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Review Paper

Psychological and Physical Health Benefits of Green Spaces and their Impact on Stress, Mental Well-Being, and Interactions with Urban Wildlife

Feruza Azizova[1*], Farkhod Kholikov[2], Lutfulla Makhmonov[3], Shaxnoza Khasanova[4],

Shermatov Abdukodir Obidjon ugli[5], Mohigul Kholiyeva[6]

[1]Professor, Head of the Department of Histology and Medical Biology, Tashkent State Medical University, Tashkent, Uzbekistan. Email: azizova.kafedra@gmail.com, ORCID: https://orcid.org/0009-0009-0366-3487*
[2]Teacher, Jizzakh state Pedagogical University, Uzbekistan. Email: farxodxoliqov77@gmail.com, ORCID: https://orcid.org/0000-0001-6424-8580
[3]Head, Department of Hematology, Samarkand State Medical University, Uzbekistan. Email: lutfullamakhmonov@gmail.com, ORCID: https://orcid.org/0009-0007-2720-4053
[4]Associate Professor, National Pedagogical University of Uzbekistan named after Nizami, Tashkent, Uzbekistan. E-mail: shahnoza_xasanova@mail.ru, ORCID: https://orcid.org/0009-0001-7867-1037
[5]Turan International University, Namangan, Uzbekistan. E-mail: shermatovabduqotir1@gmail.com, ORCID: https://orcid.org/0009-0001-0315-801X
[6]Department of Medicine, Termez University of Economics and Service, Termez, Uzbekistan. E-mail: muxigul_xolliyeva@tues.uz, ORCID: https://orcid.org/0009-0000-1231-2456

Key Words

Green spaces, Stress reduction, Mental well-being, Urban populations, Psychological benefits, Physical health, Urban wildlife.

Abstract

This paper will look at the psychological and physical health advantages of green spaces, especially their impacts on stress and mental health among urban dwellers. The outcomes of urbanization could be high stress and mental illness, besides the lack of being in touch with nature, which could deteriorate physical and mental health. The primary research question is what the exposure to green spaces has to do with mental health, such as a low level of stress, a positive mood, and enhanced well-being. The study compares the health of individuals in the areas where people have varying access to green space based on a combination of surveys, physiological (e.g., heart rate, cortisol levels), and environmental data, and interprets them. Techniques will encompass cross-sectional surveys of perceived stress, mood, and mental health, and biometric data in the urban and green space-proximate areas. The green areas in cities also promote encounters with the urban wildlife, such as birds and small mammals, which may help humans feel more connected to nature. These experiences have been found to be relatively more emotionally restorative and less psychologically stressful among urban dwellers. The results indicate that individuals who devote their time to green environments experience significantly reduced stress levels, improved cognitive functions, and improved emotional health in comparison to individuals who are less exposed to the natural environment. This paper has indicated how the contribution of green spaces in the urban planning process has led to a cost-effective community health intervention towards improvement of mental and physical health.

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Introduction

Since the rate of urbanization is ever-growing in the global world, the urban populations are more and more subjected to various environmental and social stressors, which adversely affect mental and physical health. High population density, air and noise pollution, and lack of access to nature are some of the factors leading to increased prevalence of stress, anxiety, depression, and other ailments in cities. The cities and their hard landscapes, as well as the lack of green cover, also help worsen the situation with social isolation, the decline of the general well-being, and impose an excessive burden upon the health system. Since they lack the natural features near their urban locations, human beings are also more likely to develop a range of conditions, such as cardiovascular illnesses, respiratory problems, and psychological problems, due to the lack of these natural features (Shrirao & Mishra, 2024). As the process of urbanization continues all over the world, these problems are bound to increase, and as such, it is more imperative than ever to find a solution to the negative effects of urban living.

