



KEY POINT SUMMARY

OBJECTIVES

The objective of this study was to examine if design features of an inpatient room can reduce stress if they improve perceptions of control, social support, or positive distraction.

Stress reduction in the hospital room: Applying Ulrich's theory of supportive design

Andrade, C.C. & Devlin, A.S. 2015 | *Journal of Environmental Psychology*. Volume 41, Pages 125-134

Key Concepts/Context

In this study the authors intended to empirically test Ulrich's (1991) theory of supportive design. According to this, the physical-socio environment of a healthcare facility affects the well-being of patients, which is promoted through perception of control (PC), social support (SS), and positive distraction (PD). The authors point to literature that separately provides evidence for the relevance of each of the above aspects. The study found that design elements that promoted PD and SS contributed to the reduction of stress. The same conclusion could not be drawn for PC elements in the physical environment.

Methods

This was an experimental study in which research participants in Portugal and the United States were asked to look at eight possible variations of the layout of the same patient room and express which of the physical design aspects in the room reduced stress. The design of the room was developed in the following four steps:

1. Physical features associated with stress reduction were shortlisted from the literature.
2. Previously hospitalized patients in the US were surveyed about the above characteristics – which ones they considered important and those they thought needed to be added.
3. Features were shortlisted from the above based on those
 - a. Considered important but not provided
 - b. Suggested to be added
 - c. Having scientific evidence about their impact on stress

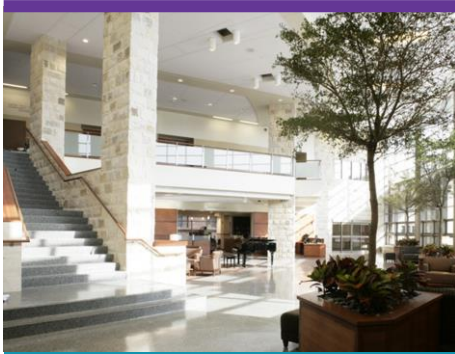


4. The final list consisted of 12 elements, four each for PC, SS, and PD. The simulated patient room was a single-bedded room with two bedside tables, a closet with hangers, a window, and a bathroom with a sink, toilet, and shower. Further, the room had the following features: space for chairs for family and friends, Internet (for email and Skype), bedside phone, sleeper sofa for family and friends, TV with 40 channels and a DVD/VCR combo, space to put photographs of family and friends, plants, paintings of nature, lighting adjustable by patients, temperature adjustable by patients, windows that can be opened by patients, and refrigerator.

There were 142 participants from Portugal and 75 from the U.S. They were randomly shown eight possible scenarios or experimental conditions – a combination of PC, SS, and/ or PD features -- and asked to answer related questions. One of the eight scenarios was where the room was not provided with any of the 12 design elements. An online survey tool, Qualtrics, was used for this part of the study. The data was analyzed statistically.

Findings

- The participants considered the rooms shown with the PD features (with or without SS and PC features) more distracting than the room without PD features.
- The participants considered the rooms with the SS features (with or without PC and PD features) more conducive of social support than the rooms without SS features.
- The participants considered rooms with PC features (without SS and PD features, and with either SS or PD features) to be more empowering than the rooms without any feature in terms of a sense of control. However, they perceived a lower sense of control when compared with rooms having all 12 features.
- On analyzing stress in all the eight scenarios, it was found that increase in stress was in the following order:
 - Presence of all design elements
 - Presence of SS and PD design elements
 - Presence of SS design elements
 - Presence of SS and PC design elements
 - Presence of PC and PD design elements
 - Presence of PD design elements
 - Presence of none of the PC, SS, or PD design elements
 - Presence of PC design elements
- Stress is significantly higher in a room with none of the PC, SS, or PD design elements than in a room with all design elements ($p=0.009$); with SS and PD elements ($p=0.019$); with PC elements ($p=0.007$)
- The more the design elements in the room (those related to PC, SS, and PD) the less is the expected stress in that room ($r= -.264$).



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- The more the number of design elements in the room, the higher is the PC, SS, and PD.
- The effect of PD and SS on stress is significant, but the presence of PC elements does not indicate reduction of stress.

Design Implications

The authors had the following design suggestions:

- Toward fostering social support the following could be done to accommodate family:
 - In the patient room: window seats (that can double as beds), chairs that can be folded and stored on wall hooks when not in use
 - Outside the patient room: family lounges
- Toward positive distractions, patients could have access to televisions, art, and music.

Limitations

The authors indicate that their study had the following limitations:

- The cultural differences were not taken into consideration.
- The study was conducted in an experimental setting.

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