

The Impacts of Environmental Amenities and Recreational Sites on Sustainable Human Life in Rajshahi City, Bangladesh

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ABSTRACT

Environmental amenities and recreational sites are the blessing of nature that promote sustainable urban life through raising living standard quality of urban residents. This study is an effort to assess the impact of environmental amenities and recreational sites on urban human life. For achieving research objectives primary data was obtained through a simple random survey conducted on 400 in-house residents of Rajshahi City. The data was analysed in terms of frequency, percentage, graph chart and likert scale measurements for getting result according to research demand. The survey reveals that the Padma River was most picturesque and relaxing place to 73.25% of the respondents. Regarding social cases the presence of environmental facilities community wellbeing (84% respondents' opinion) and social network (66% respondents' opinion) has increased while social crime (76% respondents' opinion) has decreased. Availability such amenities prevent chronic diseases (76% respondents' opinion) and promotes mental health (89% respondents' opinion) along with longevity of life (76.75% respondents' opinion). A high percentage of respondents agreed that these amusement sites create employment (66% respondents' opinion) and develop infrastructure (77% respondents' opinion) and local business (70% respondents' opinion). Cultural enrichment including preservation cultural heritage (26% respondents' opinion), fostering cultural festival (33% respondents' opinion), cultural views exchange (23% respondents' opinion) have occurred while environmental pollution including noise (76% respondents' opinion), land (66% respondents' opinion), and water (86% respondents' opinion) and air pollution (83% respondents' opinion) have remarkably reduced due to these amusement sites in the study area. Finally, this study proposes that upgrading recreational spaces, preservation of cultural heritages, integrating green infrastructure, health programs in green places, more recreational sites, public-private partnership, community engagement help to foster inclusive, comfortable and sustainable urban life.

Keywords: Environmental amenities, recreational sites, Sustainable urban, Human-health, Living-Quality, Bangladesh

INTRODUCTION

Environmental amenities and recreational sites notably add quality to urban centres for the resident as a part of a holistic approach to urbanism (Juzelėnienė 2022; Badiu et al., 2016; Petronienė, and Dizdaroğlu, 2015). The rapidly growing cities such as Rajshahi, Bangladesh, where challenges like urban encroachment and destruction of the environment are prevalent, much focus is placed on the access of green spaces and open recreational areas as the strong determinants of the livability and sustainability. With more people being adopted by cities, the need to further develop and protect such infrastructure also arises in order to maintain ecological equilibrium, promote people's health, and guarantee social comfort (Wolch, et al., 2014 & Van Kamp, et al., 2003). This is even more exacerbated by the fact that Rajshahi is still developing with growing environmental burdens such as air, water, wastage and noise pollution, congestion, and resource deprivation. In urban landscapes, open spaces, greenery, and community recreation zones perform an important function which is connected with providing a number of ecosystem services such as air filtration, regulation of temperature, management of drainage water and conservation of biodiversity (Sylla et al., 2019; Niemelä et al., 2010). In Rajshahi city where a population explosion is evident, provision of such services becomes critical in reducing the adverse impacts of urbanization by minimizing air pollution, mitigating the effect of heat islands and building capacity towards climatic variations. In addition to this, providing a number of recreational facilities and green open spaces enables engagement in physical exercise, leisure and social interactions, which are very important in upholding both physical and psychological health (Thompson et al., 2012; Buijs et al., 2009). More so, the provision of these recreational areas in such cities as Rajshahi is significant because there are socio-cultural activities that revolve around these places and therefore encourage the interaction of the community which still retains its structures and has social relations embedded.

Over the past decades, a growing number of studies have confirmed that availability of environmental amenities is associated with less stress, better mental health, and more well-being (Kang et al., 2021; Busse, and Nilsson, 2007). Nevertheless, in a number of fast-growing cities across the world that includes Rajshahi, the availability of these green infrastructures is fast becoming a problem due to the extreme urbanization, population rise and economic growth (Immergluck et al., 2017; Jiang & Swallow, 2014). With higher levels of rural-as-urban migration on the rise, Rajshahi's overstretched population has adversely affected the available resources leading to restriction and deterioration in both quality and quantity of green or recreational spaces. This deficiency of green blue and grey infrastructure installs climate vulnerability, health inequalities and social fragmentation (Winston 2021; Seto et al., 2012). As a result, it is imperative that cities come up with urban planning approaches that are more sustainable in order to embrace environmental services within the city's development strategy, which will ensure that these spaces remain available, fairly distributed, and resilient to any future threats (Thaher, 2023; Garau & Pavan, 2018;). Rajshahi a major metropolitan area and the most populous city is located in the northern part of Bangladesh, alongside the Padma River. Historically, the city has been revered for its clean surroundings and magnificent structures but such notions appear to be changing as the city is increasingly becoming forward looking, concerning social and environmental dynamics. Previous study has revealed a variety of drawbacks, including increased levels of congestion and pollution, insufficient provision of park and recreation areas, and unrestrained and unhealthy urban growth, all of which have led to the deterioration of quality of life (Ali, 2022; Beardsley et al., 2009). The rapid urbanization in Rajshahi has started encroaching upon and even replacing natural sceneries and open spaces (Yiğitcanlar et al., 2015; Bostenaru, 2014). This, in turn, has lessened avenues for outdoor recreation and thereby reduced the ability of the city to enhance its effects towards climate change. It has also compromised the health of ecosystems within the city due to further land-use changes facing pressure from economic activities and population increase (Chubarkina, and Буданов, 2023; Chen, 2015). The negative impacts of urban amenities on environmental quality are most severe in over-populated regions, where there is excessive competition for scarce resources made worse by inefficient design of towns leading to a decline in the overall quality of life (Arfanuzzaman & Dahiya, 2019). Focusing on this issue, it should be mentioned, that the absence of well-planned parks and facilities for engaged activities bears a

social overuse of the environment, where urban spaces are busy, but do not promote the effective wellbeing of the residents (Othman & Jafari, 2019 and Niedźwiecka-Filipiak et al., 2019).

Urban ecosystems support a range of recreational activities that improve mental health, relax the body, and encourage a healthy lifestyle (Sardi & Larroudé, 2020). Similarly, the COVID-19 pandemic has also placed great emphasis on the importance of having open air areas, given that people have been unable to move freely or interact with one another, making the health risks associated with lack of green space even more pertinent issues (Beery et al., 2021; Ugolini et al., 2020). More so, in a city like Rajshahi, where there are limited urban greens, the COVID-19 pandemic brought into focus the issue of urban planning that safeguards public health through incorporating green spaces, which is sustainable, and therefore, should be initiated while there is still time. The green spaces in Rajshahi's contribute to the health of the citizens but also have a possibility of increasing the economy of the city through tourism and higher property prices (Sarker, 2023; Loures, et al., 2015).

