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Therapeutic Environment Design Elements in Malaysia's Medical Tourism Accommodations: An Observation Study

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ABSTRACT

This study evaluates the design elements for healthcare environments that prioritize patients' physical and psychological well-being in the Malaysian healthcare system, specifically focusing on medical tourism accommodations. In Malaysia, private hospitals often lack on-site accommodations and instead collaborate with nearby hotels. This research examines four hotels frequently recommended by multiple hospitals, using a qualitative observational method to observe and gather meaningful insights systematically. The study reveals that while existing designs have positively impacted the medical tourism industry, there is room for improvement. Interior environment design, encompassing elements such as lighting, ventilation, color schemes, noise management, furniture selection, and room layouts, is pivotal in promoting patients' health and recovery. Furthermore, incorporating natural elements such as landscapes, vegetation, and water features proves effective in enhancing the overall patient experience and reducing stress. The study emphasizes the importance of considering the surrounding environment, particularly in urban areas, where tourism benefits should align with medical tourists' health and recovery needs. In conclusion, this research contributes a conceptual framework for developing guidelines to design accommodations with therapeutic qualities. These guidelines can potentially enhance the well-being of medical tourists and further strengthen the growth of the medical tourism sector in Malaysia.

1. INTRODUCTION

In 1998, the Malaysian government identified medical tourism as a potential sector for development and one of the National Key Economic Areas to help Malaysia become a developed country [1]. Significant investments have been made in its development over the last few years by both the public and private sectors. However, Malaysia is not the sole player in Southeast Asia, and there is intense competition in the region. Therefore, the government of Malaysia, medical service providers, and other relevant parties must pay more attention to attracting more potential patients [2].

Although there is ample literature available about the medical tourism industry and the competitiveness of destinations, as well as how to develop them, there exists a research gap concerning the long-term experiences of medical tourists, as highlighted [3]. Also, Nazem and Mohamed [3] revealed that medical tourists face challenges in the long run, which necessitates better planning for those who need to stay longer in the host country. Moreover, Azmi [4] noted that despite media coverage and interest in the therapeutic environment in Malaysia, there needs to be more hard research evidence on its role and impact pertaining to medical tourism. Consequently, the researchers concluded that medical tourism in Malaysia introduces a range of attendant risks and opportunities for patients.

The environment plays a crucial role in shaping human behavior, and designing built health environments that cater to the needs of their occupants is of utmost importance [5]. Long-term medical tourists who leave their homes for a new environment seek convenient services and better accommodations to improve their health. However, medical tourists often feel stressed, and their recuperation process can be hindered due to the lack of healing design quality in their accommodations [6]. As highlighted by Kaufman [7], the healing design of medical tourism facilities can significantly impact the physical and psychological well-being of medical tourists during treatment and the healing process.

Despite the improvements in the Malaysian healthcare system over the past few decades, the creation of a therapeutic environment design that supports the physical and psychological well-being of patients during treatment and the healing process over the long term remains a challenge [8]. Therefore, careful consideration should be given to the design of long-term medical tourism accommodations to ensure they meet the needs of their occupants and promote the well-being of tourists in Malaysia. Hence, the purpose of this study is to evaluate the design elements of a therapeutic environment in

medical tourists' accommodations and to provide a research conceptual framework for designing a therapeutic environment in Malaysia.

To achieve a deeper understanding of the research's objectives, clear definitions of the fundamental terms used in this study are provided, as shown below.

Therapeutic environment is a physical, psychological, and social setting designed to promote the physical, mental, and emotional well-being of individuals.

Healing environment design is the concept of using the physical environment to create spaces that rely on a set of environmental elements and support the therapeutic health and well-being of individuals.

Medical tourism facilities are healthcare facilities that offer medical or surgical care not available in the patient's home country, and they provide medical services and various other amenities, including accommodation, transportation, and leisure activities.

2. LITERATURE REVIEW

2.1 Therapeutic environment

A therapeutic environment refers to a physical, psychological, and social setting designed to promote the physical, mental, and emotional well-being of individuals. Such environments are typically found in healthcare facilities, including hospitals, rehabilitation centers, and mental health institutions, where patients receive medical treatment, therapy, or support for various health-related issues. These settings aim to provide assistance, rehabilitation, and attention to individuals, enhancing their physical, mental, and spiritual well-being [9]. The concept of a therapeutic environment holds significance for healthcare experts, and different therapeutic environments may employ various therapeutic methods, including psychological, cognitive, and behavioral approaches [10]. In general, a therapeutic environment is a meticulously designed and managed space that plays a crucial role in supporting the physical and psychological recovery of individuals receiving medical care or therapy. Its purpose is to create a nurturing and healing atmosphere that enhances the overall well-being of patients.

The therapeutic environment properties of natural surroundings have been recognized for a long time. From the very beginning, a holistic approach to treating patients was used, with the application of empirical natural treatment techniques and transcendental or mystic rituals aimed at enhancing the therapy's therapeutic benefits [11]. In ancient times, the location and building compositions of the Asclepieia were carefully chosen to find natural beauty with thermal springs and spectacular views, and buildings for various recreational activities closely related to the buildings where physicians were practicing medicine were also built [12]. Also, several contemporary architects, such as Alvar Aalto and Richard Neutra, emphasize the value of natural and therapeutic vistas for health and healing [13, 14].

Since the patient's recovery heavily depends on the therapeutic environments, designers and administrators of medical settings invest significant effort in creating the ideal space for their patients [15]. In recent times, there has been greater attention given to the crucial effect of surrounding environments, particularly in hospitals that require a nurturing environment. The interior design provided by the designer is vital in a therapeutic environment and may differ from the guidelines [16]. It is possible that the designer's approach is superior, such as creating rooms with better views of the outdoors and facilitating effective communication between patients, nurses, and companions [15].

In the contemporary healthcare industry, the creation of a therapeutic environment is of utmost importance [11]. Therefore, a holistic approach to creating a sustainable healthcare system is essential, and this can be achieved through the integration of healing places' urban and architectural design. Overall, building a therapeutic environment in the context of healthcare requires a design that is both productive and sustainable [17].

2.2 Healing environment design

The notion of healing environments began to evolve on a scientific foundation in the second half of the twentieth century after numerous studies were conducted on the effects of environmental elements on health outcomes, and positive findings were obtained [18]. Recent studies have highlighted the significant relationship between emotions and health, which has existed since ancient times [19]. The built healing environment is intimately related to emotional health, and emotions directly impact overall health. Modern science has discovered evidence and proven such links while giving scientific explanations through transdisciplinary research [11]. Expanding study in this area is essential as a healthy population is a strategic aim for any society, and health is a crucial personal, social, and economic resource. On the other hand, contemporary lifestyles have resulted in an elevated stress level, which contributes to sickness in the general population [20]. It has been shown that the physical environment may be therapeutic if it removes stresses, links patients to nature, provides alternatives and choices to promote sensations of being in control, provides opportunities for social support, and offers relaxation options [21].

