



# Inpatients' and outpatients' satisfaction: The mediating role of perceived quality of physical and social environment

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## ABSTRACT

This study analyses the processes through which the physical environment of health care settings impacts on patients' well-being. Specifically, we investigate the mediating role of perceptions of the physical and social environments, and if this process is moderated by patients' status, that is, if the objective physical environment impacts inpatients' and outpatients' satisfaction by different social-psychological processes. Patients ( $N=206$ ) evaluated the physical and social environments of the care unit where they were receiving treatment, and its objective physical conditions were independently evaluated by two architects. Results showed that the objective environmental quality affects satisfaction through perceptions of environmental quality, and that patients' status moderates this relationship. For inpatients, it is the perception of quality of the social environment that mediates the relationship between objective environmental quality and satisfaction, whereas for outpatients it is the perception of quality of the physical environment. This moderated mediation is discussed in terms of differences on patients' experiences of health care environments.

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## 1. Introduction

The main goal of health facilities is to promote the users' well-being, and the technical and professional dimensions of those facilities are essential to reach that goal. At the same time there is a growing literature showing that the way hospitals are designed also matters significantly. Imagine you are in a hospital for a consultation. If you wait in a quiet and tidy room, with a view to green spaces, nice paintings on the wall, and comfortable seats, you are likely to feel well, expect good care, and be satisfied with the visit. Alternatively, if the waiting room is noisy and disorganized, with no windows, old posters on the walls and uncomfortable seats, it is likely that you will feel less positive, question the quality of care, and end up less satisfied with the health care service. This association between features of the physical environment and patients' well-being has been found in several studies (see Ulrich et al., 2008, for a review).

Typically those studies show the effect of a specific attribute of the health care physical environment (e.g., view from the

window, presence of plants) or the impact of some environmental changes (e.g., renovation) on patients' outcomes (e.g., overall satisfaction, stress) as if these relationships were per se self-evident. In fact, literature on health care environments has paid little attention to the mediating processes through which those relationships occur. The research presented in this paper was undertaken to investigate how the health care physical environment is related to well-being. Specifically, we tested if satisfaction with the care unit occurs because the physical environment and social environment are evaluated as having higher quality in hospital areas with more objective environmental quality. In other words, we examined whether the perceptions of patients on the quality of the physical and social environments mediate the relationship between the health care physical conditions and satisfaction with the care unit. In the next sections we will review the literature that focuses on the different associations implicated in this hypothesis.

### 1.1. From features of the physical environment to perceptions of the quality of health care environments

Several studies have demonstrated the impact of the spatial and physical conditions of hospital settings on the perceptions of

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the quality of the physical environment. Physical environment is defined as ambient, architectural or interior design features that are purely stimulus objects (Dijkstra et al., 2006; Harris et al., 2002) and that characterize the healthcare settings. Swan et al. (2003) found that patients recovering in appealing rooms rated their rooms significantly higher than did patients in typical rooms in the same hospital, and Leather et al. (2003) found that a relocated (and redesigned) waiting area originated more positive environmental appraisals, and greater reported environmental satisfaction than the traditional waiting area before relocation. In another study, Becker et al. (2008) compared patients' perceptions of health care quality before and after a dermatology outpatient practice moved from an older building, described as "traditional" in design and décor (and ranked by independent judges as the least attractive setting among six), to a new facility designed to create a highly attractive environment for patients. Patients in the new environment rated the waiting area as being more pleasant, more private, and less crowded than was true for the old environment.

These results show that the improved features of the health care physical environment have consequences on its perceived quality; but that is not the whole picture. These changes also have impact on the perception of the social environment of the care unit. For example, Hagerman et al. (2005) found that patients recovering in rooms with good acoustics considered the staff attitude to be much better than did patients treated in rooms with poor acoustics. The study of Swan et al. (2003) also found that patients in appealing rooms evaluate physicians more positively than patients in typical rooms in the same hospital.

