

Patients' hotel design attributes based on aspects of a healing environment framework and patients' preferences

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Abstract: The lack of access to advanced medical services forces some patients to travel to medical destinations, which raises concerns about health equity. One of the main challenges for both medical travelers and medical centers is ensuring access to lodging facilities at medical destinations. This study explores the preferences of medical travelers for the design features of such facilities, known as patients' hotels, which are necessary for areas with a potential medical service. The research used a literature review, questionnaires, and statistical analysis to identify the critical elements of patients' hotel design features under three influential categories: "distinctive features of patients' hotels," "patients' rooms", and "public spaces". According to respondents, the critical elements of the first category are proximity to medical centers, consideration of patients' physical and spiritual needs in the design, and a homelike environment. From medical travelers' perspectives, patient rooms must have a sense of privacy, additional spaces and amenities, and flexible layouts. The degree of social interaction preferred by patients' companions is "talking to each other" and for patients, it is "participating in a group activity". The spaces preferred for this interaction are "green spaces of the surrounding area", and for decorating public spaces, "using greenery" and "traditional architecture patterns" are preferred.

Keywords: patients' hotel, medical travellers, health equity, design factors, accessibility, healing environment, user preferences

1. Introduction

Access to medical and healthcare services that are affordable, of satisfactory quality, and delivered within a reasonable waiting time has become a global concern. This issue is particularly critical for populations living in remote and underserved areas, where limited access to advanced healthcare services often results in incomplete treatment and raises serious concerns regarding health equity.

A patient hotel is a building concept where independent patients who do not need clinical care can remain at a short distance from the hospital with less staff to follow their medical procedure (Pleijel, 2019). These spaces and family-oriented spaces on the hospital campus also provide emotionally supportive environments (Peters, 2017) and make the care system significantly more efficient and less costly.

Previous studies investigated distinctive attributes, possible outcomes, perceived advantages, and determinants of decision-making to stay at medical hotels from a hospitality industry viewpoint (Chaulagain et al., 2023; Han, 2013; Han & Hwang, 2013; Han & Hyun, 2014; Han et al., 2015). Studies focusing on patient needs and the design features of the patients' hotel are rare and thus there is a gap in the field. A more recent study investigated factors influencing physically disabled people's satisfaction level at a hotel and concluded that inaccessible areas have a negative effect on their satisfaction. People with physical disabilities, powerchair and wheelchair users have been reported to be the most deprived groups in hotels (Tutuncu, 2017). This outcome also highlights the importance of "design for all," which seeks to provide environments that remain functional and equally accessible to all individuals—irrespective of ability or disability— whether in healthcare or hospitality settings (Mosca & Capolongo, 2023).

Hospitals and the hospitality industry by a customer-oriented management approach combine their efforts and share their experiences to attract more patients (E. R. C. M. Huisman et al., 2012; Meesala & Paul, 2018). In fact, hospitals with the provision of hotel-like services for patients and the hospitality industry by targeting different markets such as medical tourism are likely to greatly benefit. However, even though hospitals gain patient satisfaction by providing hotel-like rooms and welcoming lobbies, the hospitality industry has not to date created special room design based on patient travellers' needs. This research aims to achieve the distinctive features of suitable rooms, public spaces, and hotel design attributes for medical travellers in the hospitality industry to fulfil this gap. To investigate related factors in design of a patient hotel, the research focuses on the healing environment's elements that depends on medical travellers' attitudes and needs, rather than ambient features. While different models of offering lodging facilities exist in medical destinations and previous studies mainly focused on the combined functions of hotels, hospitals, and healthcare centres, this study investigates features of freestanding facilities that just offer accommodation for patients and their families near hospitals or on hospital campuses. The main goal is the provision of emotional support and convenience for patients and their families; in other words, it is an effort to make a same experience in healthcare and hospitals and equal opportunity to access to medical services for people in different areas. The term "medical travellers" refers to patients and their families in this research.

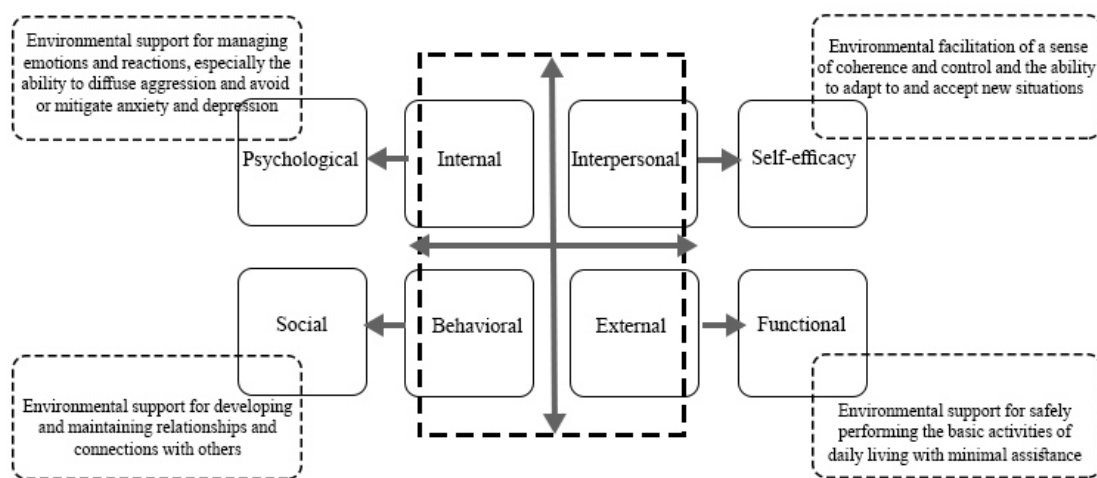
2. Literature Review

Based on intended function (patients' hotel), the literature of supportive healing spaces is reviewed to recognize factors that provide fundamental infrastructure for treatment spaces. Concepts of "the healing environment", "evidence-based design", and "patient- centre design" are in the contexts of healthcare design, which alter traditional attitudes toward healthcare facilities. Thus, contrary to previous practices in healthcare facilities, the focus is not just on technological and medical aspects. A significant number of studies in related literature have implied that ambient environmental factors such as natural light and thermal comfort have beneficial effects on patient wellbeing and recovery (Brambilla & Capolongo, 2019; Salonen et al., 2013; Sklavoua & Tzouvadakis, 2016; Zhang et al., 2019). However, optimal healing environment is defined as an environment where all components of health care such as the social, psychological, spiritual, physical, and behavioural are considered in an efforts to offer support and the achievement of wholeness (van Nijhuis, 2017). Accordingly, for an effective design, all aspects of the environment and influential components should be considered. In a review, DuBose et al. (2016) present a framework for identifying the power of the built environment on better outcomes for patients. This framework of breaking the concept of healing into antecedent

components is represented in Figure 1. In the framework, self-efficacy and functional aspects are largely influenced by patients' physical needs and common concerns and, to a lesser extent, by the culture of a specific context. Therefore, the features associated with these aspects can be considered general attributes. In contrast, psychological and social components are primarily shaped by cultural factors and patients' backgrounds; thus, it is essential to examine these elements in detail within each specific context.

