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A Case Study on Green Design Strategies to Enhance Mental Health in High-Rise Dwellings

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Abstract

The pandemic has profoundly impacted individuals' physical and mental well-being, particularly those undergoing or recovering from medical treatment. This study explores how the height of residential buildings influences mental health outcomes, including stress, anxiety, depression, and loneliness. The primary objective of the research is to examine how architecture, specifically housing height and the presence of natural landscape features such as green spaces, contributes to creating healing environments within living spaces. The study investigates the correlation between mental health issues and the availability of green spaces in residences designed for individuals in treatment. A comprehensive methodology involving a questionnaire survey and a detailed case study of patients' apartments was employed to gather data on various housing typologies. The findings reveal a significant relationship between mental health and the presence of green landscape elements, with respondents categorized into four housing types: low-rise, mid-rise, high-rise, and individual villas. Notably, a positive correlation exists between mental health outcomes and access to views of outdoor green spaces, especially in high-rise housing. The presence of indoor green spaces also positively influences mental health. The research highlights the potential of increasing green elements around buildings, particularly in higher-rise settings, to enhance mental well-being and provide healing effects in residential environments. Exploring the connection between green spaces and mental well-being offers valuable insights for architects and urban planners, encouraging the development of healthier, more restorative living environments in urban areas.

Keywords: Built Environment, Green Landscape, Mental Health, Mental Wellbeing, Public Health.

Introduction

Stress, anxiety, depression, and loneliness harm people's mental health. There is a significant need for mental health professionals in hospitals to support patients and individuals suffering from these issues. COVID-19 exemplified circumstances where anxiety, depression, stress, loneliness, and insomnia were widespread. The healthcare industry continuously works to improve, especially during Covid-19, when implementing practical and safe practices is crucial for people's well-being (1, 2). Higher patient satisfaction outcomes are key indicators of improved healthcare performance. Creating a healing environment in healthcare settings positively affects people's mental health (3). However, in light of such circumstances, even our homes need healing features to address mental health challenges like stress, anxiety, insomnia, and despair. Furthermore, understanding the relationship between humans and the environment, especially dwellings, is essential. Isolation or post-treatments impact patients' mental health (4). A positive effect was observed when family members participated in therapy or engaged patients. Open space is a crucial aspect of good public health (5). Globally, around two hundred and four territories and countries are affected by anxiety disorders due to isolation or post-treatment. People are anxious about any pandemic nowadays, which has changed everybody's lives. People's movement has been restricted. In such a situation, working from home, unemployment, home schooling for kids, and lack of interaction, everybody cares about their mental and physical health. The duration of a patient's hospital stay depends on their physical and psychological health, including factors such as stress, anxiety, insecurity, depression, and

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uncertainty (6). Many healthcare facilities seek evidence that healing environment design initiatives have the desired effect on individuals. The environment is essential in healthcare facilities and residences. The primary goals of the hypothesis are to understand the following: psychological health issues such as stress, anxiety, depression, and loneliness in people post-treatment; how individuals perceive the building and their mental state while in isolation or post-treatment; the impact of architectural space on creating a healing environment; comparing patients' wellbeing across different residence typologies; and exploring the relationship between mental health and the view of natural landscape elements in various residential types.

People worldwide are affected by mental health issues. During the pandemic, it is unknown how a year of government restrictions on fundamental freedoms has impacted the mental health of citizens. Accordingly, this research aims to evaluate the correlation between building typology and the prevalence of stress, depression, sleep disruption, and lack of confidence in one's ability to cope with the epidemic. The methodology used includes a questionnaire survey and a case study. A correlation was analysed based on the values obtained from the survey. The survey was conducted using a Likert scale.

Several authors have proposed different definitions of well-being. Well-being is the state of mind and physical health. It is a positive situation in which individuals' and communities' personal, relational, and collective needs and aspirations are fulfilled (7, 8). The degree of well-being varies from person to person, and its emotional dimension is highly subjective. The main parameters used in this research are day lighting, nature, color, spatial layout, thermal comfort, sound, and noise. Connecting to the outdoors, having indoor plants, and being connected to nature can help relieve stress and anxiety (9, 10). Contact with nature can enhance one's quality of life. Green spaces in indoor courtyards and atriums foster positive feelings while reducing negative emotions. Providing natural illumination in a patient's room can promote good sentiments (11). Natural light may be essential in a therapeutic setting. It can alter a space's perceived size and warmth, evoke memories, provoke sensations, and influence physiological functioning. Different colors affect mood and behaviour and increase brain activity, which can help treat stress, anxiety, sleeplessness, migraines, and depression (12). Windows are aesthetic features that allow people to mentally escape from unpleasant interior spaces. Large windows enable patients to look out into sunny natural surroundings, which can help reduce pain. However, it has also been noted that large windows might increase the risk of depression due to greater exposure to daylight (13). Lighting is classified into artificial lighting, day lighting, and sunlight. Artificial lighting is effective in improving mood and reducing depression. Sunlight can lessen pain, depression, and the tendency to stay indoors for extended periods. A window-to-wall ratio of 16% is considered optimal for day lighting performance, balancing natural light, energy efficiency, and comfort (14).

