SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

This pilot study describes the characteristics of older adults' sleep in acute care environments and measures noise and light levels to see how they affect sleep.

DESIGN IMPLICATIONS

This study provides interesting methods to begin to evaluate sound and light in healthcare environments. Many of the factors that interfere with sleep have direct relationship to the built environment.

Sleep and the Sleep Environment of Older Adults in Acute Care Settings

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Key Concepts/Context

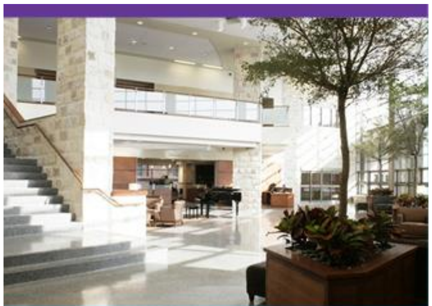
Not every patient has difficulty sleeping in an acute care setting, but it is common. Environmental factors, such as light and noise, can interfere with sleep, further compromising an existing sleep problem. Environmental light, considered a primary cue for setting the internal clock and maintaining normal day/night rhythms, is often different in acute care settings compared to home and may affect sleep. However, there is not much research on the effect of light on sleep. In several studies, noise was the most common environmental cause of sleep disturbance in hospitals and nursing homes.

Methods

This descriptive pilot study was conducted over 1 month on a 50-bed medical unit of a 300-bed acute care hospital in rural Texas, with a consecutive sample of 7 participants who were monitored for 3 days. Participants wore an actigraph on their dominant wrist to measure sleep. Light and sound meters were secured to the wall at the head of the bed. Participants rated pain daily using a numeric scale of 0 (no pain) to 10 (worst pain imaginable). The participants were assessed for delirium on admission and daily using the Confusion Assessment Method. Data for each participant were collected for a minimum of 1 day up to 3 days, yielding a total of 10 days of data. No participant developed delirium during the study.

Findings

The sample's sleep efficiency was very impaired, even considering the common sleep issues of older adults. Wakefulness and length of wakefulness periods contributed to decreased sleep efficiency and indicated sleep fragmentation. The median sound level during sleeping hours was 52.87 dB, which is somewhere



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between the sound level during the daytime of an urban residence (50 dB) and conversational speech at 3 feet from the speaker (60 dB).

The sound level did not differ between participants in private versus semiprivate rooms, nor with number of comorbidities. The primary sources of noise in the participants' rooms appeared to be the automatic alternating pressure mattress and the air conditioning system.

Light levels followed a day–night rhythm, with consistent dimming of lights at night and brightening in the early morning. The average lights-out time did not reflect onset of sleep time per actigraph readings. The first sleep period usually occurred about 30 minutes after the lights dimmed, but sleep periods were often short and interrupted by wakefulness. The major sleep period happened several hours after the lights dimmed. None of the participants received hypnotic or sedative medications, and none had dementia or consumed alcohol.

Limitations

Because patients were discharged, data were available for fewer participants on the second and third nights, so it is possible that data were skewed by the increased severity of illness of participants with prolonged hospitalization. It is difficult to compare these levels of light with usual room light levels, as there is no standard for luminance from particular lightbulb wattage.

Reviewer note: Small sample size means generalizability is limited.