Incorporating environmental amenities into the processes of urban development is also important to achieve the sustainable urban development objectives. In a particular, the improving city's goal of sustainable development 11 (SDG-11) incorporates ensuring integrative and inclusive access to safe and sustainable cities that also lack the green space, which is one of the measures of such inclusiveness (An, S. 2023; Rosemann et al. 2020). Cities that focus on developing green spaces and their equitable distribution among the populace are more resilient to climate change and offer a better quality of life to its citizens (Ferreira, 2016; McCormick et al. 2013). However, green space deficient cities are also cities without social equity and are prone to social and environmental injustice; such is the case in Dhaka, where slum inhabitants suffer high environmental health risks due to poor access to environmental resources (Zhang et al., 2018; Latif et al., 2016). In Rajshahi, where such marginalization is prevalent, there is an urgent need for the application of inclusive planning principles in order to improve urban resilience and facilitate the development of more sustainable and just cities (Welch et al., 2022; Van Herzele, and Wiedemann,2003;)

Initially, it is acknowledged that urban development cannot exist in a governance and policy vacuum. There is, however, a need to ensure effective urban governance to incorporate environmental considerations into the urban system, especially in Rajshahi where rapid urban growth creates enormous sustainability-related problems. Studies show that the inclusion of more actors, and particularly local governments, communities and private stakeholders, tends to result in a more sustainable urban planning process (Pongruengkiat et al., 2023; Shen et al., 2016). In the case of Rajshahi, the absence of a strategic plan has caused environmental problems and scarcity of parks and other recreational areas, thus, ample urban interventions which are sustainability-centric are required (Asaduzzaman, 2023; Qodri, and Wahyudi, 2021). Nevertheless, positive views towards environmental amenities and recreational spaces did not generate as much spatial distribution accessibility equity and economic development impact research in Rajshahi. Only a few problems considered how these amenities are helpful for the urbanism of sustainability, more specifically the processes of community building, relieving the localities from the burden of social problems and enhancing their attractiveness for tourism and real estate (Cheng et al., 2022; Tzoulas et al., 2007). So, considering the existing literature this study found that there is dearth of literature in the study area and the effort of the study is relevant which is stated as this research focuses on the socioeconomic status of urban residents in Rajshahi City such as how they view the impact of environmental amenities on urban life. It intends to provide specific insights into the development of urban planning policies and strategies that seek the equity, sustainability and overall well-being of the people in Rajshahi City.

METHODOLOGY

In regard to research, sample size calculation is very important as it guarantees the use of statistically valid findings. Calculated sample sizes aid in minimizing errors, improving population representation, and allow proper conclusions to be made hence improving the quality of results in different disciplines. The sample size determination of this study is follows the works of Singh, & Masuku, 2014; Charan, & Biswas, 2013; Noordzij et al., 2010.

$$n = \frac{Z^2 \cdot p \cdot (1-p)}{E^2} \times \frac{N}{N + \left(\frac{Z^2 \cdot p \cdot (1-p)}{E^2} - 1\right)}$$

n= required sample size

N= population size (Number of residents in Rajshahi City- 552,791)

Z= z-value (1.96 for 95% confidence level)

P= estimated proportion (0.5)

E= margin of error (0.05)

Using the above sample size determination formula for a total population of 552,791 and at a confidence level of 95% with a 5% margin of error, the estimated sample size is about 384 respondents. For achieving better accuracy, reliability and validity of result a400 residents are taken as appropriate sample for this study.

This study aims to evaluate impacts of environmental amenities and recreation sites on urban life in Rajshahi City, Bangladesh. The study was carried out based on primary data which are collected following simple random survey from 400 respondents those are permanent residents of Rajshahi City.

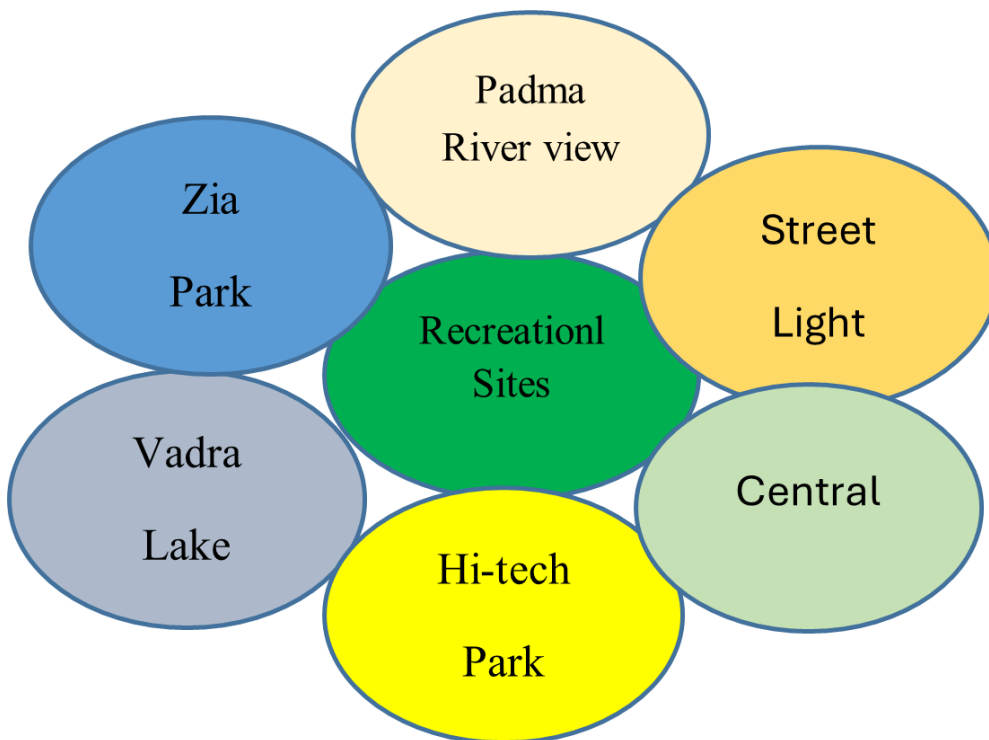


Figure 1: Recreational Sites in the Study Area

Sources: Author’s Own Made Based on Survey data, 2024

The cultural and natural heritage of the city enriched with innumerable resources is the attractions like Padma River, Central Zoo, Lake, Street light and several other parks. These sites are the most significant aspects of this study as their health, social, economic, cultural and environmental effects will be examined. The data collection was done through structured questionnaires over stratified random sampling. Individuals spanning all age brackets, gender, education and social class were targeted to avoid bias in selection. The survey included open and closed-ended questionnaires as well as Likert-type scales in order to solicit respondent’s views on such aspects as the wellbeing, social interaction, health and the preservation of the environment interrelated to the recreational sites.