The window is an important feature that influences the building's energy consumption. Window wall ratio (WWR) determines how solar radiation enters the indoor space (15). A WWR of 0.24 is optimal, providing good daylight and natural ventilation. A higher WWR does not necessarily mean better performance. The larger the window, the more heat or light enters which can cause overheating and glare. It is not advisable if the WWR is less than 0.24. A WWR between 0.24 and 0.3 is good; if it exceeds 0.3, it may lead to overheating.

Initially, pandemic infections were spread by a few people in smaller high-risk locations. Those locations were called super-spreading sites (16). The built environment and sociodemographic factors substantially influence viral transmission. Because of increased interaction intensity, high-risk areas are the primary source of the virus spreading to other populations. During the wave, policymakers needed to strengthen their power to regulate the situation and prevent infections from increasing. These places also include urban regeneration regions with dense structures. When developing policies, policymakers should remember that low-income or unemployed people cannot move away from their communities. Children living in more impoverished areas interacted more with transportation networks (17). Historically, people's mental health has been treated by psychiatrists and psychologists in

person. Later, evidence-based strategies have an architectural influence on healing mental health. However, the traditional approach cannot be followed due to social distancing norms. That creates difficulties for healthcare facilities in their daily operations (18). Digital mental health approaches help people manage stress while adapting to a new lifestyle (19). Numerous assessments, including data from various nations, reveal a significant rise in anxiety, depression, psychological discomfort, and insomnia because of the pandemic (20, 21). Environmental factors such as neighbourhood walkability and green space quality improve overall well-being. A spatial agent-based model that revealed potential negative impacts on total visits and treatment inequities for lower socioeconomic groups (22). The public's opinion on staying home or self-isolation was generally favourable (23).

Residential greenery is one of the measures to minimize urban heat island effects in urban regions (24, 25). University outdoor spaces support student mental well-being, but more research is needed on how specific landscape features, facilities, and environmental factors influence psychological restoration and satisfaction (26). The blue-green diet examines how blue-green infrastructure types and interaction modes influence health, highlighting the importance of customized designs to improve well-being and urban sustainability (27). Growing evidence links exposure to nature with health, but understanding the mechanisms behind the relationship between biodiversity and health is necessary to explore micro biome pathways and fill gaps in metrics, equity, and socioecological connections (28). The psychosocial co-benefits of nature-based urban spaces show sensitivity to naturalization, openness, tree cover, and water areas, with limited prior evidence on their impacts on well-being (29). Urban forests benefit mental health, physical activity, and relaxation even in winter; however, more research is needed on diverse health outcomes and seasonal effects in cold-climate cities to inform future planning (30). Nature imagery in healthcare settings consistently reduces stress, pain, and anxiety, demonstrating strong potential for enhancing patient well-being (31). Walkable environments with local shops and natural elements like trees and gardens boost seniors' mental well-being by encouraging community connection, tranquillity, and trust in public spaces, supporting healthy, inclusive aging (32). Higher road ratios in street views are associated with increased stress and depression, particularly during and after the pandemic, underscoring the importance of urban planning in balancing roads and natural features (33).

High-rise living showed strong evidence linking urban form to thermal comfort, day lighting, and ventilation (34). A significant seasonal thermal variation was identified across Local Climate Zones in Jaipur, highlighting a cost-effective approach to climate-responsive planning (35). Multi-objective optimization of urban form enhances energy efficiency, thermal comfort, and sustainability, with a research focus on humid subtropical climates and morphology variables like orientation and height (36). The traffic noise in high-rise buildings peaked between the third and sixth floors, with honking noise being dominant near roads, highlighting important vertical noise patterns for urban planning (37). The seasonal land surface temperature stability found on urban streets in northern China is driven by differing summer and winter factors, with vegetation dominating summer and building-land traits influencing winter (38). Tree-induced cooling benefits depend on species traits, planting methods, and environmental context, emphasizing the need for tailored strategies to maximize shading and evapotranspiration for effective urban heat mitigation (39).