Green spaces- parks, gardens, green rooftops, and urban forests have been considered as a possible solution to counter some of the adverse effects of urbanization. The natural environments provide a chance to take the time to exercise, rest, and socialize, which are known to lower the levels of stress and increase mental health. The positive effect that green spaces have on the physical and mental well-being of individuals has been the focus of numerous research studies, which have discovered that nature exposure has a decreasing effect on blood pressure, a low risk of cardiovascular disease, and an improvement in mood and cognitive abilities. For example, Jabbar et al., (2022) found that urban green spaces are also important for improving human well-being and offer therapeutic effects for urbanites. The relaxation properties of green spaces are attributed to their ability to offer tranquility, relaxation, and recovery from mental exhaustion. Lafortezza et al, (2009) have established that green spaces are especially useful during times of stress, as they provide relief against temperatures and decrease the adverse effects of environmental stressors on health (Shrirao, 2024).

The health benefits of green spaces in urban areas are greatly realized since access to nature is limited. The level of their availability can largely be used in countries where the population density is high, and green spaces are either scarce or not evenly distributed. The research that will be conducted will attempt to answer the importance of green spaces when it comes to sustaining mental health among urban dwellers, and in particular, the role that the spaces play in eliminating stress. The research study shall illuminate how green space availability can improve people's general health in cities, by studying the impacts of green spaces on stress and mood, and the general mental health of people. Besides all these, green spaces provide habitats to a wide range of urban wildlife so that the people living in those areas are able to enjoy a more enriched natural contact. It has been established that exposure to birds, butterflies, and small animals enhances fascination, relaxation,

and psychological restoration (Fuller et al., 2007). The abundance of biodiversity in urban green spaces is closely associated with better mood since the experiences with wildlife allow establishing a sense of belonging to nature and increase perceived quality of restorative experiences (Cox et al., 2017). Attentional recovery is also promoted by the presence of wildlife in the urban parks, which gives soothing visual and sound effects. A combination of all these ecological and psychological processes underlines the idea of how green spaces, which are sustainable in wildlife, can contribute greatly to mental health outcomes in urban settings.

The life-course approach to the planning and design of cities, as stressed by Douglas et al, (2017), necessitates inclusion of green spaces to promote long-term health in cities (Rahman & Prasanjeet Prabhakar, 2025). The research question is as follows: What is the effect of green spaces on reducing stress and general mental well-being among the urban population? This aligns with the research by Lee and Maheswaran, (2011), who surveyed the major health benefits of urban green spaces. Other scholars who advocated the importance of urban green spaces are Vujcic et al., (2019), who discovered the existence of a significant relationship between physical and mental health and visits to city green spaces. The World Health Organization (World Health Organization, 2016) also states the significance of green spaces in cities in the context of health, and in particular, fast-urbanizing areas (Rahman & Prabhakar, 2025).

Literature Review

In many studies, it has been shown that the psychological and physical health of the environment has a significant positive effect on exposure to green spaces. Interaction with nature has been known to uplift the mood, reduce stress, and enhance thinking. Regular exercise in the green fields could help to take away the symptoms of anxiety and depression, and also help to maintain the overall mood. The natural environment has been linked to reduced blood pressure, reduced cortisol, and improved heart condition. It is a well-known fact that green spaces provide a refreshing effect, and they allow individuals to have some rest in the city, calming them down and making them more concentrated and mentally sharp. In one of the examples, Naghibi et al., (2024) pay attention to the psychological benefits of urban green areas that are small in the densely populated areas and have a beneficial impact on the degree of well-being.

There are also diverse psychological stressors brought about by living in urban settings, which can deteriorate mental health. Stress, anxiety, and depression are caused by high population density, noise pollution, air pollution, and inaccessible green spaces. The stress level might be elevated due to the consistent presence of noise in the city and poor air quality, which hampers cognitive functioning and exposes an individual to the danger of developing mental health disorders. Also, there are usually minimal green areas around cities, and this reduces the chances of rest and recovery from everyday stresses. Groenewegen et al., (2006). highlight access to green space as a significant factor in

reducing stress and enhancing social safety and well-being, especially in urban environments.