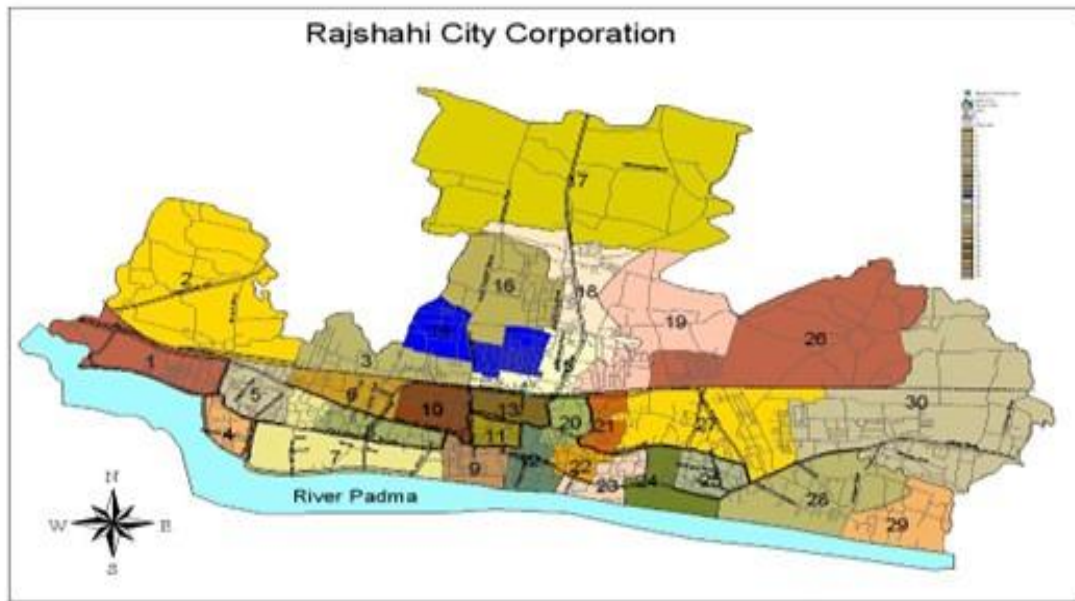


Figure 2: Map of the study area

Source: Adapted from <https://erajshahi.portal.gov.bd/site/>, Bangladesh in 2024.

DISCUSSION OF RESULTS

This part of the study investigates the socio-economic factors of the respondents from Rajshahi City with an objective of understanding the types of people and their economic situations. It provides the information to the reader on how the Environmental facilities and recreational sites will in turn influence the quality of human life. The outcome will help in urban development planning that supports the prevailing socio-economic circumstances along with adequate and worthwhile amenities for recreation purpose.

Table 1 Distribution of Respondents according to their Age

| Age group | Frequency | Percentage |
|----------------|------------|------------|
| (Less than 25) | 26 | 6.50 |
| (25-34) | 106 | 26.50 |
| (35-44) | 120 | 30.00 |
| (45-54) | 54 | 13.50 |
| (55 and above) | 94 | 23.50 |
| Total | 400 | 100 |

Sources: Author's Own Calculation Based on Survey data, 2024

The age of the 400 respondents from Rajshahi City is distributed in a relatively more detailed fashion as depicted in Table 1. It has emerged that a majority of respondents are in the age group 35-44 years which constitutes 30% of the entire sample population. The second largest age group was the 25-34 range accounting for 26.50%. Respondents aged 55 and above account for 23.50% while those in the 45-54 age group comprise 13.50%. The youngest cohort includes the less than 25 who account for the biggest proportion of the age group with 6.50%. These statistics seem to point to the fact that there were more middle-aged people in the sample studied which could be the reason of the stability working class or the more leisure active and environmental oppressed individuals. The age distribution assists in determining the radiograph of respondents and helps in determining their preferences, practices and concerns on spatial recreational facilities within the city of Rajshahi.

Table 2 Distribution of Respondents according to Gender

| Gender Status | Frequency | Percentage (%) |
|----------------------|------------------|-----------------------|
| Male | 245 | 61.25 |
| Female | 155 | 38.75 |
| Total | 400 | 100 |

Sources: Author’s Own Calculation Based on Survey data, 2024

In Rajshahi City, as shown in Table 2, the respondent’s gender is presented 61.25% of the respondents were males and females accounted for 38.75% of respondents. The less proportioned gender distribution is probably a consequence of cultural, sociological or practical factors that have led more males to be on the survey than females. This could also mean that such males are more likely to be found in active engaging places such as parks, riversides and recreational centers rather than remaining indoor. However, it is also possible that there were few female respondents because of gender roles that restrict women, disallowing them from certain activities in public spaces or engaging them exclusively in very specific types of civic activities in Rajshahi City.

Table 3 Distribution of Respondents according to their Marital Status

| Marital Status | Frequency | Percentage (%) |
|-----------------------|------------------|-----------------------|
| Married | 325 | 81.25 |
| Unmarried | 75 | 18.75 |
| Total | 400 | 100 |

Sources: Author’s Own Calculation Based on Survey data, 2024

As shown in Table 3, the 400 respondents had a distribution of marital status. Majority of the respondents, 81.25%, are married while the other 18.75% are single. Looking at the marital status of the respondents, it can be implied that most of the people posed to be surveyed had family obligations, which may affect their tastes and worries in regard to the recreational sites and environmental features. Families especially among married people may look for such friendly places as parks, lakes and window-shopping in large centers where facilities for family activities such as picnics and family outings are well catered for. Although a small minority, unmarried people may engage in recreation quite differently or in ways that are less dependent on the provision of services and facilities for enjoyment, perhaps preferring more active leisure or social activities.

Table 4 Distribution of Respondents according to their Education

| Education Level | Frequency | Percentage (%) |
|------------------------|------------------|-----------------------|
| Illiterate | 6 | 1.50 |
| Able to sign | 16 | 4.00 |
| Primary | 29 | 7.25 |
| Secondary | 112 | 28.00 |
| Higher Secondary | 110 | 27.50 |
| Higher Studies | 95 | 23.75 |
| Tertiary Level | 32 | 8.00 |
| Total | 400 | 100 |

Sources: Author’s Own Calculation Based on Survey data, 2024

The Table 4 shows that different educational backgrounds are exhibited by respondents and there is a wide range of education. Most respondents, 28%, are qualified at secondary level, whereas nearly the same come at higher secondary education with 27.50%. Of those surveyed, 23.75% have advanced studies while the rest, 8%, of respondents have attained education at a tertiary level. A small portion of the respondents are illiterate (1.50%), can only sign (4%) and primary education holders (7.25%). With this educational distribution, it can be observed that most respondents can at least have a secondary education with a fair share of the respondents advancing to higher education. A plausible explanation would be that the respondents who had educated levels were more aware of their surroundings and appreciated better the available recreational facilities. The different levels of education are expected to have a bearing on the respondents' attitudes towards environmental and social impacts which in turn determines how they relate with the available local facilities. There is, however, an overall education lay out which presents a population that is mostly literate and educated which would be vital in ascertaining their tastes and attitude towards urban development and leisure spaces.