The importance of eco-design is rarely highlighted in construction projects. Rapid urbanization occurs in cities, yet people often overlook parks and other green spaces. This study investigates how housing height affects mental health— specifically stresses anxiety, depression, and loneliness— among individuals undergoing or recovering from treatment during the pandemic. It examines how architectural design and natural landscape features influence well-being. Using surveys and case studies across various housing types (from low-rise to high-rise), the study finds a strong positive correlation between mental health and access to green views, especially in high-rise settings. The work is divided into five sections: the first covers the introduction, problem statement, and specific objectives with relevant literature; the

second discusses the methods and framework for the questionnaire; the key results are presented in the third section; the fourth contains the main discussion; and the fifth summarizes the main conclusions and possible future directions.

Methodology

Conceptual Framework

The theoretical framework is established while the physical, social, and psychological components of the healing environment are interconnected. Before developing the questionnaires, the researchers conducted an in-depth literature review to gather existing information and understanding about mental health problems, healing environments, and well-being. The quantitative analysis for the questionnaire survey included questions that thoroughly addressed the key design issues regarding demographic and socioeconomic variables that influence the relationship between the healing environment and well-being. These variables include gender, age, duration of stay, place of stay, and building type. As mentioned in the literature review, these factors are interconnected and influence each other. The questionnaire was administered to patients who evaluated the characteristics of the healing environment using a 5-point Likert scale to assess their experiences of these aspects. Figure 1 illustrates the framework used to develop the questionnaire. It was employed to analyse respondents' perceptions of the healing environment, patients' assessments of their well-being, and to measure related variables. Numerous studies have demonstrated links between health, well-being, and buildings.

The literature review identified parameters such as light, color, thermal environment, indoor air quality, plants, sound, and noise for this case study on patients' mental health. The questionnaire survey was conducted with patients receiving medical care at home in isolation. Information was collected using a combination of online and manual methods. Responses were gathered from isolated patients through structured interviews based on the prepared questionnaire. The data obtained was statistically analysed, and the results were interpreted. The study initially involved one hundred participants from various typologies. The selected typologies, each with twenty-five participants, included low-rise apartments, mid-rise apartments, high-rise apartments, and individual houses. Before commencing the interviews or case studies, patients were informed about the research goals, its anticipated contributions, and its significance. Patients and their caregivers were also briefed on the survey's aims and importance. For this case study, the primary objective of the questionnaire was to explore how patients perceived space in relation to their mental health and well-being in an indoor setting, focusing on light, color, thermal environment, indoor air quality, plants, sound, and noise. The survey was divided into four parts, which are detailed here.

Part A includes the name of the patient, age, gender.

Part B includes a question about the place of the stay and the isolation impacts Medicare on their mental health.

Part C includes questions about parameters like thermal comfort, spatial layout (access to nature), lighting, sound, noise, and color focused on the patients' healing process.

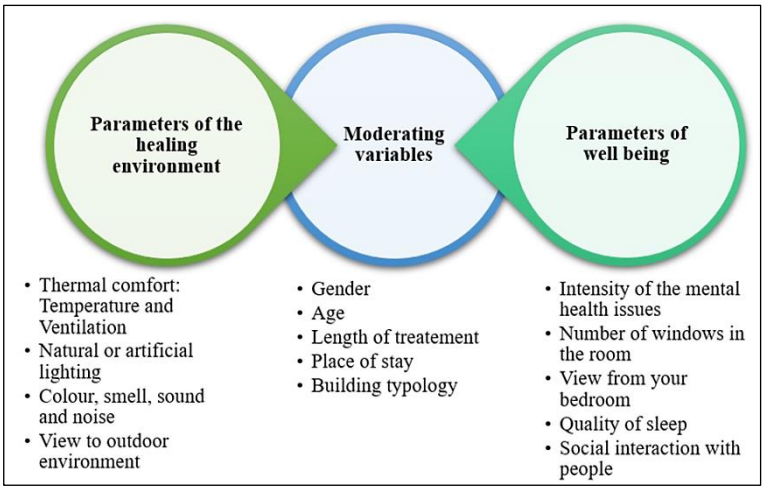

Figure 1: Conceptual Framework

Part D includes questions on what people prefer in a healing environment to reduce mental stress. Different house typologies were selected for the case study in exact geographical locations near each other and studied and analysed based on social support, color, sound, noise, room area, WWR—thermal comfort, spatial layout, and lighting. The research is divided into five parts, as shown in the research design in Figure 2.

