

**Category:** Nursing issues

**Study type:** Quantitative study - other

**Declarative title:** Web-based educational intervention improves enrolled nurses' knowledge and performance with deteriorating patients

**Citation:** Liaw SY, Chng DYJ, Wong LF, Ho JTY, Mordiffi SZ, Cooper S, Chua WL, Ang ENK. The impact of a Web-based educational program on the recognition and management of deteriorating patient. *J Clin Nurs* 2017;**26**:4848-4856.

### **Commentary**

#### ***Implications for practice and research***

- Web-based education improved enrolled nurses' knowledge and performance in the assessment and communication of patient deterioration.
- Future research should examine if this intervention results in improved clinical outcomes and if this Web-based format is superior to other delivery modalities.

#### ***Context***

Nurses who provide bedside care, including enrolled nurses—or licensed practical nurses in Canada and in the United States—are in a pivotal position to recognize, manage, and report on signs and symptoms of patient deterioration. However, many educational interventions to improve recognition and response to patient deterioration are intended for undergraduates or registered nurses; there is a lack of research that examines educational interventions for enrolled nurses. This study evaluated the effectiveness of a Web-based educational intervention designed to improve enrolled nurses' knowledge of the physiological compensatory mechanisms of deterioration as well as improve their skills in terms of assessment and management of and communication regarding patient deterioration.

#### ***Methods***

This randomized controlled trial tested the effectiveness of a 3-hour educational intervention that consisted of: (1) a video and case study dealing with the early detection of vital sign changes; (2) multimedia material on the tasks involved in the assessment and management of and communication regarding patient deterioration; and (3) five virtual simulations where participants practiced their new skills, reflected on their performance, and received feedback. All 64 participants had less than five years of nursing experience and were divided in two equal groups: the experimental group received the educational intervention and the control group did not receive any intervention. Participants' knowledge and performance were measured and compared before and one week after the intervention with a multiple-choice test and a simulation of deterioration.

#### ***Findings***

In the two groups, participants' knowledge and performance scores were similar before the intervention. The scores of participants who received the Web-based educational intervention showed a statistically significant improvement, whereas the scores of

participants from the control group remained similar to baseline. Participants from the experimental group were more likely to monitor the respiratory and pulse rates of their patient after receiving the educational intervention. These findings suggest that the Web-based educational intervention was effective to improve enrolled nurses' knowledge and performance in assessing, managing, and reporting patient deterioration.

### **Commentary**

This was one of the first studies to focus on patient deterioration within an educational intervention for enrolled nurses. While the decision to escalate care remains the responsibility of the assigned registered nurse, enrolled nurses are in close contact with patients at the bedside. They provide surveillance that is essential to ensure timely recognition of altered vital signs and other symptoms that may precede unplanned ICU admission or death.<sup>1</sup> This study is in alignment with a movement within the nursing profession to share the responsibility of recognizing a deteriorating patient. This is in line with other efforts, such as involving families in the recognition of deteriorating patients and in the escalation of care.<sup>2</sup>

This study focused on the crucial steps of assessment and communication that precede actual interventions with deteriorating patients. Issues with the recording of vital signs and the activation of rapid response systems are now acknowledged.<sup>3</sup> This study has demonstrated that providing a relatively short educational intervention can improve the monitoring of vital signs and the communication of abnormalities by enrolled nurses. Accurate assessment of respiratory rates, even though essential, has been neglected, perhaps because of over-reliance on oxygen saturation levels.<sup>1</sup> An important finding of this study is that in the experimental group, 40% more enrolled nurses assessed the patient's respiratory rate after the intervention.

However, the performance of enrolled nurses was only measured in simulation. Demonstrating transfer to clinical practice is one of the biggest challenges in the field of simulation research.<sup>4</sup> While the Web-based format is accessible and convenient, there is no evidence that it is superior to other delivery modalities, since the control group did not receive any educational intervention. At this point, patient deterioration education appears effective, but there is a need for further research on the most effective format(s) for delivery in terms of improving patient outcomes.

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**Competing interests**

None