Table 5 Distribution of Respondents according to Household Size

| Household Size | Frequency | Percentage (%) |
|----------------|------------|----------------|
| (1-3) | 211 | 52.75 |
| (4-6) | 133 | 32.5 |
| (7 and above) | 56 | 14.00 |
| Total | 400 | 100 |

Sources: Author's Own Calculation Based on Survey data, 2024

Table 5 gives the distribution of the household sizes of the respondent households. A majority (52.75%) of the respondents inhabit smaller family sized households ranging from 1-3 members. While 32.5% consist of medium sized family households of 4-6 members. A further 14% of the respondents however belong to households classified as large having 7 or more family members. This proves that a great number of the respondents belong to smaller nuclear families, which in return may have a bearing on their recreation habits and preferences. A smaller household size may perhaps correlate with a higher inclination towards recreation that involves walking or jogging by individuals or small groups as opposed to larger groups undertaking activities such as picnics or recreational trips.

Table 6 Distribution of Respondents according to Income (Monthly)

| Income Group (BDT) | Frequency | Percentage (%) |
|--------------------|------------|----------------|
| Less than 20000 | 26 | 6.50 |
| (20001-40000) | 104 | 26.00 |
| (40001-60000) | 133 | 32.5 |
| (60001-80000) | 77 | 19.25 |
| (80001-100000) | 32 | 8.00 |
| (100000 and above) | 28 | 7.00 |
| Total | 400 | 100 |

Sources: Author's Own Calculation Based on Survey data, 2024

The data regarding the monthly income distribution of the surveyed population is presented in table 6, indicating economic variation of the sample enrolled in the study. Most of the respondents (32.5%) belong in the income category of BDT 40,001-60,000. The second largest segment, 26%, comprise the group of BDT 20,001-40,000. Respondents who earn between BDT 60,001-80,000 constitute 19.25%, and those who earn BDT 80,001-100,000 are 8% of the respondents. Only 7% of the respondents claim that their incomes are

above BDT 100,000, and 6.50%’s incomes are lower than BDT 20,000. This distribution implies that the respondents are heterogeneous in the sample and many of the respondents belong to the mid-income group. Income distribution is particularly useful for determining how potential users will respond to and use the recreational facilities available. For example, individuals with higher incomes may look for better and more costly amenities while those with lower incomes may want something cheaper and at the very best accessible.

Table 7 Distribution of Respondents according to Expenditure

| Income Group | Frequency | Percentage (%) |
|---------------------|------------------|-----------------------|
| Less than 20000 | 55 | 17.5 |
| (20001-40000) | 132 | 30.0 |
| (40001-60000) | 98 | 24.50 |
| (60001-80000) | 72 | 18.00 |
| (80001-100000) | 24 | 6.00 |
| (100000 and above) | 19 | 4.75 |
| Total | 400 | 100 |

Sources: Author’s Own Calculation Based on Survey data, 2024

Finances of the respondents in terms of their monthly spending habits are illustrated in Table 7 and helps understand their spending patterns. It can be observed that 33% of the respondents believe that they spend BDT 20,001-40,000 in a month. A small fraction of respondents (24.50%) feels that they expend BDT 40,001-60,000 while 18% of surveyed individuals state that their consumptions are in a range of BDT 60,001-80,000. A small fraction, only 6%, get to spend BDT 80,001-100,000, 4.75% being the more than BDT 100,000 spenders. A considerable 17.5% of the respondents are revealed to spend below BDT 20,000 in a month. A fair expenditure distribution shows that a majority of respondents have moderate spending behaviors which may be consistent with their income levels. Resolution of such patterns is important because those are essential for understanding the importance respondents place on recreational expenditure, which is under disadvantages of the present economic conditions.

Table 8 Distribution of Respondents by Visiting Place

| Visiting Place | Frequency | Percentage (%) |
|-----------------------|------------------|-----------------------|
| Padma River | 293 | 72.5 |
| Zoo | 84 | 21.00 |
| Lake | 55 | 17.5 |
| Street Road light | 47 | 11.75 |
| Hi Tech Park | 68 | 17.00 |
| None | 34 | 8.50 |

Sources: Author’s Own Calculation Based on Survey data, 2024

In Rajshahi City, the survey respondents showed variation with respect to the Merits or Environmental Facilities and is shown in Table 8. Out of all the amenities, the survey reports that the respondents are most likely to frequent, the Padma River stands out, as 72.5% of the respondents reported that they frequent the site. The Zoo comes in next with 21% of the population and then the Lake is visited by 17.5%. Street road lights probably, which could mean design or night related activities spaces attracts 11.75 % of the respondents, 17% of the sample is drawn to the Hi-Tech Park, which is an epitome of progress in technology and infrastructure. As many as 8.5% of the respondents, however, indicated that they do not patronize any of

these places. There is a variety in the data as evidenced by the high average preference towards natural places such as the river and the lake as indicated by the results.

Table 9 Distribution of Respondents by Visiting Times

| Visiting Times | Frequency | Percentage (%) |
|-----------------|------------|----------------|
| Occasionally | 145 | 36.25 |
| frequently | 67 | 16.75 |
| Very Frequently | 41 | 10.25 |
| Rarely | 33 | 8.25 |
| Never | 114 | 28.50 |
| Total | 400 | 100 |

Sources: Author’s Own Calculation Based on Survey data, 2024

The table 9 gives information about the frequency of respondent's visits to recreational sites. Most, that is, 36.25% visit these sites from time to time, while 16.75% do so often and 10.25% very often. Quite a number, 8.25%, visit hardly or almost never, and 28.50% claim, they do not go to those recreational spots at all. This distribution depicts that, most people tend to make occasional visits which could bring a compromise between leisure activities and other engagements. Those who do make frequent and very frequent visits, perhaps regard such activities, as doing exercises, resting or going out with friends, on a different and even greater level than they do with those who get the infrequent visits. On the other hand, a sizeable majority of the people who do not make a visit at all could be due to a number of reasons, perhaps lack of such places nearby, lack of time or even lack of interest. Knowing the visit frequency is also useful in categorizing use patterns towards facilities and need for enhancement or additional recreational amenities.