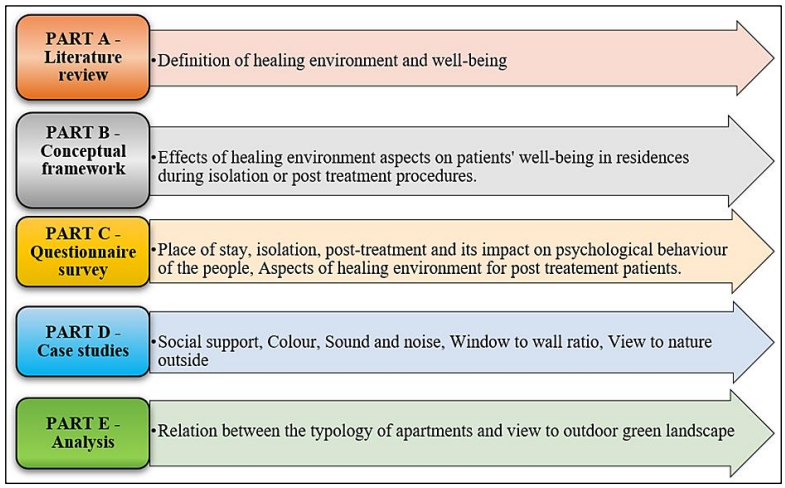

Figure 2: The Research Design of the Present Study

Initially, the author reviews the literature to identify several theoretical definitions and parameters of well-being as the primary focus of the study (Part A). The theoretical framework is discussed in Part B. A questionnaire survey was conducted to understand and measure the perceptions of well-being and healing among patients living in various apartments (Part C). Different apartment layouts were studied and analyzed (Part D). The data obtained from the questionnaire and case studies is ultimately analyzed in Part E to determine the relationship between apartment types and one parameter (outdoor green landscape). The questionnaire covered various topics such as demographics, place of residence, treatment of mental disorders and its impact on psychological behavior, along with parameters like thermal comfort, spatial layout with a view of nature, lighting, color, sound, and noise. The quantitative questionnaire utilized a Likert scale: very high (5 points), large (4 points), neutral (3 points), low (2 points), and meager (1 point) to measure the parameters and facilitate comparisons. The questionnaire was distributed to individuals in different housing types through a Google Form. The housing typologies are compared by analyzing the data obtained from the survey.

Results

This section contains sub-sections that analyze each typology's questionnaire survey and the case study results. Table 1 mentions the mean and standard deviation of the survey method.

Table 1: The Statistical Analysis of the Selected Population of 100 Participants

	In which building typology are you living?	When you were in treatment, how badly did you feel stressed, depressed, anxious and lonely?	How important was it for you to view the outside environment during isolation?
No of participants	100	100	100
Mean	2.50	2.88	4.32
Standard deviation	1.124	1.328	0.777
Variance	1.263	1.763	0.604
Range	3.00	4.00	2.00
Minimum	1.00	1.00	3.00
Maximum	4.00	5.00	5.00

Questionnaire Survey

The analysis of the questionnaire findings is presented in Figure 3. The respondents were categorized as low-rise, mid-rise, high-rise, or individual villa residents. They reported finding coping with treatment or isolation challenging. For the first question, participants rated on a scale of 1 to 5 how much they felt stressed, depressed, anxious, and lonely during treatment or isolation. In Figure 3(A), 64% of low-rise apartment residents felt significantly more stressed, depressed, anxious, and lonely; 44% and 40% of mid-rise apartment residents felt neutral and slightly stressed, depressed, anxious, and lonely; 44% of high-rise apartment residents did not feel stressed, depressed, anxious, or lonely; and 36% of individual house residents felt neutral about mental health issues.

For the second question, the survey participants were asked to choose between a balcony or a bedroom with a view of a private garden, backyard, or courtyard. The responses from people of all typologies were very neutral in Figure 3(B). For the third question, the survey participants were asked to rate the importance of viewing the outside environment during treatment or isolation on a scale of 1 to 5. Most respondents felt that having a view of the outside world was very important for their mental health, as shown in Figure 3(C). Fourth, the survey participants were asked to rate on a scale of 1 to 5 whether they had social interaction during treatment or isolation. Among the responses in Figure 3(D), 40% of respondents living in low-rise apartments did not have any social interaction at all; 48% and 44% of respondents in mid- and high-rise apartments had neutral feelings about social interaction, and 32% of respondents in individual houses had little social interaction.

For the fifth question, survey participants were asked to rate from 1 to 5 based on whether they had contact with nature during treatment or isolation. In Figure 3(E), 40% of low-rise apartment respondents had no contact with nature, while 40% of respondents from mid-rise and high-rise apartments and individual houses had little contact. For the sixth question, participants rated from 1 to 5 based on their contact with natural light or sunlight during treatment or isolation. In Figure 3(F), 64% of low-rise apartment respondents had little contact with natural light; 44% of mid-rise and 76% of high-rise apartment respondents had much contact; and 52% of individual house respondents had little contact. Two variables were selected for Pearson correlation: mental health issues and a view of outdoor green spaces. The correlation between these variables was examined for each housing type: low-rise in Figure 4(A), mid-rise in Figure 4(B), high-rise in Figure 4(C), and individual villas in Figure 4(D). The Pearson coefficients are -0.734, -0.494, +0.046, and -0.374, respectively in Table 2.