The importance of the built environment in achieving good healthcare outcomes goes beyond design and includes the relationships between design, staff stress and effectiveness, and family stress, all of which are strongly related to how patients and their families perceive the built environment [11, 22]. The concept of a healing environment draws on studies on the impact of spaces and surrounding images on our nervous system and general immunity, incorporating modern technology, materials, and wonderful architectural experiences. The term "Healing Environment" refers to a singular atmosphere, it can also refer to either a single healing environment or a network of distinct healing environments [23].

It is crucial to arrange the different healing institutions and their interactions within a specified geographical framework. The physiological consequences of stress on individuals, as well as the potential to heal, and design elements that can produce psychologically supportive surroundings to help patients and families deal with and transcend sickness are the core topics of research on healing environments [24]. Numerous studies have shown that visual images can impact the well-being of the space being utilized. Through the design process, which includes research related to neurosciences, environmental psychology, psychoneuroimmunology, and evolutionary biology, the interdisciplinary design of the healing environment has been firmly established [11, 25, 26]. Its goal is to reduce patients' exposure to environmental

stressors and bring them into closer contact with nature while they receive treatment. The primary goal of these buildings is to establish a healing environment as a synthesis of nature, architecture, and humanity working together to generate feelings of mental well-being, tranquility, and optimism for the patients, which are vital to their effective recovery [27].

2.2.1 Healing environment elements

All design aspects of the healing environment are based on a holistic approach to treating patients, which considers medical therapies and the significance of psychological and emotional variables in the healing process through the quality of the constructed environment. These include "a sense of personal space, a welcoming atmosphere, an environment that meets the needs of visitors, good physical design in terms of usability, accessibility, and controllability, access to external areas that promote a sense of normality, supportive environments for effective communication between patients, staff, and relatives, and facilities for recreation and leisure" [28]. The relationship between a building and its purpose is continually questioned in architectural theory, not only in the sense of "form and function" but also in the sense of challenging aspects of the building design process to offer solutions that meet all user requirements and the client's aspirations [11].

Regarding healing environment design, the characteristics of interior spaces in clinical environments include the integration of indoor and outdoor spaces to create interaction between the patient and design elements [29]. Research on the impacts of the healing environment starts with the visual aspect since visualization is one of the most critical points of contact with the environment [5]. Studies in environmental psychology about the impacts of architectural design on psychosocial well-being among patients and staff, as well as discussions about relations between design and outcome measures relevant to the purpose of the environment, provide an empirical basis for the overall effects of form on the function of a healing environment. It is confirmed that buildings and staff with positive impressions of the environment design perform better on most well-being-related outcomes than those with less favourable impressions. As a result, there is a growing interest on the part of therapeutic resort administrative committees to maximize the potential of visual space in a way that is both meaningful and effective. Landscape architecture and design are also connected to a significant number of studies on healing environment design, highlighting the sensitivity of individuals to the stimuli present in the built environment [11].

Lighting and auditory elements are two primary aspects that have a significant impact on how the environment is perceived and have the potential to transform it into a healing one. Lighting design should provide patients with as much natural light as possible, as individuals surrounded by natural light have a better recovery and overall healthier lifestyles, and the staff is more productive in healthcare environments. Proper and controllable lighting should be used to reduce stress, promote relaxation, and improve environmental behaviour [17]. Florence Nightingale recognized among patients their eagerness, expectancy, waiting, and fear of surprise due to unfamiliar and unexpected noises in a therapeutic resort [11]. The aural environment should encourage activity, cognition, relaxation, and sleep. Some studies recommend positive visual and aural stimulation, variation in color and shape, the use of art, nature images, and any other positive stimuli that generate positive emotions and, as a result, enhance the patient's experience [30, 31]. Therefore, the aforementioned aspects of building new health facilities, particularly healing environments, generate a new idea in design with an all-encompassing approach to the whole aspect of medical treatment and recovery.

Buildings that can be referred to as healing environments provide minimal noise and glare, seclusion, and adequate lighting and air quality. The space temperature and humidity should be adjustable by the patient, the space dimensions should be suitable, and colors and designs related to the use of society culture should be incorporated [32]. They should be designed to connect indoor and outdoor spaces, offer nature views, and incorporate natural elements into internal spaces. This design feature also allows for the possibility of reducing noise pollution in the atmosphere and creating a green landscape [33]. The quality of the interior spaces is crucial, creating a sense of belonging to the space and understanding the space needs of the patient. Spaces for interaction between patients should be present for socialization, and some accommodations for family members are an ideal choice [16]. These design elements have outcomes such as reducing hospital length of stay, increasing pain tolerance, and increasing patient pleasure from the space. The patient should have the possibility of involvement in creating the space, and contact with the therapeutic environment should be possible [24]. The overall design of the recovery environment must take a comprehensive approach to achieving the goals by considering the elements mentioned in previous research, namely: "light, color, ventilation, noise, artwork, and landscape," as shown in Figure 1.

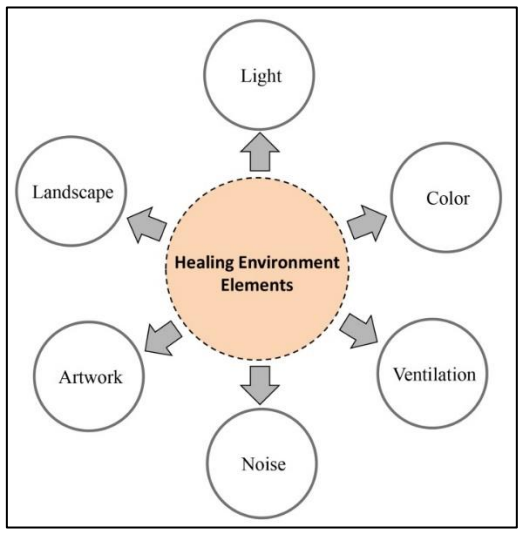


Figure 1. Healing environment elements

2.3 Medical tourism facilities

It is essential to note that medical tourism involves not only the provision of medical services but also various other services like accommodation, transportation, and leisure activities. The reason and decision for travel encompasses both the patients and the ones who accompany them. Meng et al. [34], mention that Medical tourism and the destination go together and that the destination itself can play a major part in the healing process. Coelho [35], points out the importance required in the quest to achieve success as being a developed and focused strategic planning designed to appeal to both

international and domestic tourism. Hence, this proves the necessity to create and develop a cluster among the medical facilities and the ones for tourism so as to bring about stronger medical tourism facilities that are of the best quality. By working together, these stakeholders can create an enabling environment for the growth of medical tourism and provide high-quality services to patients seeking medical care in different destinations.