Addressing patient needs in evidence-based designs and in patient-centred designs that holds “interaction with facility users” as a focal point is also a fundamental principle (Elf et al., 2015; Zhao & Mourshed, 2017). Therefore, by reviewing the subset of the four main aspects and finding the appropriate physical solution, practical factors in the design of the patient hotel are evoked and then medical travellers’ priorities are assessed.

Figure 1. Optimal healing environment framework according to DuBose et al. (2016) (Reproduced by authors)



2.1. Control

A fundamental factor in environmental psychology and an initial goal of patient-centre care is acquired through providing choices for patients to gain control over their environment (Devlin & Arneill, 2003; Proshansky et al., 1970). In-patients’ control over their environment are decreased due to their physical condition which is restricted, the imposed environment they must stay in, and the limited choices they are offered. Control helps patients to overcome an undesirable situation by the ability to change or alter settings (Phillips, 2012) or by opportunity to choose their preferred degree of presence of others (Herweijer-van Gelder, 2016). For example, the ambient environment, such as lighting, thermal comfort, and noise, has been found to include important factors for sleep health (Yang et al., 2022); therefore self-supporting systems that enable patients to have control over their environment is a common suggested solution (E. R. Huisman et al., 2012). Other strategies that solve patient restricted abilities include architectural design supporting disabled patient accessibility, wayfinding to reduce disorientation (Iyendo et al., 2016; Molzahn, 2013), and the availability of facilities and services for more convenience (van Nijhuis, 2017). In addition, environmental features that enable patients to obviate undesirable conditions include flexible seating arrangements, control over volume and type of music, single occupancy rooms (Harris et al., 2006), and increased freedom to choose daily activities (Raps et al., 1982). Furthermore, some spatial features including the size of space, brightness, and extent of view,

associated with the effects of crowding (Phillips, 2012) consequently affect sense of control (Chaudhury et al., 2005).

Universal design requirements and strategies that enhance patients' accessibility in circulation and support their control over the environment are broad and multifaceted. Examples include the provision of proper ramps, levelled floors, standard-sized elevators, and barrier-free passages within indoor spaces. In outdoor areas, representative requirements consist of designated parking lots, split curbs with inclined pathways, and the provision of resting zones at regular intervals (Elassal & Ahmed, 2024). These measures illustrate only a subset of the wider accessibility standards that need to be considered in design.

2.2. Privacy

Privacy is a common concern in hospitals and hotel environments. Previous studies on healing environments define privacy as a multi-aspect structure that consists of physical, psychological, social, and informational facets. People based on their expectations, characteristics, and field of activities define privacy differently (Alalouch et al., 2016). Studies relating to hospital environments emphasize physical privacy which includes visual and acoustics privacy (Leino-Kilpi et al., 2001). A domain belonging to an individual (Schreuder et al., 2016), the optional choice of being alone or with others, the possibility to opt for visually and audibly favourable environment, (Herweijer-van Gelder, 2016; van Nijhuis, 2017) are different definitions of privacy. Sometimes a required type of privacy depends on the intended activity. For example, according to Hutton, for activities that have an individual nature and need personal concentration such as reading, a quiet space or room is important (Hutton, 2002). In addition, since poor privacy leads to additional stress, staying in a hotel with the same type of client provides psychological and social privacy of medical travellers.

Acoustic privacy can be controlled by the technical specifications and engineering solutions including sound-absorbing materials and solid walls instead of curtain walls. However, visual privacy seems to be more related to how architects design spaces such as degree of separation and personalization of space (Alalouch et al., 2016; E. R. C. M. Huisman et al., 2012; van Nijhuis, 2017).

2.3. Safety

As safety is a physical and psychological attribute, it means being in a state of calm due to awareness of eliminating potentially dangerous situations and keeping a distance from negative influences. Physical safety deals with aspects that affect physical health such as infections and patient falls. Psychological safety refers to feeling vulnerable against disturbances and disorders while knowing that demands for help will be answered (E. R. Huisman et al., 2012).

Factors related to perceived safety are prospect, refuge and escape. In terms of patient room design, prospect is linked to visual mastery, desirable view and lightning which can detect danger and cleanliness of a room (van Nijhuis, 2017). Refuge can translate as storage space for belongings (hiding valuables and keeping accessories). Escape can be defined as observation of and accessibility to personnel (in addition to companions of patients, personnel are also a source of security for them) (Persson et al., 2014) and ability to call support (Schreuder et al., 2016). Additionally, Many design and construction concepts considered scalability, adaptability, and flexibility of the spaces as safety principles of design for healthcare facilities (Reiling, 2006).

2.4. Social support

Researchers use the term "social support" as the emotional, informational, and tangible support for patients. In one's daily life, social support is received from family and people nearby. When a patient is hospitalized, the need for social support increases because a sudden and stressful situation occurs, but access to this normal support is restricted. Social support reduces the effects of a stressful situation (Herweijer-van Gelder, 2016; van Nijhuis, 2017). In previous studies, two strategies to increase social support have been introduced. The first relates to informal caregivers such as close friends and family by adopting caregiver's role as companions, assistants, representatives, navigators, and planners (Miller et al., 2016). The other strategy refers to social relations that result, for instance, in interaction with other patients. This kind of social interaction might form at different levels, from passive contacts to actual conversations (Mogensen, 2011). Social interactions have been recommended as a bridge from the healthcare environment to the surrounding community in several studies, and design should be a reminder of healing, health, caring, and compassion (Anåker et al., 2017).

Social support can be increased through single-patient rooms, private areas, access to communal spaces, spaces that draw patients out of their single rooms (Anåker et al., 2019), lounges and rooms for group consultation, comfortable and moveable furniture arranged in small flexible grouping (Shepley et al., 2016; van Nijhuis, 2017; Zimring et al., 2004), provision of additional services such as internet (van Nijhuis, 2017), carpeted rooms (Salonen et al., 2013; Zimring et al., 2004) and spaces without predicted or prescribed functions that enable immediate and spontaneous activities (Iyendo et al., 2016).

