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Impact of Humanized Anatomical Paedagogy on Psychophysiological Responses and Academic Achievement in Nursing Students

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Purpose:

Human anatomy is one of the most crucial fundamental subjects in medical and health professional education; it imparts students with anatomical skills and knowledge of human structure and functions. Furthermore, anatomy is a critical subject that imparts students with the competency of physical and clinical assessments and is valued as an essential course for nursing practice by registered nurses. Additionally, anatomical knowledge is essential for students to pass examinations and obtain a nursing licence. Because anatomy is considered a difficult subject to learn, with a large volume of content and complex concepts, several teaching strategies have been developed by educators to improve learning, for example, video-based lectures, interactive activities, and hands-on training. Notably, few studies have illustrated the use of cadavers to teach anatomy to nursing students; previous study suggested that nursing students have a better learning experience with exposure to cadaveric materials than to specimens.

Using cadavers to deliver anatomical knowledge not only provides students early opportunities to learn about death-related topics but also provides them more hands-on learning experience with real materials. Current literature on using cadavers for teaching anatomy to nursing students is limited and provides no information about students' achievement in anatomy. Despite the limited literature regarding using cadavers in anatomy for nursing education, cadaver use in anatomical courses was first introduced for nursing students based on its success in medical education. To further understand the students' learning experience of this teaching method, this study (1) described the nursing students' psychophysiological responses to human anatomy using cadavers, (2) examined the effects of humanised anatomy teaching method on academic achievement, and (3) further analysed the correlation between the students' characteristics, psychophysiological responses, and *academic achievement in anatomy.*

Methods:

This study employed an observational pretest–posttest comparative design and was conducted during September 2017–January 2018. This study is part of a large multiyear project on silent mentors (a respectful terminology for donated cadavers) and medical education programme. A total of 151 participants with a 4-year BSN degree were recruited from two nursing schools located in the same region of Taiwan. Human anatomy teaching using cadavers and traditional teaching using plastic specimens were delivered at A and B (comparison group) schools, respectively.

The teaching method of this study was humanised anatomy teaching using cadavers. This pedagogy integrates donated cadavers, known as silent mentors, into the human anatomy course. Thus, it comprised anatomy and a serial activity related to the silent mentor used in the laboratory for students to learn human structure and function. The humanised anatomical teaching is a new pedagogical model for teaching anatomy in the medical curriculum at medical schools in Taiwan and Malaysia and was launched in an anatomy course for nursing students. Standardised and researcher-modified

questionnaires were used to collect data. Either parametric or nonparametric methods were used for data analysis depending on data distribution.

Results:

A small proportion of students experienced physical symptoms and stress. The trend of death anxiety in the male group gradually decreased from T0 to T2. The scores of death anxiety of the female students were constantly higher than those of male students. We tested the gender effects in the mean scores of death anxiety and found a significant difference between male and female groups. Gender difference was observed in death anxiety caused by working with cadavers. The total mean scores of engagement and several subscales were significantly different between the two schools. The students in the humanised anatomy group tended to have higher levels of engagement in total scores of engagement and the subscales of skill, attitude, emotional, and participation/interaction engagement than those in the comparison group (all $p < 0.05$). Significant correlations were found between anatomical grades and total scores of course engagement ($r = 0.29$), skill engagement ($r = 0.27$), and performance engagement ($r = 0.38$) (all $p < 0.05$) in the humanised anatomy group. All psychophysiological responses of students did not influence their achievement. Further, the students believed that using cadavers had higher levels of engagement than did using plastic specimens.

Conclusion:

Anatomy is a cornerstone in learning biosciences for nursing students at the preclinical stage to gain knowledge of the human structure and functions and to more appropriately confront death. Our study illustrated that using cadavers in teaching anatomy laboratories did not cause physical symptoms or emotional stress in most of the nursing students. However, female nursing students had higher death anxiety encountering the deceased than did male students. Notably, the beneficial effects of using this method to teach anatomy improved students' engagement with the course. We conclude that using cadavers for delivering anatomy course should be a norm in nursing education for students to confront death earlier, to enhance engagement with the course, and to gain anatomy knowledge in a hands-on manner with real materials. This study suggests that human anatomy using cadavers is an effective teaching method to improve students' engagement with class.

Title:

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Keywords:

academic achievement, death anxiety and humanized anatomical paedagogy

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Abstract Summary:

Our study is the first to explore nursing students learning experience regarding anatomical paedagogy on psychophysiological responses and achievement. The humanised anatomy course provided an earlier opportunity of death confrontation for students. This study suggests that anatomy using cadavers is an effective teaching method to improve students engagement with class.

Content Outline:

Introduction:

1. Anatomy is a critical subject that imparts students with the competency of physical and clinical assessments and is valued as an essential course for nursing practice by registered nurses.

2. Using cadavers to deliver anatomical knowledge not only provides students early opportunities to learn about death-related topics but also provides them more hands-on learning experience with real materials.
3. Few studies have illustrated the use of cadavers to teach anatomy to nursing students.

Body main point:

1. Using cadavers in teaching anatomy improves students' course engagement.
2. Course engagement and course grades have positive correlations.
3. Gender influences death anxiety caused by cadavers used in anatomy.
4. Psychophysiological responses to cadavers do not influence student achievement.

Conclusion:

1. Anatomy is a cornerstone in learning biosciences for nursing students at the preclinical stage to gain knowledge of the human structure and functions and to more appropriately confront death.
2. The beneficial effects of using this method to teach anatomy improved students' engagement with the course.

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