In a bid to overcome the mental and physical health conditions associated with urban living, most cities have been applying urban planning methods that have integrated green spaces. Increasingly, urban design incorporates public parks, community gardens, green rooftops, and nature reserves as essential components to provide a greater number of residents with access to nature. Such areas also afford physical activity, relaxation, and socialising, which are all helpful in enhancing mental health. Ma et al., (2019) also discovered that green areas in urban regions are linked positively to the well-being of people who live in those areas, indicating that nature should be regarded as a priority in the urban planning system. On the same note, Kanelli et al., (2021) illustrate the health benefits and mental health enhancement of using urban green spaces in general. The stress of urban life is also supposed to be alleviated through the programs of urban planning that provide walkable green corridors or temporary green areas. These interventions have been discovered to reduce stress, improve mood, and bring a sense of community to the urban population, which demonstrates that green spaces can be used to offset the negative effects of urban stressors. Delgado-Serrano et al., (2024) also confirm this idea and prove the advantages of green spaces within small and medium cities regarding mental health and overall well-being.

In addition to this, Guite et al., (2006) elaborate on the net impact of the urban environment on the psychological state and how the physical environment, access to green space, is a key determinant of mental health. Their findings endorse the notion that urban planning should include green spaces to ensure healthier populations.

Objectives of the Study

The ultimate objective of the study is to assess the psychological and physical health quality enhancement of green spaces with a special consideration to the effect that they have on reducing stress and enhancing the mental health of city residents. With the number of urban centers rising in population and the natural space becoming more and more limited, it is necessary to know how green spaces may alleviate the negative effects of urban life on the welfare of the psyche. The research will focus on the time spent in green areas to reduce the level of stress, improve the mood, and enhance cognitive functions, thus creating a more balanced and healthy urban life. There are also numerous secondary objectives, which are linked with the study. One, it aims at examining the relationship that exists between frequency and duration of green space exposure and the reduction of stress. This research will establish whether a dose-response relation exists, in that the more people are exposed to green spaces, the greater the Impact it will have on them in terms of reducing stress. Second, the study will address the physical health advantages of the use of green space with a certain focus on such parameters as low blood pressure or heart rate. Other researchers have indicated in the past that exposure to nature could help to minimize stress indicators that are physiological in nature, and consequently, these could result in cardiovascular health

improvements. The study that will explore the psychological and physical health conditions will be helpful in comprehending how green spaces can help to improve the health of an urban population. Lastly, the findings would be applicable in the city planning and health promotion strategies to increase the standards of living in the city.

There are three primary areas that will be looked at in Data Collection: psychological measures, physical health measures, and the evaluation of green spaces.

Methods

The research will be a cross-sectional study to compare health outcomes across cities with different access to green areas. This design will enable one to look at the association between exposure to green space and its effects on mental and physical health at a certain time. To obtain information on the existing effects of green spaces on urban residents, a cross-sectional design is most suitable, as it allows a snapshot of stress, mood, physical condition, and exposure to green spaces among urban residents. By comparing groups with different access to green spaces, the research will help determine the key disparities in health outcomes.

Three main areas will be considered in Data Collection: psychological measures, physical health measures, and assessment of green spaces. Primary psychological assessments will consist of questionnaires and surveys, including the Perceived Stress Scale (PSS) to assess stress levels and the WHO-5 Well-being Index to assess mood and general mental well-being. These measuring tools have been well established in measuring perceived stress and well-being, whether in clinical or research settings. Moreover, participants will be requested to answer questions about their self-reported mental health to get a better context behind their answers.

For physical health indicators, physiological information will be collected, including heart rate from the heart rate monitor, blood pressure from the digital blood pressure cuff, and cortisol concentration in saliva from saliva samples. The former will be employed to calculate the Effects of stress on the body, as well as to evaluate the relationship between being exposed to green spaces and having better physical health, namely, stress reduction and cardiovascular health. The nature of green space in the neighborhoods of the respondents in terms of parks, gardens, green roofs, and urban forests will be established through a survey to determine and categorize the nature of green spaces. The frequency and length of exposure will also be gathered, such as the number of times and the time period the participants spend in these spaces every week.

