------------|-----------------------------------------------|------------|---------|
|                                  | For Relaxation/Recreation Purpose             |            |         |
| Sex                              | Male                                          | 239(24.7)  | 474(48.9)| 1.92    | 0.384   |
|                                  | Female                                        | 161(24.1)  | 348(52.1)| 159(23.8)|         |
| Age                              | <30                                           | 142(23.8)  | 312(52.3)| 142(23.8)|         |
|                                  | 30-49                                         | 201(24.9)  | 395(49.0)| 210(26.1)|         |
|                                  | ≥50                                           | 47(23.3)   | 98(48.5)| 57(28.2) |         |
| Marital Status                   | Never married                                 | 139(23.0)  | 325(53.7)| 141(23.3)|         |
|                                  | Married                                        | 237(24.7)  | 470(49.0)| 252(26.3)|         |
|                                  | Formally married                              | 19(50.2)   | 23(56.5)| 21(33.3)|         |
| Household size                   | One person                                    | 34(20.5)   | 83(50.0)| 49(29.5)|         |
|                                  | 2-4 persons                                    | 168(22.0)  | 411(53.8)| 185(24.2)|         |
|                                  | >4 persons                                     | 194(27.9)  | 324(46.6)| 178(25.6)|         |
| Religious Affiliations           | Christianity                                  | 241(22.8)  | 510(52.1)| 265(25.1)|         |
|                                  | Islam                                         | 137(27.7)  | 234(47.2)| 124(25.1)|         |
|                                  | Others                                        | 19(23.3)   | 37(41.7)| 25(30.9)|         |
| Ethnic group                     | Yoruba                                        | 299(21.5)  | 582(50.1)| 288(24.5)|         |
|                                  | Others                                        | 106(22.4)  | 239(50.4)| 129(27.2)|         |
| Highest educational qualifications| No formal education                           | 19(22.9)   | 40(48.2)| 24(28.9)|         |
|                                  | Primary Education                             | 35(32.4)   | 43(41.7)| 28(25.9)|         |
|                                  | Secondary/Tech. Education                     | 105(26.6)  | 198(50.1)| 92(23.3)|         |
|                                  | Tertiary Education                            | 241(23.0)  | 511(51.1)| 270(25.8)|         |
| Profession                       | Unemployed                                     | 42(24.9)   | 86(49.1)| 46(26.3)|         |
|                                  | Self employed                                  | 174(24.8)  | 313(50.2)| 172(24.5)|         |
|                                  | Private/Public employees                       | 132(25.5)  | 249(48.1)| 135(26.1)|         |
|                                  | Students and Others                           | 52(20.8)   | 134(53.6)| 62(24.8)|         |
| Rank in occupation               | Junior staff                                   | 10(23.7)   | 239(54.9)| 89(30.5)|         |
|                                  | Senior staff                                   | 71(28.6)   | 121(48.8)| 56(27.6)|         |
|                                  | Management staff/ business owners              | 115(22.7)  | 233(46.4)| 153(30.2)|         |

Source: Author’s field survey, 2017

2.3.3 Evaluation of Government Supports for the Development of GI in the Study Area

Figures 5 and 6 are the result of the residents’ evaluation of government supports for the development of GI in Lagos Metropolis. Specifically, majority (34%) of the residents rated present supports for GI facilities by the government to be average. While 26% of the residents rated government support to be low and only 14% rated government supports for GI in Lagos Metropolis to be high. Also, despite the high reported score of 28% for technical supports, the residents highly reported (39%) that they expect more financial commitments from the government than provision of free seeds (15%) and free lands (12%) respectively.

Figure 5: Government Supports for Urban GI in Lagos Metropolis.

Figure 6: Expected Government Supports by Lagos Metropolis

3. Discussion

This study is an attempt at assessing the socio-demographic factors associated with visit to GI facilities/sites in Lagos Metropolis. Previous study like that of Riaz, Batool, Younas and Abid (2002), emphasized that socio-economic characteristics such as gender, age, education and occupation of the respondents play very important role in the determination of human attitude towards the use of green spaces and realities of life. However, findings from the present study indicated that household size and rank in occupation are the two major socio-demographic factor associated with visit to GI facilities in the study area. This suggests that diversified recreational facilities that can be more useful for households or family recreation should be set up, and that a multifunctional facility should be developed, such as the provision of more stone or wooden seats.
and tables for playing board games, reading, meeting friends, family discussions among others (De Vries et al., 2003; Zhang, Chen, Sun & Bao, 2013). It also suggests that these facilities should be provided at different levels of operations so that all categories of residents (irrespective of their economic strength and rank in occupation) will find the facilities affordable and be very enthusiastic to pay and make use of the GI facilities at different levels. To achieve this, thoughtful designs fortified with adequate facilities are required to attract residents, encourage active participation and multiple users (Giles-Corti et al., 2005).