Table 10 Distribution of Respondents by Visiting Reasons

| Visiting Reasons | Frequency | Percentage (%) |
|------------------|------------|----------------|
| Picnic | 80 | 20.00 |
| Boating | 27 | 6.75 |
| Walking | 160 | 40.00 |
| Jogging | 67 | 16.75 |
| Bird watching | 27 | 6.75 |
| Others | 40 | 10.00 |
| Total | 400 | 100 |

Sources: Author’s Own Calculation Based on Survey data, 2024

There are various reasons why respondents visit recreational sites and these reasons have been put in Table 10. Walking was found to be the most favored activity with 40% of the respondents claiming that it is the main reason they visit these sites. A few other reasons included picnicking (20%), jogging (16.75%) and boating (6.75%). Besides, 6.75% of the respondents were also engaged in bird watching and 10% said they engaged in some other activity. This goes to show the participants of the study preferred walking as an activity and therefore it can be concluded that such participants are involved in activities that are outdoors, inexpensive fast and healthy. Choosing activities like having picnics and or jogging indicates that there is an element of socialization in addition to one’s active level of fitness. Such information is essential for urban development since recreational zones are built and developed according to the inhabitants’ engagement in diverse activities.

Table 11 Distribution of Respondents by Satisfaction of Cleanliness of Recreational Site

| Satisfaction | Frequency | Percentage (%) |
|--------------|------------|----------------|
| Excellent | 254 | 65.00 |
| Good | 107 | 26.75 |
| Fair | 40 | 10.00 |
| Total | 400 | 100 |

Sources: Author’s Own Calculation Based on Survey data, 2024

Table 11 describes the satisfaction of respondents with regard to the cleanliness of recreational areas. The respondents seemed to rate the cleanliness very high, as a good proportion, 65%, rated it as excellent, 26.75% good, and only 10% fair. This suggests that the majority of the respondents are contented with the level of cleanliness of the local recreational areas, which is likely to encourage them to use and enjoy these areas more. Cleanliness is one of the determinants of the attractiveness and usability of any given public space and the high levels of satisfaction captured in this table shows that recreational facilities in Rajshahi City are quite good. Yet, the 10% of respondents who rate cleanliness as fair indicate need for concern and better management in appearance as all recreation sites must meet the minimum expectation of all users.

Table 12 Distribution of Respondents by Participation in Environmental conservation activities

| Participation | Frequency | Percentage (%) |
|---------------|------------|----------------|
| Yes | 107 | 26.75 |
| No | 293 | 72.5 |
| Total | 400 | 100 |

Sources: Author’s Own Calculation Based on Survey data, 2024

The extent of participation in environmental conservation activities is indicated in table 12. The percentage of persons engaging in such endeavors is only 26.75%, even though significant majority (72.5%) do not engage in them. This variation may hint at the unawareness, uninterested, or unavailability of means for contribution towards activities that preserve the environment. The low rate of participation might also mean that there are many respondents who do not see the need for involvement in conservation activities because it does not personally affect them or that they may think an individual’s efforts will make no difference. This suggests the importance of advertising campaigns and programs which would mobilize the local population to assist in the protection of the environmental resources around them, which is likely to, among other benefits, improve the longevity of the recreational areas and urban centers in Rajshahi City.

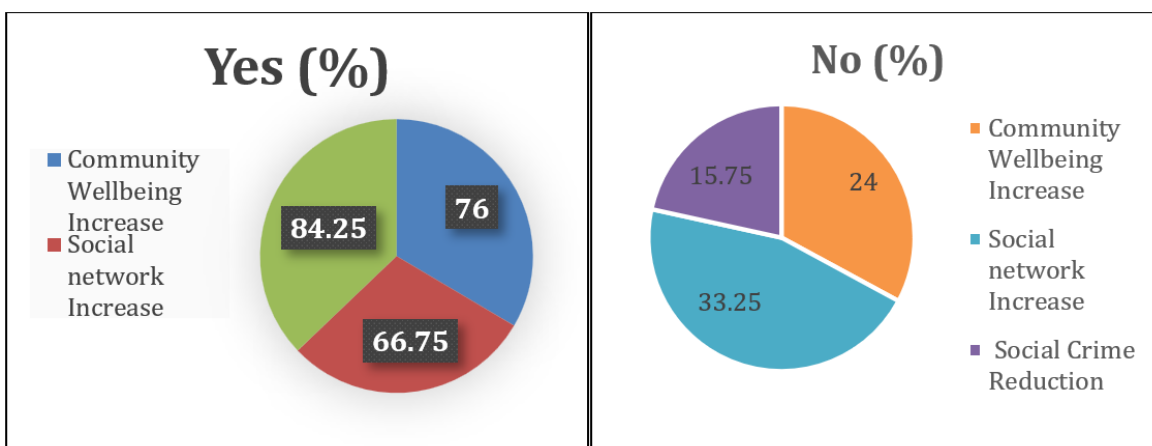


Figure 3: Distribution of Respondents by Social Impacts

Sources: Author’s Own Calculation Based on Survey Data, 2024

Figure 3 shows the classification of the respondents of Rajshahi City in relations to what they feel about the social effects of environmental and recreational facilities offered to them. It appears that 76% are of the opinion that such facilities serve to improve the community while 24% disagree with this feeling. Likewise, 66.75 % of the people who answered the question think that the facilities provided have helped in strengthening social ties, while 33. 25 % do not. Such a decrease in the level of social crimes is strongest as being reported by the 84.25% of the respondent, where they are saying that the crimes have lowered, in contrast to 15.75 who do not. The implications of these findings are that a large part of the survey population offered positive answers to essential social questions, including, worrisome aspects like crime levels and prospects of wellbeing. In the survey data collected by the author in 2024, the respondents, on average, indicated that such facilities were conducive to enhancing the social structure within Rajshahi City.

Table 13 Distribution of Respondents’ satisfaction by Social Impacts

| Social Impacts | Community Wellbeing Increase (%) | Social network Increase (%) | Social Crime Reduction (%) |
|----------------|----------------------------------|-----------------------------|----------------------------|
| Very high | 187 (46.75) | 160 (40.00) | 267 (66.75) |
| High | 173 (42.5) | 226(56.50) | 106 (26.50) |
| Neutral | 40(10.00) | 14 (50.00) | 27 (6.75) |
| Total | 400 | 400 | 400 |

Sources: Author’s Own Calculation Based on Survey Data, 2024

Respondents' level of contentment regarding the different social implications of environmental and recreational facilities in Rajshahi City is presented in Table 13 As for the community well-being, it was observed that 46.75% of the respondents were ‘very high’ satisfied, whereas 42.5% were 'high' satisfied which left only 10% to remain indifferent. In relation to improving social networks, 40% claimed to be ‘very high’ satisfied whilst the majority (56.5%) claimed to be ‘high’ satisfied with improvement in social network. Only a small portion of 5% was found to remain indifferent in this aspect. In the first place concerning extent of satisfaction of social awareness programs in dispensation of justice, there is an overwhelmingly (66.75%) reduction in social crime in the very high category, with those who are very high say ‘high’, ‘high’ at 26.5%. Only lowly black 6.75% were sawed off from this area. Overall, the results indicate that the respondents believed these facilities brought them social advantages, especially in terms of crime lowered which encouraged satisfaction in the community and social interactions.

