



RESEARCH ARTICLE

Perception and Attitude Towards Rooftop Gardening Among Urban Residents of Coimbatore District

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ABSTRACT

Coimbatore district in Tamil Nadu, renowned for its lush greenery, has seen rapid population growth and unchecked development in recent times, leading to a decline in urban green spaces and increased environmental concerns. To address this, rooftop gardening has been proposed as a sustainable and cost-effective solution. This study aimed to evaluate the perception and attitude towards rooftop gardens among urban residents of Coimbatore district. A descriptive quantitative study was conducted, in which sampling of 80 respondents was done through systematic sampling method with a pre tested well - structured interview schedule. Data analysis involved SPSS and MS Excel, focusing on descriptive statistics. Results showed that the majority of respondents (85%) had favourable attitudes towards rooftop gardening, while a very few had an unfavourable attitude (3.3%). In terms of perceptions, three-quarters (75%) had positive views, and in terms of overall negative perception (54%) showing negative views. However, half of the respondents (54%) on overall perceptions still held negative views towards rooftop gardening. Thus, effective policy interventions and collaborative efforts involving government and municipal authorities are necessary to promote the acceptance of rooftop gardens among urban residents.

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INTRODUCTION

Urbanisation is a worldwide occurrence that is changing the human settlement landscape by causing a reduction in green spaces and rise in population concentrations. Rooftop gardening has evolved as an acceptable answer to the environmental problems brought about by increased urbanisation. It additionally improves urban aesthetics and also helps with food security, biodiversity protection, and climate resilience. Notwithstanding its possible advantages, urban residents attitudes and perception

towards rooftop gardening differ greatly depending on socio-cultural settings, economic status, and environmental awareness.

Coimbatore, a bustling urban centre situated in the southern state of Tamil Nadu in India, epitomizes the complexities of urbanization when combined with customs and environmental issues. Coimbatore has seen a rise in rooftop gardening initiatives in

the past couple of years, fueled by community-driven campaigns, government incentives, and private initiative. The perceptions of Coimbatore's urban residents towards rooftop gardening, however, are still largely unexplored, leaving a large knowledge vacuum about the dynamics of sustainable living and urban agriculture in the area. This research aims to address this gap by investigating the perceptions of rooftop gardening among urban residents in Coimbatore district. By employing a mixed-methods approach, this study seeks to explore the factors influencing individuals' attitudes and perception towards rooftop gardening, identify barriers and facilitators to adoption, and assess the perceived benefits and constraints associated with rooftop gardening practices in urban settings.

One of the main challenges faced by urban inhabitants worldwide is the rapid urbanisation and high population increase associated with the creation of carbon-neutral communities UN-HABITAT, (2022). Global urbanisation has also brought about a range of problems, such as rising environment pollutions, an increasing demand for food, a shortage of green spaces for leisure and physical activity, and ineffective household disposal of waste management; the unpredictability of urban disasters, which made city people suffer extra mental strain along with city life pressure Al-Zu bi & Mansour, (2017). Additionally, rooftop gardens are a sustainable urban development technique that improve urban landscape quality and maintain the equilibrium of the ecological cycle. On the other hand, rooftop gardens are among the most crucial elements of eco-city development, which can improve the environment and quality of life Hossain et al. (2019)

Understanding the perceptions of urban residents towards rooftop gardening in Coimbatore district is crucial for informing policy interventions, urban planning strategies, and community engagement initiatives aimed at promoting sustainable urban agriculture and fostering environmental stewardship. Moreover, the findings of this study can contribute to the broader discourse on urban sustainability, offering valuable insights into the role of rooftop gardening in mitigating the adverse effects of urbanization on ecosystems, public health, and socio-economic well-being. Keeping the above problems in view, the present study was taken up with the specific objective to identify the perception and attitude towards rooftop gardening among urban residents of Coimbatore

district. Through an in-depth exploration of urban residents perceptions of rooftop gardening, this research endeavours to shed light on the intricate interplay between human behaviour, environmental attitudes, and urban development in the context of Coimbatore district, paving the way for informed decision-making and grassroots action towards a greener, more resilient urban future.

