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Environmental Factors Affecting Health-Related Quality of Life: Nurses' Narrative Analysis

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Abstract

Introduction: The hospital environment is recognized as one of the most stressful workplaces. The impacts of the hospital environment on the health-related quality of life of nurses necessitate the consideration of their viewpoints in the field of design and maintenance of the hospital environment. Accordingly, this study aimed to identify environmental factors affecting the promotion of nurses' health-related quality of life.

Methods: In this study, 10 nurses working in a selected hospital were chosen through purposeful sampling and participated in the narrative analysis. The required data were collected through narratives from semi-structured interviews with participants. The content of all narratives was evaluated by the thematic analysis.

Results: The environmental factors affecting the nurses' health-related quality of life were classified into four main themes: physical environment", "functional support of the environment", "social support of the environment", and "psychological support of the environment. Besides, the themes related to the physical environment were classified under space configurations and air quality. Furthermore, functional support was placed under ergonomics. Communications and territory were found as subsets of the theme of social support, while interior design, tranquility, light quality, air quality, and the sense of control were classified under the main theme of psychological support. The frequency of themes repeated in the narratives indicated that psychological support and the physical environment have the highest impact on the health-related quality of life of nurses.

Conclusion: According to the findings of the study, policymakers, managers, and designers are recommended to try to understand nurses' perceptions of positive workplace components, and to introduce necessary environmental actions and interventions to promote the health-related quality of life of nursing staffs.

Keywords: Health-related quality of life, Positive work environment, Qualitative study, Narrative analysis, Nurses

Introduction

Health-related quality of life is defined as human satisfaction in all aspects of life (1) and is directly related to feeling good in one's life (2). This concept is a completely subjective variable and emphasizes physical, psychological, and social aspects of health and affects the individual experiences, emotions, age, gender, education level, class level, risk factors, the physical and social environment of

living and working places (3,4,5). Workplace stresses and lack of resources to adapt to them can lead to mental illnesses and decrease the quality of life (6). Hospitals are classified as the most stressful working environments (7). Nurses as the major part of human resources in the health sector (up to 80% in some centers) are more susceptible to stress, burnout, fatigue, and reduced satisfaction and health-related quality of life (8,9). According to Lambert's study, nurses in 17 countries under study experience high levels of job stress (10). Nurses' most important occupational problems include spending too much time without coming out the workplace, inadequate sleep, excessive walking distances within the ward, lack of adequate rest spaces during working shifts and the excessive stress due to the treatment process and its responsibilities, affecting their health-related quality of life (11). Health-related quality of life has both objective and subjective dimensions. The objective dimension addresses the effects of variables on physical health, while the subjective dimension focuses on the effects of the components on emotional responses, satisfaction, and self-report health. Understanding the environmental and psychological factors affecting the mental and objective aspects of health-related quality of life can contribute to planning and developing positive workplace infrastructures (12). According to studies, the health-related quality of life of nurses in Iran has been reported to be moderate to low (13,14).

According to researchers, a positive practice environment for nurses is an environment capable of attracting, maintaining, and providing spatial support for them (15). Extensive studies have been done on the relationship of environmental components with nurses working conditions and patients' treatment. In their meta-analysis, Olrich et al. reviewed numerous studies that confirmed the relationship between hospital environmental factors and their effects on patients and hospital staff (16). The effects of the plan layout of the inpatient ward, the number of beds in the ward, number of rooms, noise pollution, etc. on nurses' performance and satisfaction have been addressed in the reviewed studies (17-19). Studies conducted in Iran have focused solely on assessing the health-related quality of life of nurses or its relationship with issues such as productivity and stress, and effective environmental issues have not been studied in the current cultural and managerial setting (20-23).