Based on Lunt et al. [36], which investigated health facilities, tourism facilities, motivations of medical tourists, and the general behavior of medical tourism, seven facilities were identified: "promotional, inbound, accommodation, treatment, recovery, leisure, and outbound." Consequently, a graphical representation of the essential facilities in the medical tourism industry was developed, as shown in Figure 2. A total of seven medical tourism facilities were identified and described, as shown in Table 1.

In this study, the section on medical tourism facilities will primarily focus on accommodation, as it is the research's central theme and its impact on patients' recovery. This will be discussed in detail, along with a recommendation for future research to explore other aspects of medical tourism facilities.

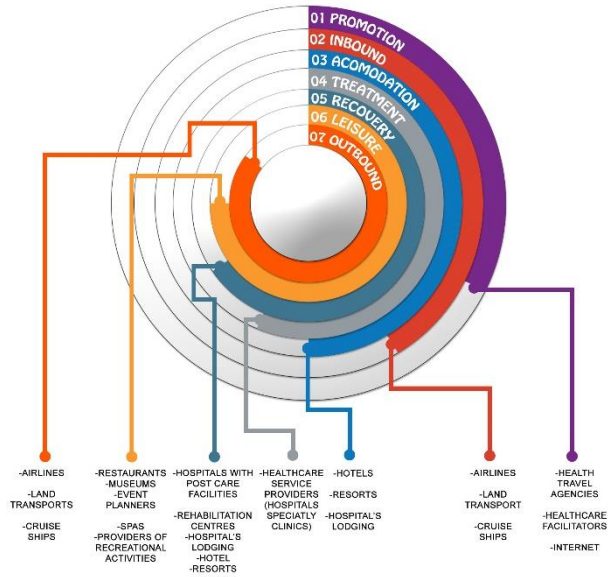


Figure 2. Medical tourism facilities

Table 1. Description of medical tourism facilities

Medical Tourism Facilities	Description
Promotional	This section discusses health travel agencies, healthcare facilitators, and the government's role in promoting medical tourism. In Malaysia, the government partnered with the private sector to support medical tourism, establishing the Malaysia Healthcare Travel Council (MHTC) to promote Malaysia as a top medical tourism destination. MHTC utilized various strategies, including online marketing, agencies at airports, and consultancy services in Asian countries like India, Myanmar, Vietnam, and Indonesia, to attract potential patients seeking treatment.
Inbound	This part encompasses airplanes and transport on both land and cruise ships. The Malaysian government is also responsible for developing this part. Some of the services offered include provision of VIP waiting lounges at the airport while providing free transportation between the airport, hospital and any other related activities to the city.
Accommodation	This includes hospital lodging, resorts, and hotels, which are often developed in collaboration with private associations. Accommodation plays a crucial role in tourist destinations, as evidenced by the fact that it can significantly impact the success of medical tourism recovery. Therefore, tourism managers should prioritize accommodation quality to create superior facilities that can aid in faster and more efficient medical tourism recovery.
Treatment	This part is basically about the healthcare service provider at hospitals and the specialty clinics.
Recovery	The recovery process is influenced by two factors: accommodation and treatment. The quality of hospital services and associated post-care facilities, such as rehabilitation centers, accommodation hotels and resorts, and hospital lodgings, play a critical role in providing appropriate support to patients during their recovery.
Leisure	This involves the provision of recreational activities places such as museums, restaurants among.
Outbound	Includes, airline transportation, ground transportation and cruise ships transportation.

2.3.1 Accommodation

Accommodation refers to the physical environment and services provided to patients and their families during their stay in a hospital. It aims to create a comfortable, safe, and supportive environment for patients, promoting their well-being and aiding their recovery [37]. The concept of hospital accommodation includes aspects such as the setting, atmosphere, and hospitality offered to patients, ensuring that their unique needs are met [38]. Different types of accommodation may be available, such as staying in the patient's room, staying in a separate accommodation provided by the hospital, or staying at external facilities; this includes resorts and hotels, which are often developed in collaboration with private associations [37]. The accommodation type can influence the overall hospital experience for patients and their families, with those staying at external facilities reporting more positive experiences [39]. Also, Accommodation plays a crucial role in tourist destinations, as evidenced by the fact that it can significantly impact the success of medical tourism recovery [40]. The provision of appropriate hospital accommodation is essential in delivering patient-centered, respectful, and sensitive care.

It is widely recognized that patients' accommodation should provide a safe and secure environment where they can spend the majority of their time while in the hospital. There is a growing body of research that focuses on improving patients' experiences and care delivery through accommodations. The community's growing awareness of this link has resulted in the development of evidence-based, patient-centered healthcare accommodation design [41].

Evidence-based design is founded on an evidence basis that comes from reliable studies in architecture, environmental psychology, neuroscience, and behavioral economics [42]. However, the contextual nature of much of the research that supports evidence-based design, which is related to the quality or effectiveness of care in specific settings such as hospitals or treatment centers, is a significant obstacle that must be addressed to incorporate evidence-based design into healthcare building design and operation successfully. Implementing these findings into buildings presents a number

of challenges, with the primary difficulty being the need to separate the findings from the contexts of care or physical environment. Additionally, a range of physical, physiological, and psychological variables obscures the effects of the physical environment in the current database. These variables must be translated into design indicators or variables before they can be used in decision-making and such translations are not always straightforward and may result in a loss of meaning and utility [43].

The patient-centered approach to healthcare delivery requires that patients' perspectives be taken into account at every stage of the care process, from the development of care plans and the delivery of treatments to the design and maintenance of physical spaces. Due to the market-driven nature of the healthcare industry, where healthcare providers compete to attract patients, there is now greater emphasis on providing patient-centered care and designing facilities that support healing outcomes [41]. Patients' feedback and input regarding the physical environment are critical for identifying issues and developing an effective action plan for quality improvement in healthcare organizations. Patients' involvement also provides valuable insights for healthcare designers and architects, allowing them to go beyond their limited expertise in the physical environment of a particular healthcare facility. In order to achieve the desired results in terms of perceived service quality, they may need to adapt and/or redesign the healing environment [40].

In conclusion, to gain a deeper understanding of the connection between accommodation design and healing environment elements, an extensive review of research in this field was conducted, and a comparative literature review table was constructed. The findings of studies related to healing environment elements were compiled, as shown in Table 2.