2.5. Positive distraction and homelike environment

Healing is a gradual phenomenon that is obtained over time. Balance and coordinated set of mind, body, and soul occur in the home, community, and nature (DuBose et al., 2016). A more 'homelike' atmosphere that "break down the formality of a normal hospital" rather than a traditional health facility environment (Payne et al., 2015) is constantly desired by patients (Jellema et al., 2019) and modern care programs (Devlin & Arneill, 2003).

Strategies that evoke a feeling of being at home depend on whether the space is private or public. In public places, creating a familiar atmosphere in a strange and unknown space, "recognizability", is the main factor and is derived through activities or symbols that are memorable (Mogensen, 2011; Öhlén et al., 2014). In private rooms, "personalization" through provision of daily living activities (DuBose et al., 2016; Öhlén et al., 2014), being with family members, pleasant designs using paintings on walls and views from windows, and being surrounded by personal items without disturbing other patients or being disturbed by them implies feelings of being at home (MacAllister et al., 2016; Persson et al., 2014). Jellema et al. suggest seasonal decorations as markers in time to enhance the homely environment (Jellema et al., 2019). For instance, in Maggie centres designs, metaphors of a house- big kitchen table, living rooms, and a fireplace - and small-scale designs are reminders of the concept of the homely environment. (Van der Linden et al., 2016).

Positive distraction is associated with a new approach shifting patient's attention away from the institutional environment of hospitals and painful procedures to visual stimulation and small set of environmental features that reduce stress (E. R. Huisman et al., 2012; Zimring et al., 2004). It has been well established that internal and external perspectives of green areas (Capolongo, 2016), indoor plants (Dijkstra et al., 2008; Jamshidi et al., 2020), artworks and its aesthetic aspects

(Awtuch & Gębczyńska-Janowicz, 2017; Iyendo & Alibaba, 2014), furniture (mainly providing more comfortable chairs) (Luo, 2017; Selami Cifter & Cifter, 2017), softer lighting, and colour (Salonen et al., 2013) improve patient mood and provide a supportive environment.

A summary of the aforementioned factors and related physical solutions are presented as follows:

Effective factors and related physical aspects/design strategies:

Control:

- The proper size of space, brightness, and extent of view can decrease effect of crowding
- Flexible seating arrangement; control over the temperature, light, and the volume and type of music in their rooms; architectural design that supports accessibilities for disabled patients; design healthcare layout and wayfinding to reduce disorientation
- Freedom to choose daily activities and allow access information
- Considering universal design requirements in circulation

Privacy:

- Private rooms or spaces
- Solid walls instead of curtain walls

Safety:

- Provide prospect, refuge and escape
- scalability, adaptability, and flexibility of the spaces

Social support:

- Single-patient rooms, private areas
- Lounges and rooms for group consultation, communal areas
- Comfortable and moveable furniture arranged in small flexible grouping
- Provision of additional services such as internet and the provision of decent meals for families
- Carpeted rooms
- Spaces without specific or prescribed functions

Positive distraction and homelike environment:

- Single patient room (personalization in private space)
- Recognizability, memorable functions, activities, or elements, (in public place)
- pleasant design with lighting, views, exposure to nature (view of nature from a window, images of nature, and indoor plants), colour, and artwork, comfortable furniture, seasonal decorations

Strategies and solutions mentioned in the literature review are the result of different contexts studies and mainly consider a variety of cultures and choices. For instance, in regards the issue of privacy in hospital design, some cultures prefer single patient rooms while others prefer multi-patient rooms. For such contradictory results, a combination of single and multiple- patient rooms for various preferences and purposes is suggested as a middle ground (Taylor et al., 2018). In addition to estimating the main preferred option in each context, providing an optional choice is

essential. Another instance is using of culture and context affecting preferences is positive distractions such as pictures of nature suggested by earlier studies. Abstract forms might be attractive for some people but irritating for others. Thus, further research in each context is necessary to approximate patients' preferences of overall atmosphere of their lodgings.

It is crucial to underscore the significance of environmental factors, which are considered fundamental in healthcare design and are frequently highlighted in the literature as determinants of positive healing outcomes. For example, the integration of natural light in patient rooms has been demonstrated to increase quality of sleep, mitigate symptoms of depression, and decrease hospital length of stay (Aries et al., 2015; Park et al., 2018). Similarly, acoustic quality plays an important role and can be improved through the use of sound-absorbing flooring and ceiling tiles, as well as architectural strategies that physically separate patient rooms from high-noise areas. In addition to these, air quality and adequate ventilation are vital components that further enhance the healing environment (Zhang et al., 2018). Collectively, these design considerations substantially contribute to promoting patient well-being and accelerating recovery.

3. Method

The study used a qualitative method to discover effective factors and a quantitative method to select preferred physical solutions among possible and recommended methods of obtaining satisfactory results. First, the basic principles of healing environments framework for attaining stress-less and supportive environments were reviewed in the existing literature. Since there was a variety of related physical aspects, a questionnaire was used to find users' choices and preferences. This research was part of a larger study where the post occupancy evaluations of three buildings with the same function were explored. Therefore, different characteristics of those buildings inspired some options used in the questionnaire. Initially, a draft open-ended questionnaire (meaning descriptive questions) on medical traveller needs was prepared and distributed in limited numbers. Based on the aforementioned process, a comprehensive multiple-choice questionnaire was created. The final format included three categories of questions: the first category asked questions on the main differences and characteristics of the patient hotel, the second category investigated patient room features, while the third covered questions on social spaces.

In the next step, to investigate the validity of the questions, the questionnaire was re-edited and approved under the supervision of three experts in architecture, urban planning, and health policy management.

3.1. Data collection and participants

The questionnaire was prepared in two languages: Persian and Kurdish. The survey was conducted with 112 participants from 2 hostels and a hotel for medical travellers in Sanandaj, Zanjan, and Tehran (three of the medical tourism destinations in Iran). Medical travellers were mainly patients and families from deprived regions who had travelled to have access to hospitals and care in more advanced cities.

Figure 2 shows the interior spaces of the Nikan Hotel in Zanjan, Iran and the figure 3 shows the patients' room. This hotel, which is a part of Mehraneh Clinic, is particularly for patients' who suffer from cancer.