What is clear is that research on the effects of hospital environment on staff-related outcomes is specific to the effects of one aspect of the hospital environment on work efficiency, environmental quality, and nurses' satisfaction and health. Besides, all assessments have been performed using questionnaires or qualitative methods. According to Boswell and Cannon, the qualitative method is suitable for revealing and discovering complex human issues and what lies beyond them (24). Given that users perceive the environment through multiple components to form a real sense of the place, the only way to assess a given environment is through a qualitative approach and in-depth study of the lived experiences of those who are permanently connected to that environment. On the other hand, a review of the literature showed that despite the studies on the nursing community, there is no qualitative study dealing with nurses' experiences of the work environment and its effects on their health-related quality of life in Iran, and there is a huge gap in this regard. Therefore, the purpose of this study was to identify the environmental factors affecting the aspects of health-related quality of life of nurses based on the analysis of narratives from nurses working in selected hospitals in Tabriz. The insights from this study can contribute to planning, maintaining, and managing clinical and medical centers to improve the health-related quality of life of nurses.

Methods

This study employed a qualitative and applied research design. A narrative analysis strategy was also used to assess nurses' viewpoints on the factors affecting the objective (physical health, work efficiency) and subjective aspects (feeling good, satisfaction, and self-report health) of

their health-related quality of life during their service periods. The participating nurses were asked to narrate a story of their presence in the workplace and how they interact with it. Narrative research is a type of qualitative research that selects a set of stories narrated by people as the source of their data. Narration is the main way of organizing experiences within temporal meaningful events so that if we want to examine the components affecting the experience (time and place), it is better to understand the experience as a fictional and narrative phenomenon (25). The employment of narrative analysis leads to the collection of unique and rich data that cannot be collected through many quantitative research methods or the collected data through these methods are considered marginal information and data and, thus, are useless (26). The most important reason for choosing the narrative analysis approach for the present study is the importance of time and place in this strategy so that the researcher can evaluate the effects of differences between past, present, and environmental change outcomes on the participants' perceptions.

The participants in this study were nurses selected from a 128-bed hospital in Tabriz that once underwent reconstruction and environmental changes (Table 1).

The participants were selected through purposive/judgmental sampling with the highest diversity. In purposeful sampling, the researcher seeks out the most useful information from informants based on the research goals and hypotheses (27). To ensure the generalizability of the findings, both males and females nurses were included in this study. The inclusion criteria were willingness to participate in the study, having at least ten years of experience in inpatient wards or intensive care units, and the absence of known mental disorders, chronic illnesses, or newly performed surgeries during the study. The sample size was not determined at the beginning of the study and the basis for finishing the study was data saturation.

Table 1. The participants' demographic data

Gender		Marital status		Education		Workplace	
Male	Female	Single	Married	Bachelor	Master	Inpatient ward	ICU
4	6	3	7	7	3	6	4

Semi-structured validity interviews were conducted to collect data. Each interview lasted between 45 and 60 minutes and was conducted based on the prior appointment time in the inpatient room. At the beginning of each interview, the researcher provided some explanations about the significance and purposes of the study and the way the questions to be answered. Narrative interviews begin with a narrative-generating question. The narrative-generating question carries the time factor and must be designed so that participants can tell the process of their presence in the environment from the beginning of their occupation to the present in the form of a story. The participants were asked to describe their narrative in greater detail and to focus more on environmental issues that had a positive or negative impact on their physical or mental health. After the generating questions, there is a measurement phase in which more abstract questions are asked that are intended to engage the participants in explaining and discussing the nature of the environment. To ensure that the questions were meaningful, two persons who were not among the research participants were interviewed to evaluate the extent to which their narratives were meaningful and detailed. As the interviews progressed and the narratives were analyzed, new questions were extracted from the narrative manuscripts and used as follow-up questions in subsequent interviews. An example of narrative-generating questions was this: "*Tell us about your memories from your first day at your home. Dou you like it or do you get used to it? Did the reconstruction affect your mood and work that made you love the*

workplace?" (To discover the attachment to the workplace).

Research texts were created to start data analysis. When a person tells a story, he/she does not follow the order of meanings and concepts in the story. To create meaningful research texts, the meaning and significance of stories and narratives must be extracted and reconstructed from field texts. In this technique, the narratives are linked to the two elements of "place" and "time". The place is the context of the narrative and includes personalities and the physical environment. Time also includes narratives from the past to the future and creates the plot. Narrative analysis is usually considered in terms of structure and content. Accordingly, Lieblich et al. proposed a two-dimensional matrix for narrative analysis, one related to structure and content and the other to the whole story or part of it. Using the proposed matrix, the researcher can focus the research on the whole or part of the narrative or its form or content (26). In the present study, the researchers focused on the overall content of the narratives. For the content analysis of narratives, a thematic analysis which is widely used in qualitative research was employed (28). Thematic analysis is a technique for identifying common themes (topics, ideas, and patterns of the meaning) that occur repeatedly within data and is used in content analysis of narratives (29).

