Thinking about Healthcare Building and Environment Design in Terms of the Principles of Biomedical Ethics

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Abstract

The design of the healthcare environment focuses more and more on the protection and promotion of patients' rights and well-being. However, architectural studies rarely discuss the definition of patients' rights and well-being or summarize the mechanism of measures to realize it in medicine and nursing. In order to make a better understanding of patient's rights and expand the thinking of design, we try to analyze and summarize the role of the healthcare environment from the perspective of biomedical ethics. The paper takes the four accepted principles of biomedical ethics given by Beauchamp and Childress (1979) namely (1) respect for autonomy, (2) nonmaleficence, (3) beneficence, (4) justice, as the basis for sorting the framework of healthcare environment design that aims to promote the patients' rights and well-being. According to the relevant environment research results, the paper gives the influences that the physical environment can bring to the patients, and summaries the goals of healthcare environment design for the rights and interests of patients.

Introduction

Due to contemporary values of love and respect for life, society has taken on more responsibility for patients, and patients also have a different priority than in any previous era (Sigerist 1987). As a result, protecting the interests of patients and promoting their health and well-being has become the primary goal of the contemporary healthcare system. Influenced by this value, healthcare architect tries to make a positive impact on patients through a well-designed environment, and a large number of research and design practices are underway. However, due to the limitations of the professional background, the architects do not grasp the further judgment criteria of what is beneficial

to the patient, so it is necessary to draw conclusions from the medical professional research results and obtain the design direction. In the medical-related category, the judgment criteria are part of the content of biomedical ethics and referring to biomedical ethics can give us a better understanding of patient rights and medical practice.

Principles of biomedical ethics and healthcare environment

The four principles of biomedical ethics, namely (1) respect for autonomy, (2) nonmaleficence, (3) beneficence, and (4) justice (Beauchamp and Childress 2013), are widely accepted and referred in medical issues. The principles affect the medical policies and hospital management measures, which often have a significant impact on the layout and design orientation of architectural space. Also, the principles are conveyed in the education and professional practice of caregivers, which influences the professionals' proposal and demand for their working environment. The principles of biomedical ethics form a value-guided relationship with environmental design, as shown in Fig.1. Therefore, it seems that the design idea of medical facilities is not only influenced by the basic principles of architectural design (Pollio 1914), but also by the principles of biomedical ethics (Fig.2). In that way, it is essential to understand what these four principles mean to the professionals and patients and what the immediate impact on the building and environment may be, or how they can be supported.

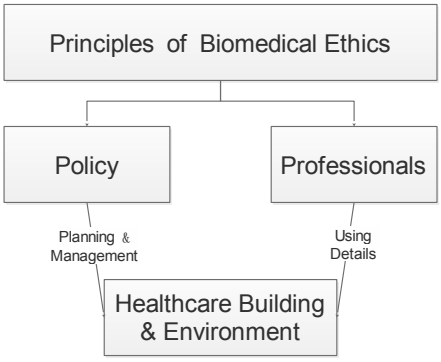

Fig.1 The relationship between biomedical ethics and healthcare building & environment

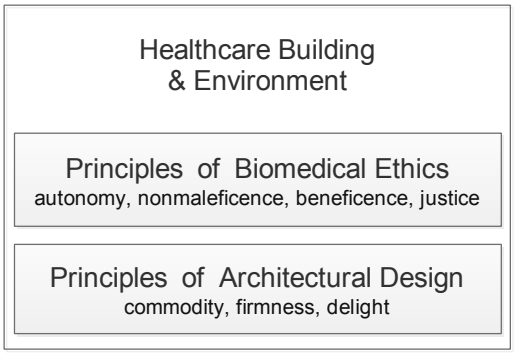

Fig.2 Design principles of healthcare building& environment

The healthcare environment for the four principles

The healthcare environment for respect for autonomy

The principle of respect for autonomy expresses respect for personality and freedom. In clinical practice, the core of this principle is to respect patients' choices and their autonomous actions and to realize patients' perception of autonomy by creating a good social environment and interpersonal relationship in the healthcare facilities. Therefore, a well-designed environment needs to support these aspects.

Injuries or illnesses often temporarily or permanently disable people from acting independently, which may hurt their self-esteem and self-efficacy. The general goal of the healthcare environment design is to adapt to the patient's ability. Moreover, some designs combine the physical environment with auxiliary equipment, such as ceiling hoist, to reestablish patients' independent capacity. The lack of autonomy also stems from patients' medical knowledge gap for making medical decisions and taking medical care of themselves. In order to strengthen the patient's mastery of personal illness and medical knowledge, some healthcare designs place the functional devices or space, such as a patient engagement system or patient libraries, to provide patients with relevant information (Haggerty et al. 2013, Chen et al. 2003).

Avoiding the limitations means providing patients with a broader range of choices so that the final choices are closer to the preferences of different patients. The advances in modern medicine have made it possible to offer a variety of therapeutic options to suit patients' different preferences. Multiple medical solutions are supported by multiple types of medical material resources, implying that the building environment needs to give support to the different equipment and time scheme in terms of the layout, traffic flow, and function setting. The patient's choice involves the choice of the physical environment itself as well. Therefore, some researchers recommend providing patients with multiple space options (Lorenz and Dreher 2011, Anåker et al. 2019). Factors that affect the choice of treatment environment may include privacy, social interaction,

patient-nurse contact, and contact with nature (Wang and Pukszta 2018), which can become the design clues for the diversity of the environment.

