



THE BENEFITS OF HOME GARDEN DESIGN ON OCCUPANTS' COMFORT AND HEALTH

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ABSTRACT

Home gardens have become an important element in residential environments due to their contribution to environmental quality, occupant comfort, and physical and psychological health. The presence of vegetation around residential buildings can improve thermal conditions, enhance air quality, reduce stress levels, and increase aesthetic value. This study aims to analyze the benefits of home garden design on occupant comfort and health. A descriptive quantitative approach was employed using survey methods, observations, interviews, and questionnaires. Data were collected from 30 homeowners who possessed active home gardens and had lived in their residences for at least one year. The variables examined included garden design, thermal comfort, air quality, psychological health, and environmental aesthetics.

The results indicate that 84% of respondents experienced improved thermal comfort, 80% reported better air quality, 76% experienced positive psychological effects, and 90% perceived enhanced aesthetic quality due to the presence of home gardens. These findings demonstrate that home garden design significantly contributes to creating healthier, more comfortable, and visually appealing residential environments. Therefore, integrating garden design into residential planning is highly recommended as a sustainable strategy to improve quality of life.

Keywords: home garden, thermal comfort, air quality, mental health, aesthetics, residential environment.

INTRODUCTION

Rapid urbanization and population growth have significantly transformed residential environments around the world. The expansion of urban areas has resulted in the reduction of green open spaces, leading to various environmental and health-related challenges such as increased air pollution, higher temperatures, reduced biodiversity, and elevated stress levels among residents (United Nations, 2022). As a result, the development of home gardens has emerged as an important strategy for improving environmental quality and enhancing human well-being within residential settings.

A home garden can be defined as a managed green space located within or around a residential property that contains a variety of plants, including ornamental species, vegetables, fruits, medicinal plants, and shade trees (Galhena et al., 2013). Beyond their aesthetic value, home gardens provide numerous ecological, social, economic, and health benefits. They serve as multifunctional landscapes that contribute to environmental sustainability while improving the quality of life of household members.

Environmental quality is one of the primary benefits associated with home gardens. Vegetation can absorb carbon dioxide, release oxygen, filter airborne pollutants, and regulate microclimatic conditions around residential buildings. According to Nowak et al. (2014), urban vegetation plays a crucial role in improving air quality by removing particulate matter and gaseous pollutants from the atmosphere. Similarly, Bowler et al. (2010) reported that green spaces can reduce ambient temperatures through shading and evapotranspiration, thereby mitigating urban heat island effects and improving thermal comfort.

Thermal comfort is an essential component of residential well-being. High temperatures can negatively affect physical health, productivity, and overall comfort. The presence of trees and shrubs around houses can reduce solar radiation and create cooler outdoor environments. Research conducted by Akbari et al. (2001) demonstrated that strategically planted vegetation can significantly reduce surrounding air temperatures and lower energy consumption for cooling purposes. Consequently, home gardens contribute to creating more comfortable and energy-efficient living environments.

In addition to environmental benefits, home gardens have a positive impact on physical and mental health. Gardening activities encourage physical movement, which can help reduce the risk of obesity, cardiovascular disease, and other lifestyle-related illnesses (Soga et al., 2017). Furthermore, engaging in gardening activities provides opportunities for exercise, relaxation, and

interaction with nature. These activities promote healthier lifestyles and contribute to overall well-being.

The psychological benefits of green spaces have been widely documented in previous studies. According to Ulrich (1984), exposure to natural environments can reduce stress and accelerate psychological recovery. Kaplan and Kaplan (1989) further explained through the Attention Restoration Theory that interaction with natural settings helps restore cognitive functioning and reduce mental fatigue. Home gardens provide accessible natural environments where residents can experience relaxation, emotional restoration, and improved mental health.

Recent studies have shown that individuals who spend more time in gardens report higher levels of life satisfaction and psychological well-being. de Bell et al. (2020) found that access to private gardens was positively associated with improved mental health, reduced anxiety, and greater happiness. Similarly, Soga et al. (2017) concluded that gardening activities significantly contribute to reductions in depression and stress while enhancing quality of life.

Home gardens also contribute to food security and household economic resilience. Families can cultivate vegetables, fruits, herbs, and medicinal plants within their gardens, reducing food expenditures while improving nutritional intake. Galhena et al. (2013) emphasized that home gardens are effective systems for enhancing household food security and dietary diversity, particularly in developing countries. The cultivation of edible plants not only provides fresh and healthy food but also promotes sustainable food production practices.

