SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

This study sought to measure and analyze acoustic noise levels in a general surgical ward.

DESIGN IMPLICATIONS

Designers should be acutely aware of space planning and specification of products that might mitigate the noise problem faced in healthcare facilities, so as to minimize the psychophysiological effects excessive noise exposure has on individuals, for example, decreased wound healing, sleep deprivation, and cardiovascular stimulation.

Noise Levels in a General Surgical Ward: A Descriptive Study

Christensen, M.
2005 | Journal of Clinical Nursing
Volume 14, Issue 2, Pages 156-164

Key Concepts/Context

The noise levels in many UK hospitals exceed those recommended by the World Health Organization, yet are so prevalent that healthcare providers tend to think of them as just part of the working environment. However, current ward-based research is dated, perhaps indicating that the control of noise in these areas is perceived as insurmountable.

This study took place in the UK.

Methods

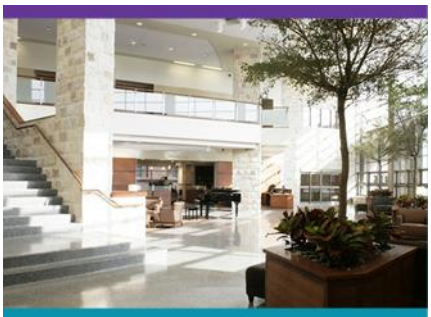
The researcher used a Norsonic 116 sound-level meter (SLM) to take measurements in the A weighted scale. The data, including noise level data and number of staff present, were obtained and recorded at 5-minute intervals over 3 consecutive days. The researcher placed the monitoring equipment microphone so that the sound it picked up was uniform.

The study used was descriptive, producing data at ordinal level, which were used to see if noise levels and number of staff present correlated during specific time periods.

The researcher used Spearman's Rho, a nonparametric test to examine two sets of data for a positive or negative correlation, to see if there was a relationship between the number of hospital personnel present in the study areas and the measured noise level.

Findings

The researcher found that the mean noise level in the clinical area was 42.28 dB, with spikes reaching 70 dB(A). The lowest noise level was 36 dB(A), which occurred



The Center for Health Design: Moving Healthcare Forward

The Center for Health Design advances best practices and empowers healthcare leaders with quality research providing the value of design in improving patient and performance outcomes in healthcare facility planning, design, and construction, optimizing the healthcare experience and contributing to superior patient, staff, and performance outcomes.

Learn more at www.healthdesign.org

between 12:00 a.m. and 7 a.m. The researcher also found a positive relationship between the number of staff present and the level of noise recorded, indicating that healthcare workers influence noise levels.

However, the researcher noted that, during periods when no staff was present, sound pressure level did not decrease significantly, perhaps due to the presence of relatives and patients alike.

The problem is then compounded by long reverberation times within the study room itself, points out the researcher. Hard, reflective walls and floors allowed for the original sound wave to be reflected back into oncoming sound waves and amplifying the original sound. The researcher found this to be especially true during the night shift, where nurses' station activity prompted a rise in ambient noise to 45 dB(A).

Limitations

One important limitation of the study could be the potential for the Hawthorne effect, whereby, the nurses, knowing they are being observed, change their behavior. For example, because they were being observed, the nurses may have purposely controlled the level of noise so as not to proportion blame on themselves. The author notes that this was a real threat to the reliability and validity.

To try and overcome the problem of erroneous noise level data in this study, the researcher suspended the SLM from the ceiling so as not to be easily visible to hospital staff yet was able to perform the task effectively. The researcher positioned the SLM to minimize the effects of air conditioning vents and noise reverberation.