Patients' preference for autonomous action varies from person to person. However, some activities, such as physical exercise, self-care, health management, have been proven to positively influence the patients' health. As a result, the medical community often discusses "patient activation" to improve the patient's intention to engage in healthy behaviors (Greene and Hibbard 2012). Accessible facilities and sound design have been shown to promote healthy behaviors of patients (Zimring et al. 2005).

The healthcare environment for Nonmaleficence

In clinical practice, nonmaleficence means that caregivers must ensure that the care they provide does not pose unnecessary harm or risk to patients, which is not only physical but also psychological. Besides, this principle also emphasizes the need to ensure that patients receive due care (Beauchamp and Childress 2013). That is to say, being unable to play its role in a positive direction or making the patient's illness continue or worsen is seen as a kind of maleficence of the healthcare system. Therefore, good-designed environment should not cause physical or psychological harm to patients, nor hinder the treatment process.

Physical harm caused by environment include direct injuries or falls due to poor design and include adverse environmental effects on patients' health or treatment outcomes, such as providing low-quality air or high temperature in cardiac inpatient rooms which can affect the morbidity and mortality of heart disease (Giorgini et al. 2015). On the other hand, psychological harm comes from pain and fear of illness and unknown therapeutic effects. This fear may be heightened by hearing the groans of other patients (Hilton 1985) or witnessing the painful treatment of other patients. Psychological harm can also come from violated privacy and dignity, like being naked in front of strangers or show pain or vulnerability to others. Providing shelter for the awkward scene is what environmental design can do.

The second, due care cannot be obstructed or delayed by a poorly-designed

environment, such as improper monitoring caused by the blind corner of vision or delays due to long care paths. Beyond that, avoid medical errors in the treatment process caused by spatial reasons, such as dispensing errors caused by visual confusion or glare.

The healthcare environment for Beneficence

Beneficence means promoting the health and well-being of others. In medical institutions, it is often considered to be an established fundamental principle. Patients believe that the staff will act with compassion and kindness by having their best interests at heart. This kind of trust is a prerequisite for the continuation of the embarrassing, painful, and even life-threatening healing process. Benefit for patients is also the goal of healthcare environment design.

Undoubtedly, healthcare environment conducive to recovery is in line with this principle. Firstly, the physical conditions, like temperature, humidity, will have some positive effects on recovery. For example, there is evidence that ambient temperature has an impact on the recovery of burn patients (Wilmore et al. 1975). Also, some studies are conducting from the perspective of aesthetics about using the environmental force to alleviate stress, establish positive emotions, and speed up the recovery. It is convinced that the use of nature and artworks is beneficial to recovery by Ulrich`s research which illustrates that view through a window may influence recovery from surgery (Ulrich 1984).

Besides, the positive distraction of the healthcare environment can play a role in the offset of the fear and pain to patients in the course of treatment to some degree, which is based on McCaul and Malott's (1984) theory that predicts the pain will be alleviated by engrossing environmental distraction. Studies have shown that natural scenery, nature videos with music or natural sounds (such as birdsong or running water) can reduce the pain of intervention or wound treatment (Lee et al. 2004, Diette et al. 2003). That is to say, introducing natural scenery into the design of the treatment environment, or setting natural images or screens on walls and ceilings, with music playing equipment, will be beneficial to distract patients' attention and thus reduce their pain during treatment.

The healthcare environment for Justice

The principle of justice refers to the fair and equal treatment of all individuals in society. Justice can be absolute or relative. Absolute justice focuses on protecting individual rights, while relative justice, or distributive justice focuses on the allocation of social resources. When architecture becomes the material carrier of medical resources under the macro urban background, the distribution justice of medical facilities follows social policies and decisions. From the perspective of urban planning, the issue can be a service radius or accessibility. In the microscopic healthcare scenes, it is challenging to realize the absolute justice. Patients' judgment on whether their rights and interests are infringed comes from their subjective perception of justice. According to Folger's (1986) referent cognitions theory, individuals feel unfair when they believe there are multiple programs, and the one that should have been chosen and would have produced better results is not adopted. However, procedures for better outcomes are often different for patients and healthcare professionals. For example, the queuing order in patients' cognition may have some contradictions with the order of medical emergency rating. Morrison (2015) mentioned that in ED, physicians would first treat patients in crisis, while patients who are put on hold may feel unfair if there is no clear explanation because they are also suffering.

As an objective substance, the role of the physical environment is to separate patients of different grades, to avoid the sense of injustice caused by medical priority for patients in mixed placement, which is the most significant in the emergency department and waiting area. Also, the healthcare design can make conscious compensation for the objectively existing heterogeneous conditions, to ensure that patients with the same conditions will not have a great sense of difference and injustice about space occupancy. For a typical example, it can be the problem of space occupancy in multiple inpatient wards. In the case of paying the same fee, patients hope to occupy the same or even better space compared with other patients. The design will help to avoid the loss of sense of justice by balancing the dominant conditions in the space purposefully

Construction

Giedion's (1967) definition of the main task of contemporary architecture is "the interpretation of a way of life valid for our period." The way of life valid for our period is discussed in the subject of ethics. The long history of architecture tells us that the evolution of architecture always follows the evolution of ethics. The interpretation of the principles of biomedical ethics can be a development opportunity for health care environment.

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