MATERIALS AND METHODS

The study was undertaken with an objective of analysing the perception and attitude towards Rooftop Gardening among Urban residents of Coimbatore district. An "Ex Post Facto" research design was used in this study. District was selected purposively since Coimbatore has faced drastic urbanization and the city residents were aware and also adopted rooftop gardening due to the prominence and outreach programs and initiatives of Tamil Nadu Agricultural University. There are ten assembly constituencies in Coimbatore district, among which "Coimbatore North" had been chosen as the area of research. From which "RS Puram and PN Pudhur" were selected. These areas were selected using Purposive sampling since it is located in the middle of the city with adequate urban resident population, with diversity in age, educational status, possession of roof top gardens etc., and familiarity about the place by the researcher and close proximity to Tamil Nadu Agricultural University. In order to know the ground reality Systematic sampling was used to select the respondents. With a sample size of 80, urban residents were drawn using systematic sampling technique in the above-mentioned places of the district. The required data was collected using a pretested well-structured interview schedule. The collected data were coded, tabulated and analysed using appropriate statistical tools. The descriptive statistical tools such as mean, standard deviation, frequency and percentage analysis were used to draw the inference from the study.

FINDINGS AND DISCUSSIONS

From Table.1 it could be inferred that more than half of the respondents were Female (60%) and exactly half of them belonged to 18-35 years of age group (50%) since the respondents were working population and students. More than three-fourth (80%) of the respondents had a nuclear family type which is prominent in most of the cities. Majority of



Table1 Profile characteristics of urban residents (N=80)

S. No	Variables	Results %
1.	Gender	
	Male	40.00
	Female	60.00
2.	Age	
	18-35	50.00
	36-60	43.33
	Above 60	6.66
3.	Type of family	
	Nuclear	80.00
	Joint	20.00
4.	Type of residence	
	Owned	90.00
	Rented	10.00
5.	Level of education	
	Secondary	3.33
	Higher secondary	18.33
	Undergraduate	38.34
	Postgraduate	40.00
6.	Primary occupation	
	Private services	13.33
	Government services	16.67
	Business	21.67
	Homemaker	23.33
	Retired	3.33
	Unemployed	8.33
	Student	13.34
7.	Number of floors in your building	
	Only ground floor	18.33
	Single storeyed building	60.00
	Multi storeyed building	21.67
8.	Type of building	
	Individual house	93.33
	Apartment	6.77
9.	Possession of rooftop garden	
	Have a rooftop garden at present	28.33
	Never had a rooftop garden	50.00
	Had a rooftop garden before	21.67
10.	Attitude towards roof top gardening	
	Favourable	85.00
	Neutral	11.67
	Unfavourable	3.33
11	Experience in rooftop gardening	
	0-5 years	40.00
	5-10 years	8.33
	above 10 years	1.67
	Nil	50.00

Attitude towards roof top gardening

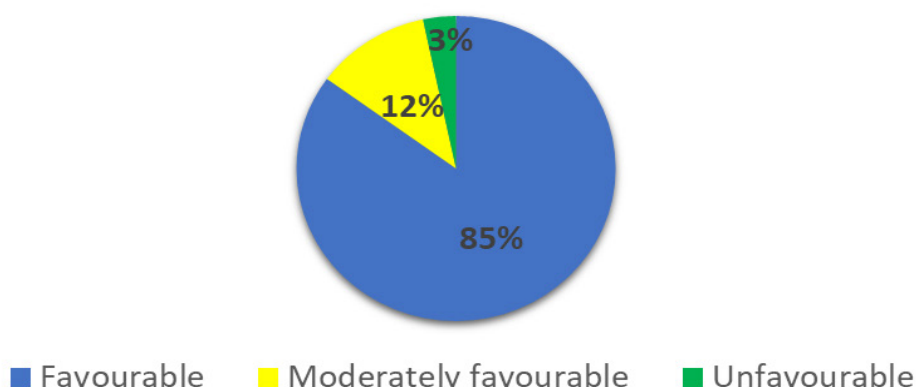


Figure 1. Attitude of respondents towards Roof top gardening

the respondents possessed a own house (90%), since they were native residents of the city. Nearly half of the respondents (40%) had Postgraduate as their highest level of education due to more prominent colleges nearby their residence.

