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Important yet unnecessary: Nursing students' perceptions of anatomy and physiology laboratory sessions^{1,2}

Jed Montayre, RN, PhD^{a,*}, Trena Sparks, RN, MN^{b,4}

^a School of Clinical Sciences Auckland University of Technology, Auckland, New Zealand 0627

^b Southern Institute of Technology, Invercargill, New Zealand 9840

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ABSTRACT

Anatomy and physiology is one of the major bioscience concepts integrated within the undergraduate nursing curriculum. The current research surveyed nursing students' perception of the laboratory sessions for their anatomy and physiology course. The results revealed positive student perception toward laboratory sessions particularly on how the sessions' format and delivery complement student learning of anatomy and physiology. However, nursing students find laboratory sessions unnecessary to pass the anatomy and physiology course.

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Introduction

Biological sciences are integral academic components in nursing education. However, previous research indicated that nursing students find biosciences challenging and anxiety provoking (Craft, