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Cardiovascular Critical Care Escape Room: An Innovative and Engaging Educational Concept for Nursing Students

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Purpose:

Escape rooms, based on the popular live-action gaming method, provide students with a unique way to apply educational content in an engaging and stimulating learning environment (Cain, 2019; Clarke et al., 2017; Eukel, Frenzel, & Cernusca, 2017; Friedrich, Teaford, Taubenheim, Boland, & Sick, 2018; Morrell & Ball, 2019). An educational escape room was designed to engage undergraduate nursing students in applying cardiovascular critical care content. In small groups, students solved nine sequential puzzles to save a fictitious patient before 60 minutes elapsed. The escape room fulfilled several content objectives, including differentiating between types and etiologies of shock, distinguishing key features of cardiac medications, solving chest tube related problems, analyzing ECG rhythm strips, calculating drug dosages of intravenous drip medications, differentiating between types and causes of chest pain, and applying cardiovascular content in multiple choice questions. When groups completed tasks, their answers opened locks and decoded clues needed to unveil subsequent puzzles.

The purposes of this mixed methods study were to (1) evaluate the impact of an escape room in nursing education on student knowledge and (2) to evaluate student perceptions of the teaching innovation.

Methods: Participants completed a pre- and post-knowledge assessment and validated perception tool adapted to the content (Eukel, Frenzel, & Cernusca, 2017).

Furthermore, a focus group two weeks after the event explored the activity's impact on teamwork, communication, learning, and future practice.

Results: Twenty-nine of the 31 students in the course (97%) students participated in the pre- and post-escape room surveys. An independent samples *t*-Test indicated that students' mean score for the post-knowledge assessment (61%) was statistically significantly higher than students' mean score for the pre-knowledge assessment (58%), $t(28) = -2.5, p < 0.05$. In addition, a linear regression analysis indicated that students' mean score for the pre knowledge assessment significantly predicted students' mean score for the post-knowledge assessment, $F(1,27) = 36.9, p < 0.001$, and also explained a significant proportion (58%) of variance in post-knowledge assessment score. A one-sample *t*-Test indicated that students' gaming perception mean was statistically significant higher than the mean value of the evaluation scale ("3"- not agree nor disagree), $t(28) = 5.12, p < 0.001$. Four students participated in the focus group. Qualitative analysis of the focus group transcription revealed four themes: *logistics of the learning activity, cognitive learning, team learning, and professional practice skills*. Student discussed how they enjoyed the variety of active learning strategies. They reflected on teamwork, communication, and peer correction needed to complete tasks

correctly. They also discussed how the game engaged skills required in the clinical setting, like critical thinking and the use of assistance.

Conclusion: The cardiovascular escape room increased student knowledge and was positively received by students. The educational innovation encouraged student engagement in learning, content application, peer communication, appropriate use of assistance, and nursing practice skills. Educational escape rooms hold great potential for transferability and adaptability to various topics and professions (Cain, 2019; Clarke et al., 2017; Eukel et al., 2017; Friedrich et al., 2018; Kinio, Brandys, & Jetty, 2017).

Title:

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Keywords:

academic, cardiovascular and gaming

Abstract Summary:

Learn how an innovative educational escape room in cardiovascular education impacted students in this mixed method study. Quantitative findings indicate that students increased content knowledge and had positive perceptions of the event. Qualitative findings indicate how participants enjoyed applying knowledge as they enhanced their communication, teamwork, and collaboration skills.

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