Sleepless in stepdown

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THE RECOVERY PERIOD following open-heart surgery includes physiologic as well as psychological nursing care. Disturbances in sleep may influence not only the length of recovery time, but also how recovery is perceived by patients. Sleep disturbances are common in critical care settings and may have significant impact on physiologic, behavioral, and functional outcomes.

The healthcare team (nurses, physicians, and therapists) on the Open-Heart Step-down (OHSD) unit at Christiana Hospital noted that some patients weren't sleeping well. Patients often complained that their sleep was frequently disrupted in the OHSD. These observations caused the research team to question if sleep disruption was a problem for all patients on this unit.

Feeling groggy

The research team reviewed literature regarding sleep deprivation in the acute care setting and found most of it pertinent to the ICU setting. However, the team couldn't locate research regarding sleep in step-down units. Patients' ICU stay was typically 24 hours or less following open-heart surgery. We concluded that due to the short ICU length of stay, sleep deprivation was of primary concern in the OHSD unit, where the typical length of stay is approximately 4 days. The focus of this original nursing research was to determine if patients on the OHSD unit were also experiencing disrupted sleep and if so, to identify contributing factors.

The OHSD unit is a 10-bed telemetry unit; all rooms are private. Following open-heart surgery, patients are transferred from the cardiovascular ICU to the OHSD unit, where they remain until discharge.

Frequent interruptions

The concept that quality sleep is a key ingredient in post-op recovery is widely recognized. Sleep helps restore the body and is an integral part of the healing process.

The conceptual framework for our study was based on Maslow's Hierarchy of Needs and Virginia Henderson's Need Theory. Maslow noted that the need for sleep is at the most basic level: that of the individual's physiologic needs. Henderson's nursing theory is based on the assumption that nurses care for patients until they're able to care for themselves. This assumption is contained within her 14 components based on human needs, which include sleep and rest, and encompasses four major concepts: individual, environment, health, and nursing. Both Maslow and Henderson note that quality sleep is necessary for achieving optimal health.

Why are patients so tired?

The Modified Sleep in ICU Questionnaire was developed by Freedman, Kotzer, and Schwab. It was originally created for ICU patients, but we received permission to modify the questionnaire to better fit our patient population. Reliability and validity weren't established for this instrument.

We found significant differences between quality of sleep (QOS) at home and overall sleep quality in the OHSD unit; not surprising, sleep at home rated better. Patients rated QOS on night 2 in the OHSD unit higher than overall QOS in the OHSD unit. We didn't find out why the second night was better, but assume it has to do with the patient being more comfortable with the environment. We didn't compare subsequent nights.

The QOS questionnaire was then used to determine reasons for variation in QOS. Our purpose was to assess whether noise was the primary factor for the poor perception of QOS or if it was caused by interruptions in sleep for vital signs monitoring, testing, and medication administration. Our findings indicated that patients perceived noise as secondary to nursing interventions as a reason for disrupted sleep.

Shhh! They’re sleeping

With the discovery that noise was less strongly associated with sleep disruption than originally hypothesized, we attempted to identify the contributing factors to sleep disruption so we could adopt specific interventions and evaluate them for effectiveness.

Although all shifts participated, night-shift nurses on the OHSD unit could readily recall which actions required them to wake up patients: weights, lab draws, vital signs, and medications. The typical night shift is from 1900 until 0700. The next logical step was to group tasks together, or “bundle” nursing care, so that it would be as patient-specific,
less disruptive, and as conducive to patient safety and recovery as possible.

After consulting with the multidisciplinary team, and obtaining buy-in from the chief of cardiac surgery and other key stakeholders, the OHSD nursing staff implemented a plan to bundle nursing care interventions. Nurses considered daily weights, interval vital signs, collection of lab specimens, and medication administration to be critical to quality nursing care, yet patients perceived these interventions as interfering with restful sleep. Obviously, essential nursing tasks couldn’t be eliminated, but the timing of the interventions could be adjusted to minimize sleep interruptions.

**Do not disturb**
The nurses started the project by administering medications earlier in the evening or later in the morning. For instance, if a patient’s medication was due at midnight, it was given during bedtime assessment, between 2230 and 2330. If a patient’s medication was due at 0400, medication administration was retimed for 0530-0630. By making this simple adjustment to the nursing routine, nurses bought patients 6 or 7 hours of uninterrupted sleep.

For patients who weren’t prescribed furosemide or other diuretic therapy, the nurses performed daily weights with the last set of vital signs in the evening, instead of waking patients up in the early morning. Blood specimens were no longer drawn at a fixed time; they’re drawn when patients request pain medicine, or during the early morning assessment.

Consolidating nursing care to coincide with patients’ wakeful periods requires nurses to be more thoughtful and organized in care delivery, which is a challenge to the tendency to establish routines. Bundling interventions makes nursing care less structured and habitual and nurses more efficient, patient-centric, and recovery-minded.
Getting rid of restlessness

Effectiveness of bundling was measured by reviewing for injurious outcomes associated with “missed” nursing care, and patient perception of sleep quality. To date, approximately 2 years post-study, no adverse events have been linked to bundling nursing care. Because nurses are still visualizing patients at a minimum of every 1 to 2 hours, it’s unlikely that allowing a patient to sleep uninterrupted could be directly linked to an adverse event. In fact, it’s more likely that nursing skill in visual, auditory, and other sensory assessment would improve because of bundling activities that incorporate best practice based on evidence.6

<table>
<thead>
<tr>
<th>Activity</th>
<th>Before bundling (mean)</th>
<th>n = 30</th>
<th>After bundling (mean)</th>
<th>n = 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing assessments</td>
<td>3.9</td>
<td></td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Vital signs</td>
<td>4.5</td>
<td></td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>Blood samples</td>
<td>4.2</td>
<td></td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>Medication administration</td>
<td>3.7</td>
<td></td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>3.9</td>
<td></td>
<td>3.9</td>
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</table>

The QOS questionnaire was administered to 40 consenting patients after implementation of bundled nursing care. When compared with our original research results, the surveys showed a reduction in mean
scores on questions specific to patient perception of disruptiveness of specific activities—nursing interventions, vital signs, lab draws, and medication administration—indicating that patients associated bundling with less sleep disruption. (See Comparison of mean scores on activities disrupting sleep.) Furthermore, the mean score on questions related to overall quality of sleep was higher, implying a greater perception of quality.

**Sweet dreams**

Activities that wake the patient up at night should be evaluated to determine if they’re necessary. Nurses should determine if the benefits of the activity outweigh the importance of providing the patient with a restful night’s sleep. Patient perceptions of sleep should be considered when creating patient care plans, especially for care given at night. Improving patients’ sleep may improve physiologic, psychological, and functional well-being. This, in turn, may decrease length of stay and increase participation in rehabilitation activities, especially after cardiac surgery.

**REFERENCES**


Joanne Matukaitis is the vice chair of the Glynn-Brunswick Memorial Hospital Authority for Southeast Georgia Health System in Brunswick, Ga. At Christiana Care Health System in Delaware, Thea Eckman is a staff education specialist (Wilmington); Kirstan Baxter is a nurse manager, Cardiovascular Critical Care Complex (Newark); Elisabeth Bradley is a clinical leader, cardiovascular prevention program (Newark); Helen Hawrylack is a patient-care coordinator (Newark); Sharmila Johnson is a cardiovascular clinical nurse specialist (Newark); Donna Papnicolau is a cardiovascular liaison and STS data manager (Newark); and Patricia Briggs is an open-heart step-down unit nurse (Stanton).

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