BACKGROUND

More than 250,000 people die in the United States each year due to medical errors, which constitutes the third leading cause of death, ranking behind only heart disease and cancer (Makary & Daniel, 2016). In a hospital setting, nurses can detect errors early and initiate actions to prevent negative consequences for patients (Aiken, Clarke, Cheung, Sloane, & Silber, 2003). Nurses who are situationally aware understand why a patient’s condition may be changing and can anticipate what is likely to happen next, allowing them to react quickly and appropriately when something goes wrong (Cohen, 2013). Therefore, training nurses to improve their situation awareness (SA) could be the most valuable strategy in reducing deaths and other costs associated with medical errors.

SA is a multilevel concept referring to a person’s 1) accurate perception of relevant cues in the environment, 2) integration of those cues to comprehend their meaning in the current situation, and 3) projection of situation status into the near future. These three levels of SA are an essential skill in medical settings that can be developed over time to improve patient care and ensure patient safety. Farnan (2016) noted that SA would “undoubtedly” improve the quality and safety of patient care by reducing errors. For instance, Schulz et al. (2016) found errors in SA were responsible for 81.5% of the cases from the German Anesthesia critical incident reporting system. Therefore, skills and techniques that improve and maintain SA are crucial to nurses in helping them to recognize or prevent medical errors.

PURPOSE

This scenario-based SA workshop, and subsequent practice in situation assessment can serve as an effective strategy to help prevent medical errors in a healthcare setting.

PARTICIPANTS

Six novice nurses (five females and one male) with less than two years of clinical experience employed at a local hospital participated in the workshop.

PROCEDURE

The nurses participated in a six-hour educational workshop consisting of two simulation scenarios, a lecture on situation awareness, simulation debriefing, and mindfulness training. Each nurse completed two 11-minute simulation scenarios (one at the beginning of the training session and one at the end of the training session) to measure their SA skills. The simulation was paused at three, predetermined time-points to evaluate the SA levels of the participants.

SA Assessment- Participants’ SA was measured via the SA Global Assessment Technique (Endsley, 1995). The SA queries were derived from a goal-directed task analysis conducted with a focus group of experienced nurses (or subject matter experts) working at the local hospital who provided emergency care. The questions on the SA assessment focused on the three levels of SA (i.e., perception, comprehension, and projection) across three time periods.

SA Lecture- The SA lecture educated participants on the importance of SA to decrease the prevalence of medical errors. The content in the workshop focused on defining SA and its relevance to the medical field. The material also covered barriers that affected good SA (e.g., memory limitations, lack of attention, high workload) along with various cognitive biases.

Workshop Evaluation Form- To examine the effectiveness of the SA workshop, participants completed the workshop evaluation form consisting of 10 items that assessed participants’ attitudes and opinions about the workshop.

RESULTS

Percentage of correct responses

<table>
<thead>
<tr>
<th>Level</th>
<th>Overall</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Workshop</td>
<td>68%</td>
<td>84%</td>
<td>69%</td>
<td>69%</td>
</tr>
<tr>
<td>Post-Workshop</td>
<td>77%</td>
<td>84%</td>
<td>69%</td>
<td>69%</td>
</tr>
</tbody>
</table>

As shown in Figure 1, there was a significant increase in the workshop participants’ mean overall SA percentage score from the pre-condition to the post-condition, t(5) = 4.54, p < .05. Specifically, the participants showed their greatest improvement in SA level 3, t(5) = -3.80, p < .05. Quantitative results from the workshop evaluation showed the participants rated the workshop very positively, with all participants agreeing or strongly agreeing that the workshop would help improve their SA, make them better nurses, and were satisfied with the experience. In addition, the nurses agreed that they would like the hospital to continue to provide SA education.

CONCLUSION

The results of the study demonstrated that situation awareness can be improved via simulation-based training. Participants demonstrated their greatest increase in SA in their ability to project patient’s future status based on their understanding of the relevant cues. The training provided nurses with strategies for improving their SA and the opportunity to practice them in a high fidelity simulation. Future research should assess whether this improvement can generalize back into a hospital setting and improve patient care.

REFERENCES