It could be predicted that nearly one-fourth of the respondents were Homemaker’s since they took care of their children and welfare of their household. More than half of the respondents (60%) resided in ground floor, because a single floor was sufficient for a nuclear family. Majority of the respondents lived in individual houses (93.33%). Regarding the possession of rooftop gardens half of the respondents (50%) never had rooftop gardens, because most of the respondents had shortage of time and space to maintain it. More than three -fourth (85%) of the respondents showed a favourable attitude towards roof top gardens since

they were aware about the positive benefits of keeping a rooftop garden. Regarding the experience on rooftop gardening, half of the respondents had no experience in rooftop gardening (50%) since majority never had a roof top garden followed by, (40%) mentioning 0-5 years those who had a roof top garden before or now.

Perception towards roof top gardening

From Table 2. it could be inferred that, majority of the respondents (94.30%) agreed to have a positive perception that rooftop gardening increases the aesthetic value and reduced stress, since the respondents felt happy and spend their leisure time after peek working hours, followed by (90%) agreeing to have a positive perception that rooftop garden effectively utilizes kitchen and degradable household wastes for compost and manure and so on. Nearly half of the respondents (45.70%) disagreed to have a

Table 2. Positive perception on rooftop gardening (N=80)

S. No	Positive Perception on Roof Top Gardening	Agree %	Neutral %	Disagree %
1.	Reduce Urban Heat Island Effect	70.00	21.10	9.90
2.	Increase aesthetic value and reduces stress	94.30	4.30	1.40
3.	Effective utilization of household waste water	87.10	11.40	1.50
4.	Effective utilization of kitchen and degradable household wastes for compost and manure	90.00	8.60	1.40
5.	Improves air quality	82.90	14.30	2.80
6.	Generates additional income by selling the freshly harvested produce	45.70	44.30	10.00
7.	Access to safer, healthy food and meets the dietary and nutritional requirement of the family	88.60	10.00	1.40
8.	Reduction of food expenditure	44.30	10.00	45.70



Overall Positive perception towards roof top gardening

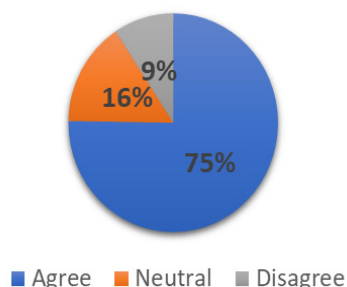


Figure.2. Overall positive perception on rooftop gardens

positive perception that roof top garden would reduce food expenditure because apart from growing food crops the respondents cultivated flowering, medicinal, aromatic, potted plants etc.,

From Table-3 it could be inferred that more than half of the respondents (62.90%) agreed to have a negative perception that possessing a roof top garden would end in frequent shattering and

damage due to heavy winds and rains, followed by more than half of the respondents (58.60%) having a negative perception resulting in staining and improper drainage and so on. The least agreed negative perception on roof top gardens was leakage in roofs (44.30%).

From Table-4 it could be inferred that major constraint enumerated by the respondents were damage of growbags due to high exposure of sunlight and radiation (86.67%) as the growbags are prone to frequent damages due to high temperature and radiation, followed by a slight above three-fourth of the respondents (76.67%) mentioning difficulty in carrying the inputs and planting materials from ground to top since it's a tiring work to carry and lift it safely in the rooftops. The least possibly encountered constraint mentioned by the respondents was lack of water availability (33.33%) since the water requirement is minimum when compared to conventional farming in fields and usage of household waste water for roof top gardens.