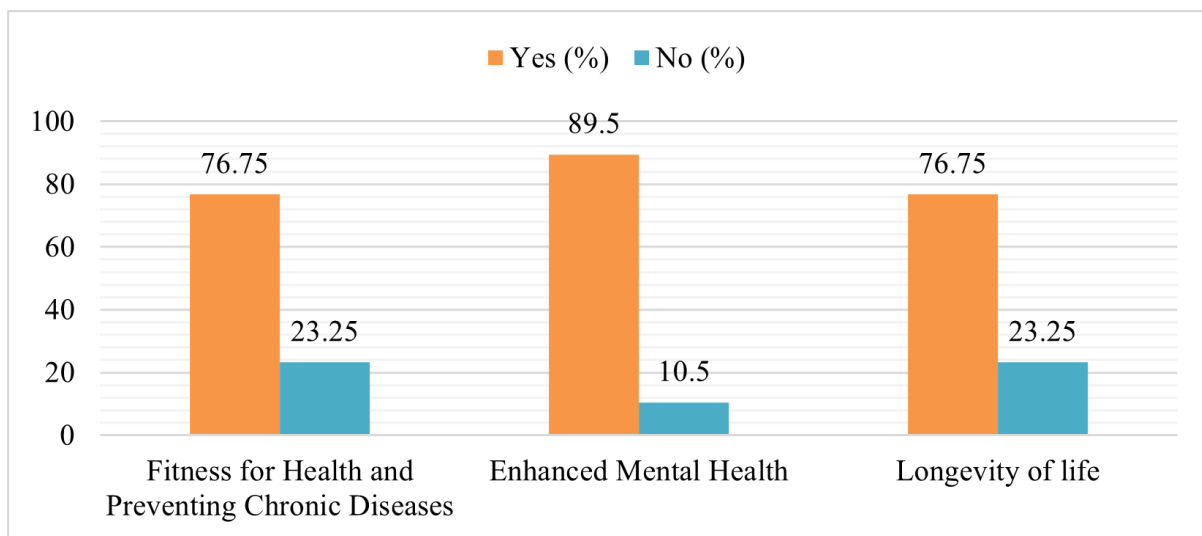


Figure 4: Distribution of Respondents by Health Impacts

Sources: Author’s Own Calculation Based on Survey Data, 2024

The content of Figure 4 presents the ways how leisure has a significant health influence, particularly in fitness, mental wellbeing and life expectancy. Most notably, 76.75% of the respondents feel that participation in recreational activities helps them in fitness levels and prevention of diseases whereas 89.50% of them believe it improves their mental health. Also, 76.75% of the respondents indicated that recreational places help in extending age. The results were very high influencing the degree of appreciation that the respondents had towards recreational facilities and their provision of health advantages mostly in physical and mental aspects. The information presents the need for well-designed and accessible recreational areas for the development of healthier communities. This could help the communities because they could promote healthy behaviors that assist in the containment of infections preventing over reliance on the health care services.

Table 14 Distribution of Respondents’ satisfaction by Health Impacts

| Health Impacts | Fitness for Health and Preventing Chronic Diseases (%) | Enhanced Mental Health (%) | Longevity of life (%) |
|----------------|--|----------------------------|-----------------------|
| Very high | 306 (76.50) | 266 (66.50) | 267 (66.75) |
| High | 67 (16.75) | 94(25.00) | 106(26.50) |
| Neutral | 27 (6.75) | 40(10.00) | 27(6.75) |
| Total | 400 | 400 | 400 |

Sources: Author’s Own Calculation Based on Survey Data, 2024

Table 14 outlines respondents’ satisfaction with the health impacts of recreational activities. An overwhelming 76.50% rated their satisfaction with fitness and disease prevention as very high, while 16.75% rated it as high, and 6.75% were neutral. Regarding mental health, 66.50% of respondents rated their satisfaction as very high, 25% as high, and 10% were neutral. Similarly, for longevity of life, 66.75% rated their satisfaction as very high, 26.50% as high, and 6.75% were neutral. These results reflect strong approval of the health benefits provided by recreational sites, with the majority of respondents highly satisfied. The satisfaction levels highlight the critical role recreational amenities play in enhancing physical fitness, mental well-being, and overall longevity, making these spaces vital for public health.

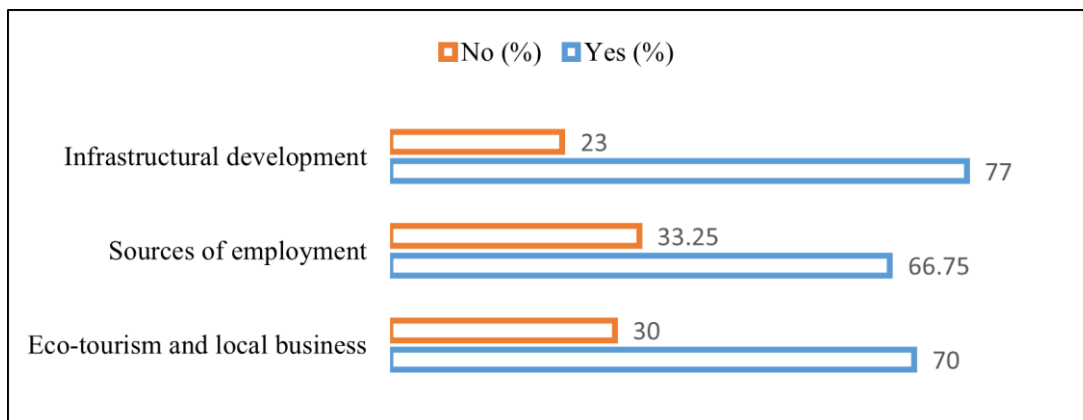


Figure 5: Distribution of Respondents by Economic Impacts

Sources: Author’s Own Calculation Based on Survey Data, 2024

As shown in Figure 5, the development of the economy from the point of view of recreation is analyzed mainly in relation to eco-tourism, employment, and infrastructure. Concerning this aspect, a striking 70% of those surveyed are of the opinion that recreation centers promote eco-tourism and sustainable economic development of the locality. Moreover, 66.75% of respondent’s share that these centers provide employment opportunities and 77% think that they promote infrastructural development. The information provides

evidence that recreational areas, and especially that of ecotourism development, and job provision have economic gains. Further, the economic potential of the sites is shown in that infrastructural development is aimed at in an investment like those above in the short to medium term for business and community growth. This data indicates that investments made on sports facilities and equipment are likely to have multiplier effects on the economy and encourage similar, if not more, investments policy.