Another important function of home gardens is the enhancement of residential aesthetics. Attractive landscape designs increase the visual appeal of homes and create pleasant living environments. According to Nasar (1998), aesthetically pleasing environments positively influence residents' perceptions of comfort and satisfaction. Well-designed gardens containing a combination of ornamental plants, flowers, lawns, and landscape elements can improve the overall appearance and value of residential properties.

Despite the numerous benefits of home gardens, many residential areas still lack adequate green spaces due to limited land availability, insufficient knowledge of landscape design, and low public awareness regarding environmental sustainability. Therefore, it is important to investigate the contribution of home gardens to occupant comfort and health and to promote their integration into residential planning and development.

Based on these considerations, this study aims to analyze the benefits of home garden design on occupants' comfort and health. Specifically, the study seeks to examine the effects of home gardens on thermal comfort, air quality, psychological well-being, and environmental aesthetics. The findings are expected to provide valuable insights for homeowners, landscape designers, urban planners, and policymakers in developing sustainable and healthy residential environments.

RESEARCH METHODOLOGY

3.1 Research Design

This study employed a **descriptive quantitative research design** to analyze the benefits of home garden design on occupants' comfort and health. Descriptive research aims to systematically describe characteristics, conditions, and relationships among variables within a particular population (Creswell & Creswell, 2018). The quantitative approach was selected because it enables the measurement and analysis of respondents' perceptions regarding the influence of home gardens on environmental quality, comfort, and health.

The study focused on evaluating four major aspects: thermal comfort, air quality, psychological well-being, and environmental aesthetics associated with home garden design.

3.2 Research Location and Period

The research was conducted in residential areas where homeowners actively maintained home gardens. The study was carried out from January to March 2026. The selected locations were considered suitable because they represented urban and suburban residential environments with varying garden sizes and vegetation compositions.

3.3 Population and Sample

The population of this study consisted of homeowners who possessed home gardens in the selected residential areas.

A **purposive sampling technique** was used to select respondents based on the following criteria:

1. Homeowners who possess a home garden.
2. Residents who have lived in their homes for at least one year.
3. Individuals willing to participate in the study.

According to Etikan et al. (2016), purposive sampling is appropriate when respondents are selected based on specific characteristics relevant to the research objectives.

A total of **30 respondents** were selected as the study sample.

3.4 Research Variables

The study consisted of one independent variable and four dependent variables.

Independent Variable (X)

Home Garden Design

Indicators:

- Plant diversity
- Garden size
- Landscape arrangement
- Availability of shade trees
- Functional garden elements

Dependent Variables (Y)

Y1: Thermal Comfort

Indicators:

- Temperature reduction
- Shading effectiveness
- Outdoor comfort level

Y2: Air Quality

Indicators:

- Freshness of air
- Dust reduction
- Oxygen availability

Y3: Psychological Health

Indicators:

- Stress reduction
- Relaxation
- Emotional well-being

Y4: Environmental Aesthetics

Indicators:

- Visual attractiveness
- Landscape beauty
- Residential satisfaction

3.5 Data Types and Sources

Primary Data

Primary data were collected directly from respondents through questionnaires, interviews, and field observations.

Secondary Data

Secondary data were obtained from:

- Scientific journals
- Books
- Government publications
- Previous studies related to home gardens, environmental health, and residential landscapes

According to Sekaran and Bougie (2019), combining primary and secondary data improves the reliability and comprehensiveness of research findings.

3.6 Data Collection Techniques

Several techniques were employed to collect data:

1. Observation

Direct observations were conducted to examine the physical characteristics of home gardens, including vegetation types, garden layout, and maintenance conditions.

2. Questionnaire Survey

A structured questionnaire was distributed to respondents to assess their perceptions of the benefits of home gardens.

Responses were measured using a five-point Likert scale:

Table 1. Likert Scale

Score Response Category

5	Strongly Agree
4	Agree
3	Neutral
2	Disagree

Score Response Category

1 Strongly Disagree

The Likert scale is commonly used to measure attitudes and perceptions in social science research (Sugiyono, 2022).

3. Interviews

Semi-structured interviews were conducted to obtain additional information regarding residents' experiences with home gardens and perceived benefits.

4. Documentation

Documentation included photographs of home gardens, residential environments, and related records to support research findings.