In contrast to the evidence from previous studies, highest education attained did not emerge as a socio-demographic factor associated with visit to GI facilities in the survey. Whereas, education has been previously identified to be one of the most consistent predictors of positive environmental attitude. In fact, studies of Wall (1995), Ewert and Baker (2001) indicate that individuals with high levels of education tend to appreciate, visit and care more about green spaces in the environment than the less educated people. However, to a certain extent, the result of this study which shows that highest educational attained did not account for reasons why users visit GI facility sites, is consistent with the study by Maas et al. (2009) who concluded that the amount of available green space in the neighbourhood was less important for social contacts of high income people; residents with low income or low level of education benefit most from green space in their living environment.

This study also discovered that men visited and participated in the activities around GI facilities more than women. This result is in agreement with previous findings that differences exist with respect to the gender around green spaces: men shows different sensibility and expectations with respect to urban GI and the younger men are mostly driven by the wish to seek to escape from children interference in their busy schedules and therefore showing preference for the use of parks to meet friends and to rejuvenate from everyday stress. Women on the other hand, are more sensitive to safety and children facilities and will prefer to play with the children especially around the home compared to their male counterparts (Jahdi & Khanmohamadi, 2013; Conedera, 2015). In all, the findings show that environmental approaches to restore natural space in developing nations can have a positive impact on levels of use of the green space and on stewardship to the environment.

On government supports for green infrastructure development in Lagos Metropolis, the residents perceived that government supports for development of GI is still on the average. This may be due to the fact that while government is concentrating on provision of technical supports, tree seeds for planting, land provision and preparation; the public have not felt the impact of government supports or official development assistant by the government adequately in their neighbourhoods. They therefore perceived that if government make more funds available for the development of GI, the facilities will be more available and spread throughout Lagos Metropolis.

4. Conclusion and Recommendations

Green infrastructure has many roles and capacity to provide diverse benefits for cities and their residents (Venn & Niemelä, 2004). A number of empirical studies have indicated that urban residents, values urban green space as place to recuperate from physical, emotional and psychological illness, as well as overcoming stress (Takano et al., 2002; Bonnes, et al., 2011).

Overall, the results in the present study indicate that the degree of use of GI site in Lagos Metropolis is still very far from the purpose for which the facilities are provided. Although, some of the participants still visit GI facilities for the purpose of relaxation and recreation, a large majority of the respondents mentioned that they visit due to joblessness and for spiritual exercises. However, a correct use of the facilities would yield health benefits such as feeling of freshness, mental relaxation, and opportunity for body exercises, early recovery from illness, quality air and control of micro-climate (Benedict & McMahon 2006; Jahdi & Khanmohamadi, 2013; Dipeolu, 2015). Green infrastructure within residential neighbourhoods provides a place of contact between people and nature, increases the potential of meeting neighbours, developing sense of community and enables social well-being and social inclusion, among various categories of users (Germann-Chiari & Seeland, 2004; Seeland et al., 2009; Conedera et al., 2015). It is concluded that GI makes the quality of life better by improving health and creating functional environment through environmental, social and economic impacts. So, a correct use and attitude toward the facilities should be encouraged among residents. The study however makes the following recommendations:

(1) That, the Lagos State government should allow GI facilities to enhance more opportunity for job generation. This could be achieved from the planning stages of implementing GI projects. The project should be planned to generate jobs for residents especially those in the field of built environment. Workers in horticulture, plant scientist, landscape architects and artisans in carpentry, masons, and iron benders can also be employed to carve appropriate shapes and implement professional designs on GI sites. Others that can also benefit from establishment of GI facilities are the tax officers, administrative staff, security and guards that manage the affairs and security of the facilities.

(2) More public orientation on attitude toward use of GI facilities should be emphasized by the government. This could be achieved through various media organisations and public lectures regularly organised for the citizens so that they can be well equipped with needed information and understanding of the benefits and usefulness of GI facilities. This understanding will have capacity to develop in resident’s correct and positive environmental attitude in citizens which gradually affect their use and care for GI facilities in their neighbourhood.

(3) There is need for more financial commitment by the government to environmental greening projects in Nigeria. This will allow every department related to environmental designs to have more resources to implement green infrastructure projects and consequently spread GI sites across the nation. As environmental greening is encouraged in the nation through
these recommendations, challenges related to environmental sustainability can be sufficiently tackled.

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