Table 15 Distribution of Respondents’ satisfaction by Economic Impacts

| Economic Impacts | Eco-Tourism and Sustainable Local Business (%) | Sources of Employment (%) | Infrastructural Development (%) |
|------------------|--|---------------------------|---------------------------------|
| Very high | 200 (50.00) | 187(46.75) | 160 (40.00) |
| High | 146 (36.50) | 174(45.00) | 226(56.50) |
| Neutral | 54(15.00) | 40(10.00) | 14 (50) |
| Total | 400 | 400 | 400 |

Sources: Author’s Own Calculation Based on Survey Data, 2024

As indicated in Table 15, the assessment of the respondents regarding the economic effects of the recreational facilities was also done. Half of the respondents (50%) rated their satisfaction towards eco-tourism and businesses around them as very high and 36.50% rated it as high while 15% remained neutral. Respondents’ satisfaction towards employment impacts was also high where 46.75% rated it very high, 45% rated it high and 10% were neutral. With regard to infrastructural development, 40% rated very satisfied, 56.50 % rated satisfied while 50% were neutral. From these results, it is evident that the respondents are very much pleased with the economic advantages that come with the recreational amenities offered, mainly in the aspects of the encouragement of local patrimony, professional employment and infrastructural development. The figures speak to the economic rationale of creating recreation areas for the purpose of enhancing the economic activities of an area.

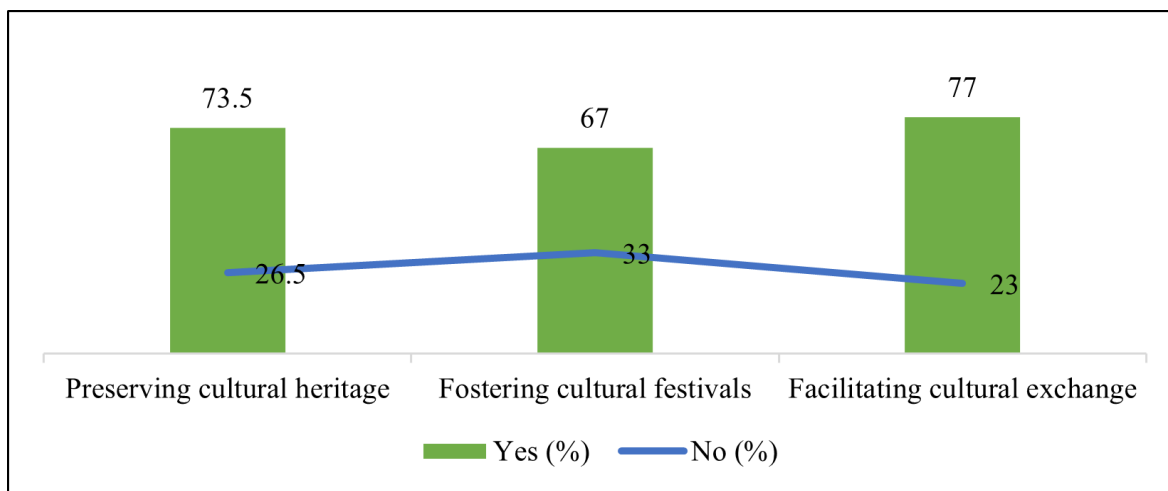


Figure 6: Distribution of Respondents by Cultural Impacts

Sources: Author’s Own Calculation Based on Survey Data, 2024

Figure 6 examines the sociocultural dimensions attributed to recreation spaces in terms of protecting cultural heritage, promoting cultural activities such as festivals and integrating different cultures. 73.5% persons believe that such recreational centers are meant to protect the culture, while 67% of them perceive such places as an arena for cultural festivals promotion. Likewise, 77% of the participants are of the opinion that recreational areas encourage interaction between different cultures. The above high percentages prove that recreational places are indeed important areas for enhancing and preserving cultures. The benefits attributed

to the favorable cultural changes are critical in ensuring the existence of social harmony and social facilities that allow the people to actively participate in the expression of their cultural values and practices enhancement of the social as well as cultural aspects of the city.

Table 16 Distribution of Respondents' satisfaction by Cultural Impacts

| Cultural Impacts | Preserving cultural heritage (%) | Fostering cultural festivals (%) | Facilitating cultural exchange (%) |
|------------------|----------------------------------|----------------------------------|------------------------------------|
| Very high | 120 (30.00) | 292(73.30) | 254(63.50) |
| High | 227 (56.75) | 80(20.00) | 106(26.50) |
| Neutral | 53(12.5) | 28(6.70) | 40(10.00) |
| Total | 400 | 400 | 400 |

Sources: Author's Own Calculation Based on Survey Data, 2024

The cultural impact that recreational areas have on people is presented in Table 16. In terms of maintaining cultural values, 30% expressed they were extremely happy, 56.75% were moderate, while 12.5% expressed their neutrality. In relation to the contribution towards the organization of cultural events, the majority of respondents (73.3%) were very happy, 20% were happy, and 6.75% felt indifferent. Also, the respondents appreciated the cultural exchangers in the recreational areas with 63.5% being very happy, 26.50% happy, while 10% remained neutral. These figures suffice to indicate that the importance of these recreational facilities is not only limited to fun activities, but also outspreads the desire to promote culture. They assist in the preservation of cultural heritage in addition, providing venues for festivals and interactions. The satisfaction levels are remarkably high which indicates that the recreation centers are effective in promoting participation in cultural practices and enhancing the cultural activities in the city.