Table 2. Literature review comparison

N.	Reference	Recovery	Accommodation	Methodology	Findings
1	[44]	✓	✓	Qualitative	This study highlights the positive impact of healing environments in wellness centers, with reduced stress, quicker patient recovery, improved family well-being, and a comfortable, safe workplace. Light is crucial in health and performance, affecting visual tasks, mood, circadian rhythms, and bodily processes. Incorporating natural light into healthcare designs is recommended for its cost-effective benefits. Adequate daylight lowers depression, shortens hospital stays, improves sleep, and supports staff on night shifts, enhancing healthcare satisfaction. Proper window placement and daylight access are vital considerations.
2	[45]	✓	✓	Qualitative	The study underscores architecture's pivotal role in shaping human behavior and well-being within built environments. Design elements such as light, color, privacy, views, space, and materials significantly influence user experiences. Architects must prioritize creating spaces that enhance individuals' well-being, recognizing that every design choice affects behavior, fostering positive responses in users who spend most of their time in these structures.
3	[30]	x	✓	Qualitative	This study explores the impact of art and natural daylight on hospital interiors. Using surveys and on-site observations, it finds that the presence of art and natural light accelerates patient recovery and boosts staff job satisfaction in healthcare settings.
4	[46]	✓	✓	Mix methods	The study suggests that healthcare designers should go beyond project briefs and collaborate with experts like lighting consultants to enhance hospital design. Creating healing environments in public hospitals in Malaysia requires stricter project briefs from the Ministry of Health, addressing negative experiences, conducting research on hospital design, and encouraging healthcare lighting designers to explore project briefs beyond minimum requirements.
5	[47]	x	✓	Mix methods	This study in Putrajaya, Malaysia, aimed to enhance nursing services through effective service design in a newly constructed healthcare lighting system. Utilizing site observations, photographic documentation, interviews, and questionnaires with 120 nurses, the SPSS analysis revealed age-related variations in nurses' perceptions of the hospital's lighting design. The research suggests that optimal lighting design can enhance nursing care, reduce errors, and contribute to a higher quality of life in the healing environment.
6	[48]	✓	x	Qualitative	Key findings from this study include persistent noise levels exceeding guidelines in healthcare facilities, which can disrupt patient sleep, affect rest and communication, and impact staff well-being. While noise reduction interventions show promise, their effectiveness is not well-established. The link between noise and patients' healing processes is indirect, with sleep disruption being the most researched aspect.

7	[49]	x	✓	Qualitative	This study identifies five approaches to enhancing sound environments in healthcare settings: space planning, material selection, and external and internal noise control. It emphasizes the importance of addressing noise issues in sensitive hospital environments, as excessive noise can negatively impact patient health and healthcare professionals' performance. The research indicates that studies on this topic are predominantly published in medical, engineering, environmental sciences, acoustics, and nursing journals, with authors mainly from architecture, engineering, medicine, and nursing backgrounds.
8	[50]	✓	x	Quantitative	The study survey explored the impact of various sounds on participants' EEG and psychological responses. Water sounds were found to be calming and invigorating, while songbird sounds were described as thunderous and beautiful. When designing therapeutic gardens for mental health hospitals, the vitality of the garden is crucial. Water sounds had a significant positive effect on psychological liveliness, while music promoted feelings of calm. Single sounds had a more substantial psychological impact than combined sounds. Overall, music and water sounds were found to be the most soothing, with water also boosting energy levels.
9	[23]	x	✓	Qualitative	This study aims to establish best health practices for maintaining good indoor air quality (IAQ) in hospital inpatient wards. The handbook covers various aspects, including hospital and room localization, microclimatic parameters, ventilation systems, materials, furniture, maintenance, and management. It emphasizes the need for a multidisciplinary approach to incorporate knowledge from various fields to ensure users' health. Decisions related to construction, materials, cleaning, and maintenance should be grounded in scientific research and data analysis for optimal IAQ.
10	[51]	x	✓	Mix methods	This research explores factors influencing the physical and psychological well-being of residents in healing environments, categorizing them into spatial and environmental factors. Spatial elements include architectural design, nature views, indoor plants, wayfinding, color schemes, art, furniture layout, and virtual environments. Environmental factors encompass air quality, daylight, thermal comfort, and acoustic quality. The study aims to integrate these factors to create an optimal healing environment for children in a state pediatric hospital in Assiut, with potential effects on occupants' satisfaction and well-being, considering the unique nature of hospital settings.
11	[15]	x	✓	Qualitative	This study suggests that well-designed staff relaxation rooms and patient waiting areas with appropriate colors and lighting levels can enhance well-being. While color and design alone do not treat illness, neglecting building conditions and monotony can negatively impact recovery rates and staff morale. The insight into the importance of variety in shapes and colors for patients' recovery remains relevant. A balanced and appealing environment has long been recognized as crucial for patients' health and well-being.
12	[52]	x	✓	Qualitativ	The study concludes that the Children's Hospital in Jakarta should provide medical facilities and special services for children. It should create spaces for play and socialization, incorporate natural elements for relaxation, adopt architectural healing concepts for natural therapy, and implement environmentally friendly systems for sustainability, aiming to offer comprehensive healthcare tailored to children's needs and well-being.
13	[53]	✓	✓	Qualitative	This study suggests a shift in focus from the physical properties of audible sounds to considering the informational content, significance, and impact of composite sounds on people. It takes into account building characteristics, such as HVAC system noise, partition sound reduction, and sound absorption, as well as specific sound sources from users, staff, visitors, and patients. By manipulating various sound sources, designers can enhance positive effects while mitigating undesirable noises, offering potential improvements in the overall acoustic environment.
14	[54]	✓	x	Qualitative	The study emphasizes the crucial architectural challenge in designing mental hospitals: creating a healing and secure environment for both patients and staff. Achieving the right balance between these aspects significantly influences the building's design and atmosphere, impacting staff, patient safety, and overall civil protection.
15	[55]	✓	x	Qualitative	Patient recovery is facilitated by access to sunshine, nature, reduced noise levels, and private environments. In psychiatric settings, spatial design and color can promote positive social interactions among both patients and staff. The study suggests that architectural principles, including factors like Welcome, Path, Territory, Area of Freedom, Outdoor Space, Access to Light, Motion in the Structure, and Orientation of Space, can contribute to the well-being of children and adolescents in healthcare facilities.
16	[56]	✓	x	Qualitative	This study highlights the importance of the spatial experience method in creating architecture that resonates with users, citing case studies that demonstrate its historical and contemporary relevance in architectural design.
17	[57]	x	✓	Qualitative	This research underscores the importance of aligning healthcare settings with care models and processes to enhance healing truly. Tallaght Hospital's success was attributed to three factors: evidence-based design, creative architects, and rethinking patient and staff organization. To fully realize the benefits of evidence-based design, these elements must work in harmony. While focusing on hospitals, the principles discussed apply to all healthcare contexts. Architecture can potentially improve people's well-being, but it requires informed clients, skilled architects, and thorough research.