Table 2: Correlation Analysis (CA)

Typology	Variable 1	Variable 2	Pearson Correlation Coefficient (r)
Low-rise apartments 1–5 floors	Mental health issues	View of outdoor green spaces	-0.734
Mid-rise apartments 5–9 floors	Mental health issues	View of outdoor green spaces	-0.494
High-rise apartments 9+ floors	Mental health issues	View of outdoor green spaces	0.046
Individual house	Mental health issues	View of outdoor green spaces	-0.374

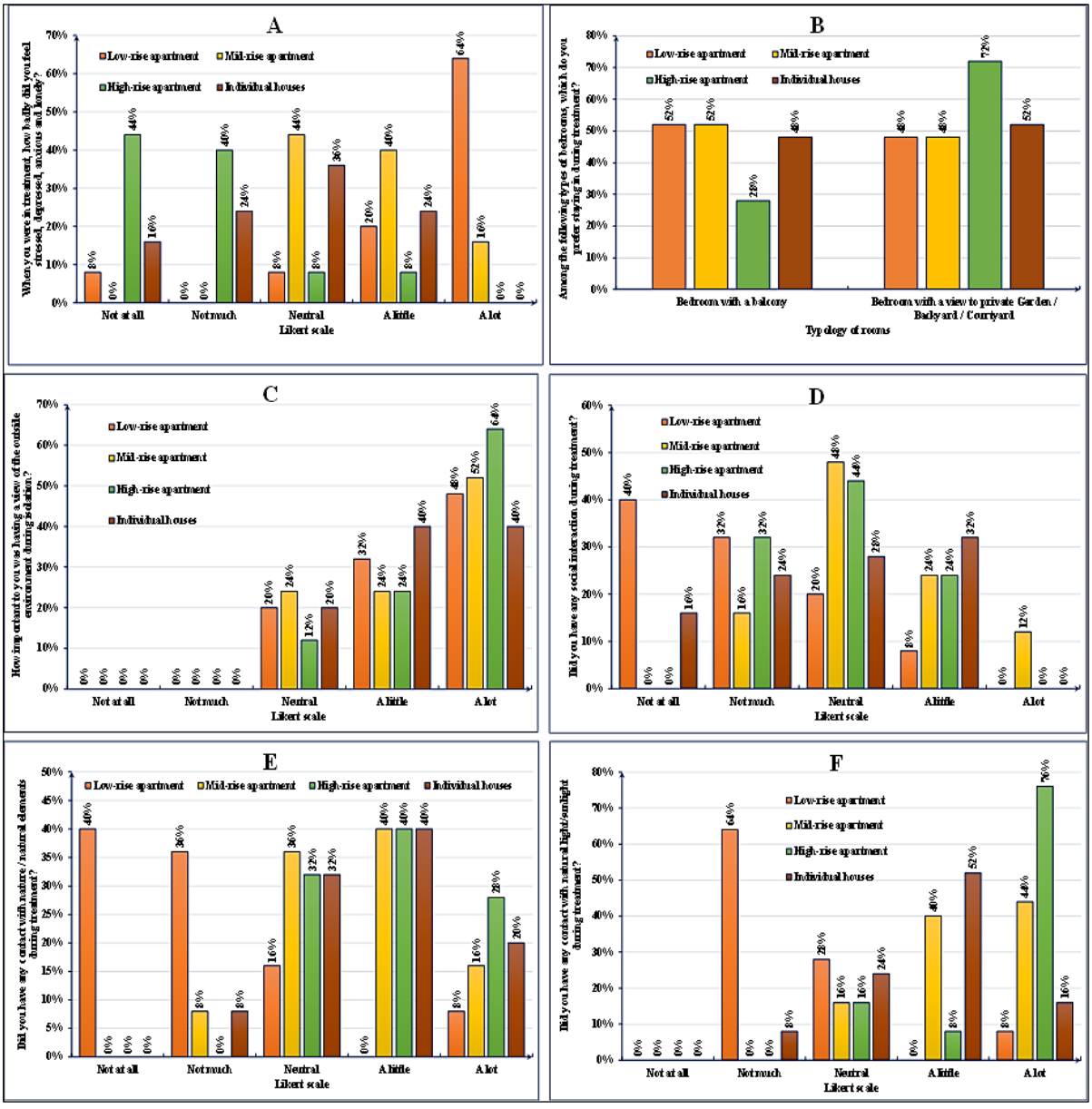

Figure 3: Analysis of Questionnaire Findings: (A) When You Were in Treatment, How Badly Did You Feel Stressed, Depressed, Anxious And Lonely? (B) Among The Following Types of Bedrooms, Which Do You Prefer Staying in During Treatment? (C) How Important to You Was Having A View of The Outside Environment During Isolation? (D) Did You Have Any Social Interaction During Treatment? (E) Did You

Have Any Contact with Nature / Natural Elements During Treatment? (F) Did You Have Any Contact with Natural Light/Sunlight During Treatment?