Figure 2. interior spaces of Nikan Patients' Hotel in Zanjan, Iran (reference: www.mehranehcharity.ir)



Figure 3. Rooms of Nikan Patients' Hotel in Zanjan, Iran (reference: www.mehranehcharity.ir)

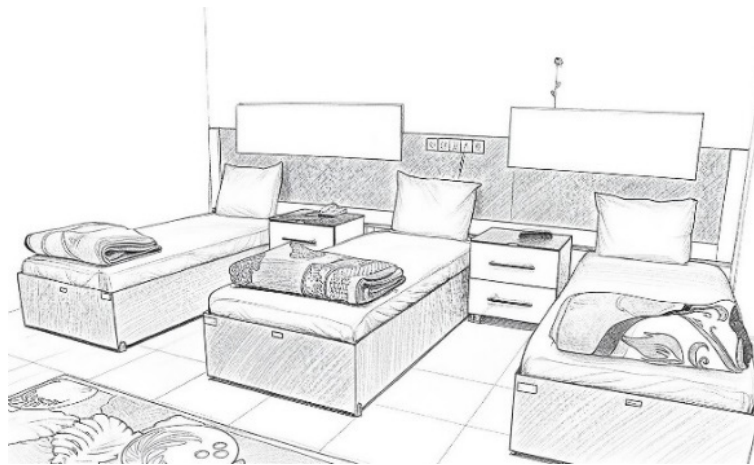


Table 1. Demographic profile of participants.

variable	Scale/ category	N	%
Role	patient	30	26.78
Role	Patient family	75	66.96
Role	Not mentioned	7	6.25
Age (yr)	15-25	13	11.60
Age (yr)	26-35	38	33.92
Age (yr)	36-50	39	34.82
Age (yr)	50 and Older than 50	13	11.60
Age (yr)	Not mentioned	9	8.03
Gender	Male	59	52.67
Gender	Female	48	42.85
Gender	Not mentioned	5	4.46
Reason for residence	Cancer radiotherapy	59	52.67
Reason for residence	Accompany child patient	12	10.71
Reason for residence	Sterility and infertility	4	3.57
Reason for residence	other	3	2.67
Reason for residence	Not mentioned	34	30.35
Residence duration	Less than 7 days	1	0.89
Residence duration	7-30	17	15.17
Residence duration	30 and more than 30 days	68	60.71
Residence duration	Not mentioned	26	23.21

4. Results

The demographic profile of the respondents is presented in Table 1. Of the 112 respondents, 59 (52.67%) were male, and 48 (42.85%) were female. 75 (66.96%) of the participants were patient companions, and 30 (26.78%) were patients. Fifty-nine respondents (52.67%) were cancer patients undergoing radiotherapy.

4.1. Special features of the patient hotel

Figure 4 illustrates the preferences of medical travellers as regards the specific features of the patient hotel. The first question asked the possible advantages of a patient hotel, and the main reason for using these hotels from the user's point of view in Iran. The majority of respondents (54%) emphasized that staying in a patient hotel saves time and money by enabling access to medical treatment and recovery in an adjacent area. Other responses included safety due to access to medical services (33%), ensuring the quality of recovery (23%), and stay in a hotel in a hotel with a greater privacy (2%).

The second question concerned the main differences in the design of this type of hotel from other hotels. The most frequent response (45%) highlighted patients' physical needs as a critical design concern. Psychological support and the provision of spaces for group consultation accounted for 26% of responses, existence or absence of special functional spaces accounted for 23%, while increase the size and features of the room was cited by 17%.

The last question investigated preferable theme in the design of these hotels. The largest proportion of respondents (42%) indicated a preference for a home-like environment, 26% emphasized integration with the therapeutic environment, (22%) prefer integration with natural environment, and 21% highlighted the importance of improving the social support environment.

Figure 4. Percentage of each option in patient hotel attributes questionnaire.

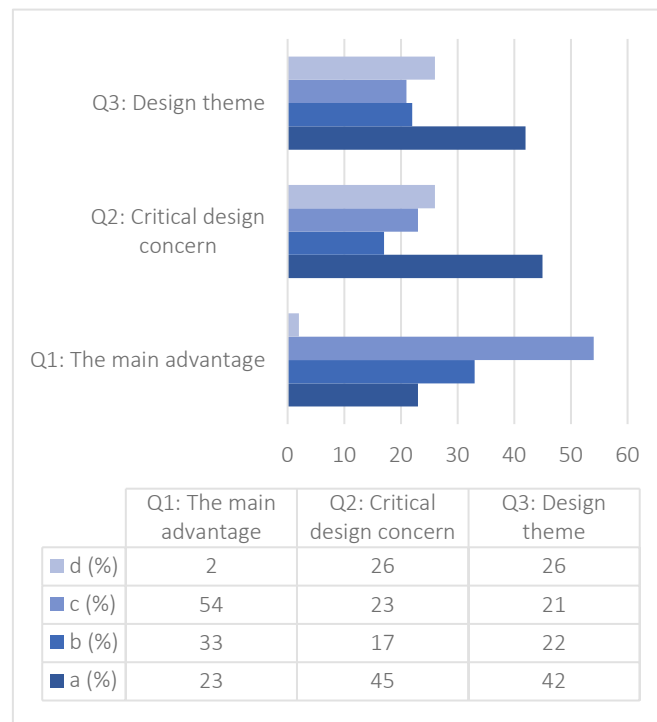


Figure 5 and 6 show the differences between patients and their companions' viewpoints about question 1 and 2 respectively. Items a, b, c, and d in figures are the very items in figure 4.

In figure 5, among patients, responses were distributed across three main options: quality of recovery period and facilitation of long-term treatment (a: 20%), safety due to access to medical services (b: 40%), and saving time and money for treatment and recovery in an adjacent area (c: 40%). None of the patients selected privacy as the main advantage (d: 0%).

By contrast, patients' companions emphasized option c (saving time and money by receiving treatment and recovery together in an adjacent area), which accounted for nearly 50% of their responses. Option b (safety due to access to medical services) received 24%, while 22% valued the quality of recovery period or facilitate the long-term treatments. Only 2% considered privacy (option d) as the most important advantage.

