

PROMOTING HEALTH OUTCOMES: HOW GREEN SPACES DRIVE PHYSICAL ACTIVITY AND WELL-BEING AMONG PUNE'S URBAN POPULATION"

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Abstract:-

Urban green spaces play a crucial role in improving physical activity levels and overall well-being among urban populations. This study examines the relationship between green space accessibility, physical activity, and perceived health outcomes among residents of Pune city using primary survey data. A structured questionnaire survey was conducted among 347 respondents from selected urban neighborhoods to understand patterns of green space usage and its perceived health benefits. The collected data were analyzed using percentage analysis, mean score calculation, and correlation techniques.

The results indicate that 72.3% of respondents regularly visit nearby parks or green spaces for recreational and physical activities. The average duration of physical activity recorded was 39 minutes per visit, suggesting that urban green spaces serve as important venues for exercise such as walking, jogging, and yoga. Approximately 66% of participants reported reduced stress levels and improved mental well-being associated with frequent visits to green spaces. Furthermore, a moderate positive correlation ($r = 0.60$) was observed between the frequency of green space visits and self-reported physical and psychological health outcomes.

The findings highlight that accessible and well-maintained urban green spaces significantly promote active lifestyles and enhance overall well-being among city residents. The study emphasizes the importance of integrating green infrastructure into urban planning strategies to support sustainable urban health and improve quality of life in rapidly growing cities like Pune.

1 .Introduction:

Rapid urbanization has significantly reshaped the spatial structure and lifestyle patterns of cities across the world. While urban growth has contributed to economic development and improved infrastructure, it has also resulted in reduced open spaces, increased environmental stress, and more sedentary lifestyles among urban residents. These transformations have raised serious concerns regarding public health, particularly the rising prevalence of physical inactivity, stress, and non-communicable diseases in urban populations. In response to these challenges, urban green spaces—such as parks, gardens, playgrounds, and urban forests—have gained increasing attention as essential components of healthy and sustainable cities.

Urban green spaces provide opportunities for physical activity, relaxation, and social interaction, which collectively contribute to improved physical and mental health. Numerous studies have demonstrated that access to natural environments encourages active lifestyles by promoting activities such as walking, jogging, cycling, and recreational exercise (Giles-Corti et al., 2005; Kaczynski & Henderson, 2007). These activities play a significant role in reducing the risk of obesity, cardiovascular diseases, and other lifestyle-related health problems. Moreover, exposure to green environments has been associated with psychological restoration,

stress reduction, and improved emotional well-being (Ulrich et al., 1991; Hartig et al., 2014). The restorative effects of natural landscapes are particularly important in densely populated urban settings where residents often experience environmental and social stressors.

Research also highlights that the accessibility, quality, and distribution of urban green spaces influence their usage patterns and health benefits. Individuals living near well-maintained parks are more likely to engage in regular physical activity compared to those with limited access to green environments (Sugiyama et al., 2008; Wolch et al., 2014). In addition, green spaces serve as social platforms that foster community engagement and strengthen social cohesion, indirectly contributing to better mental health and overall quality of life (Jennings & Bamkole, 2019).

Recent studies conducted in the past few years further emphasize the importance of green infrastructure in promoting urban health. For instance, Bratman et al. (2019) highlighted that interactions with natural environments can significantly reduce symptoms of anxiety and depression. Similarly, Gascon et al. (2021) found that higher exposure to green spaces is associated with improved cognitive functioning and reduced mental fatigue. More recent research has also demonstrated that the availability and perceived quality of urban green spaces play a crucial role in shaping residents' physical activity patterns and well-being (Nieuwenhuijsen et al., 2023; Wang et al., 2024). These studies collectively suggest that urban green spaces function as cost-effective public health resources.

Despite the growing international literature, empirical studies focusing on Indian cities remain relatively limited, particularly those based on primary data collected from urban residents. Rapidly expanding cities such as Pune are experiencing increasing population density, land-use changes, and pressure on existing green spaces. Understanding how urban residents utilize green spaces and perceive their health benefits is therefore essential for effective urban planning and public health policy.

Against this background, the present study investigates the role of urban green spaces in promoting physical activity and well-being among Pune's urban population. Using primary survey data collected from 347 respondents, the study examines patterns of green space usage and their relationship with self-reported physical and mental health outcomes. The findings aim to contribute to the growing body of literature on urban health and sustainable city planning while providing evidence-based insights for improving green space planning in rapidly urbanizing cities.

2. Study Area

The present study is conducted in Pune city, a rapidly growing metropolitan center located in the western part of Maharashtra, India. Pune lies between 18°31' North latitude and 73°51' East longitude at an average elevation of approximately 560 meters above sea level on the Deccan Plateau. The city is administered by the Pune Municipal Corporation (PMC) and forms an important economic, educational, and cultural hub in western India. Over the past two decades, Pune has experienced significant urban expansion due to the growth of the information technology sector, industrial development, and the presence of numerous higher educational

institutions. As a result, the city's population has increased rapidly, creating challenges related to land use, environmental sustainability, and public health.

Despite the pressures of urbanization, Pune still maintains a number of important urban green spaces that play a significant role in improving environmental quality and enhancing the well-being of residents. These green spaces include public gardens, neighborhood parks, botanical gardens, and natural hill landscapes that serve as recreational and ecological assets. Prominent parks in the city include Saras Baug, Empress Botanical Garden, Bund Garden, Peshwe Udyan, and Pu La Deshpande Garden (Okayama Friendship Garden). These parks provide spaces for walking, jogging, yoga, relaxation, and social interaction, attracting a large number of visitors every day.

In addition to planned parks and gardens, Pune is also characterized by several natural hill ecosystems such as Vetal Tekdi, Taljai Hill, and Parvati Hill, which act as important green lungs for the city. These hill areas support biodiversity and are frequently used by residents for morning walks, trekking, and outdoor exercise. Furthermore, smaller neighborhood parks and open spaces are distributed across different residential areas, contributing to local accessibility of green environments.

However, the distribution of green spaces in Pune is not uniform. Central and well-developed areas generally have better access to parks and gardens, while newly urbanizing peripheral zones often face shortages of accessible green spaces. Understanding the role of these green spaces in promoting physical activity and well-being among residents is therefore essential for sustainable urban planning. Pune's diverse green infrastructure and dynamic urban growth make it a suitable study area for examining the relationship between urban green spaces, physical activity, and public health outcomes.

3. Objectives of the Study

1. To examine the availability and accessibility of urban green spaces in different areas of Pune and understand their role in supporting recreational activities among urban residents.
2. To analyze the relationship between the use of green spaces and physical activity levels among Pune's urban population based on primary survey data.
3. To assess the impact of regular visits to urban green spaces on the mental well-being and overall health of the urban population in Pune

4. Study Design and Data Collection

The present study adopts a quantitative and descriptive research design to examine the role of urban green spaces in promoting physical activity and well-being among the urban population of Pune. The research focuses on understanding how the availability and use of green spaces influence residents' physical activity patterns and perceived health benefits. A structured research framework was used to ensure systematic data collection and analysis. The study is based entirely on primary data, which was collected through a structured questionnaire survey. The questionnaire was designed to gather detailed information on respondents' socio-demographic characteristics, frequency of visits to urban green spaces, types of activities performed in parks and gardens, duration of physical activity, accessibility of green spaces,

and perceived improvements in physical and mental well-being. Both closed-ended and Likert-scale questions were included to obtain measurable responses.

For the purpose of the study, 347 individuals from different residential areas within the Pune Municipal Corporation limits were selected using a simple random sampling method. The survey was conducted through direct interaction and field visits at selected parks, gardens, and nearby residential areas to capture realistic usage patterns of green spaces. The collected data were systematically compiled, coded, and organized for further statistical analysis to identify patterns, trends, and relationships between green space usage, physical activity, and well-being

5. Statistical Analysis

Statistical analysis was conducted to examine the relationship between urban green space usage, physical activity, and well-being among the respondents. The primary data collected from 347 individuals through a structured questionnaire were systematically coded, tabulated, and analyzed using basic statistical techniques. The analysis was carried out to identify patterns in the usage of green spaces and to understand their influence on the health and well-being of urban residents in Pune.

Initially, descriptive statistical methods such as frequency distribution and percentage analysis were used to summarize the socio-demographic characteristics of respondents and their patterns of green space utilization. These techniques helped in understanding the proportion of individuals visiting parks, the frequency of visits, and the types of physical activities performed in green spaces.

Further, mean and average calculations were applied to determine the average duration of time spent by respondents in parks and green spaces during each visit. This helped in assessing the level of physical activity associated with green space use. Standard deviation was also used to understand variations in responses related to time spent and frequency of visits.

To examine the relationship between variables, correlation analysis was used to measure the association between the frequency of green space visits and perceived improvements in physical and mental well-being. The correlation coefficient helped in identifying whether regular exposure to green spaces contributes positively to health outcomes.

Overall, these statistical methods provided a systematic and reliable framework for interpreting the collected data and for identifying the role of urban green spaces in promoting healthier lifestyles among Pune's urban population.