18	[58]	✓	✓	Qualitative	Healing and therapeutic landscape design can provide valuable support in medical facilities and for individuals with health conditions, complementing professional medical care. While not a substitute for medical treatment, such designs can enhance and expedite patients' recovery processes. In Slovakia, healthcare facilities often fall short of contemporary standards, necessitating modifications to hospital infrastructure and exteriors to create a natural environment conducive to healing through landscape design.
19	[59]	✓	x	Qualitative	Hospitalization can have negative effects on the emotions of toddlers and young children, leading to regressive behaviors and stress. Exposure to a garden environment, whether passively or actively, can stimulate their senses, promoting cognitive and motor development, reflective thinking, and emotional well-being. This interaction results in increased cooperation with treatment, reduced crying, improved activity levels, cheerfulness, and obedience to caregivers, all of which contribute positively to the children's recovery. Landscape can be considered an environmental intervention that enhances the healing process for hospitalized children.
20	[60]	✓	✓	Qualitative	The study highlights that well-planned gardens in Malaysian hospitals can serve as effective environmental interventions in healthcare. Patients benefit from the garden's year-round pleasant atmosphere, whether through observation or active engagement, contributing to their psychological well-being. These findings open avenues for further research on the natural environment's potential to restore the well-being of hospitalized patients, potentially leading to significant cost reductions for the government's medical expenses.

3. METHODOLOGY

This study has employed qualitative research methods, on which a multi-case study was selected through site selection, case study, and observation.

3.1 Site selection

The first stage of the observation study involved site selection. These sites were selected for their unique features and innovative solutions that support the medical tourism industry. The selection process included factors such as proximity to the medical center, cooperation with the medical center, and exceptional services (e.g., a select number of rooms and facilities that are handicapped-friendly). Table 3 shows the first observation stage in the facilities that the hospital provided for the medical tourism facilities. They have selected 15 private hospitals in Malaysia that hospitals have Elite Partners with MHTC (Malaysia Healthcare Travel Council).

As shown in the table, the study selected 15 private hospitals in Malaysia that have Elite Partnerships with MHTC. Elite Partners are the most prestigious private healthcare institutions in Malaysia. These institutions are accredited by international healthcare accreditation agencies, including the Joint Commission International (JCI), the Malaysian Society for Quality in Health (MSQH), the Australian Council on Healthcare Standards (ACHS), Accreditations Canada, and the CHKS Accreditation Unit (UK). This accreditation status means that these hospitals have contributed to making Malaysia one of the top countries for medical tourism.

As shown in Table 3, private hospitals did not have dedicated long accommodations on-site, and instead, these hospitals relied on collaborating with nearby hotels, whose information was provided on the hospital's website. Consequently, they offer accommodation services indirectly through private hotels. For this study, the researcher selected four case studies of hotels that multiple hospitals recommended. Table 4 displays the hotels chosen for this study.

3.2 Case study

Case study research involves an in-depth, detailed examination of a particular case or cases within a real-world context. This type of research is particularly suitable for situations where understanding the context is essential. Case study research is valuable in areas where little is known about how or why processes or phenomena occur, where individual experiences and contexts are crucial, or where theory and research are in their early stages. Its primary objective is to provide in-depth insights and understanding of the specific cases under investigation.

In this study, four hotels were selected for the case study research (Table 5). The case study research focused on the location of the hotels, the surrounding environment, and their potential impact on the health and recovery process of medical tourists. Additionally, it delved deeper into understanding the effects of the case study on social, cultural, economic, and political aspects.

Table 3. Private hospitals selection in Malaysia. Source: MHTC (Malaysia Healthcare Travel Council)

Private Hospitals	Doctor Referral and Appointment	Emergency Care	Flight Arrangement	Accommodation		Airport Transport	Language Assistance	Visa Application	Special Food and Beverage	Local Sightseeing Tour Arrangements
				S.	L.					

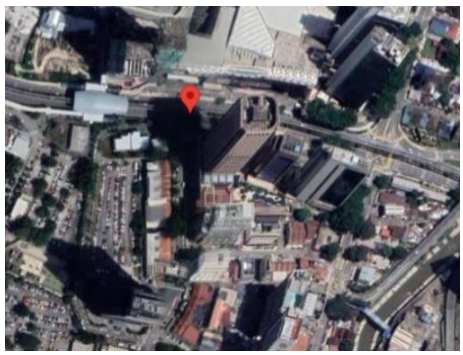
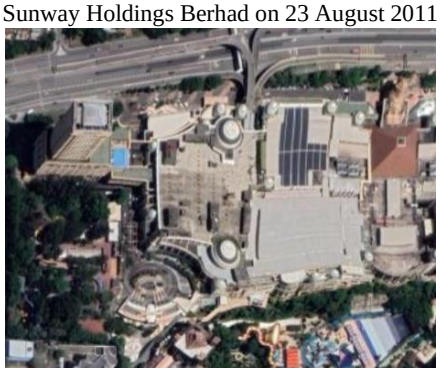
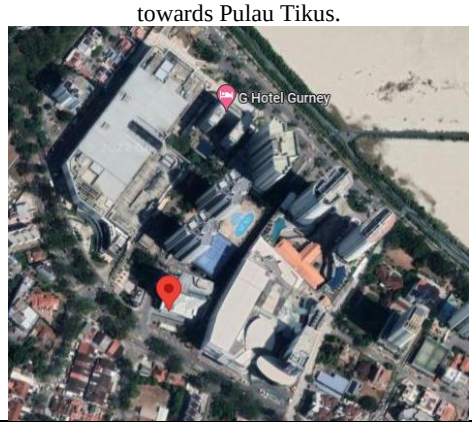
1	Beverly Wilshire Medical Centre	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	Gleneagles Kuala Lumpur	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	Gleneagles Penang	✓	✓	✓	✓	✓	✓	✓	✓	✓
4	Island Hospital	✓	✓	✓	✓	✓		✓	✓	
5	KPJ Tawakkal Specialist Hospital	✓	✓	✓	✓	✓	✓	✓		✓
6	Loh Guan Lye Specialists Hospital		✓	✓	✓	✓	✓			
7	Mahkota Medical Centre	✓	✓	✓	✓	✓	✓	✓	✓	✓
8	Institut Jantung Negara	✓	✓	✓	✓	✓	✓	✓		
9	Pantai Hospital Kuala Lumpur	✓	✓	✓	✓	✓	✓			
10	Penang Adventist Hospital		✓		✓	✓				
11	Prince Court Medical Centre	✓	✓		✓	✓	✓	✓		
12	Subang Jaya Medical Centre	✓	✓		✓	✓	✓	✓		
13	Sunfert @ Bangsar South	✓	✓	✓	✓	✓	✓	✓		✓
14	Sunway Medical Centre	✓	✓	✓	✓	✓	✓	✓	✓	✓
15	Thomson Hospital Kota Damansara	✓	✓		✓	✓	✓			