3.7 Research Instruments

The instruments used in this study included:

Table 2. Research Instruments

Instrument	Function
Questionnaire	Collect respondents' perceptions
Observation Sheet	Record garden characteristics
Interview Guide	Obtain detailed information
Camera/Smartphone Documentation	
Laptop	Data processing and analysis

According to Kothari (2004), research instruments are essential tools for ensuring accurate and reliable data collection.

3.8 Data Analysis Techniques

1. Descriptive Statistical Analysis

Descriptive statistics were used to summarize respondent characteristics and analyze responses related to home garden benefits.

The percentage formula used was:

$$P = \frac{f}{N} \times 100$$

Where:

- P = Percentage
- f = Frequency
- N = Total respondents

According to Walpole (2017), percentage analysis is effective for describing survey results and identifying response patterns.

2. Mean Score Analysis

The average score for each indicator was calculated using the following formula:

$$\bar{X} = \frac{\sum X}{N}$$

Where:

- $\bar{X}$ = Mean score
- $\sum X$ = Total score
- N = Number of respondents

Mean scores were interpreted using the following criteria:

Table 3. Interpretation of Mean Scores

Mean Score Category

4.21 – 5.00 Very High

3.41 – 4.20 High

2.61 – 3.40 Moderate

1.81 – 2.60 Low

1.00 – 1.80 Very Low

3. Comparative Analysis

Comparisons were made among different aspects of home garden benefits, including thermal comfort, air quality, psychological health, and aesthetics.

The analysis aimed to determine which aspect contributed most significantly to occupants' comfort and health.

3.9 Validity and Reliability Testing

Validity Test

The validity of questionnaire items was assessed using Pearson Product Moment Correlation. According to Sugiyono (2022), an item is considered valid if the calculated correlation coefficient exceeds the critical value of the correlation table.

Reliability Test

Reliability was tested using Cronbach's Alpha coefficient.

Reliability criteria:

Cronbach's Alpha Interpretation

≥ 0.80	Very Reliable
$0.60 - 0.79$	Reliable
< 0.60	Less Reliable

According to Hair et al. (2019), Cronbach's Alpha values greater than 0.70 indicate acceptable reliability.

3.10 Research Procedure

The study was conducted through the following stages:

1. Identification of research problems.
2. Literature review and theoretical framework development.
3. Preparation of research instruments.
4. Selection of respondents.
5. Data collection through observation, questionnaires, interviews, and documentation.
6. Data tabulation and processing.
7. Statistical analysis and interpretation.
8. Drawing conclusions and formulating recommendations.

RESULTS AND DISCUSSION

4.1 Respondent Characteristics

The study involved 30 homeowners who possessed and maintained home gardens. Respondents varied in age, occupation, and length of residence. Understanding respondent

characteristics is important because perceptions of environmental comfort and health benefits may differ among demographic groups.

Table 1. Characteristics of Respondents

Characteristics	Category	Frequency	Percentage (%)
Age	20–30 years	6	20.0
	31–40 years	10	33.3
	41–50 years	8	26.7
	>50 years	6	20.0
Education	High School	12	40.0
	Diploma	7	23.3
	Bachelor Degree	11	36.7
Length of Residence	1–5 years	8	26.7
	6–10 years	13	43.3
	>10 years	9	30.0

Source: Primary Data Analysis, 2026

The majority of respondents (33.3%) were aged between 31 and 40 years. This age group generally demonstrates greater awareness of environmental quality and residential comfort. Additionally, most respondents had lived in their homes for more than six years, allowing them to experience the long-term benefits of home gardens.

4.2 Characteristics of Home Gardens

The observed home gardens varied in size, vegetation composition, and functional use.

Table 2. Types of Plants Cultivated in Home Gardens

Plant Category	Frequency	Percentage (%)
Ornamental Plants	30	100
Shade Trees	24	80
Vegetables	21	70
Fruit Plants	18	60
Medicinal Plants	15	50

The results indicate that ornamental plants were present in all home gardens. However, many respondents also cultivated vegetables, fruits, and medicinal plants, suggesting that home gardens serve both aesthetic and productive functions.

The integration of different plant types contributes to environmental sustainability and supports household food security. According to Galhena et al. (2013), diversified home gardens provide ecological, nutritional, and economic benefits for households.

4.2 Impact of Home Gardens on Thermal Comfort

One of the primary objectives of this study was to examine the contribution of home gardens to thermal comfort.