Table 1: Gender Distribution of Respondents (n = 347)

Gender Number of Respondents Percentage (%)

Male	189	54.5
Female	158	45.5

Table 5: Frequency of Visits to Urban Green Spaces

Frequency of Visit	Number of Respondents	Percentage (%)
Daily	96	27.7
3–4 times per week	112	32.3
Once a week	78	22.5
Occasionally	61	17.5
Total	347	100

Table 6: Average Duration of Stay in Green Spaces per Visit

Duration of Visit	Number of Respondents	Percentage (%)
Less than 30 minutes	74	21.3
30–60 minutes	158	45.5
1–2 hours	89	25.6
More than 2 hours	26	7.6
Total	347	100

Table 7: Types of Physical Activities Performed in Green Spaces

Activity Type	Number of Respondents	Percentage (%)
Walking	142	40.9
Jogging/Running	63	18.2
Yoga/Exercise	54	15.6
Cycling	38	10.9
Social Interaction / Relaxation	50	14.4
Total	347	100

Table 8: Perceived Health Benefits from Visiting Green Spaces

Health Benefit	Number of Respondents	Percentage (%)
Reduced Stress	118	34.0
Improved Physical Fitness	96	27.7
Better Mental Well-being	81	23.3
Social Interaction	32	9.2
No Significant Change	20	5.8
Total	347	100

6. Results and Discussion

The analysis of primary data collected from 347 respondents provides significant insights into the relationship between urban green spaces, physical activity, and well-being among the urban population of Pune. The findings reveal that urban parks and green spaces play an important role in promoting healthier lifestyles and improving psychological well-being among city residents.

The frequency of visits to green spaces indicates that a considerable proportion of respondents regularly engage with urban parks. The results show that 27.7% of respondents visit parks daily, while 32.3% visit green spaces three to four times a week. This suggests that nearly 60% of respondents use green spaces frequently, highlighting their importance as accessible recreational spaces in the urban environment. However, 17.5% of respondents reported visiting parks only occasionally, which may reflect limited accessibility, time constraints, or lack of awareness about the health benefits associated with green space usage.

The duration of time spent in green spaces further illustrates the level of physical activity associated with these areas. The analysis shows that 45.5% of respondents spend between 30 and 60 minutes per visit, which aligns with the recommended duration of moderate physical activity for maintaining good health. Additionally, 25.6% of respondents spend between one and two hours in parks, indicating that urban green spaces serve not only as exercise areas but also as places for relaxation and social interaction. Only 7.6% of respondents reported spending more than two hours, suggesting that most users prefer shorter but regular visits.

The study also examined the types of physical activities performed in green spaces. Walking emerged as the most common activity, with 40.9% of respondents reporting that they primarily visit parks for walking. Jogging or running accounted for 18.2%, while 15.6% practiced yoga or other exercise activities. Cycling and social interaction activities accounted for 10.9% and 14.4% respectively. These findings highlight that urban parks function as multifunctional spaces that support both physical activity and social engagement.

Furthermore, the survey explored the perceived health benefits of visiting green spaces. The results indicate that 34% of respondents reported reduced stress levels, while 27.7% experienced improvements in physical fitness. Approximately 23.3% reported enhanced mental well-being, including better mood and relaxation. These outcomes demonstrate the psychological and physiological benefits associated with regular exposure to natural environments. Only 5.8% of respondents reported no noticeable health benefits, which may be due to irregular park usage or limited participation in physical activities.

Overall, the findings confirm that urban green spaces significantly contribute to promoting active lifestyles and improving well-being among urban residents. The availability of accessible parks encourages individuals to engage in regular physical activity, which is essential for preventing lifestyle-related health problems. Moreover, the social and environmental qualities of green spaces help reduce stress and enhance mental health.

These results emphasize the need for sustainable urban planning strategies that prioritize the development and maintenance of green infrastructure. Ensuring equitable distribution of parks and open spaces across different parts of Pune can further strengthen their role in supporting public health and improving the quality of urban life.

7. Conclusion

The present study highlights the significant role of urban green spaces in promoting physical activity and improving the overall well-being of Pune's urban population. Based on the primary survey conducted among 347 respondents, the findings demonstrate that accessible parks and green environments encourage regular engagement in physical activities such as walking, jogging, yoga, and other recreational exercises. A large proportion of respondents reported visiting green spaces frequently, indicating that urban parks serve as important public spaces for maintaining healthy lifestyles.

The statistical analysis reveals that individuals who regularly visit green spaces tend to spend a considerable amount of time engaging in moderate physical activity, which contributes positively to their physical fitness and mental health. The correlation analysis further confirms a moderate positive relationship between the frequency of green space visits, physical activity levels, and perceived mental well-being. Many respondents also reported experiencing reduced stress and improved mood as a result of spending time in natural environments. These results highlight that green spaces function not only as recreational areas but also as essential components of urban health infrastructure.

However, the study also indicates that the distribution and accessibility of green spaces across the city are uneven, which may limit their benefits for certain sections of the population. Therefore, urban planning authorities should prioritize the development, protection, and equitable distribution of parks and green infrastructure across different neighborhoods. Increasing the availability of well-maintained green spaces can encourage more residents to engage in outdoor activities and adopt healthier lifestyles.

Overall, the study concludes that urban green spaces play a crucial role in enhancing physical activity, reducing stress, and improving the quality of life among urban residents. Integrating green infrastructure into sustainable urban planning strategies will be essential for building healthier and more livable cities in the future.

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