Concerning the quality of narrative analysis, concepts such as the validity and reliability of positivist research do not apply and do not require repeatability as a measure for evaluation. Lu argues that narrative research must meet three criteria of trustworthiness, verisimilitude, and utility for quality assurance (30). Trustworthiness can be measured in many ways. In this study, Lincoln and Guba's evaluative criteria were used to assess trustworthiness. To increase the credibility of the research, attention was paid to the researcher's prolonged engagement in the research topic due to a good relationship with the research problem and appropriate interaction with the participants, the possibility of member checks, peer reviews, and a rich description of the research findings. Verisimilitude is represented by the believability of the narratives. The narratives examined in this study, all derived from the nurses' professional experiences, meet the verisimilitude criterion well. The utility narrative research is achieved when the story has the details necessary to produce a proper conclusion for the researcher. In this study, narrative-generating questions led the participants to provide details about their work in their stories. To overcome the intrinsic biases, the investigator's triangulation was used. Therefore, two male and female researchers were hired to conduct the interviews and collect data. To ensure the generalizability of the findings, it is attempted to use the greatest diversity in the sample and have complete knowledge of the participants' characteristics in purposeful sampling.

All ethical considerations were observed in the present study including the approval of the research project by hospital management and obtaining verbal and written consent from the participants, explaining the research objectives for the participants, ensuring the anonymity, non-disclosure, and sharing of the interviews, the voluntary appointment of the interview time, and the freedom to leave the study at each stage.

Results

The results of the narrative analysis of the collected data led to the emergence of four main themes: "physical environment", "functional support of the environment", "social support of the environment", and "psychological support of the environment", each of which partly explains some of the nurses' views on environmental impacts on objective and subjective aspects of health-related quality of life.

The first interview was conducted with the leader of participants who had the highest experience in the selected hospital. In the analysis of the leader's narrative, eight themes were identified and were classified into four main themes. The other two themes were mentioned by the three participants and added to Table 2. Eventually, the collected data reached saturation as no new theme was not identified. Environmental themes were selected based on the nurses' emphasis was

on one category. In analyses, a sentence can fall into more than two main themes. For example, a participant's narrative can be categorized into three themes of visibility, light, and crowdedness: "*To take a rest, I prefer to go to the room in the back of the ward or the terrace outside, which is far away from the inpatient ward. Crowdedness does not allow me to refresh my mind*" (Participant # 4). According to Connelly and Clandinin's technique to identify the most important location of actors, the nurses' most emphasis on the concept of space was put on the relaxation room and the nursing station, respectively. Our analyses showed that the relaxation room and its spatial components were significant for creating satisfaction and a sense of tranquility for nurses. Components such as the room's fitness and size, the distance to the nursing station, its location in the ward, lighting, the outside view, the presence of amenities in the room, privacy, and coziness were the main features identified in the narratives. Table 2 shows the themes, the main categories, the subcategories, and their frequencies.

Table 2. The themes, main categories, subcategories, and their frequencies

Main themes	Main categories	Subcategories
Physical environment (58)	Space configuration (36)	Plan layout (3)
		Fitness and size of spaces (6)
		Distance between spaces (15)
		Location of spaces (12)
	Air quality (22)	Temperature (14)
		Freshness (8)
Functional support of the environment (17)	Ergonomics (17)	Furniture convenience (3)
		Light levels (14)
Social support of the environment (36)	Communication (21)	Interaction with patients(5)
		Interaction with colleagues (16)
	Territory (14)	Ownership (12)
		Privacy (2)
Psychological support of the environment (237)	Interior design (38)	Accessories (11)
		Color (24)
		Symbolic concepts of space (3)
	Tranquility (121)	Noise (34)
		Crowdedness (21)
		Natural view (37)
		Outside view (29)
	Light quality (68)	Natural light (48)
		Artificial light (20)
	Air quality (10)	Odor (10)
	Sense of control (36)	Relation control (6)
		Environmental control (30)

A. The physical environment

The analysis of the nurses' narratives indicated that physical characteristics of the environment directly affect satisfaction and objective aspects of the quality of their life. The theme of the physical environment was classified into two subcategories of space configuration and air quality.