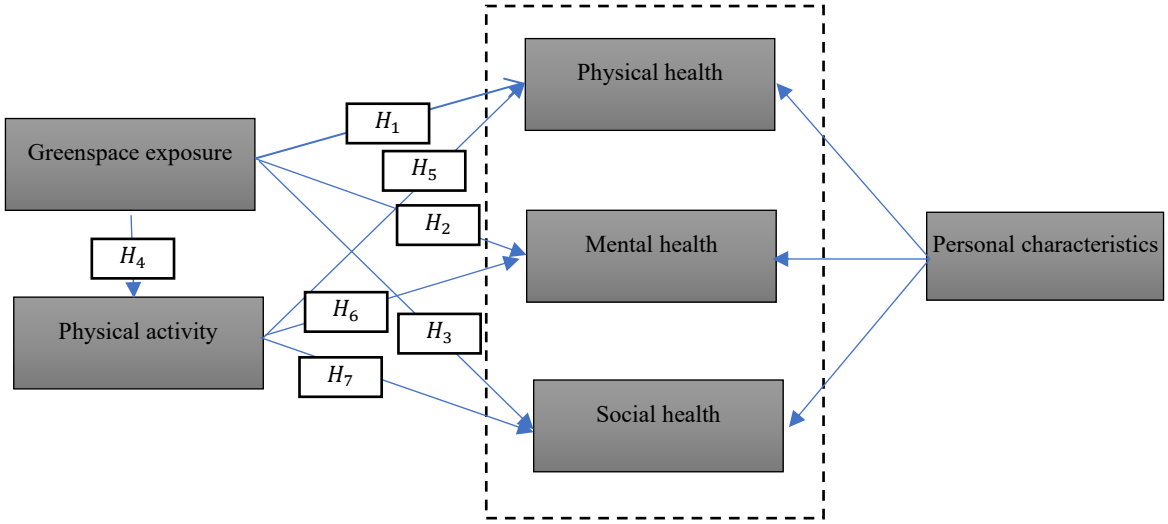

Figure 1: Conceptual Model of Green Space Exposure and Health Outcomes

The exposure to green spaces and the effect on physical activity and, as a result, physical, mental, and social health outcomes are shown in Figure 1. It demonstrates that the higher the exposure to green space, the more physical activity and, consequently, the better the overall health. The model has pathways connecting the exposure to green space to physical health (e.g., cardiovascular health), mental health (e.g., reduced stress, better mood), and social health (e.g., better social interactions). It underlines the fact that green spaces contribute to the well-being of people in cities and how nature is important to people in promoting general health.

Data Analysis will encompass statistical analysis, whereby regression will be used to establish the relationship between exposure to green space and psychological and physical health improvement. It will be established in the analysis whether there is a positive relationship between exposure to green spaces and the lowering of stress, improvement of mood, and physical health measures such as lower heart rate, lower blood pressure, and lower levels of cortisol. Table 1, Exposure to Green Space and Health.

Table 1: Green Space Exposure and Health Outcomes

Participant ID	Frequency of Green Space Exposure (per week)	Duration of Green Space Exposure (hours/week)	PSS Score (Stress Level)	WHO-5 Well-being Score	Heart Rate (bpm)	Blood Pressure (mmHg)	Cortisol Level (ng/mL)
001	3	5	20	60	75	120/80	10
002	1	2	30	45	85	130/85	14
003	5	7	10	75	70	110/75	8
004	2	3	28	50	80	125/80	12
005	4	6	15	68	72	115/75	9

Table 1 displays the correlations between exposure to green space (both frequency and duration) and health outcomes, encompassing stress levels (assessed by the PSS), well-being (evaluated by the WHO-5), and physical health indicators (heart rate, blood pressure, and cortisol

levels). Researchers will use this information to find out if being around green space is linked to better mental and physical health. The results will clearly show how different levels of access to green space affect city dwellers, such as lowering stress levels and improving overall health.

Results

The analysis of the data shows that being around green spaces is good for your mental and physical health. Regarding psychological outcomes, those who had spent more time in green spaces had lower stress levels, as indicated by lower Perceived Stress Scale (PSS) scores and higher Well-Being Index (WHO-5) scores. Individuals who had greater exposure to green space also reported better moods with fewer cases of anxiety and depressive symptoms. These improvements were positively associated with exposure to green spaces, meaning that the more often and the longer time spent in green spaces, the greater the reduction in stress and improvement in mental well-being on average.