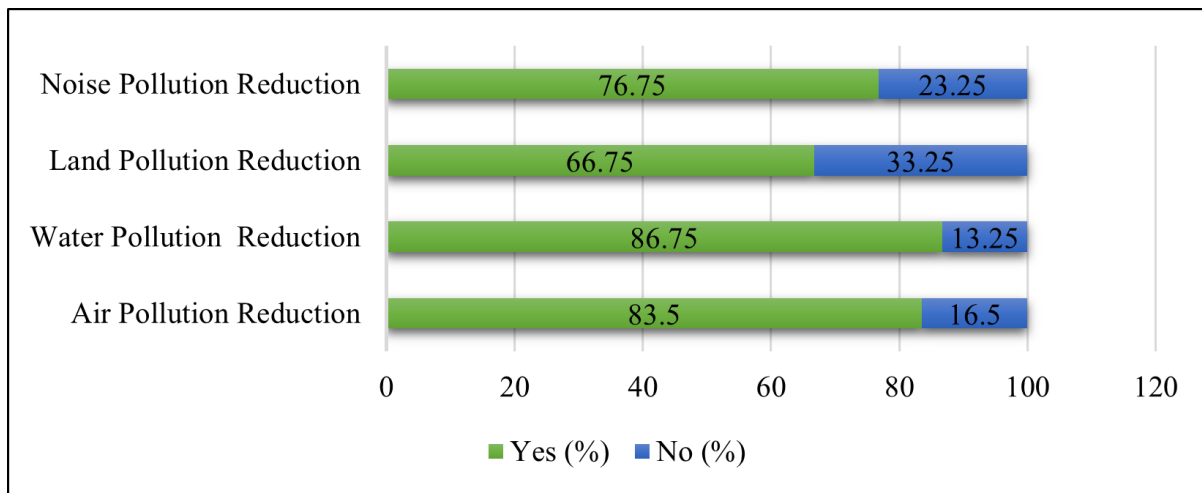


Figure 7: Distribution of Respondents by Environmental Impacts

Sources: Author's Own Calculation Based on Survey Data, 2024

Figure 7 shows the environmental effects of the amenities in Rajshahi City based on the respondents' views. A remarkable proportion of the respondents, 83.5%, agree that air pollution has reduced due to these environmental measures while 16.5% hold a contrary view. In the same manner, 86.75% of the respondents acknowledged that water pollution has reduced, while 13.25% did not. Land pollution reduction registered a lower approval with 66.75% affirming it, 33.25% denying it. Finally, 76.75% of the respondents agreed that noise pollution had improved while 23.25% did not believe there was an improvement. In general, the information indicates that respondents have very constructive views on the environmental improvements that have taken place, especially those regarding air and water pollution based on the study findings collected in

2024. These results suggest that the respondents understood the positive environmental effects that the amenities of the city had.

Table 17 Distribution of Respondents’ satisfaction by Environmental Impacts

| Environmental Impacts | Air Pollution Reduction (%) | Water Pollution Reduction (%) | Land Pollution Reduction (%) | Noise Pollution Reduction (%) |
|------------------------------|------------------------------------|--------------------------------------|-------------------------------------|--------------------------------------|
| Very High | 267 (66.75) | 300(75.00) | 240 (60.00) | 240(60.00) |
| High | 93 (22.50) | 80 (20.00) | 120(30.00) | 134(33.50) |
| Neutral | 40(10.00) | 20(5.00) | 40(10.00) | 26 (6.50) |
| Total | 400 | 400 | 400 | 400 |

Sources: Author’s Own Calculation Based on Survey Data, 2024

The satisfaction ratings of the respondents on the various environmental aspects in Rajshahi City are summarized in Table 17. In regard to the air pollution control, 66.75% of the respondents expressed ‘very high’ level of satisfaction, 22.5% showed a ‘high’ level of satisfaction, while the rest, 10%, were indifferent. Water pollution control attracted majority positive responses, with 75% of the respondents saying that they are ‘very highly’ satisfied, and only 20% indicating ‘high’ satisfaction, 5% of neutral categories. In respect to land specifically pollution control, there were 60% of respondents who said they are ‘very high’ satisfied, 30% who said ‘high’, while 10% were neutral. The same responses were also reported on noise pollution control whereby 60% of respondents showed ‘very high’ satisfaction, 33.5% ‘high’ and 6.5% remained neutral. To summarize the findings, the data indicates that the participants’ level of satisfaction over environmental alterations is relatively high, particularly with regards to the reduction of water pollution, according to the author’s conducted survey in the year 2024.

DISCUSSION

In a wide spectrum of environmental facilities and recreational establishments, the study highlights the necessity of these natural capitals for sustainable and comfortable living of Rajshahi City residents. According to the demographic profile, the majority (61.25%) of the respondents was male, apart from of the percentage of the sampled population aged between 25 and 44 years was 56.50%. Besides, in accordance with the educational status, the respondents differed, with 28% having secondary qualifications. On the flip side, approximately half of the total respondents (52.75%) lived in 1-3 members family who living with a median earnings, with 32.5% falling in the range of BDT 40,001- 60,000. As said in the study, the recreational sites usage was widely spread, for walking (40%) or jogging (16.75%) almost three-fourth of the respondents (72.5%) visited the Padma River regularly. Therefore, health returns were evident as well, 76.75% of the sampled population reported that those recreational sites contributed to develop their physical fitness as well as mental health improvement (89.50%). Nevertheless, the residents of Rajshahi City concerned about the surrounding atmosphere, based on water (86.75%) and air pollution (85.0%), were widespread in the region. In terms of social effects, the percentages of the respondents who cited about improvement of community well-being and better social networks which created through recreational activities were 76% and 66.75% respectively. As for the economic benefits, 70% of the respondents opined that eco-tourism and local businesses were thriving likewise, 77% believed that the development of recreational infrastructure was accelerating economic growth. As said of the cultural perspectives, a significant percentage of respondents (70%) pointed out that the development of recreational establishments contributed to the preservation of culture and fosterage of culture exchange. In spite of these benefits, only one fourth of the respondents (26.75%) participated in preserving atmosphere which proved the lack of the engagement of the community in the efforts of sustainability of the territory. The results of this study revelled outwardly the necessity of environmental amenities as well as recreational sites for economic development, health purposes and social integration.

CONCLUSION

The studies discussed above are suggestive of certain important strategies that could be adopted in ensuring the sustainable use of environmental resources and recreational areas in Rajshahi City, Bangladesh, additional extremities. The findings are significant especially in providing the suitable policy guidance on the sustainable utilization of environmental amenities and parks in Rajshahi City as well as in the whole of Bangladesh. In Rajshahi City for example, there are many areas such as the Padma River that are located in the city that are highly visited and therefore the health and social benefits cited by the respondents require that such areas continue being improved. In this case, the relevant government agencies must develop laws that concerned with in this case the environment, most especially when dealing with pollution. The local government must impose restrictions on tolerable levels of disturbances and certain practices within the designated recreational area as both air and water, land and air, have been described as pollutants of great concern. Also, the lifting of these restrictions with time, especially the provision of essential services, such as health and sanitation would enhance user satisfaction and promote greater utilization of the regions. The need for the involvement of the actors themselves is another aspect which desires strategic focus. Now, considering the fact that these spaces positively influence the people only 26.75% of the respondents engage in activities geared towards protection of the environment. As such, there is need for the city to develop focus on awareness and community based programmes on sustainability to enhance the urban sustainability development. And also there is a section of local population that should be encouraged to do certain activities, e.g. cleaning or planting trees, in exchange of some gain, because it is proven that such allows developing ecological culture among the people.

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