Table 3. Respondents' Perceptions of Thermal Comfort

Response Category	Frequency	Percentage (%)
Strongly Agree	15	50.0
Agree	10	33.3
Neutral	3	10.0
Disagree	2	6.7
Strongly Disagree	0	0.0
Total	30	100

Table 4. Mean Score of Thermal Comfort Indicators

Indicator	Mean Score	Category
Temperature Reduction	4.43	Very High
Shading Effectiveness	4.50	Very High
Outdoor Comfort	4.30	Very High
Average	4.41	Very High

The findings indicate that 83.3% of respondents agreed that home gardens improved thermal comfort around their homes. Trees and vegetation reduced direct solar radiation and lowered ambient temperatures through shading and evapotranspiration processes.

These findings are consistent with Bowler et al. (2010), who reported that urban vegetation significantly contributes to temperature reduction and enhanced thermal comfort.

Impact of Home Gardens on Air Quality

Home gardens also contribute to improving environmental quality through air purification and oxygen production.

Table 5. Respondents' Perceptions of Air Quality Improvement

Response Category	Frequency	Percentage (%)
Strongly Agree	13	43.3
Agree	11	36.7
Neutral	4	13.3
Disagree	2	6.7
Strongly Disagree	0	0.0
Total	30	100

Table 6. Mean Score of Air Quality Indicators

Indicator	Mean Score	Category
Fresh Air Availability	4.37	Very High
Dust Reduction	4.13	High
Oxygen Production	4.40	Very High
Average	4.30	Very High

The majority of respondents (80%) believed that home gardens improved air quality. Vegetation acts as a natural filter by absorbing pollutants and releasing oxygen, thereby creating healthier residential environments. Nowak et al. (2014) emphasized that urban vegetation plays a significant role in reducing air pollution and improving human health.

4.5 Impact of Home Gardens on Psychological Health

The psychological effects of home gardens were examined through indicators related to stress reduction, relaxation, and emotional well-being.

Table 7. Psychological Health Benefits

Response Category	Frequency	Percentage (%)
Strongly Agree	12	40.0
Agree	11	36.7
Neutral	5	16.7
Disagree	2	6.6
Strongly Disagree	0	0.0
Total	30	100

Table 8. Mean Score of Psychological Health Indicators

Indicator	Mean Score	Category
Stress Reduction	4.33	Very High
Relaxation	4.40	Very High

Indicator	Mean Score	Category
Emotional Well-being	4.20	High
Average	4.31	Very High

The results show that 76.7% of respondents experienced positive psychological benefits from their home gardens. Gardening activities and exposure to natural environments provided opportunities for relaxation and stress relief. These findings support Kaplan and Kaplan (1989), who argued that natural environments facilitate mental restoration and improve emotional well-being.

4.6 Impact on Residential Aesthetics

Aesthetic enhancement was identified as one of the most significant benefits of home gardens.

Table 9. Perceptions of Environmental Aesthetics

Response Category	Frequency	Percentage (%)
Strongly Agree	16	53.3
Agree	11	36.7
Neutral	2	6.7
Disagree	1	3.3
Strongly Disagree	0	0.0
Total	30	100

Table 10. Mean Score of Aesthetic Indicators

Indicator	Mean Score	Category
Visual Beauty	4.60	Very High
Landscape Attractiveness	4.53	Very High
Residential Satisfaction	4.40	Very High
Average	4.51	Very High

Approximately 90% of respondents agreed that home gardens significantly improved the visual quality of their residential environments. Attractive landscapes contributed to greater

satisfaction and pride in home ownership. Nasar (1998) stated that aesthetically pleasing environments positively influence human perception and overall quality of life.

4.7 Overall Benefits of Home Gardens

Table 11. Comparison of Mean Scores for Home Garden Benefits

Aspect Evaluated	Mean Score	Category
Thermal Comfort	4.41	Very High
Air Quality	4.30	Very High
Psychological Health	4.31	Very High
Environmental Aesthetics	4.51	Very High

Figure Interpretation

The highest mean score was recorded for **environmental aesthetics (4.51)**, followed by **thermal comfort (4.41)**, **psychological health (4.31)**, and **air quality (4.30)**. Although all aspects were rated very highly, aesthetic improvement emerged as the most noticeable benefit perceived by respondents.

Discussion

The results demonstrate that home gardens provide substantial environmental, health, and aesthetic benefits. Vegetation contributes to temperature regulation by reducing heat absorption and increasing shade, resulting in improved thermal comfort. This finding supports the study of Akbari et al. (2001), which highlighted the role of vegetation in reducing residential temperatures and energy consumption.