Figure 5. Differences between preferences of medical travellers' opinion

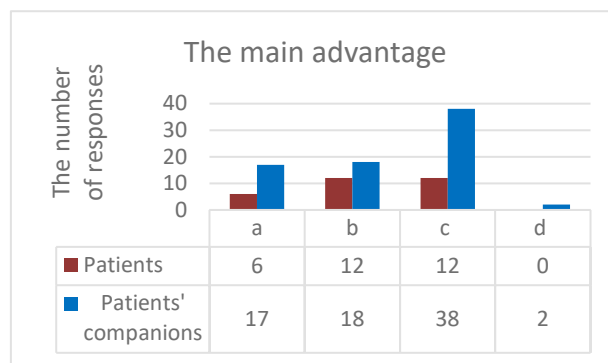
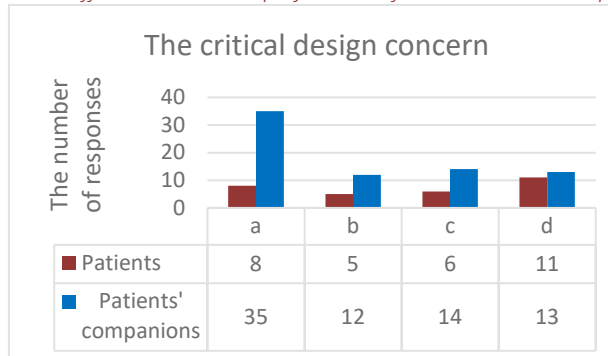


Figure 6 presents that, among patients, 26% emphasized option a (design according to patients' physical needs), while smaller shares selected option b (increasing the size and features of the room, 16%), option c (existence or absence of special functional spaces, 20%), and option d (the presence of a counselor and increased psychological support, 36%). In comparison, patients' companions strongly prioritized option a, with 47% emphasizing the importance of designing according to patients' physical needs. The other concerns received relatively similar levels of attention: option b (16%), option c (18%), and option d (17%).

Figure 6. Differences between preferences of medical travellers' opinion



4.2. Accommodation

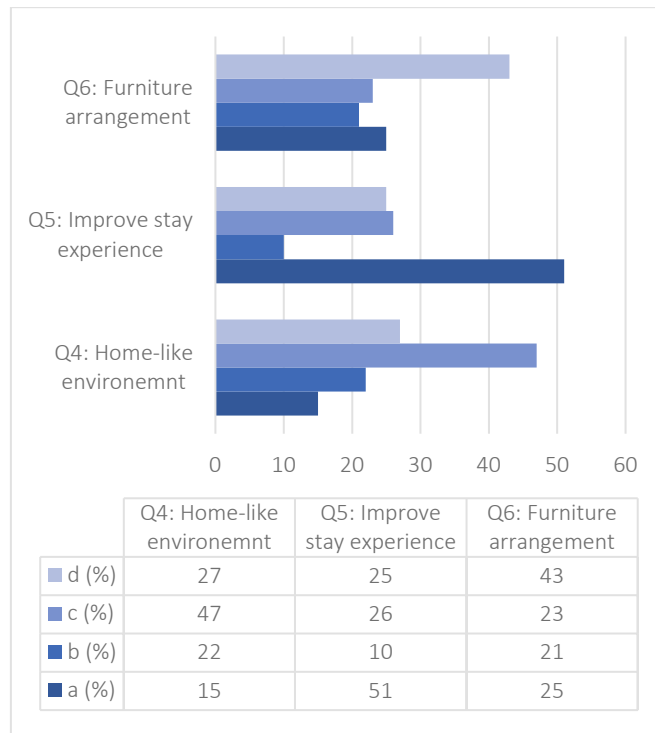
Participants in the present study were questioned on room design considerations such as the arrangement of furniture, the improvement of the accommodation experience, and the creation of a home-like atmosphere. The preferences of the respondents in regards possible physical solutions and options are presented in Figure 7.

For Question 4 which asked what makes medical travelers feel at home, nearly half of the respondents (47%) emphasized the importance of privacy as the key factor in creating a sense of being at home. Comfortable furniture, natural materials, and textures were mentioned by 15%, while 22% highlighted the possibility of engaging in daily activities, and 27% pointed to the need for more options for family or supporters.

In Question 5 preference regarding improving the stay experience was asked. The most frequent response (51%) referred to the addition of more spaces and amenities, such as mini-kitchens or storage areas. 26% of participants emphasized the open/close space syntax, 25% chose the use of artworks and plants in the room, while 10% highlighted the value of incorporating self-supporting systems into rooms.

For Question 6 regarding the proper furniture arrangement, 43% of respondents preferred flexible arrangements that allow furniture to adapt to different uses. Fixed arrangements accounted for 25%, while 21% of participants suggested multifunctional furniture, and 23% supported room partitioning to create adaptable zones

Figure 7. Percentage of each possible physical solutions in the room's design consideration.



4.3. Public spaces

Figure 8 provides respondents' preferences and opinions on public spaces, the degree of social interaction, and the style of details and decorations ("recognizability" in public spaces for creating a home-like atmosphere).

For Question 7, decoration and details' style related question, 42% of respondents preferred the use of plants, while 32% highlighted patterns inspired by traditional architecture. In contrast, abstract forms received only 5% of responses, and 30% supported the use of natural patterns.

Regarding Question 8 which seeks the degree of social interaction that respondents preferred, 44% of participants expressed a preference for "talking with others" as the most desirable form of interaction. Group activities such as participating in shared tasks were chosen by 35%, while

15% preferred to sit and observe others and being seen by others, and another 17% highlighted the option of see others without being seen.

For Question 9 explore social interaction spaces and public places that attract medical travelers, the majority of respondents (51%) emphasized surrounding areas and green spaces as the most important settings for interaction. Designed pavilions in the open spaces were selected by 26%, while 21% preferred lounges and interior public spaces, and only 11% highlighted the use of green roofs and public terraces.

Figure 8. Percentage of each option or physical solution regarding public spaces.

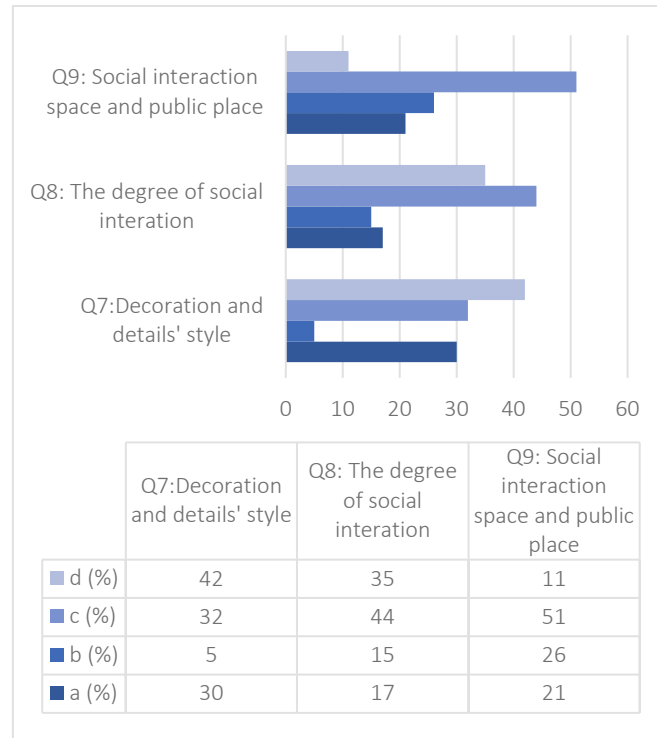


Figure 9 and 10 show the differences between patients and their companions' viewpoints about question 7 and 8 respectively. Items a, b, c, and d in figures are the very items in figure 8.