* S. = Short accommodation, L. = Long accommodation

Table 4. Hotels selected for this study

NO	Case Study	Private Hospitals
1	Sheraton Imperial Hotel, Kuala Lumpur	Prince Court Medical Centre
2	Sunway Resort Hotel & Spa Kuala Lumpur	Sunway Medical Centre
3	G Hotel Kelawai Penang	Gleneagles Penang
4	Olive Tree Hotel Penang	Pantai Hospital Penang

Table 5. List of hotels (Case studies)

Hotel:	Sheraton Imperial Hotel	**Hotel:**	Sunway Resort Hotel & Spa
Location:	Kuala Lumpur	**Location:**	Kuala Lumpur
Description:	Sheraton Hotels and Resorts is an international semi-luxury hotel chain owned by Marriott International.	**Description:**	Sunway Group is a Malaysian conglomerate company. It was formed following a merger between Sunway City Berhad (SunCity) and Sunway Holdings Berhad on 23 August 2011
Map:		**Map:**	
Hotel:	G Hotel Kelawai	**Hotel:**	Olive Tree Hotel
Location:	Penang	**Location:**	Penang
Description:	Kelawei Road is a major thoroughfare in the city of George Town in Penang, Malaysia. It is one of the main roads leading out of the city centre to the suburbs, stretching from the heart of George Town towards Pulau Tikus.	**Description:**	Olive Tree is a Malaysian brand located in Penang.
Map:		**Map:**	

3.3 Observation

Observation is a type of qualitative research method that encompasses not only participant observation but also fieldwork. In observational research design, multiple study sites are involved. Observational data can be integrated as supplementary or confirmatory research [61]. Observation in qualitative research is one of the oldest and most fundamental research approaches. This approach involves collecting data using one's senses, especially by observing and listening systematically and meaningfully. Similarly, observation is considered the foundational element of all research methods in the social and behavioral sciences. However, observations of social settings, particularly educational environments, are often not as straightforward as they might seem. Qualitative observation occurs when the researcher takes field notes on the behavior and activities of individuals or the environment and buildings at the research site. In these field notes, the researcher records activities at the research site in an unstructured or semi-structured manner.

A visual observation based on the checklist created from the healing environment elements has been conducted (Depending on Figure 1). Observations were recorded in a notebook using a checklist system, and photographs were taken. This study's observations were conducted at the four selected locations and evaluated based on each element's role in supporting the therapeutic environment and Malaysia's medical tourism industry. The checklist included various items:

- Natural & Artificial Light: The availability of natural light sources and the building's manufactured lighting system.
- Ventilation & Air quality: The building's ventilation and the quality of the air.
- Color: The colors inside the premises.
- Noise: The surrounding noises.
- Artworks: The internal artwork.
- Landscape: The gardens and the surrounding landscape and view of the greenery scenes.

4. FINDINGS AND DISCUSSION

Through the case study and site observation analysis, we can observe that the current design of medical tourism accommodations has had a positive impact on the medical tourism industry and the overall well-being of medical tourists. However, the analysis findings have also highlighted several issues and factors that need attention in designing medical tourism accommodations. While many hospitals recommend various hotels as accommodation options, there is a notable deficiency in the quality of the therapeutic environment within these accommodations, particularly in terms of physical and therapeutic design characteristics.

4.1 Exterior

In the case study and site observation, it was observed that all cases were situated in urban locations, which is advantageous for medical tourists from a tourism perspective. However, from a healthcare standpoint, more consideration is needed regarding the surrounding environment and its potential impact on the health and recovery process of medical tourists. This aligns with the findings of Huang and Xu [6], which underscore the importance of the surrounding environment in the health and healing process of tourists. While medical tourism accommodations were designed to be health-friendly in terms of physical and therapeutic design characteristics, there is room for improvement in the design of other medical tourism accommodations, such as choosing quieter locations and closer to nature. Some of these improvements are integral to the healing process of patients staying in medical tourism accommodations. These findings suggest the importance of a holistic approach to medical tourism accommodation design, starting with choosing the location taking into account not only the physical and therapeutic aspects but also the broader environmental and contextual factors. By doing so, medical tourism accommodations can better serve the health and well-being of patients, ultimately contributing to the growth and development of the medical tourism industry in Malaysia.

4.2 Interior

The results of the observations have revealed that the interior environment design, encompassing aspects such as lighting, ventilation, landscaping, color selection, noise levels, furniture, and room layout, all significantly contribute to promoting patients' health and expediting their recovery. Furthermore, the integrated design of the rooms has a positive impact on patients, as it resembles high-quality hotels, as shown in Figure 3. Nevertheless, the analysis results have also brought to light several issues and considerations that must be addressed when designing the interior of medical tourism accommodations.

Natural and artificial lighting, in terms of creating a therapeutic environment, were incorporated into all cases through the use of various window types for natural lighting. LED artificial lighting was consistently used in all rooms across the four cases. However, to maximize the benefits and well-being of medical tourists during their recovery, it is essential to incorporate well-designed windows that provide ample natural lighting in the accommodation. Proper window design in medical tourism accommodations is crucial as it not only enhances the therapeutic environment but also offers a sense of orientation and a sanitizing effect for medical tourists. Adequate window design for views and natural lighting is essential in creating a healing space, as it can contribute to the healing process and reduce stress. Furthermore, ensuring sufficient natural daylight in medical tourism accommodations is essential for promoting the healing and rehabilitation of patients and enhancing the comfort and energy levels of care providers. Proper natural lighting within the space can also have positive effects on metabolism and vitamin D levels, help prevent infections and chronic diseases, and increase overall energy and activity levels, as highlighted by Iyendo et al. [24].

