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Assessing urban dwellers' knowledge of terrace gardening in Telangana state

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Abstract

India's projected population of 2.0 billion by 2050 poses challenges to food and energy resources, exacerbated by rapid urbanization and farmland conversion. Controlling population growth is gradual, making addressing immediate food needs crucial. Urban agriculture, particularly terrace gardening, emerges as a positive solution on unused urban spaces. This health-conscious practice helps meet urban food demand, eases pressure on traditional agriculture, and promotes environmental benefits and biodiversity preservation.

The study, utilizing an ex-post facto design, focused on Telangana, specifically Hyderabad, Warangal, and Karimnagar, due to significant terrace gardening prevalence. Proportionate random sampling included 60 respondents from Hyderabad and 30 each from Karimnagar and Warangal. Data collected through pre-tested interviews underwent coding for statistical analysis, revealing distinct categories of terrace gardening knowledge: 52.50% high, 35.83% medium, and 11.67% low expertise. Higher education levels indicated increased awareness of organic food, contributing to a deeper understanding of terrace gardening.

The survey unveiled diverse expertise among respondents in terrace gardening. High awareness levels were observed in seepage proofing (89.17%) and potting mixture ingredients (88.33%). Respondents demonstrated knowledge in suitable crops (86.67%), plant nutrition management (85.00%), and compost preparation (84.17%). Notably, 83.33% exhibited skills in pest and disease management.

However, awareness gaps were identified, with 54.17% unaware of terrace gardening layout and 53.33% unfamiliar with crop rotation benefits. Additionally, 52.50% lacked knowledge of seedling trays, and 50.83% were unaware of drainage hole uses. Furthermore, 47.50% lacked understanding in protecting plants from harsh weather conditions. These findings underscore strengths and areas for improvement in respondents' terrace gardening knowledge and practices.

Keywords: Terrace gardening, population demands, health conscious

Introduction

India is anticipated to become one of the world's most densely populated countries, with a projected population of around 2.0 billion by 2050 (Siva *et al.*, 2017) ^[1]. Despite the population growth, the available food and energy resources are not expected to keep pace with the increasing demand, leading to potential challenges such as hunger, poverty, malnutrition, and social instability. The migration of people from rural to urban areas in search of better opportunities exacerbates the population boom, causing fluctuations in the availability of natural resources in the areas they move to. This constant movement places strain on resources, and the conversion of farmland into residential areas reduces the land available for agriculture.

While controlling population growth is a gradual process, addressing the immediate concern of feeding the existing population is crucial. The reduction of agricultural land due to conversion for non-agricultural purposes presents both challenges and opportunities. On the positive side, urban areas with multistory buildings offer unused spaces such as

roofs, balconies, and other areas that can be utilized for vegetable production through practices like "Roof cultivation" or "Terrace gardening." This form of urban agriculture, driven by increasing health consciousness (Walter and Stoelzle, 2018) ^[2], is gaining popularity and can help alleviate stress on traditional agricultural land (Specht *et al.*, 2014) ^[4]. Terrace gardens contribute to meeting the food demand in cities while also providing environmental benefits and contributing to the preservation of biodiversity (Kumar *et al.*, 2019) ^[7].

Materials and Methods

The research was conducted in the state of Telangana, utilizing an ex-post facto research design. The cities of Hyderabad, Warangal, and Karimnagar were purposefully chosen for the study due to their notable prevalence of terrace gardening practitioners. To ensure a representative sample, a proportionate random sampling technique was employed. Specifically, 60 respondents were selected from Hyderabad, while 30 respondents each were chosen from

Karimnagar and Warangal, aligning with their respective population sizes. The researcher employed a pre-tested interview schedule for data collection through personal interviews with the respondents. Subsequently, the collected data underwent coding and tabulation to facilitate statistical analysis, employing tools such as frequency and per centage.

Results and Discussion

According to Table 1, the evaluation of respondents' knowledge about terrace gardening reveals distinct categorizations based on their expertise. A majority of respondents, constituting 52.50 per cent, demonstrated a high level of knowledge, followed by 35.83 per cent in the medium knowledge category, and 11.67 per cent of respondents exhibited low knowledge about terrace gardening.

The prevalence of higher education levels among the

surveyed respondents suggests an increased awareness of organic food and a stronger emphasis on maintaining a strict and healthy diet. This inclination may have contributed to a more profound understanding of terrace gardening practices, possibly resulting in a higher level of knowledge in this area. These results indicate a robust comprehension of the subject matter among the respondents. These findings align with the studies conducted by Mondal *et al.* (2014) [5] and Vani (2018) [8].