1. **Space configuration:** In their narratives, the nurses placed a great emphasis on the structure of space. For example, one participant stated that: "*The design of our ward is very good because the location of the nursing station is suitable and we are not far away from service rooms and patient rooms, and we do not get too tired*" (Participant 10). Another participant pointed to the small width of the hallway as a factor that disrupted their work: "*The hallway of the ward may be standard in design, but this is not so in practice. It is difficult for the colleagues to rotate a bed to enter the room. Also, when a bed is placed on the way, we run into*

difficulty when moving around" (Participant 2). According to the participants' narratives, space configuration was subcategorized into the plan layout (having a single or two hallways), the fitness and size of spaces, the distance within spaces, and the location of spaces

2. **Air quality:** Air quality was subcategorized into two themes of air temperature and freshness in the nurses' narratives. "*From the main entrance of the hospital, you feel that the air is not fresh in some spaces in the hospital and you are feeling a little shortness of breath*" (Participant 2). "*At the meeting times, the air is stale in the hallways of the inpatient ward, and it's difficult to breathe as it gets too hot. The ventilation systems may not function properly at this rush hour. So it's is a bit difficult to stay in the nursing counter at this hour*" (Participant 1). The emphasis on air circulation, the need for opening windows in the relaxation rooms were two highlights in the narratives related to air quality.

B. Functional support of the environment

Ergonomics: The nurses' narratives emphasized the environmental capacity to create ideal conditions for doing related works. The propositions in the narratives were classified into the two sub-categories of furniture convenience and light: "*The counter shadow is always falling on my papers when doing the office work. I always have to change my place so that my own shallow does not fall on the papers and so I not get a headache. I said several times if there was a good light up, everything would be fine*" (Participant 5). "*I remember the first year I started working in the hospital, just a few months later, the wards were under repair. Although the ward smelled fresh, it was still occupied by the same old chairs. They were not bad in appearance for the nursing station but their height was not adjustable so I occasionally objected to changing them*" (Participant 10).

C. Social support of the environment

In their narratives, the nurses pointed to facilitating social interaction in the workplace and creating a suitable territory for nurses.

1. **Communication:** Interacting with colleagues and interacting with patients and their families are two subcategories of communication as pointed out by the nurses. One participant stated: "*One of the good things about this hospital is the shared dining room located on the first floor of the hospital. At a special hour, we go out to eat there. We can see colleagues working in other wards. Even though not everyone is allowed to be there, we can chat for a few minutes, which makes us refreshed and remove the feeling of being isolated*" (Participant 1). "*In one or two-bed patient rooms, we have a good relationship with patients and this helps the patients have more trust in us. In 4-bed rooms, the patient may be embarrassed to talk about his/her demands or pain. But this is not always the case*" (Participant 3). The arrangement and type of furniture, the importance of communal spaces, and the type of inpatient rooms are all factors mentioned by the participants that can influence interactions.

2. **Territory:** Having a specific territory means defining the boundaries of social presence. The territory was classified into sub-categories of ownership and privacy according to the nurses' narratives. One participant points out that: "*One of the good things about our ward is the changing rooms inside the ward, with anyone having their own wardrobe. Central changing rooms and their wardrobes are entirely ours but with limited access*" (Participant 10). As for the privacy of space, a nurse stated that: "*There is a relatively small room for rest near the escalator at the end of the ward. The room is a bit far from the station and the patient rooms. You are always worried to be away from the events or a patient may mistakenly open the door when you are taking a rest. Although we have warned many times, there is no sign placed on the door. Though, we should be close to our workspaces*" (Participant 3).

C. Psychological support of the environment

The most important theme extracted from the participants' narratives was related to the psychological aspects of the environment. Interior design, tranquility, light quality, air quality and sense of control were the four main sub-categories of this theme.