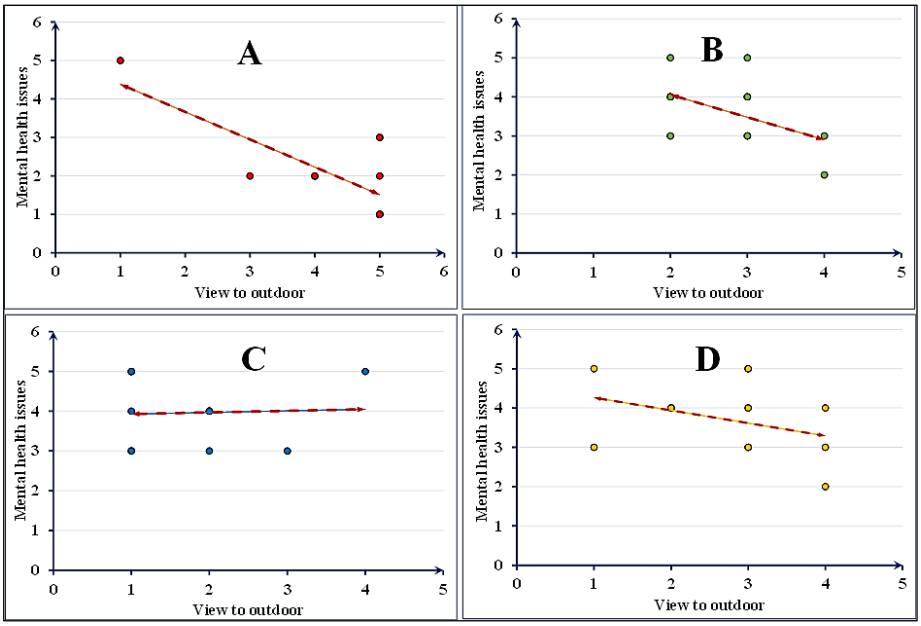

Figure 4: Correlation Analysis: (A) Low-Rise Apartment, (B) Mid-Rise Apartment, (C) High-Rise Apartment, (D) Individual Villa.

Case Study

Case studies were done to understand the spatial room layout, location, surrounding environment, wall-window ratio, day lighting and ventilation, bedroom heat, interior color, and greenery outside. From Figure 5 and Table 3, concerning the WWR, the low-rise apartment has less daylight than mid-rise and high-rise apartments. In contrast, the mid-rise and high-rise apartments radiate heat into the house compared to low-rise apartments. Most residents prefer cool or neutral interior colors, which is essential to have a view of the greenery outside. They believe that as a good impact on people's mental wellbeing.

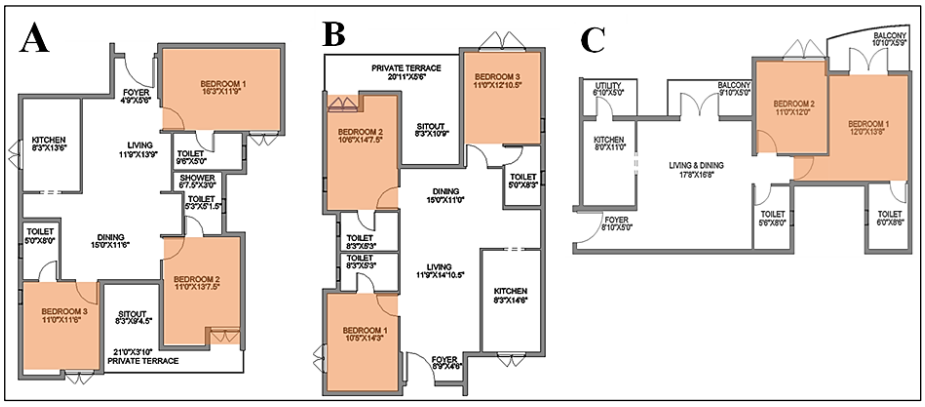

Figure 5: Floor Plan of Selected Apartments: (A) Low-Rise Apartment, (B) Mid-Rise Apartment, (C) High-Rise Apartment

Table 3: Case study – (A) Low-rise apartment, (B) Mid-rise apartment, (C) High-rise apartment