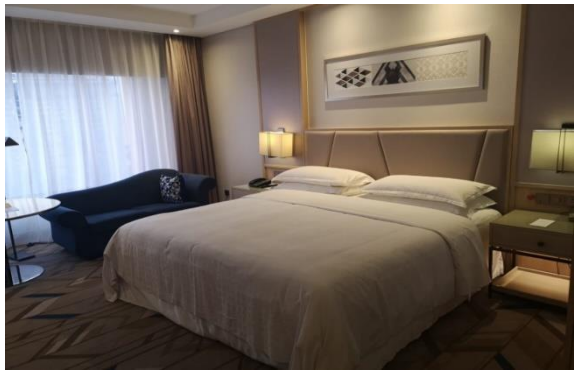
Regarding natural ventilation within the context of creating a therapeutic environment, it has been considered in the design; however, practical implementation of natural ventilation remains unavailable. Incorporating mixed ventilation systems in medical tourism accommodations can significantly enhance the quality of indoor air. Even though these accommodations often feature large windows, they may not be operable. Therefore, the introduction of mixed ventilation systems, particularly in tropical climates like Malaysia, can facilitate air circulation and create a more comfortable environment. As highlighted by Huang and Xu [6], natural ventilation and indoor air quality directly impact patient recovery times and the incidence of infections. The proper placement, design, and

size of windows are pivotal in improving ventilation and airflow. Additionally, architectural elements such as balconies, pergolas, hollow structures, skylights, and zenith-angled openings can further enhance air circulation throughout the building, ultimately reducing the risk of bacterial and disease transmission.

The interior furniture and artwork were carefully chosen and arranged, facilitating easy differentiation between them. The analysis of interior furniture and artwork underscores the significance of meticulous selection in medical tourism accommodations. According to Iyendo et al. [24], designing healthcare accommodations for patients should prioritize legibility and clear wayfinding to reduce disorientation and enhance patient comfort and control. Artwork displayed in accommodations and other healthcare spaces has been shown to positively reduce stress and pain [22]. Dark-colored furniture against a white or warm background was found to be the most suitable choice for interiors and furnishings, as it enhances distinguishability and significantly impacts patients' overall comfort and sense of control. These settings can profoundly influence patients' well-being, promoting relaxation and a sense of mastery over their surroundings.

The accommodation lacks integration with the landscape, vegetation, and water elements. In terms of natural surroundings, is essential for creating a more integrated and less isolating environment. Landscapes, vegetation, and water elements not only add visual appeal to healthcare facilities but also significantly influence a patient's overall well-being. Patients feel less isolated when surrounded by natural scenes, fostering a greater understanding and appreciation of the surrounding plants. These observations align with the findings of Iyendo et al. [24], who emphasized the importance of incorporating natural elements into therapeutic spaces. Such elements have been shown to reduce stress levels among patients and staff while cultivating a calming atmosphere, resulting in faster recovery. Integrating natural elements not only leads to better medical outcomes but also reduces stress and enhances treatment cooperation. Therefore, the integration of natural elements in healthcare facilities is crucial for creating a comfortable, calming, and healing environment for patients. Additionally, supporting patients' needs can be achieved by providing outdoor green spaces that incorporate natural and water elements. Research by Iyendo et al. [24] suggests that outdoor healing gardens with elements like moving water, bird sounds, and natural sunlight can provide a soothing environment for patients. These gardens offer pleasant views and serve as a retreat from medical settings, ultimately reducing stress levels and improving medical outcomes. Furthermore, Lundin [54], explains that open spaces and urban settings without natural elements are unsuccessful in reducing stress levels and may even exacerbate them. Therefore, it is imperative to consider incorporating natural and water elements into the outdoor areas of healthcare facilities to create a more healing and comfortable environment for patients. According to Ulrich [22], incorporating these natural settings can promote patients' well-being and encourage their recovery. Conversely, the predominance of hardscape, such as concrete, and urban or mechanical sounds, such as traffic noise, can have the opposite effect. Therefore, designing social and interaction spaces with natural elements can improve the quality of healthcare facilities and promote patients' recovery.

Also, the access facilities were designed to be user-friendly, but some areas of accommodation design still had limitations in terms of accessibility. Accessible facilities are crucial considerations in the design of medical tourism accommodations. As noted by Al-Sharaa et al. [29], creating a healing space for patients requires a barrier-free environment that facilitates easy movement within the accommodation facilities and enhances their comfort.



Sheraton Imperial Hotel, Kuala Lumpur

Sunway Resort Hotel & Spa Kuala Lumpur

G Hotel Kelawai Penang

Olive Tree Hotel Penang

Figure 3. Interior design of accommodation rooms in four selected hotels

In general, these finding implications are multi-faceted, with significant potential to impact patient health and well-being, as well as contribute to the growth and development of the medical tourism industry. Key considerations include the importance of well-designed windows to provide ample natural lighting, enhancing the therapeutic environment, patient recovery, and overall well-being. The practical implementation of mixed ventilation systems is crucial for improving indoor air quality, directly affecting patient recovery and infection control. Careful selection of interior furniture and artwork can promote patient comfort, reduce stress, and empower a sense of control. Integrating natural elements like landscapes, vegetation, and water within healthcare facilities can reduce stress, enhance patient well-being, and expedite recovery, especially through the incorporation of outdoor healing gardens. Lastly, prioritizing user-friendly and accessible facilities is essential, facilitating patient mobility and comfort, ultimately creating a healing environment. These considerations have the potential to enhance the well-being of medical tourists and drive growth within the medical tourism sector.

4.3 Aspects

In social aspects, there is a need for more consideration of multicultural spaces, as some cases show very limited interaction in this regard. To improve social integration and the healing process, it is important to increase the size of social and interaction spaces within healthcare facilities. This allows medical tourists, their families, and others to take their minds off their own problems and feel a sense of community. Properly designed social spaces can also reduce patient stress and improve staff job satisfaction, as noted by [52]. Also, it is important to acknowledge that when designing medical accommodations, the backgrounds of the users, including cultural and religious aspects, should be taken into account to ensure their comfort in the environment, this is consistent with the [24].

In economic aspects, despite the success of the medical tourism industry and its positive impact on the economy, the design of rehabilitative environments in medical tourism accommodations faces certain barriers related to commercial costs and developer budgets. Additionally, it has been noted that one aspect relates to policy; currently, there is no specific policy for designing medical tourism accommodations, and designs are often based on hotel resort requirements, which are frequently determined by star ratings.

In general, these findings underscore the significance of multicultural spaces in healthcare facilities, emphasizing the need to expand social and interaction areas for enhanced social integration and the healing process. Enlarged spaces can foster a sense of community, alleviating patient and staff stress. To ensure user comfort, considering cultural and religious backgrounds is essential in medical accommodation design. On the economic front, the medical tourism industry, despite its positive economic impact, grapples with commercial costs and budgetary barriers. Additionally, the absence of tailored design policies, often influenced by hotel resort standards, can impede the development of healing environments in these facilities, necessitating policy and design adjustments.