1. **Interior design:** The components of the desired interior design of the workplace are

among the most important facts expected by the nurses. The colors of space, materials, and furniture, decorative accessories and the effects of decorative components on the promotion of symbolic concepts of the workplace are sub-categories extracted from the nurses' narratives. One participant stated: "*We had a painting in the relaxation room that was installed by a colleague, and you became more depressed every time you looked at it*" (Participant 7). This statement points to the importance of selecting components of the workplace and its effects on promoting the symbolic concept of the workplace (to resemble the home or a hotel). Another participant points out the importance of accessories in the workplace, saying, "*After the changes in interior architecture of the ward, a chandelier was installed above the counter so that both our patients and we think we are in a hotel rather than a hospital, which shows how effective an element can be*" (Participant 5). Color is also one of the components emphasized by the research participants. One of the interviewees (Participant 4), who was working in the intensive care unit, said: "The color change on the floor carrying a flower design has made the ward so much more attractive and pleasant than the ceramic flooring used before. Although it was white it did not look so warm". In most of their narratives, the participants emphasized the neutrality of the color of the workplace and its effect on their spirit.

2. Tranquility: According to the participants' views, tranquility was divided into sub-categories of noise, crowdedness, natural view, outside view as factors reducing the employees' stress. There were many narratives about the importance of noise. For example, one participant stated that: "*Our working conditions got better since the day the ward was reconstructed. We always heard the noise of the street in the rooms, or we could not half-open the windows because the noise produced by cares distracted us and, most importantly, interrupted patients' sleep*" (Participant 1). The participants also repeatedly pointed to the uncontrolled noise of the hospital ventilation systems as a disturbing factor: "There is always a ventilation noise that distracts me from what I'm doing now. I don't know if it's an old system or I am too sensitive to its sound" (Participant 2).

Crowdedness was also an important point referred to in the narratives: "It is very difficult for me to endure the rush hour in the ward. You can't go far here, of course, this is required by our job (Participant 1). The participant stressed the importance of having a personal quiet space for taking short breaks.

Outside view and access to or view of nature has been one of the important issues mentioned in the narratives: "*Those who work in the intensive care unit are better off than we are. One side of the whole hallway is facing the main yard. They have both the perfect view and the light. Here we are getting depressed*" (Participant 1). Having visual or physical access to nature was one of the points underlined in the narratives: "*The rooms in the northern side of the inpatient ward have access to campus buildings and it is not attractive for the patients and us to look out the window*" (Participant 4). Another participant believed that: "*My colleagues in the inpatient ward of another hospital have a patio and they could have light in the nursing area. They also have a few pots that make the space much more pleasant. Their working conditions are completely different perhaps for a few pieces of the pots*". The use of hospital open spaces for designing a green space for space users, the use of nature-themed boards and paintings, having a terrace, patio in two hallways, having access to natural view instead of adjacent buildings, the existence of pots giving a feeling of green space inside the wards were some of the most influential strategies that could enhanced the nurses' satisfaction as was pointed out by the participants in their narratives.

3. Light quality: Light, both natural and artificial, has been described as one of the most important factors affecting the objective and subjective aspects of employees' health-related quality of life and reducing their stress. One participant points out: "*I don't like the room without natural light in my own home anymore. Here in the hospital, we are most of the time in the hallways or the nursing counter, so we do not have access to natural light unless we go into the patient*

rooms to get refreshed" (Participant 2). Pointing to the negative effects of controlled light, another participant stated: "*Our relaxation room is right facing the street (west) and the light would be very disturbing in the afternoon if the curtains are taken off*" (Participant 3). The participants believed that the quality of the relaxation rooms is related to the quality of the light and having a view to the outside. The participants' narrative confirmed that the psychological impact of the absence of windows is not solely related to the absence of light and view: "*It might be possible to tolerate the absence of a window in a clean and tidy workroom, but you have to have light in the examination room and the head nurse's room. You do not feel like working in a space covered by walls in the four sides*" (Participant 5). The preference for southern light, the emphasis on artificial light suitable for work, the presence of patios inside the wards to light up the hallways were among the things mentioned by most participants.

4. **Air quality:** The most important aspect of air quality is the bad smell of space and the importance of fragrance: "*I have always a good feeling in commercial spaces because of the fragrance than when I am at home or work because I'm very sensitive to it. Not always but sometimes there is a musty odor in the workplace. The conditions are really terrible at peak hours. The air conditioning isn't working well and the air smells almost rancid*" (Participant 6).