Using photographs of 28 different waiting rooms, Arneill and Devlin (2002) asked participants to rate how they perceived the quality of care to be delivered in those healthcare settings. Results showed that perceived quality of care was greater for waiting rooms that were nicely furnished, well-lighted, contained art-work, and were warm in appearance, versus waiting rooms that had outdated furnishings, were dark, contained no art-work or poor quality reproductions, and were cold in appearance. The impact of the features of counseling office environments on people's perceptions has also been studied, revealing that, for example, softness/personalization and order are associated with perceptions of how bold, friendly, and qualified the therapist in the office was likely to be (Nasar and Devlin, 2011), and that the display of credentials is associated with therapists' qualifications and energy (Devlin et al., 2009).

In sum, research shows that the features of the health care settings' physical environment not only influence the appraisal of the physical environment, but also affect the perception of care and staff. This outcome is not surprising since the literature supports the idea that physical traces or cues left by occupants in their work and home environments may be used to form impressions about their traits or characteristics (e.g., Harris and Sachau, 2005; Gosling et al., 2002). In a health care setting, as Arneill and Devlin (2002) pointed out, the physical environment is the first impression that a patient receives. If the environment communicates that the doctors, nurses, and other staff care about its appearance and function themselves and design it with the patient in mind, then the patient enters the system with a positive image of the health care process and trusts that he/she will be well cared for in all other aspects.

These findings may also explain why the perceptions of the physical environment and social environment are often correlated. Fornara et al. (2006) found that in a low humanized hospital (which orthopedic care unit experts evaluated as low quality), inpatients and outpatients perceived lower spatial-physical comfort, as well as lower care for social and organizational relationships than did patients in medium- and

high-humanized hospitals. This congruence between the quality of spatial-physical features and social-functional aspects was also found in the studies of Swan et al. (2003), Arneill and Devlin (2002), and Becker et al. (2008), already described in this paper.

## 1.2. From perceptions of the quality of the health care environment to well-being

A different group of studies has shown that both the perception of the quality of the hospital's physical and social environments predict patients' well-being. In other words, the quality of the healthcare setting from the users perspective (Gifford, 2002), and the quality of the social and organizational relationships in general, including the relationship with the staff (Irurita, 1999), are crucial for patients' satisfaction with the hospital experience. Harris et al. (2002) interviewed 380 discharged inpatients to identify environmental sources of satisfaction with the hospital, and, specifically, to determine the relative contribution of environmental satisfaction to overall satisfaction with the hospital experience. Environmental satisfaction, that is, satisfaction with interior design, architecture, housekeeping, privacy, and the ambient environment was perceived as a source of overall satisfaction, following nursing and clinical care. In order to explore the views of patients on how their perceived health, mood, and quality of life are affected by the ward physical environment, Rowlands and Noble (2008) interviewed patients with advanced cancer. Despite the fact that patients were informed previously that the purpose of the study was to assist in the redesign of the ward, the strongest theme that emerged was the importance of staff, in particular the nurses. Secondly, three major themes related to the physical environment appeared: the immediate environment, single versus multi-occupancy rooms, and contact with the outside environment. Patients reported that the attitude, competence, and helpfulness of the staff create the atmosphere of the ward regardless of layout, furnishings, equipment and décor, but they also assumed that the physical environment has an effect on their mood and well-being.

Similarly, but using a questionnaire approach, and focusing on primary health care centers, Raposo et al. (2009) examined the dimensions of health care quality that predict patients' satisfaction. Perception of the quality and empathy of medical care was the stronger predictor of patient satisfaction, followed by the facility's quality.

These studies demonstrate that the evaluations of the physical environment and of the social environment are two important predictors of satisfaction with the health care service that might also influence mood and well-being. Specifically, it should be noted that what is common in studies that address the influence of both physical and social dimensions (see also Andaleeb et al., 2007; Gotlieb, 2002; Pilpel, 1996; Ziaei et al., 2011) is that normally perceptions of caregivers explain the larger part of variance of patients' satisfaction, but that the physical environment also has a statistically significant positive impact.

## 1.3. How physical environment features lead to well-being: The mediating role of the perception of the hospital's quality of environment

It has long been recognized that the health care physical environment affects patients' well-being. Reference can be made to the study of Dijkstra et al. (2008) who, using a scenario describing a possible hospitalization, found that a photo of a hospital room with indoor plants generated less perceived stress to participants than did a room with a painting of an urban environment on the wall. Further, Ulrich's (1984) well-known

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