The positive impact on air quality further confirms the ecological importance of home gardens. Trees and ornamental plants improve atmospheric conditions by filtering pollutants and increasing oxygen production. These findings align with those reported by Nowak et al. (2014).

Psychological benefits were also significant. Exposure to greenery and participation in gardening activities promoted relaxation and reduced stress. According to Ulrich (1984), interaction with natural environments can facilitate emotional recovery and improve mental health. The current findings reinforce the importance of integrating nature into residential settings.

The highest-rated benefit was environmental aesthetics. Attractive garden designs enhance the visual appearance of homes and contribute to higher residential satisfaction. Well-maintained

gardens create pleasant living environments and strengthen residents' emotional attachment to their homes.

Overall, the findings indicate that home gardens are multifunctional landscape elements that improve environmental quality, support physical and psychological health, and enhance residential aesthetics. Therefore, homeowners and urban planners should prioritize the development of home gardens as part of sustainable residential design strategies.

CONCLUSIONS

Based on the research objectives and findings, the following conclusions can be drawn:

1. The Impact of Home Garden Design on Thermal Comfort

The study found that home garden design significantly improves thermal comfort in residential environments. The presence of trees, shrubs, and other vegetation helps reduce ambient temperatures by providing shade and enhancing evapotranspiration processes. The average thermal comfort score of **4.41 (Very High)** indicates that most respondents experienced cooler and more comfortable environmental conditions due to their home gardens. Therefore, home gardens play an important role in creating a pleasant and sustainable microclimate around residential buildings.

2. The Impact of Home Garden Design on Air Quality and Health

The findings revealed that home gardens contribute positively to air quality improvement and occupants' health. Vegetation functions as a natural air filter by absorbing carbon dioxide, trapping dust particles, and releasing oxygen. The average air quality score of **4.30 (Very High)** demonstrates that respondents perceived cleaner and fresher air in their residential environments. Furthermore, gardening activities and regular interaction with natural elements promoted healthier lifestyles and enhanced physical well-being.

3. The Impact of Home Garden Design on Psychological Well-Being

The study also showed that home gardens provide substantial psychological benefits. Respondents reported lower stress levels, greater relaxation, and improved emotional well-being. The average psychological health score of **4.31 (Very High)** indicates that exposure to natural environments contributes significantly to mental restoration and emotional comfort. Home gardens serve as personal green spaces where residents can relax and recover from daily stress.

4. The Impact of Home Garden Design on Environmental Aesthetics

Environmental aesthetics emerged as the most highly rated benefit, with an average score of **4.51 (Very High)**. Home gardens enhance the visual attractiveness of residential properties and create more pleasant living environments. Attractive landscape designs increase residential satisfaction and improve the overall quality of life of occupants.

5. Overall Contribution of Home Gardens

Overall, the study concludes that home gardens are multifunctional landscape elements that provide environmental, health, psychological, and aesthetic benefits. The integration of well-designed home gardens into residential areas contributes significantly to creating healthier, more comfortable, and environmentally sustainable living environments.

RECOMMENDATIONS

Based on the findings and conclusions of this study, the following recommendations are proposed:

1. For Homeowners

Homeowners are encouraged to develop and maintain home gardens by incorporating various types of vegetation, including shade trees, ornamental plants, vegetables, fruits, and medicinal plants. Proper garden maintenance can maximize environmental and health benefits while enhancing residential aesthetics.

2. For Urban Planners and Landscape Designers

Urban planners and landscape architects should integrate green spaces and home garden concepts into residential development plans. Sustainable landscape design should be promoted to improve environmental quality and support residents' physical and psychological well-being.

3. For Government and Policy Makers

Local governments should encourage community participation in home gardening programs through training, awareness campaigns, and incentives. Policies supporting urban greening and residential landscaping can contribute to healthier and more sustainable communities.

4. For Educational Institutions

Educational institutions should promote environmental education and gardening activities to increase public awareness of the importance of green spaces. Training programs on sustainable gardening practices can help residents optimize the benefits of home gardens.

5. For Future Researchers

Future studies are recommended to investigate additional aspects of home gardens, such as their economic value, contribution to household food security, biodiversity conservation, and long-term effects on public health. Researchers may also employ larger sample sizes and more advanced statistical analyses to strengthen future findings.

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