



KEY POINT SUMMARY

OBJECTIVES

The study sought to test how sleep-care guidelines for minimizing nighttime noise and care-related activities impacted the sleep quality of surgical intensive care unit (SICU) patients.

DESIGN IMPLICATIONS

Designers need to recognize the importance that selection of materials, space planning, and other design decisions have on impacting sleep for all patients, particularly those most vulnerable, the critically ill. While this study concluded little about these types of design decisions, designers should pay attention to the impact of light- and noise-abating material in healthcare applications to promote the best sleep among all patients.

Efficacy of Controlling Night-Time Noise and Activities to Improve Patients' Sleep Quality in a Surgical Intensive Care Unit

Li, S., Wang, T., Wu, S. F. V., Liang, S., Tung, H.
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Key Concepts/Context

In the intensive care unit (ICU), noises, continuous lighting, and constant care-related activities disrupt patients' sleep. Patients also may struggle to sleep because they are in an unfamiliar environment, feel isolated, are in pain, have various tubes or other equipment to deal with, as well as just general treatment activities. Meanwhile, nurses are busy managing patients' critical conditions and have little time to focus on their sleep needs. Yet, poor quality sleep can effect outcomes and put patients at greater risk for infection, complications, and mortality. Clearly, interventions to improve ICU patients' sleep are needed.

Methods

Researchers recruited a convenience sample of 60 surgical patients from an ICU in Taipei, Taiwan. They estimated the desired sample size with G*Power software.

The study, which used a quasi-experimental design, was done in two phases. Each phase lasted for 3 months from December 2007 through May 2008. In the first phase, a control group received the typical care, and the researchers collected data on sleep quality and noise levels in the SICU. In the next phase, the hospital implemented guidelines to change SICU nurses' behaviors in regard to noise and light pollution, and the investigators collected data. The guidelines specified that nurses change their nighttime care routines and decrease the noise level and lights from 11:00 p.m.–5:00 a.m. The nurses were trained and a sequence of activities was established to follow the guidelines.

The researchers analyzed the data using SPSS, version 15.0.



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Findings

The study found that, after the nurses implemented the guidelines, peak and average sound levels dropped significantly. Further, in the experimental groups, the perceived noise and sleep interruptions from care-related activities and noises decreased significantly compared to the control group. The experimental group also reported better sleep quality and sleep efficiency than the control group.

In the experimental group, the top three environmental factors that disrupted patients' sleep were noise, taking vital signs, and nursing interventions, such as bathing. In the control group, the top three were noise, diagnostic testing (i.e., chest X-ray), and nursing interventions.

The finding supports the efficacy of the study intervention for improving the sleep environment and enhancing ICU patients' sleep quality.

Limitations

The authors note several limitations of the study. First, the study participants were recruited from a surgical ICU in a large medical center and may not be generalizable. Second, selection bias is possible as the researchers recruited only patients who stayed in the ICU for more than two nights. They also excluded patients under sedation, using narcotics, or having sleeping problems and taking sleeping pills on a regular basis to avoid potential confounding effects. Third, the authors note that they assessed patients' sleep only on their second night in the ICU, so they could not determine if patients' perceived sleep quality and daytime sleepiness changed over time as patients adapted their environment. Fourth, by using a nonequivalent, posttest-only (quasi-experimental) design, the authors could not rule out initial differences between the two groups. Finally, the study did not "blind" the nurses. Therefore, the authors state, they could not rule out the Hawthorne effect (people changing their behavior when they know they are being watched). Nurses may have been more cautious about their behavior knowing that they were being observed and, thus, intentionally decreased the noise level and falsely augmenting the intervention effect.