4.4 Framework

The analysis results have led to the establishment of a research conceptual framework, which aims to develop guidelines for designing medical tourism accommodation facilities with therapeutic qualities, as shown in Figure 4. This framework will propose healing environment elements that can be used to assess the quality of therapeutic environment design in medical tourism accommodation facilities and address the previously mentioned issues. Anticipated to be a valuable tool for stakeholders in the medical tourism industry, it will contribute to enhancing the well-being of tourists in Malaysia.

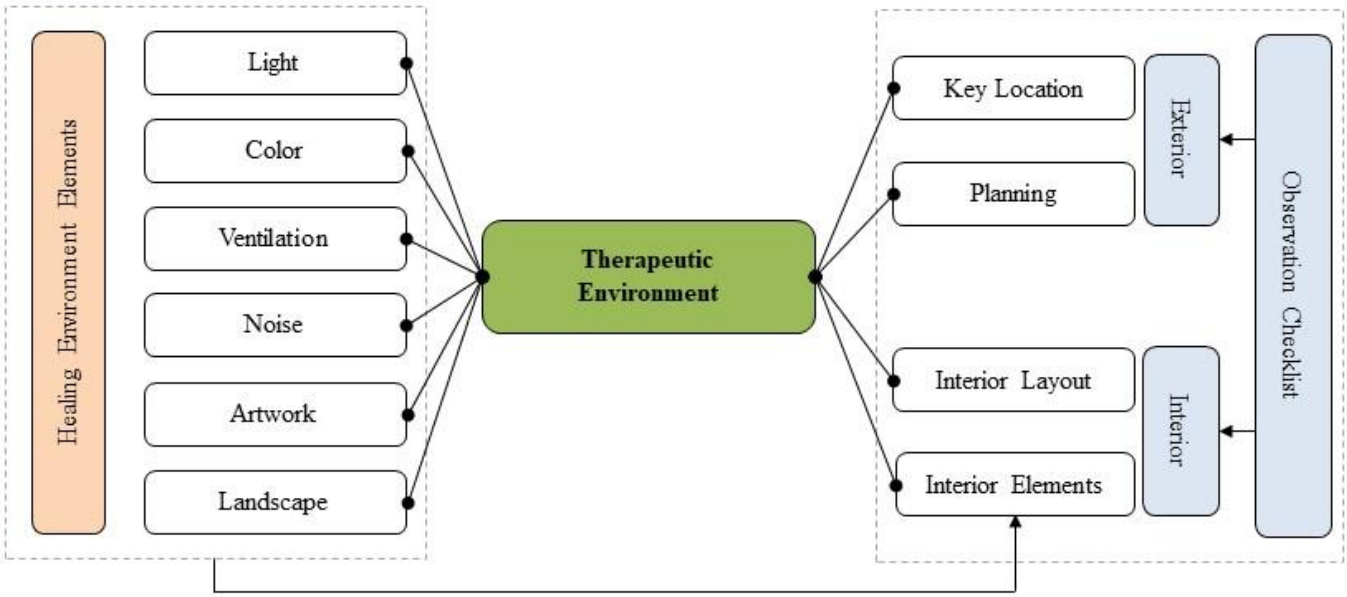


Figure 4. Research conceptual framework

5. LIMITATIONS AND FUTURE RESEARCH

This study has certain limitations that should be taken into consideration. First, the study was limited to a specific area, namely Kuala Lumpur and Penang. Expanding the study to include other sites would provide a broader understanding of the topic and enhance the generalizability of the findings. Second, the geographical scope of the study was limited to Malaysia. Including data from other countries would allow for a more comprehensive analysis of medical tourism accommodation design and its impact on patients. Third, the study was conducted over a relatively short period of time. Conducting the same study with the same framework over a longer duration would provide a more in-depth understanding of the subject and enable the researchers to observe any potential changes or trends over time. Fourth, the study solely relied on the qualitative research method. Incorporating other research methods, such as quantitative surveys or mixed-method approaches, would yield additional insights and contribute to a more comprehensive understanding of the topic. Lastly, the observation checklist used in this study focused on specific elements, including natural and artificial lighting, ventilation and air quality, color, noise, artwork, and landscape. This research suggests that all design elements are essential for patient outcomes and recommends that practitioners in the field of medical tourism accommodation design prioritize these elements. However, it may be beneficial to study each element separately and understand its effects from various perspectives and factors on the health and well-being of patients. Additionally, future research endeavors might consider including additional variables, such as variations in room size and the visual and aesthetic quality of room views, to further investigate the influence of various factors on the design of medical tourism accommodations.

6. CONCLUSIONS

In conclusion, this research offers valuable insights into the design of medical tourism accommodations in Malaysia and its profound impact on the well-being of medical tourists. The observational analysis has illuminated the positive influence of the current design on the medical tourism industry, yet it has also underscored critical areas necessitating enhancement. A pivotal discovery pertains to the imperative need for more robust integration of therapeutic elements within these accommodations. While they aspire to exude the opulence of high-quality hotels, these spaces fall short in terms of the essential physical and therapeutic design characteristics. This calls for a comprehensive reimagining of the approach to medical tourism accommodations, emphasizing the paramount importance of prioritizing patients' well-being.

The interior environment design, encompassing facets like lighting, ventilation, color schemes, noise management, furniture selection, and room layout, has been unequivocally established as pivotal in fostering patients' health and expediting their recovery. Thoughtful consideration in designing windows to maximize natural light and ventilation is indispensable for creating a truly therapeutic environment. Furthermore, the choices of furniture and artwork wield considerable influence over patients' comfort and their sense of control. The integration of natural elements, including landscapes, vegetation, and water features, carries tremendous potential for elevating the overall patient experience while alleviating stress. Notably, the analysis has drawn attention to the significance of the surrounding environment. Although urban locales offer tourism advantages, they demand a more nuanced perspective when viewed through the lens of healthcare and recovery for medical tourists.

Additionally, effective social and interaction spaces should be conceived with multicultural sensitivities to facilitate social integration and buttress the healing process. In an economic context, despite the medical tourism industry's triumphant journey, it grapples with the challenges of commercial costs and developer budgets. Furthermore, policy considerations must crystallize into specific guidelines for the design of medical tourism accommodations. To navigate these findings and usher in improvements in medical tourism accommodations, we propose a research conceptual framework. This framework aspires to proffer comprehensive guidelines for the creation of accommodations imbued with therapeutic qualities, an initiative poised to ameliorate the well-being of medical tourists in Malaysia and bolster the ascension of the medical tourism sector. Overall, this study serves as a foundation for further research and practical improvements in the design of medical tourism accommodations, contributing to the well-being of medical tourists and the continued success of the industry in Malaysia.

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