Figure 9. Differences between preferences of medical travellers' opinion

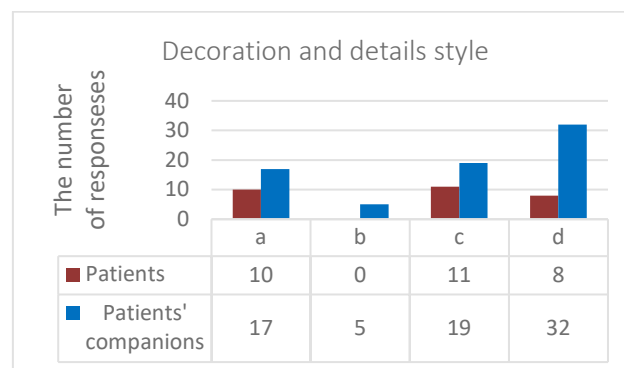


Figure 9 shows that, among patients, the most frequently selected option regarding decoration and detail style in patient hotels was c (applying traditional architecture), chosen by 36%. This was followed by a (forms derived from natural patterns, 33%), d (using plants, 26%), and b (applying abstract forms), which received no responses. In contrast, patients' companions

showed a different pattern of preferences. The highest proportion (43%) highlighted the use of plants (option d), followed by applying traditional architecture (option c, 26%), and forms derived from natural patterns (option a, 23%). Only 6% of companions supported abstract forms (option b).

Figure 10. Differences between preferences of medical travellers' opinion

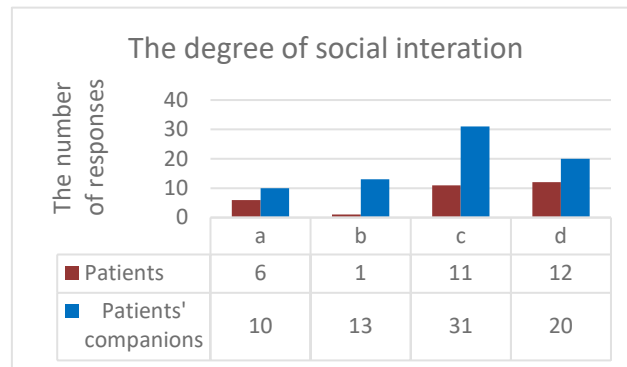


Figure 10 summarizes the responses of patients and their companions regarding the most desirable types of social interaction spaces. Among patients, the most frequently selected option was d (green roofs and public terraces), chosen by 12 participants. Options c (surrounding area and green spaces) and a (lounges and interior public spaces) followed closely with 11 and 6 responses, respectively, while only 1 participant selected option b (designed pavilions in open spaces). Patients' companions, however, placed a stronger emphasis on outdoor spaces. A total of 31 respondents (option c) preferred surrounding areas and green spaces, followed by 20 who emphasized green roofs and public terraces (option d). Lounges and interior public spaces (option a) received 10 responses, and designed pavilions in open spaces (option b) were selected by 13 companions.

Except for questions 1, 2, 7, and 8 in other questions, the preferences of patients and their companions match with each other.

5. Discussion

In the first question which the main advantage of staying in a hospital hotel compared to other hotels was asked, near half of respondents believed that staying in a patient hotel saved both time and money due to receiving medical services and recovery in an adjacent area. According to patients' answers patients' hotel adjacency result in access to facilities and medication, provide emergency care and safety for them, that's another reason for them to prefer to stay in a patients' hotel. These insights underscore the critical importance of spatial proximity between the patient hotel and the hospital, suggesting that hospital campuses and their surrounding neighborhoods are among the most strategic locations for establishing patient hotel as an independent facility. Nevertheless, despite the strong preference for adjacency, combining the hotel and hospital within a single building may reduce the restorative and hospitable qualities of the hotel while disrupting the functionality of the medical environment. Therefore, it is important to maintain a location that is close enough to ensure accessibility, yet sufficiently independent to preserve both functions.

In the second question, respondents were asked to identify the most critical design concern in a patient hotel. The greatest concerns (40.17% of responses) related to patients' physical needs, such as installing handrails in corridors and sanitary spaces. Accordingly, as mentioned in the

literature review, meeting the requirements of universal design and addressing issues such as minimizing floor-level differences in planning, providing appropriately sized corridors and lifts for comfortable movement, ensuring sufficient signage and accessible entry and exit points, supplying shower chairs or benches and accessible sanitary fittings in toilets, and providing beds and furniture that support people with disabilities must be addressed to meet patients' needs (Piramanayagam, Pritam, & More, 2019).. Moreover, in addition to these physical requirements, patients highlighted the importance of spiritual and psychological support for example through the presence of consultants or counsellors. Therefore, compared to a typical hotel, allocating spaces for supportive care functions rather than leisure facilities appears to be a necessary consideration in patient hotel design. In the analysis of Question 3, which explored the essential components of hotel design that contribute to improving patients' mood, the most frequently reported factor was the presence of a home-like atmosphere (37.5%). This finding highlights that patients value continuing their treatment in environments that evoke a sense of home, thereby fostering comfort and psychological relief. Such results are consistent with human-centered design approaches, which emphasize that highly formal environments are less effective in reducing stress, whereas familiar and home-like settings enhance emotional well-being. Importantly, this question serves as a key indicator in identifying the proper theme for patient hotel design, demonstrating that a home-like and supportive atmosphere should guide the overall design direction in the analysis of Question 4, which addressed the creation of a home-like atmosphere, the respondents most frequently emphasized privacy (41.96%) as the factor that best evoked a sense of home. This suggests that patients and their families associate privacy with comfort and emotional security, making it a cornerstone of home-like design in patient hotels. Based on these findings, it can be inferred that lodging facilities resembling hostels for medical travellers are perceived as less effective in meeting patients' needs compared to facilities designed in the form of hotels, where privacy is more strongly embedded in the spatial layout.

In the analysis of Question 5, which focused on improving the patient hotel stay experience, the most frequent response (45.53%) referred to the addition of spaces and amenities such as a mini-kitchen and study area, thereby enhancing the functional capacity of the room. Providing greater functionality within the room creates an adaptable environment for different situations and strengthens patients' and families' sense of control and safety. These findings suggest a hierarchy of needs in accommodation spaces: privacy—primarily ensured through private rooms—represents the foremost priority, followed by the functionality and capabilities of the room, and subsequently aspects such as positive distractions and other supportive features.