5. **Sense of control:** Providing conditions in which the space user has a choice is a key factor in environmental psychology. The participants' narratives showed the importance of the sense of control: "*When you are at your home you can adjust the temperature. Sometimes you want to have a bit of cool air but your colleague does like it or it is impossible. And you have no control over it*" (Participant 8). "*The nursing counter is located in a bad place in the ward and we cannot see those who are entering or leaving the wave. You are always feeling that something bad might happen*" (Participant 1). Having no control over temperature, no access to the outside, low visibility and control over the environment, not seeing patients due to the patient's bed facing the door, inability to listen to music in the workplace, and inability to control unwanted sounds are among the factors falling under the sense of control as was pointed out by the participants.

Discussion

This study aimed to evaluate and identify the environmental factors affecting the health-related quality of life of nurses. The results showed that factors affecting objective and subjective aspects of nurses' quality of life are categorized into four main themes: physical environment, functional support of the environment, social support of the environment, and psychological support of the environment. The nurses' narratives confirmed that all participants were affected by the environmental conditions of their work during their time of service, and some components were improved by the reconstruction of the workplace. Also, relaxation rooms were the most important place for nurses. The frequency of repetition of a component in the narratives indicated the importance of that component in the nurses' views. Of the main themes, psychological support was considered to be the most important one. Besides, light quality, interior design, space configuration and sense of control were considered as the most important themes, respectively, in related subcategories.

The analysis of the physical dimension of the workplace showed that the plan layout, spacing, fitness, size, and location of the spaces were factors that had positive and negative effects on the nurses' satisfaction with the workplace. The plan layout and shape of the area in which nurses were working were effective in their efficacy, satisfaction with the workplace, fatigue, stress, and reducing their medical errors. Besides, the distance between spaces was pointed out in the narratives as the most important factor affecting the nurses' work process. These findings are in line with a study done by MacAllister on the effects of the plan layout of the ward on patient and staff health (31). He found that the distance between the nursing station and the patients' room, the shape, and size of the rooms had a direct impact on the levels of nurses' and

patients' interactions and the distance walked by the nurses. Evidence also shows that the standardization of patient rooms helps staff and employees do routine tasks with minimal error and stress (32). Another thing noted by the participants concerning the physical dimension of the environment was the direct attention to air quality in terms of freshness and temperature. This has been also reflected in other studies that pointed to the effects of air quality especially temperature on nurses' perceptions (33).

Concerning the functional support of the workplace, the analysis of the nurses' narrative suggested the relationship between work-related equipment, especially furniture, and the amount of light with work efficiency and fatigue levels. In line with these findings, studies by Rogers et al showed that the physical conditions of the nursing work environment can be effective in causing physical and psychological injuries and harms to employees (34).

Previous studies have shown the importance of patient-nurse interactions (35). The theme of social support, with emphasis on the notions of interpersonal interactions, the definition of privacy and personal territories against interactions, has been a focus of attention in the nurses' narratives. From the nurses' point of view, the existence of shared spaces such as relaxation rooms and dining rooms, while creating an independent realm for nursing staff not to be disturbed by patients and their families, allows for interaction and communication with colleagues and can the fatigue occurred during the working shift. The number of inpatient beds was shown to a driver of interaction between patients and nurses. For instance, the narratives told by the nurses indicated that interaction with patients is desirable and usually occurs in one-bed and two-bed rooms more frequently than multi-bed rooms.

Psychological support was found to be the most important aspect of the workplace from the nurses' point of view and was subcategorized into a number of themes including interior design, the sense of tranquility, light quality, air quality, and sense of control. Of all the themes identified, the most emphasis was on the effects of natural light, visibility, and sense of control. Concerning the interior design, our findings indicated that accessories, color, and symbolic concepts created by the workplace atmosphere were the most important factors. From the most participants' perspective, the presence of artworks such as paintings, photographs, and other decorative items are effective in creating a positive feeling among nurses. Research has acknowledged that interior decorative elements can have a positive or negative impact on the treatment process of patients and the efficiency of nurses' work so that the appropriate theme can act as a positive distraction and can effectively reduce stress on hospital users (36). This study also shows that not choosing the right decorations can do the opposite and add to the stress of users. Decorative elements can add to the symbolic meanings of space and make the workplace as warm as the home or hotel space.

