Effects of end-of-life care education on nursing students' knowledge, attitude, and self-efficacy
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Purpose Nurses experience insufficient preparation for dealing with the death of their patients (Ferguson & Cosby, 2017). For proper learning, it is necessary for them to expose to the clinical environment during end-of-life care education. However, It is difficult for students to have sufficient end-of-life care training during the clinical training period because of short clinical practice hours, difficulty to access to patients or caregivers in the dying situation, and hardship to guarantee opportunities to experience dying situations (Randall et al., 2018; Smith et al., 2018). Thus, this study aims to examine the effects of an integrated end-of-life education program for nursing students. **Method** This is a pretest-posttest quasi-experimental design with two intervention groups and no control group. There were 16 participants in the group 1 while 14 in group 2. Group 1 received both the web-based virtual simulation and a clinical case study seminar on end-of-life care, while group 2 received only the web-based virtual simulation. In order to confirm the effect of the educational program, nursing students' end-of-life care knowledge, attitude toward end-of-life care, and educational self-efficacy were measured and compared through a survey which conducted before and after the program. The analysis included a paired T-test, an independent T-test and a Spearman's rank correlation test in order to compare changes in knowledge, attitude, and self-efficacy of the nursing students. **Results and Discussion** The mean age of participants was 21.73 (SD=1.57), of which 86.7% were women. The satisfaction with the virtual simulation was 3.93 (SD=0.73) in group 1 and 3.75 (SD=0.86) in group 2. There were significant changes in the end-of-life care knowledge ($p=0.003$) and attitude ($p \leq 0.001$) toward end-of-life care in group 1. There was a significant difference only in end-of-life care knowledge ($p=0.037$) group 2. Self-efficacy did not change significantly in either group, and each change did not show a significant correlation with satisfaction. Also, among each change, only the change in the end-of-life care attitude showed a significant difference between groups, and there was no significant difference in changes of end-of-life care knowledge and educational self-efficacy between both groups. The findings indicate that web-based virtual simulation alone may improve nursing students' knowledge. In particular, due to COVID-19 pandemic in recent years, it is important for students to access to patients and families and have learning opportunities for clinical practice through innovative ways. Virtual simulation may help them improve their clinical competency such as dealing with dying situations, caring for older patients, and communicating with their caregivers. Further research is necessary to examine the effects of not only virtual simulation but also integrated programs that includes clinical components such as case studies in the area of clinical education of end-of-life care for older adults.

References
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