In the analysis of Question 6, which addressed room arrangements within a fixed area, 38.39% of respondents preferred a flexible layout in which the bedroom could be transformed into a living room during the day. Given the number of rooms in a hotel, providing diverse layouts according to users' preferences and needs appears to be a practical solution. Observations further suggest that flexible arrangements not only enhance the sense of control and enable a wider range of activities but also significantly strengthen social support, as medical travellers often gather and visit one another in their rooms. This finding also highlights the difference between a hospital room and a patient hotel room: there is no need for the same degree of functionality as in a hospital room, nor for the luxury associated with a hotel room. Rather, what is required is flexibility—allowing a room to shift seamlessly between daily occupancy and restful recovery. Such adaptability optimizes the use of limited space while simultaneously enhancing patient comfort and satisfaction. In the analysis of Question 7, which focused on details and decorative styles for public and private spaces, most of the responses (37.5%) highlighted the use of plants and greenery. Patients also expressed a preference for design styles inspired by

traditional architectural patterns in both public and private areas. These findings are consistent with previous studies that recommend incorporating plants and natural or familiar patterns. In contrast, abstract forms and patterns were less preferred by respondents, a result that is also supported by prior research presented in the literature review.

In the analysis of Question 8, which addressed the desirable degree of social interaction, the majority of respondents (39.28%) indicated that “talking with each other” was most important. As communication with other medical travellers represents a key source of social support, incorporating sociopetal rather than sociofugal settings in public spaces should be an essential design consideration. In addition, patients emphasized the value of participating in group activities, such as growing plants. This interpretation aligns with previous definitions of public spaces as “freely and publicly accessible places” that encourage and facilitate social interactions and activities (Ferwati et al., 2021). In particular, the provision of spaces for horticultural activities has been recommended by prior studies, while creative, substantial spaces for artwork and other social activities also appear to be effective in patients’ hotel contexts.

In the analysis of Question 9, which addressed creating spaces for social interaction, 45.53% of respondents preferred the use of surrounding green spaces and grass lawns. While existing studies have highlighted the positive effects of outdoor areas on patients’ well-being, further research is needed to identify the most effective strategies for designing healing gardens and green areas in patient hotels. Moreover, applying universal design principles in outdoor spaces is essential to ensure accessibility and usability for all patients and their families. Principles such as maintaining appropriate path length and width, providing seats with arms and backrests at specific intervals, creating separate paths for service and emergency vehicles, designing curb stones with inclined side surfaces at pedestrian crossings, and ensuring the availability of proper indicators and handrails represent essential considerations in outdoor design for medical travellers.

6. Conclusion

Ensuring health equity requires equitable access to advanced medical services. However, patients in disadvantaged or remote areas often encounter substantial barriers, such as long travel distances and high lodging costs, which may force them to delay or even discontinue care. These challenges highlight the need to develop dedicated patient hotels that provide a more supportive experience than conventional hospitality facilities. Hotels for medical travellers must be distinguished from hotels designed for the general public. The questions in this study revolved around three main design dimensions: (1) the overall design theme of patient hotels and their key differences from other types of hotels, (2) the features of patient rooms, and (3) the outdoor areas and design details. The findings of this research are summarized as follows:

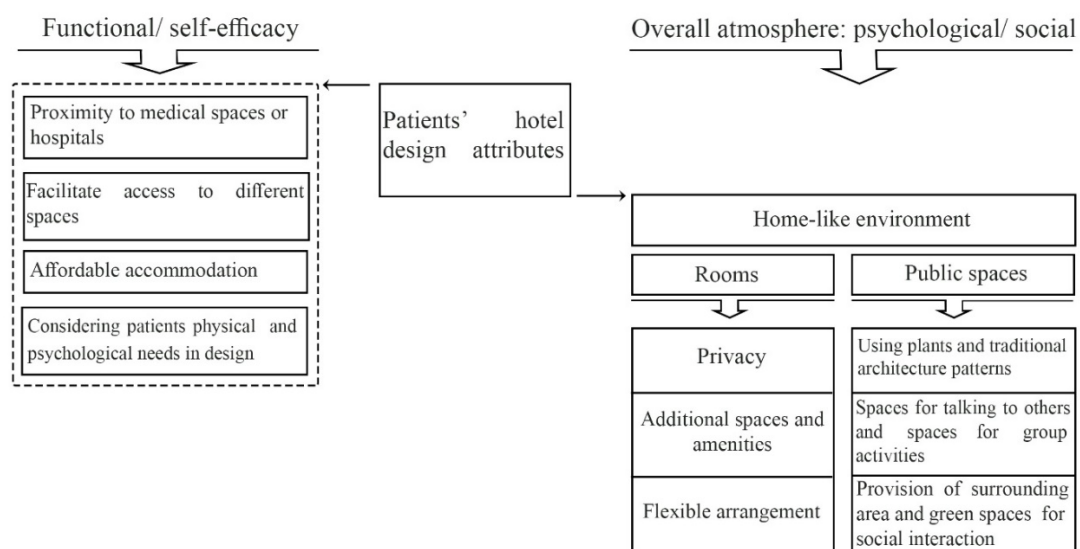
-These hotels, based on the medical travellers’ perspective, should be affordable. Therefore, instead of providing luxuries such as those in leisure hotels, it is essential that patient hotels are designed to meet patients’ physical and mental needs. Based on the literature, addressing patients’ physical needs requires design solutions that comply with the principles of accessibility and design for all. In particular, ensuring that furniture, amenities, pathways, and parking facilities meet universal standards can directly support usability and comfort for diverse patient groups. Also, patients’ answers shows that they need spaces for more mental support which is aligned with recent approaches of designing hospitals and healthcare’s that focus on human-centre environments, healing environments and meditate formal environments.

-In addition to the patient room's physical standards such as natural light, ventilation, and acoustics, rooms should have a flexible layout and have a greater number of amenities such as mini-kitchens and storage space. Such design strategies create a restorative environment while simultaneously allowing patients to maintain aspects of routine daily life within a limited area which according to previous studies increase control and patients' comfort.

-Moreover, responses show that these hotel buildings should be in harmony with the surrounding nature or have enough green space to create the desired view and access for users' social interactions. Participants preferred familiar and nature-based patterns in design, while showing little interest in abstract forms—an outcome that is consistent with the recommendations of other studies.

Figure 11 presents the conclusions based on the findings in diagrammatic form for wider use.