Table 1: Distribution of respondents based on their level of knowledge (n=120)

S. No	Category	Respondents	
		F	%
1.	Low (15-19)	14	11.67
2	Medium (19-23)	43	35.83
3	High (23-27)	63	52.50
Total		120	100

Table 2: Statement wise analysis of respondent's knowledge on terrace gardening (n=120)

S. No	Statement	Respondents				Rank
		Yes		No		
		F	%	F	%	
1	Crops are grown on fences	85	70.83	35	29.17	17
2	Observation of sooty mould under leaves and stems of tomato, lady finger and hibiscus	83	69.16	37	30.84	18
3	Common pests that you encountered in terrace gardening	80	66.66	40	33.34	20
4	Common diseases that you encountered in terrace gardening	81	67.50	39	32.5	19
5	Pests and diseases management encountered in terrace gardening	100	83.33	20	16.67	6
6	Crop rotation in terrace gardening	56	46.67	64	53.33	29
7	Plan of layout of terrace gardening	55	45.83	65	54.17	30
8	Tomato, brinjal, chilli, cucumber, beans are these short-day plants	69	57.50	51	42.50	25
9	Drainage holes plays important role in aeration	59	49.17	61	50.83	27
10	Coco peat, moss stick etc., are these water absorbing materials	87	72.50	33	27.50	16
11	Protection of terrace gardening from harsh weather conditions	63	52.50	57	47.50	26
12	Suitable crops to grow in terrace gardening	104	86.67	16	13.33	3
13	Procedure for preparation of composting through household waste	101	84.17	19	15.83	5
14	Pest and diseases control of crops through organic way	77	64.16	43	35.94	22
15	Type of grow bags suitable for vegetable and leafy vegetables	99	82.50	21	17.50	7
16	Depth of sowing of seeds for shallow rooted plants	95	79.16	25	20.94	11
17	Depth of sowing of seeds for deep rooted plants	90	75.00	30	25.00	15
18	Management of nutrition requirements of plants in a terrace gardening	102	85.00	18	15.00	4
19	How to overcome the limited space in terrace gardening	91	75.83	29	24.17	14
20	Criteria to be considered for selection of crops in terrace gardening	98	81.66	22	18.34	8
21	Coriander, celery, lettuce, spinach are these require regular watering	78	65.00	42	35.00	21
22	Management of monkeys and rodents in terrace gardening	74	61.66	46	38.34	23
23	Precautions to be taken for terrace gardening	94	78.33	26	21.67	12
24	Measures taken to be conserve water in your terrace gardening	72	60.00	48	40.00	24
25	Measures to be taken for seepage proof in terrace gardening	107	89.17	13	10.83	1
26	Crops that attract pollinators like bees	97	80.83	23	19.17	9
27	Important ingredients of potting mixtures	106	88.33	14	11.67	2
28	In Integrated pest management ml/litre of neem oil will be used for spraying	96	80.00	24	20.00	10
29	Type of trays are used to grow vegetable nursery	57	47.50	63	52.50	28
30	Trap crops grown in terrace gardening	93	77.50	27	22.50	13

Table 2 presents the survey results evaluating the knowledge of respondents regarding terrace gardening, revealing a diverse range of expertise among participants. In various aspects related to terrace gardening, a notable proportion of respondents demonstrated varying levels of awareness. The findings indicate that 89.17 per cent of respondents (Rank 1) were well-informed about seepage proofing, recognizing it as a common issue in terrace gardening that requires preventative measures. Similarly,

88.33 per cent (Rank 2) exhibited a strong understanding of the ingredients in potting mixtures, highlighting a solid foundation in fundamental elements crucial for terrace gardening practices.

Additionally, 86.67 per cent (Rank 3) were aware of crops suitable for terrace gardening, recognizing the importance of factors such as climate, available space, and resources in determining suitable crops. Moreover, 85.00 per cent (Rank 4) showcased their expertise in managing plant nutrition

effectively for terrace gardening. Similarly, 84.17 per cent (Rank 5) were knowledgeable about compost preparation through household waste, emphasizing their awareness of sustainable waste management practices integral to terrace gardening. Furthermore, 83.33 per cent (Rank 6) demonstrated knowledge of pest and disease management, employing neem oil and biological control agents.

In contrast, only 54.17 per cent (Rank 30) of respondents were not aware of the layout of terrace gardening, possibly due to a lack of knowledge and the complexity of designing layouts. Similarly, 53.33 per cent (Rank 29) were not aware of the crop rotation approach, possibly indicating a lack of understanding of its benefits. Likewise, 52.50 per cent (Rank 28) were not aware of seedling trays used for growing vegetable nurseries, potentially due to limited exposure to such trays. Furthermore, 50.83 per cent (Rank 27) were not aware of the uses of drainage holes, likely constrained by the limited space available for terrace gardening. Similarly, 47.50 per cent (Rank 26) were not aware of practices to protect terrace gardening plants from harsh weather conditions, possibly because respondents were unfamiliar with measures such as covering delicate plants during frost and using windbreaks to shield plants from strong winds.

Conclusion

In conclusion, the assessment of respondents' knowledge on terrace gardening, illustrates clear distinctions in expertise levels. A significant majority, 52.50 per cent, showcased a high level of knowledge, while 35.83 per cent exhibited a medium level, and 11.67 per cent had low knowledge on the subject. The prevalence of higher education levels suggests a heightened awareness of organic food, emphasizing a strong correlation with the profound understanding of terrace gardening practices observed among the respondents.

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