Mental Rehearsal Strategy for Stress Management and Performance in Simulations

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\textbf{Abstract}

\textbf{Background:} A mental rehearsal (MR) strategy using standardized patients was implemented for third-year nursing students in a simulation training on clinical deterioration. The study aimed to evaluate its efficacy, by comparing with a conventional approach using a mnemonic strategy with mannequin simulation, for improving the nursing students’ performance and reducing their stress level in patient deterioration management. The study also explored the students’ perspectives of using MR during their clinical practice.

\textbf{Method:} A mixed methods design was used. Thirty-two third-year nursing students participated in a randomized posttest. They were assigned to either the MR group or mnemonic group. Performance was observed and measured using simulation-based assessment. Strait—Trait Anxiety Inventory, heart rate, systolic blood pressure, and skin temperature were used as stress measures. Twenty-one students participated in individual interviews after a nine-week clinical posting.

\textbf{Results:} Performance between the MR group and the mnemonic group ($p = .105$) did not differ. The state ($p = .524$) and trait ($p = .516$) anxiety inventory, systolic blood pressure ($p = .890$), heart rate ($p = .692$), and skin temperature ($p = .521$) did not differ between the two groups. Three themes were generated from the application of MR on students’ clinical practice: being mentally and emotionally prepared, recalling and visualizing the steps to be taken, and enhancing actual clinical practice.

\textbf{Conclusions:} Both MR and the mnemonic strategies had similar effects on performance and stress during patient deterioration management. However, the interviews suggested that MR still benefits learning and has value in health professions’ training.

\textbf{Cite this article:}


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Background

It is vital for health care professionals to deliver safe and quality care to patients, and one of the methods by which professionals are trained is through simulations. Simulations provide a conducive and nonthreatening environment where technical skills can be practiced to enhance performance. Clinical performance, however, can be affected by factors other than technical skills. One of these factors is stress. Stress in a clinical setting can affect a health care professional’s ability to analyze clinical situations, make decisions, and perform certain clinical procedures (LeBlanc, 2009). Nurses, being involved in direct patient care and the monitoring of patients, are frequently exposed to highly stressful and critical clinical events (Liaw, Scherpber, Klainin-Yobas, & Rethans, 2011b). Hence, it is important that the nursing curriculum integrates into its simulation program a strategy that provides emotional training, such as stress management, in high-acuity situations (Harvey, Nathens, Bandiera, & LeBlanc, 2010; Liaw, Chan, Scherpber, Rethans, & Pua, 2012).

One of the techniques that has shown to be of benefit in training in various fields is mental rehearsal (MR). MR is a cognitive strategy that involves practicing skills without any actual physical movement (Driskell, Copper, & Moran, 1994; Jones & Stuth, 1997). The value of this strategy has been recognized primarily in sports wherein it has been successfully used in performance training of athletes (Aoun, Batjer, Rezai, & Bendok, 2011; Cocks, Moulton, Luu, & Cil, 2014). In health care training, MR is a relatively new strategy that has been used mostly by surgeons to train for certain procedures, such as laparoscopic surgery, prior to engaging in simulations (Aoun et al., 2011; Eldred-Evans et al., 2013), and more recently, by student nurses to assess and manage patient deterioration (Ignacio et al., 2016). Using such a strategy, alone or as an integral component of a stress management program, was effective in decreasing stress and improving performance in a group of inexperienced surgeons (Arora et al., 2011; Wetzel et al., 2011). Furthermore, MR has been shown as a form of stress inoculation that helps trainees manage their own stress (Arora et al., 2011).

The use of standardized patients (SPs) in simulation has shown much potential in improving performance and reducing stress in patient deterioration simulations (Ignacio et al., 2015). Although the quantitative results of a mixed methods study were not significant, students’ perceptions on the use of SPs were very positive (Ignacio et al., 2015). Meanwhile, the potential benefits of the MR strategy to enhance performance and reduce stress in assessing and managing simulated patient deterioration have been previously demonstrated using pre- and posttest combined with focus group interviews (Ignacio et al., 2016). The evidence, however, may be limited as the MR strategy was not compared with another strategy used in simulation that has already been shown to be effective. The use of the Airway, Breathing, Circulation, Disability, Exposure (ABCDE) mnemonic is the conventional strategy used to teach nursing students how to assess and manage deteriorating patients. This strategy is used with simulations utilizing high-fidelity mannequins and was shown to benefit performance (Liaw, Rethans, Scherpber, & Klainin-Yobas, 2011a). To determine, therefore, whether the MR strategy really enhances performance, this study aimed to compare the immediate effects of the MR strategy with the conventional strategy on performance and stress in simulated patient deterioration scenarios, one with SPs and the other with mannequins. The study also aimed to determine the usefulness of the MR strategy in actual clinical settings.

Methods

Study Design and Participants

A mixed methods study comprising a randomized posttest design and a qualitative interview was conducted. The combination of quantitative and qualitative methods was used as this can moderate the limitations and leverage on the combined strengths of each individual approach (Johnson & Onwuegbuzie, 2004).

On ethics approval from the university’s institutional review board, all third-year nursing students (n = 93) enrolled in a clinical decision-making module in a university in Singapore were invited to join the study. A total of 33 students consented to participate. Using a computer-generated randomizer, 17 students were randomized to the intervention group (MR-SP), and 16 students were placed in the control group (MM). The 32 participants who completed this quantitative study component were invited to participate in individual interviews conducted after their nine-week clinical posting. Twenty-one students agreed to join.

Key Points

- The use of a MR strategy with SPs and ABCDE mnemonics and mannequins were used in patient deterioration simulations.
- The MR strategy and the ABCDE mnemonic had similar effects in terms of improving performance and reducing stress levels of students.
- Qualitative results suggest that the MR strategy has been perceived by students as a valuable tool to prepare them for clinical practice.
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