Table.3 Negative perception on roof top gardening (N=80)

S. No	Negative perception on roof top gardening	Agree %	Neutral %	Disagree %
1.	Leakage in roof of building	44.30	38.60	17.10
2.	Slippery roof due to unchecked water leakage	54.30	30.00	15.70
3.	Habitation of rats, squirrels and other harmful insects	50.00	32.90	17.10
4.	Staining and improper drainage	58.60	32.90	8.50
5.	Frequent shattering and damage due to heavy winds and rains	62.90	20.00	17.10

Table.4 Constraints encountered in rooftop gardening (N=80)

S. No	Constraints	Percentage	Rank
1	High initial installation costs	68.33	3
2	Needed high maintenance	68.33	3
3	Lack of leisure time to maintain the rooftop gardens	60.00	4
4	Lack of technical knowledge	45.00	7
5	Lack of labour availability on time	50.00	6
6	Insufficient space	56.67	5
7	Lack of adequate water availability	33.33	9
8	Difficulty in sourcing inputs like seeds, implements, FYM, etc	43.33	8
9	Damage of growbags due to high exposure of sunlight and radiation	86.67	1
10	Difficulty in carrying the inputs and planting materials from ground to top	76.67	2



CONCLUSION

Regarding attitude , the majority of respondents (85%) had favourable attitudes towards rooftop gardening, while very few had an unfavourable attitude (3.3%). In terms of perceptions, three-fourth (75%) had positive views, and in terms of overall negative perception (54%) showing negativity. However, a notable portion of respondents (54%) of overall perceptions still held negative views towards rooftop gardening. Thus, effective policy interventions and collaborative efforts involving government and municipal authorities are necessary to promote the acceptance of rooftop gardens among urban residents. Thus, by enabling better transfer of new innovative technologies and providing incentives the citizens will adopt more ecofriendly roof top gardens and improve the sustainability promoting green , ecofriendly cities and green spaces .

REFERENCES

- Al-Zu bi, M., & Mansour, O. (2017). Water, energy, and rooftops: Integrating green roof systems into building policies in the Arab region. *Environment and Natural Resources Research*, 7(2), 11. <https://doi.org/10.5539/enrr.v7n2p11>
- Chowdhury, M. H., Eashat, M. F., Sarkar, C., Purba, N. H., Habib, M. A., Sarkar, P., & Shill, L. C. (2020). Rooftop gardening to improve food security in Dhaka City: A review of the present practices. *International Multidisciplinary Research Journal*, 17-21. <https://doi.org/10.25081/imrj.2020.v10.6069>
- Hossain, M. A., Shams, S., Amin, M., Reza, M. S., & Chowdhury, T. U. (2019). Perception and barriers to implementation of intensive and extensive green roofs in Dhaka, Bangladesh. *Buildings*, 9(4), 79. <https://doi.org/10.3390/buildings9040079>
- Kharel, S. (2018), "Information and communication technology for the rural development in Nepal", *Tribhuvan University Journal*, Vol. 32 No. 2, pp. 177-190, <https://doi.org/10.3126/tuj.v32i2.24714>.
- Kumar, J.R., Natasha, B., Suraj, K., Kumar, S.A. and Manahar, K. (2019), "Rooftop farming: an alternative to conventional farming for urban sustainability", *Malaysian Journal of Sustainable Agriculture*, Vol. 3 No. 1, pp. 39-43, <https://doi.org/10.26480/mjsa.01.2019.39.43>.
- Panneerselvam, P., Kumar, S.R., Balamurali, B., Rakesh,S.S. 2014. Improving socio-economic and environmental benefits of households practicing urban farming in Coimbatore. *Int. J. Trop. Agric.*, 32(3-4): 809-8. 5.
- Poornima, C.P. and Surywanshi, P.D., 2020. Vegetable Consumption Pattern and Health Consciousness of Urban Terrace Garden Farmers. *Journal of Extension*. [Online]. Available: <https://www.extensioneducation.org/index.php/jee/article/view/478/311>. [09-07-2021]
- UN (2018). *World Population Prospects: The 2018 Revision*. [Online] Available: <http://esa.un.org/unpd/wpp/index.htm>.
- UN-Habitat (2022). *Global Database of Metropolises 2020* available in https://qrco.de/UNHabitat_GlobalDatabaseOfMetropolis2020