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Growing green: A comprehensive study on the diverse benefits of urban nutri-gardens in sustainable urban development

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Abstract

Urban nutri-gardens, a response to urbanization challenges, provide hope amid concrete cityscapes by cultivating nutrient-rich produce in urban spaces. Urban gardening addresses food and nutritional security issues in contemporary urban environments. This study, conducted in Bangalore Urban District, explores the transformative benefits perceived by 90 respondents practicing urban nutri-gardens. The research findings highlight the perceived benefits of urban nutri-gardens among respondents in Bangalore Urban District. Notably, 96.67% of urban gardeners identified the availability of fresh and healthy food as the primary benefit, followed by the assurance of chemical-free vegetables (93.33%), improved emotional well-being (91.11%), enhanced household food and nutritional security (88.89%), and a sense of community pride (84.44%). Economic benefits, such as year-round vegetable availability, increased savings, and reduced expenditure on fruits and vegetables, were also acknowledged. Environmental benefits, including the utilization of domestic waste and efficient space usage, ranked high, showcasing urban gardening's role in waste reduction and sustainable practices. The research underscores the holistic impact of urban nutri-gardens on health, economics, environment and social well-being, aligning with previous studies.

Keywords: Urban nutri-gardens, sustainability and benefits

Introduction

Urban nutri-gardens, a transformative response to the challenges of rapid urbanization, have emerged as a beacon of hope within the concrete landscapes of modern cities. This innovative concept involves cultivating nutrient-rich fruits, vegetables, herbs and edible plants in urban spaces. Historical roots of urban gardening, dating back to victory gardens during World War II and the Hanging Gardens of Babylon, showcase its age-old relevance in human survival. Today, urban nutri-gardens go beyond addressing the aesthetic void in cities; they play a pivotal role in fostering localized food production and enhancing food and nutritional security.

Urban gardening has gained prominence as a transformative practice, offering a green oasis within the confines of urban spaces. From humble containers on apartment balconies to expansive rooftop gardens, the diverse expressions of urban gardening contribute to the emergence of more sustainable and aesthetically pleasing urban environments. Community gardens, vertical gardens adorning walls and the rise of indoor gardening further underscore the versatility and adaptability of this horticultural movement.

In the face of expanding cities and diminishing agricultural land, urban nutri-gardens provide a pragmatic and sustainable response. Beyond the aesthetic allure of green spaces, these gardens address fundamental issues of food and nutritional security by fostering localized food production. Empowering individuals and communities to take control of their food sources ensures a more resilient and sustainable food supply chain.

Container gardening, one of the most accessible forms of urban gardening, allows for flexibility and serves as a creative outlet. Rooftop gardening contributes not only to the aesthetic appeal but also to energy efficiency. Community gardens and vertical gardening showcase diverse expressions of the urban nutri-garden movement, fostering community engagement and maximizing the use of limited space.

At the heart of the urban nutri-garden concept is environmental sustainability. These gardens contribute to local environmental conservation efforts by utilizing small spaces efficiently, practicing composting and often employing organic farming methods. The reduction of food miles, lower carbon footprints and the promotion of biodiversity collectively contribute to a more sustainable and resilient urban ecosystem.

Beyond immediate nutritional gains, urban nutri-gardens provide valuable educational opportunities. Engaging in gardening activities fosters a deeper connection between individuals and their food sources, educating them about plant life cycles and sustainable farming practices. Moreover, these gardens serve as communal endeavors, with community gardens acting as spaces for social interaction, collaboration and shared experiences.

In addition to the social benefits, urban nutri-gardens can serve as economic engines for local communities. Surpluses from community gardens create opportunities for income generation, reducing dependency on external economic structures. This economic empowerment aspect further strengthens the fabric of urban communities, promoting self-sufficiency and resilience. Against the backdrop of urban nutri-gardens' emergence as a transformative force in sustainable urban development, this study endeavors to comprehensively examine and evaluate the diverse benefits derived from these innovative green spaces. Acknowledging the increasing importance of urban gardening in addressing contemporary urban challenges, the study aims to shed light on the tangible advantages that urban nutri-gardens bring to individuals, communities, and the broader urban ecosystem.

Methodology

The study conducted in Bangalore Urban District during 2023-24 involved 90 respondents, employing a sample design that combined purposive sampling with a subsequent snowball sampling method. Initially selecting 40 respondents from established institutions like IIHR and GKVK, the research aimed to explore constraints hindering

gardeners in achieving nutritional security, effective management practices, and environmental sustainability. Utilizing a Descriptive and Diagnostic research design, the study operationalized constraints as factors impeding these goals. The data collection methods employed to gather information on the benefits of urban nutri-gardens involved a systematic and comprehensive approach. The study utilized a combination of quantitative and qualitative research methods to ensure a nuanced understanding of the multifaceted advantages associated with these gardens.

Results and Discussion

Benefits from urban gardens as perceived by respondents

Results presented in the Tables indicated major benefits perceived by the respondents practicing urban nutri-gardens. The perceived benefits were furnished below.