	Low-rise Apartment			**Mid-rise Apartment**			**High-rise Apartment**	
Room	Bedroo m 1	Bedroo m 2	Bedroo m 3	Bedroo m 1	Bedroo m 2	Bedroo m 3	Bedroo m 1	Bedroo m 2
WWR	0.10	0.09	0.2	0.1	0.09	0.2	0.16	0.52

Day lighting	Less	Less	Neutral	Neutral	High	High	High	High
Heat	Less heat	Less heat	Neutral	Less heat	Less heat	Neutral	Less heat	Overheat
Color	Cool	Neutral	Neutral	Cool	Cool	Neutral	Cool	Neutral
View to greenery	No	Yes	Yes	No	Yes	Yes	Yes	Yes

From Figure 6, a room with a full-height window or floor-to-ceiling window can bring in more daylight and ventilation, but this can be a disadvantage as it provokes glare, which causes depression. In the second individual villa case study, the courtyard view of greenery has better views, indirect lighting, a neutral color scheme, and plants buffering the traffic noise shown in Table 4. At the end of the questionnaire, respondents were asked to rate each scenario and answer accordingly. Almost 65% of respondents felt that their house and surroundings had a high impact on mental health, 30% felt neutral, and 5% believed their house did not affect mental health. Most people felt that lack of social interaction, no contact with nature, and no exposure to natural lighting greatly affected mental health. They thought these could be reasons for mental health issues. Sixty percent of respondents believed that cool colors would help them relax and stay calm, while 30% preferred neutral colors and 10% preferred warm colors. According to studies by different authors, colors significantly influence mental health.

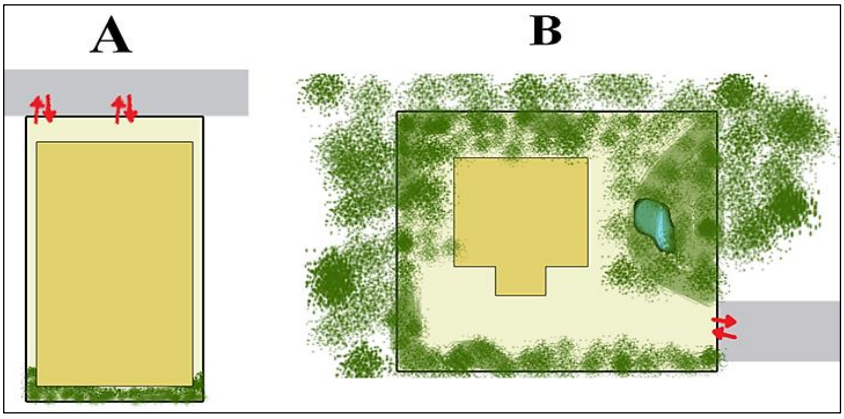

Figure 6: Individual House Site Plan: (A) Full Height Window Villa, (B) Courtyard with a Greenery View

Table 4: Case study – Individual Villas

Individual Villa	Full Height Window	Courtyard with Green Outside	
Room name	Bedroom 1	Bedroom 1	Bedroom 2
WWR	0.53	0.13	0.15
Day lighting	High	Less	Less
Heat	More heat	Less heat	Less heat
Color	Neutral	Neutral	Neutral
View of greenery	No	Yes	Yes

Regarding sounds and noise, almost 95% of people prefer soothing sounds, such as flowing water and nature sounds like breezes and birds chirping. Most respondents do not like busy traffic noise. Similarly, 90% of respondents favor natural lighting over artificial lighting in their bedrooms. Among people living in individual villas, about 70% prefer a bedroom view over a private garden or backyard during treatment or isolation. In contrast, people living in apartments favor balcony space with a view of green landscapes. Factors such as good daylight, control over natural and artificial lighting, pleasant scents from indoor plants, views of greenery, and indoor plants

enhance psychological well-being during treatment or isolation (40). This was analyzed using Pearson correlation. The respondents were classified into four categories: low-rise housing typology, mid-rise housing typology, high-rise housing typology, and individual villas (41). Low-rise housing typology shows a strong negative correlation, while a moderate negative correlation exists between mid-rise housing typology and individual villas. A positive correlation is observed for high-rise housing typology. Case studies indicate that high-rise apartments or individual residences with views of green spaces have a better recovery rate than low-rise apartments (42, 43).

