Examining Nursing Student Stress in an End-of-Life Care Simulation: Grade Level and Simulated Patient Type

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Brief Review of the Literature

The American Association of Colleges of Nursing (2016) recommends incorporating end-of-life care into undergraduate nursing curricula. This recommendation is supported by the Robert Wood Johnson Foundation and has been placed in the National Licensure Examination Detailed Test Plan (Kopp & Hanson, 2012). Traditionally, nursing education has not provided nursing students with exposure to end-of-life care (Gillan, Parameter, Van der Riet, & Jeong, 2013; Kwekeeboom, Vah, & Eland, 2005). As such, newly graduated nurses have reported dissatisfaction with their preparation (Kwekeeboom et al., 2005). Newly graduated nurses have experienced anxiety and uncertainty when caring for a dying patient; these feelings have served as the catalyst for nearly 20% of nurses to leave the profession within their first year (Gillan et al., 2013; MacKusik & Minkic, 2010).

Purpose

The purpose of this quasi-experimental study was to examine the relationship between undergraduate nursing students’ stress before and after participating in an end-of-life care simulation, using either simulated patient type: a high-fidelity mannequin or a standardized patient. The comparison between physiological and psychological stress, grade level, and patient simulators occurred due to little research into their effects on students (Aliner, Hunt, Gordon, & Harwood, 2006). Psychological stress was examined utilizing Spielberger’s State and Trait Anxiety Inventory (STAI) Scale, Form Y-1; whereas physiological stress was examined utilizing heart rate, systolic blood pressure, and diastolic blood pressure. Furthermore, grade level was differentiated between junior and senior level nursing students in a baccalaureate program.

Research Questions

- Among undergraduate nursing students participating in an end-of-life care simulation, is the relationship between simulated patient type and psychological stress moderated by grade level?
- Among undergraduate nursing students participating in an end-of-life care simulation, is the relationship between simulated patient type and physiological stress moderated by grade level?

Intervention

Prior to conducting the research, IRB approval was obtained. The 159 participants were randomized into participating or observing care for either of the two simulated patient types, standardized patient or high-fidelity mannequin. A theater student served as the standardized patient. Before and after participating in the simulation, participants had to fill out the STAI Form Y-1, take their partner’s heart rate, and obtain blood pressure per automated noninvasive blood pressure cuff on the left wrist. All findings were documented.

Statistical Analysis

The research occurred in the Fall semester of 2016 and incorporated 57 junior and 102 senior level undergraduate nursing students. For the junior level students, 32 had the high fidelity mannequin and 25
had the standardized patient for their simulation. Whereas for the senior level students, 47 had the high-fidelity mannequin and 55 had the standardized patient as the simulated patient.

The research utilized two-way ANOVAs to examine the relationship between grade level and simulated patient type on both psychological stress and physiological stress. There were no statistically significant interaction effects between patient type and grade level on psychological stress \( (F(1,155)=0.411, p=0.52) \). There were no statistically significant main effects by grade level on psychological stress \( (F(1,155)=1.347, p=0.248) \); nor were there statistically significant main effects by grade level on psychological stress \( (F(1,155)=1.247, p=0.248) \). However, junior students had higher mean scores \( (M=28.50, SD=38.09) \) than senior students \( (M=21.08, SD=31.45) \). It is worth noting that simulated patient type impacted psychological stress at the trend level \( (F(1, 155)=3.137, p=0.08) \). The results showed a very small effect size \( (\eta^2=0.02) \). Greater psychological stress, for both grade levels, occurred when care was given to the high-fidelity mannequin simulated patient \( (M=29.55, SD=38.41) \), than with the standardized patient simulated patient \( (M=18.00, SD=28.19) \).