Natural view, noise pollution, outside view, and crowdedness were found, respectively, as the most frequent elements of tranquility. Having a direct view of nature is an important factor in rebuilding employees' concentration. All participants believed in nature as a potential factor in feeling good and relaxed. For hospital patients, viewing nature from the window shortens long days of staying in the hospital, reduces pain killers, relieves pain and stress, and increases satisfaction (16), which also benefits nurses. A study by Nesbitt also showed a significant relationship between the view to the green space at rest time and the level of well-being of nurses (37). As mentioned, noise pollution was one of the factors pointed out by nurses. Experimental evidence indicates that noise in therapeutic settings is one of the most important causes of stress (38). The most important sources of noise pollution in the hospital are the sound produced by equipment, alarms, telephones, conversations, patients crying, and the paging system, which drains nurses' energy, distract them and increase their stress (38).

Light quality one of the most frequent themes in nurses' narratives has also been stressed in previous studies. Studies have shown that

mental health, reduced depression, arousal, level of consciousness and medical errors of nurses can be affected by light (39-41). A study on 141 nurses working in Turkey showed that nurses who are exposed to light for at least three hours a day experience less work stress and are more satisfied with their work (42). In contrast, studies have shown that exposure to artificial light, especially fluorescent lamplight, is perceived by nurses as one of the aspects of the nursing environment that are associated with the most energy discharge (43- 45).

Smell has also been shown as a dimension of indoor air quality that affects users' moods. Research has shown that there is a direct relationship between the pleasant smell and the health of users of space (46). In this study, the nurses pointed to rancid and stale air due to the lack of regular air circulation in the hospital.

Finally, the sense of control was one of the most frequent themes reported in this study. Nurses have more control over the environment than patients, but neglecting it will adversely affect their satisfaction (7). The analysis of the narratives suggested that nurses do not seem to have much control over the environment as it is expected. However, increasing personal spaces such as well-equipped changing rooms, personal wardrobes, and separate sleeping areas can increase nurses' sense of control.

Conclusion

The quality of the physical environment of the hospital is one of the most important factors affecting the nurses' working conditions, which has been neglected for some reason. One of the most important causes of this inattention is the focus on the functional processes of treatment and the mere consideration of the patients' environmental preferences. The results of this study showed that nurses' health-related quality of life is affected by physical and social components of inpatient setting so that inappropriate working environment causes nurses to experience the lack of mental and physical health in their workplace. Overall, the findings of the study pointed to the subjective and objective aspects of nurses' health-related quality of life. The most important factors related to the subjective aspect of quality of life are those factors that create a sense of relaxation and psychological support, such as outside view and natural elements, reduced noise pollution, reduced crowdedness, and access to a favorable rest space. These factors have the greatest impact on the nurses' satisfaction with the workplace. The distance between spaces, furniture convenience, and light quality and quantity were stressed as physical components of the environment that affect the objective aspects of the participants' health-related quality of life. The present study showed that nurses were satisfied with some of the environmental measures during the reconstruction and pointed to their desired effects in their narratives.

One of the limitations of the present narrative research, similar to other qualitative research, is the generalizability of its findings. Therefore, the maximum effort was made to improve the robustness of the research data. Another limitation of the study was its focus on one hospital; therefore, future studies can explore the experiences of nurses in different hospitals in terms of construction and management levels.

Given the impact of various environmental factors on the health-related quality of life of nurses, the Ministry of Health and its Department of Physical Resources as authorities for the construction of hospitals must identify the environmental needs of this group of personnel and make the necessary decisions for taking appropriate environmental interventions because by improving the quality of nurses' work environment, while increasing the level of health-related quality of life of their employees, they can pave the way for increasing work efficiency, job satisfaction, and reducing work-related fatigue and illness. At the hospital management scale, managers can identify the priorities of environmental change and define effective measures to achieve this goal by recognizing the importance of each component and economic budget.

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Conflicts of Interest

The authors declare that they have no conflict of interests.

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