By analyzing the results presented in Tables it could be inferred that 96.67 percent of the urban farming respondents perceived availability of fresh food and healthy as top ranked benefit from urban nutri-gardens, followed by ensures availability of pesticides or chemical free vegetable (93.33%), increased emotional well-being (91.11%), improvement in food and nutritional security at household level (88.89%) and a sense of pride among community (84.44%) these were the main reasons to start urban gardens.

It can be inferred from the Table 1 that year round availability of vegetables (63.33%) ranked top among economic benefits, followed by increased savings (41.11%), decreased expenditure on fruits and vegetables (38.89%), overcome vegetable price fluctuation and market inflation (34.44%) and decreased hospital expenditure (10.83%). The probable reason might be due to installation of shade nets by most respondents, maintaining high cropping intensity and mandatory cultivation of leafy vegetables along with vast variety of vegetables and fruits which improved nutritional security. The above results were in line with Ergere *et al.* (2018) [2]

Table 1: Distribution of respondent economic benefits received from urban gardens

Sl. No.	Benefits	Number	Percent	Rank
A	Economic benefits			
1	Urban gardening leads to increased savings through home grown produce.	37	41.11	XIV
2	It lowers spending on fruits and vegetables from markets.	35	38.89	XVI
3	Urban gardening contributes to better health, reducing hospital bills.	18	20.00	XVIII
4	It ensures a consistent supply of vegetables throughout the year.	57	63.33	X
5	Urban gardening helps stabilize vegetable prices and mitigates market inflation.	31	34.44	XVII

From the Table 2 it can be revealed that regarding environmental benefits, it was observed that opportunity to utilize domestic waste topped the list with 77.78 percent, followed by efficient use of space (70.00%), clean air (42.22%) and reduces air temperature (41.11%). The probable reason for these perceptions might be due to solution offered by urban farming This underscores the pivotal role of urban gardening in waste reduction and recycling, aligning with sustainability goals by converting household waste into valuable resources like compost and

densely populated urban areas, space is a premium and urban gardening offers an ingenious solution to make the most of available land, contributing to urban greenery and food production simultaneously. It play a role in improving air quality by absorbing pollutants and providing oxygen. Furthermore, they help mitigate the urban heat island effect by reducing air temperatures, creating a more pleasant and healthier environment. The above results were in line with Sreedaya (2004) [4], Desai and Balasubramani (2010) [1], Rani *et al.* (2015) [3] and Vincent *et al.* (2019) [5].

Table 2: Distribution of respondent environmental benefits received from urban gardens

B	Environmental benefits			
1	Reduces air temperatures	37	41.11	XIV
2	They maximize land use efficiency, ideal for densely populated areas.	63	70.00	IX
3	Urban gardens improve air quality by absorbing pollutants.	38	42.22	XIII
4	They provide a means to recycle domestic waste into valuable compost.	70	77.78	VII

From the Table 3 it can be revealed that regarding health & nutritional benefits perceived by urban farmers, It ensures access to fresh and nutritious food topped the list with 96.67 percent respondents, followed by ensures availability of pesticides or chemical free vegetable (93.33%), increased food and nutritional security (88.89%) and Gardening

encourages a more active lifestyle (74.44). The probable reason for these perceptions might be because almost all respondents were not using any chemicals and growing diverse group of leafy vegetables, other vegetables and fruits in urban farm.

Table 3: Distribution of respondent health benefits received from urban gardens

C	Health benefits			
1	Increased food and nutritional security	80	88.89	IV
2	It ensures access to fresh and nutritious food.	87	96.67	I
3	Ensures availability of pesticides/chemical free vegetable	84	93.33	II
4	Gardening encourages a more active lifestyle.	67	74.44	VIII

From the Table 4 it can be revealed that regarding social benefits, it was found that urban gardening boosts emotional and mental well-being topped the list with 91.11 percent, followed by Community Pride: It fosters a sense of pride

within the community (84.44%), gardens add beauty and greenery to urban environments (84.44%), gardening promotes inclusivity and community engagement (62.22%) and interpersonal relations. (62.22%).

Table 4: Distribution of respondent social benefits received from urban gardens

D	Social benefits			
1	Urban gardening boosts emotional and mental well-being	82	91.11	III
2	Community Pride: It fosters a sense of pride within the community.	76	84.44	V
3	Gardens add beauty and greenery to urban environments.	76	84.44	V
4	Gardening promotes inclusivity and community engagement.	56	62.22	XI
5	Interpersonal relations.	56	62.22	XI

The probable reason for these perceptions might be due to working closely with nature acting as stress buster, pursuing hobby of growing plants, special recognition given by peers and neighbours to urban farming practitioners.

Conclusion

In conclusion, the study highlights the substantial benefits perceived by urban nutri-garden practitioners in Bangalore. The respondents acknowledged a multitude of advantages, including improved food and nutritional security, economic savings, environmental sustainability through waste utilization and enhanced emotional well-being. These findings underscore the holistic impact of urban gardening, affirming its role in fostering healthier, more sustainable and socially connected urban communities.

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