The Impact of Content Reinforcement on Physiological Knowledge Retention in Nursing Students.

Raj Narnaware, Melanie Neumeier, J. Claudio Gutierrez, Paul Chahal

MacEwan UNIVERSITY

Background

There is growing concern over the loss of anatomical and physiological knowledge in medical, allied-health & nursing students over time. Numerous studies have demonstrated the difficulty of the students in these disciplines to retain and apply anatomical knowledge as they progress through their programs of study (Narnaware and Neumeier, 2019). However, physiological knowledge retention has not been studied as extensively as anatomical knowledge retention in health care disciplines, with very few studies focusing on nursing students (Aari et al., 2004). Of those studies, most are carried out after graduation (Aari et al., 2004), or are focused on a single or limited number of organ systems (Pourshanazari et al., 2013). We have previously shown that physiology students retained approximately 86.6% of their first-year physiological knowledge over four months (Narnaware et al., 2020).

Objectives

To improve the acquisition and retention of physiological knowledge, the present study aims to develop an interventional strategy that includes the repeated assessment of vascular physiology knowledge over an eight-week period.

Methods

Nursing students were quizzed on vascular physiology using the on-line quizzing system Kahoot. Each Kahoot quiz included 9-11 knowledge and comprehension level multiple-choice questions, and new sets of questions were used for each week's Kahoot quiz. Data were statistically analyzed using SPSS II, and means were compared using 2-sample t-tests. The scores are described as the mean and standard deviation (SD). Statistical significance was set at $P \leq 0.05$ for all tests.

Results

Compared to week 1, repeating knowledge of the vascular physiology yielded a significantly higher ($P<0.05$) knowledge retention at week 2 (8.3%). However, this retention was highest at weeks 3 (16.0%) and weeks 4 (21.6%), $P<0.001$), with less significant improvement ($P<0.05$) at week 6 (13.3%) and week 8 (13.6%).

Discussion and Conclusion

The present study shows that repeated knowledge assessment can significantly improve knowledge retention of vascular physiology in nursing students, and agrees with previously reported studies in medical students (Pourshanazari et al., 2013). Therefore, content reinforcement should be used as one of the interventional strategies to improve knowledge retention in nursing students, and further research should be conducted to explore effective ways to maintain increased retention over longer periods of time.

Bibliography

- Aari et al., 2004. Biological and physiological knowledge and skills of graduating Finnish nursing students to practice in intensive care. Nurs Educ Today 24:293-300.
- Narnaware, Y., Neumeier, M., 2019. Second-year nursing students' retention of gross anatomical knowledge. Anat Sci Educ 12 (6), 1-7.
- Narnaware, Y., Neumeier, M. 2020. Short-term Physiological Knowledge Retention in Nursing Students. FASEB J 34 (S1): 05558.
- Pourshanazari et al., 2013. Comparing the long-term retention of a physiology course for medical students with the traditional and problem-based learning. Adv Health Sci Educ 18:91-97.