Physiological stress was measured by heart rate, systolic, and diastolic blood pressure. For heart rate, there was no statistically significant interaction effect by patient type and grade level \( (F(1, 155)=0.530, p=0.47) \). Also, there were no statistically significant main effects when examining the relationship between patient type on percentage change in heart rate \( (F(1, 155)=0.000, p=0.47) \) and grade level on percentage change in heart rate \( (F(1, 155)=0.025, p=0.88) \). However, junior nursing students experienced greater percentage change in heart rate \( (M=4.11, SD=15.54) \) than senior students \( (M=3.80, SD=12.33) \). The junior students experienced the greatest physiological stress when the simulated patient type was the standardized patient \( (M=5.05, SD=20.24) \). For systolic blood pressure, there was no statistically significant interaction effects between patient type and grade level on percentage change in systolic blood pressure \( (F(1, 155)=0.369, p=0.54) \). Also, there were no statistically significant main effects by grade level on percentage change in systolic blood pressure \( (F(1, 155)=0.010, p=0.92) \) or by patient type on percentage change in systolic blood pressure \( (F(1, 155)=-.528, p=0.47) \).

The greatest amount of physiological stress, when measured by systolic blood pressure, occurred in senior nursing students when the simulated patient type was the high-fidelity mannequin \( (M=3.11, SD=15.88) \). There was no statistically significant interaction effect between patient type and grade level on physiological stress, as measured by percentage change in diastolic blood pressure \( (F(1, 155)=0.339, p=0.56) \). Furthermore, there was no statistically significant main effect by grade level on percentage change in diastolic blood pressure \( (F(1, 155)=0.562, p=0.46) \) or patient type on diastolic blood pressure \( (F(1, 155)=1.190, p=0.28) \). The greatest change in diastolic blood pressure occurred when the high-fidelity mannequin was utilized with the senior nursing students \( (M=5.54, SD=12.80) \).

Overall, both grade levels appeared to experience greater psychological stress, as measured by percentage change in STAI Form Y-1 with the high-fidelity mannequin. In addition, both grade levels appeared to experience greater physiological stress, as measured by percentage change in systolic and diastolic blood pressure, when the simulated patient type involved the high-fidelity mannequin. However, the exception occurred at the junior level with percentage change in heart rate as the greater physiological stress occurred with the standardized patient.

**Findings in Relation to the Literature**

Previous research has not examined the effects of grade level on undergraduate nursing students’ stress when participating in an end-of-life care simulation with either a high-fidelity mannequin or standardized patient. Ramasama Venkatsalu, Kellher, and Hua Shao (2015) found that first year nursing students preferred learning end-of-life care in the laboratory setting rather than the didactic portion of a course. Nursing educators are in a position to provide lessons by incorporating simulations, such as end-of-life care, that cause measurable stress.
By understanding which patient type causes greater amounts of stress, nursing educators can base curricula on the holistic needs of the learner. While this research occurred at one site, it opens the door for further research into nursing student stress in an end-of-life care simulation and its effect of grade level. This research found that 31.4% of the sample size has been diagnosed with anxiety, which is consistent with previous research. Chen, Chen, Sung, Hsieh, Lee, and Chang (2015) found that 32.6% of 625 nursing students experienced depressive symptoms, including anxiety at a community college. Such statistics cannot be ignored when making curricular decisions.

Title:
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Keywords:
Compare simulated patient types, End-of-life care simulation and Nursing student stress

References:


Abstract Summary:
This research examined undergraduate nursing students’ stress in an end-of-life care simulation, examining the differences in grade level and simulated patient type. The stress was examined through
psychological and physiological measures. The comparison of simulated patient types included care of the standardized patient and high-fidelity mannequin.

Content Outline:

- Brief review of literature
  - Current state of literature examining undergraduate nursing student stress
  - Identify purpose of incorporating end-of-life care in nursing education
  - Compare use of standardized patient and high-fidelity mannequin
- Purpose
  - Purpose statement
- Research questions
- Intervention
- Provide statistical analysis of research questions
  - Examine physiological stress
  - Examine psychological stress
- Findings in relation to the literature

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Author Summary: Michelle Allen has served as a leader in undergraduate nursing simulation education. She has earned her CHSE, serves as a nurse planner for INACSL, and has mentored faculty on best practices in simulation.

Any relevant financial relationships? Yes

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