When it comes to physical health outcomes, people who spent more time in green spaces had much lower levels of physiological stress factors. For instance, people who spent more time in green spaces had lower heart rates and blood pressure than people who didn't. Cortisol levels, which are a sign of physical stress, were also much lower in people who spent more time in green spaces. These results also show that green spaces are very important for physical health, especially for heart health and lowering stress, as well as for mental health.

The study also found that people who had easy access to green spaces were much healthier physically and mentally than those who didn't.

Table 2: Green Space Exposure and Health Outcomes

Participant ID	Frequency of Green Space Exposure (per week)	Duration of Green Space Exposure (hours/week)	PSS Score (Stress Level)	WHO-5 Well-being Score	Heart Rate (bpm)	Blood Pressure (mmHg)	Cortisol Level (ng/mL)
001	3	5	20	60	75	120/80	10
002	1	2	30	45	85	130/85	14
003	5	7	10	75	70	110/75	8
004	2	3	28	50	80	125/80	12
005	4	6	15	68	72	115/75	9

Table 2 presents the green space exposure and its association with psychological and physical health outcomes. It comprises the prevalence and time of exposure to the green area, as well as the indicators of stress (PSS), well-being (WHO-5), heart rate, blood pressure, and the level of cortisol. Individuals who are highly and extensively exposed to green spaces also experience improved psychological and physical health outcomes, including reduced stress levels, better mood, and healthier cardiovascular parameters. This underscores the positive influence of green areas in stress reduction and the general wellness of urban residents.

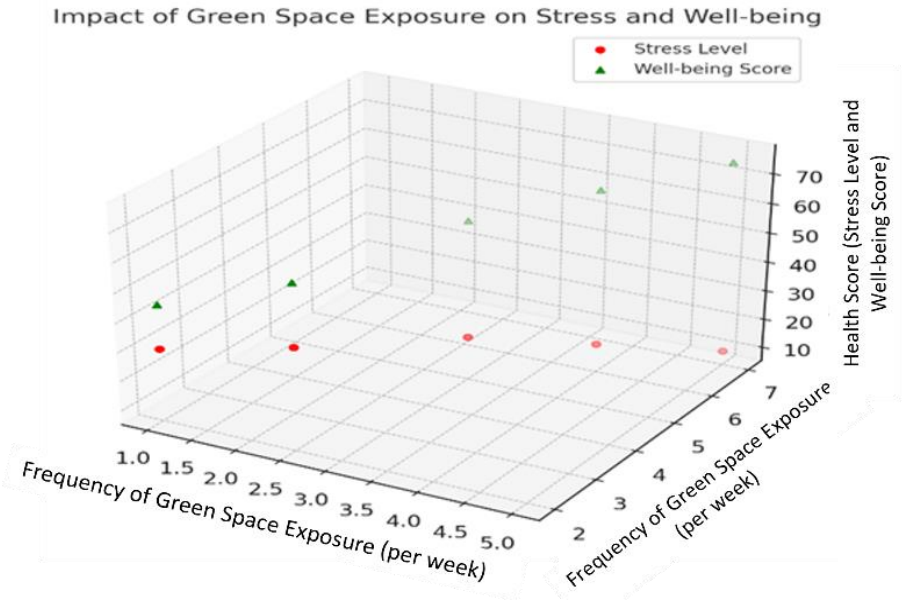

Figure 2: Impact of Green Space Exposure on Stress and Well-being

Figure 2 shows the number of visits and the amount of time spent in green space linked to lower stress levels and better mental health. The red dots show the stress levels (as measured by the Perceived Stress Scale), and the green triangles show the scores of well-being (as measured by the WHO-5 index). The graph shows that the more people spend time in green spaces, the less stressed they are and the better their health is. It also shows that people who live in cities who spend more time in nature get big psychological benefits. This shows green spaces are important for mental health.