Discussion

When planning a therapeutic area within a complex, the landscape is one of the most crucial elements. The use of natural landscapes and green surroundings can attract visitors. To effectively apply the principles of biophilia, it is essential to blur the boundary between urban and natural environments. This can be achieved by incorporating indoor/outdoor spaces, extending patterns and features from inside to outside, creating openings in the landscaping to frame views from inside, and intentionally leaving certain sections of the structure open. Similar methods used in architectural design can be applied to landscape design. The conceptualization of the landscape's walls, boundaries, and rooms can be achieved through elements such as trees, hedges, and water features. Visualizing the transition from one area to another can be helpful in designing a garden. In landscape designs within buildings, the transition from small, enclosed spaces to open, expansive plazas is often accomplished by dividing the garden into sections with different plantings. Additionally, creating views from natural surroundings into a building or sculpture is another strategy to bridge the gap between artificial and organic worlds. A home encompasses an individual's physical, mental, and social relationships. It symbolizes one's style, culture, and personal identity. The study indicates that high-rise housing exhibits superior healing qualities compared to low-rise, mid-rise, and individual villas, especially during a pandemic. Key conclusions include a positive correlation in the high-rise typology, where incorporating green elements outside the building fosters healing effects and positivity, and high-rise buildings are perceived as places of extreme safety and security. Despite changes in privacy, there is an increased demand for healing today. The findings highlight the importance of integrating green elements into residential architecture to create healing environments and support mental health in post-pandemic living conditions.

In this study, respondents engaged online, and their well-being levels and perception of the healing environment were found to be influenced by factors such as socioeconomic status, unemployment, age, and gender. A larger sample size could offer more precise insights into the architectural aspects of patients' healing quality. Consequently, the research outcomes hold potential benefits for architects, landscape designers, healthcare communities, and society at large. This study aimed to explore the relationship between subjective mental health outcomes and objectively measured environmental factors. Along with self-reported mental health data gathered through structured questionnaires, objective environmental variables were systematically recorded for each participant's residence. These environmental parameters included building height (number of floors), housing typology (classified as low-rise, mid-rise, high-rise, or individual villa), the presence and extent of green spaces (such as balcony gardens, indoor plants, rooftop gardens, and visible outdoor landscapes), as well as the orientation of the dwelling concerning nearby green areas. Data collection involved on-site assessments, analysis of architectural drawings, and direct visual observations. Subsequent correlation analyses examined the relationships between these environmental attributes and self-reported mental health indicators, including stress, anxiety, depression, and loneliness. The results showed significant positive connections between access to green spaces and better mental health outcomes, especially among residents of high-rise buildings who had visible or physically accessible green spaces. Measurable factors such as housing typology, floor height, and the presence and extent of green spaces based on site visits and architectural documentation were included to

explore correlations within a specified timeframe. The findings establish a solid basis for future research that could utilize longitudinal or comparative methods. These approaches would help build on the current results and offer deeper insights into the long-term advantages of green interventions in high-rise residences. However, collecting more detailed, objective data, such as exact green cover percentages or spatial analysis, and incorporating objective environmental data would strengthen the analysis. This could further improve the study for future investigations.

Conclusion

This study explores the influence of residential building height and green spaces on mental health, especially for people undergoing medical treatment or recovery. Key findings show a strong positive link between mental health outcomes and access to green spaces, both indoors and outdoors, across different housing types. High-rise buildings were found to provide the most healing benefits, likely because of their views of outdoor green spaces. The research stresses the importance of adding green features to residential design to create healing environments, especially in cities. It also points out the need to connect urban and natural spaces by including features like indoor-outdoor links and biophilic design. Exposure to natural elements such as plants, green views, and biophilic design is well-known to trigger positive psychological and physiological responses that support mental health. In high-rise housing, including green spaces—like landscaped outdoor areas, balcony gardens, indoor plants, or accessible rooftop gardens—helps reduce perceived stress by encouraging visual and sensory connections to nature. These connections are linked to greater relaxation and mental refreshment.

Furthermore, the presence of greenery helps improve mood by enhancing indoor air quality, increasing access to natural daylight, and boosting the visual appeal of the living space. These factors together create a more comfortable and health-supportive residential environment, which may help reduce symptoms of anxiety, depression, and social isolation. The findings highlight the positive mental health effects experienced by residents of high-rise dwellings with accessible green spaces and align with the larger body of evidence emphasizing the psychological benefits of contact with nature. The study suggests that creating green, healing environments is crucial for promoting mental well-being, especially in the post-pandemic era. These insights are valuable for architects, urban planners, and healthcare communities involved in designing therapeutic living spaces.

Abbreviation

WWR: Window wall ratio.

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Author Contributions

Saranathan Pragati: Conceptualization, Methodology, Formal analysis, Investigation, Visulaization, Writing-Original draft, Radhakrishnan Shanthi Priya: Conceptualization, Methodology, Investigation, Validation, Writing-Original draft, Geetha Ramesh Kumar: Formal analysis, Validation, Writing–review and editing. Ramalingam Senthil: Methodology, Investigation, Validation, Curation, Writing–review and editing. All authors read and approved the manuscript.

Conflict of Interest

The authors declare no conflict of interest.

Ethics Approval

Not applicable.

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