Figure 3. Classification of medical travellers' preferences for patients' hotel attributes (reference: authors)



Regardless of the fact that a patient hotel encounters users with different backgrounds, functional aspects of the patient hotel must be formed based on the patient's physical and other needs, which are mostly constant. On the contrary, preferences about the overall atmosphere of the patient hotel vary according to different contexts and backgrounds; however, considerations such as increasing the choice and use of natural elements in the design, which is compatible with most human preferences, can generalise the results. In other words, features that mentioned the overall themes and features of patients' hotel in functional aspects can consider as general principles, while some other choices that are presented as psychological and social aspects can be vary based on cultural values. Therefore, studies that evaluate different context or other samples of patients' hotel which provide more information and valid interpretation are needed.

Patient hotels can play a vital role in ensuring equitable access to advanced medical services, although their design needs to be affordable, align with universal design principles, and applying user preferences regarding healing environment concept.

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Appendix

Questionnaire format

- 1) Which of the below is the main advantage of a patient hotel in comparison with an ordinary hotel?
 - a) Quality of recovery period or facilitation of long-term treatment.
 - b) Safety due to access to medical services.
 - c) Save time for medical treatment and recovery by staying in an adjacent area.
 - d) Stay in a hotel with greater privacy.
- 2) What is a critical design concern in designing a patient hotel?
 - a) Design according to patient physical needs (e.g., handrails for corridors and sanitary spaces).
 - b) Existence or absence of special functional spaces (e.g., library, gym, ...).
 - c) Increase the size and features of the rooms.
 - d) The presence of a counselor and increased psychological support.
- 3) Which of the following design theme do you find most effective in designing a hotel to improve your mood?
 - a) Homelike environment.
 - b) Integration with the natural environment.
 - c) Improving the social support environment.
 - d) Integration with the therapeutic environment.
- 4) What makes you feel at home?
 - a) Comfortable furniture, natural materials and texture.
 - b) Possibility of various daily activities.
 - c) A sense of privacy.
 - d) More possibilities for family accompanying.
- 5) Which of the following options is a priority to improve your experience of staying in this room?
 - a) Additional spaces and amenities for increasing living capacity of the room (e.g., mini kitchen or studying space)
 - b) Using self-supporting system for greater control over lighting, acoustic and environmental conditions.
 - c) Open and close space syntax (personal terrace for each room).
 - d) Use artworks and plants in rooms.
- 6) Which of the following furniture arrangement is best suited for your needs in a fixed-size room?

a) Fixed arrangement.

figure 12. the concept of fixed arrangement



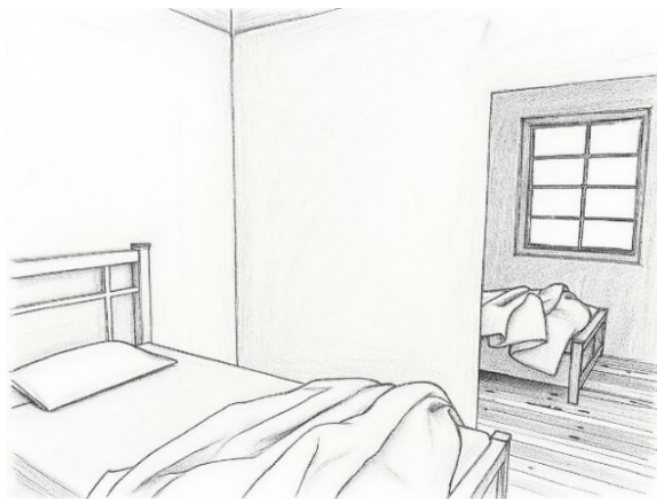
Multifunctional furniture (a couch which can be converted into a bed).

figure 13. the concept of multifunctional furniture



b) Room partitioning for different daily activities.

figure 14. the concept of defining different zones within a room by a partition



c) Flexible arrangement.

figure 15. the concept of flexible arrangement in the restorative setting alternative.

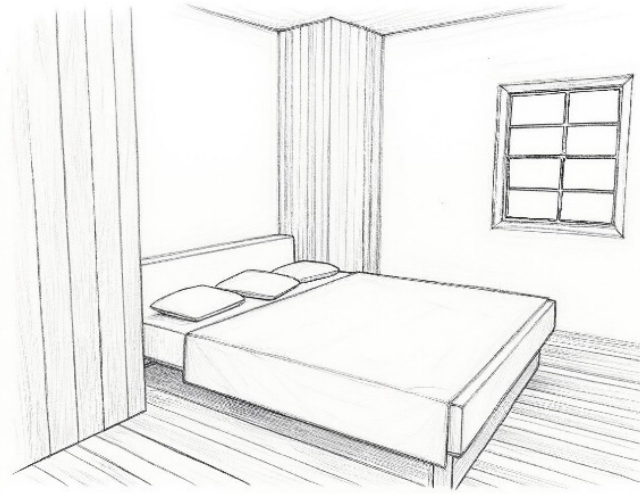
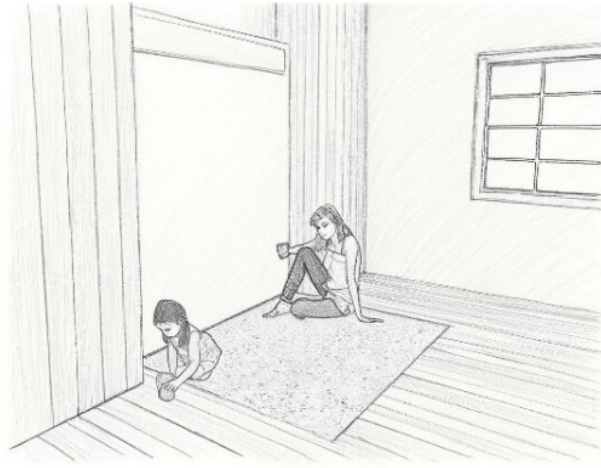


figure 16. the concept of flexible arrangement in the social and family interaction setting



- 7) Which style do you think is more appropriate for details and decorations in public and private spaces?
 - a) Forms derived from the natural pattern.
 - b) Applying abstract form.
 - c) Applying traditional architecture.
 - d) Using plants.
- 8) What degree of social interaction do you prefer?
 - a) Sit somewhere and see others.
 - b) See others and they see me.
 - c) Talk to others.
 - d) Participate in a group activity.
- 9) Which of the following spaces do you prefer to use for social interactions?
 - a) Lounges and interior public spaces.
 - b) Designed pavilions in open spaces.
 - c) The surrounding area and green spaces.
 - d) Green roofs and public terraces.

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