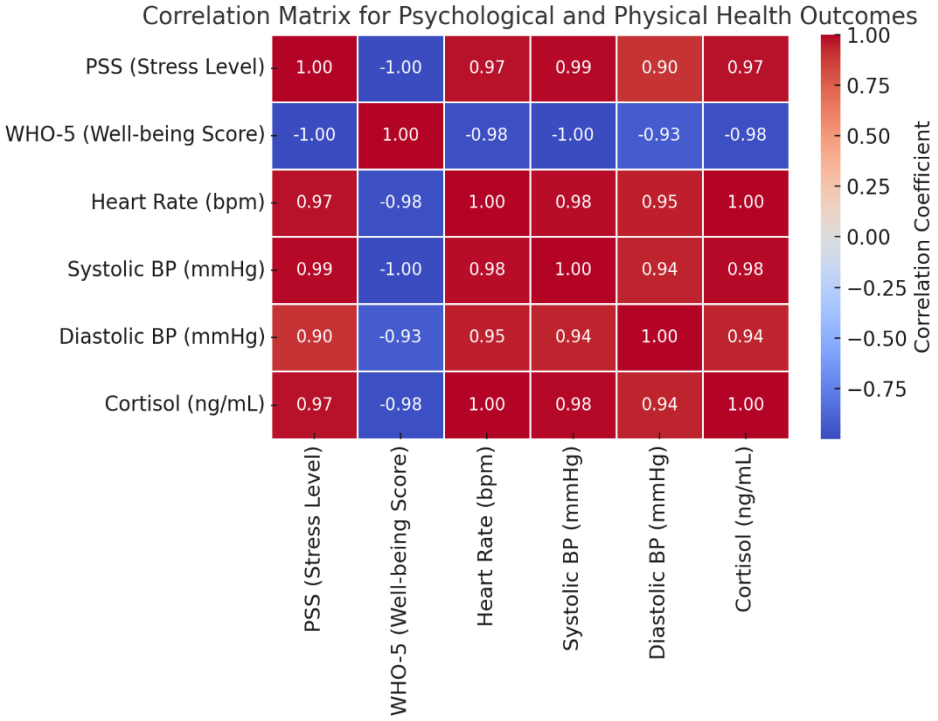

Figure 3: Correlation Matrix for Psychological and Physical Health Outcomes

Figure 3 displays the correlation matrix for several psychological and physical health variables, such as stress (PSS), well-being (WHO-5), heart rate, blood pressure (systolic and diastolic), and cortisol levels. The analysis clarifies the connections between psychological factors, like stress and well-being, and physical health factors, like heart rate and cortisol levels. This helps us better understand how mental and physical health are linked. This means that both of these things should be thought about when it comes to overall health. The findings indicate that the more one is exposed to green spaces, the lower the stress levels, the greater the mood improvement, and the better the physical health outcomes, in terms of reduced heart rate, blood pressure, and cortisol levels. These show the positive impacts of green spaces on psychological and physical health.

Conclusion

The present paper presents the serious psychological and physical health advantages of green spaces in cities. The findings show that individuals who have a higher availability of green space tend to get less stressed, be in a better mood, and in general have a better state of mind. It has also been ascertained that exposure to nature reduces perceived stress, enhances cognitive abilities, and improves mood, the more frequently and the longer the duration of exposure to nature. Physiologically, living in a green space is linked to reduced heart rate, blood pressure, and cortisol levels, implying that the heart condition was healthier, as well as the physiological indicators of stress were lower. This research also brings out the distinctions between individuals who have extensive access to green spaces and those who have limited access. Individuals in neighborhoods with high levels of green spaces indicated greater psychological and physical health outcomes and this indicates that the inclusion of the green spaces in urban planning is beneficial to health. Green spaces that support the presence of wildlife in their areas possess restorative value that cannot be achieved by the vegetation alone. The experience of contact with birds and other small animals promotes more emotional involvement with nature and leads to more significant stress reduction. It is then possible to increase the mental health advantages of green spaces by conserving and promoting wildlife department in urban environments. Ecological needs should be combined with human needs to help cities to design green environments that can provide a healthier and conducive living environment. With the projected increase in the urban population, it is significant that all the people residing in the city should be in touch with the nature as it contributes to mental health and reduces stress. Urban planning approaches that can be used to curb the detrimental health effects of urbanization can involve the establishment of green areas that can make communities healthier and more resilient. Lastly, green spaces are more than being a luxury, but also significant in the urban popular health infrastructure.

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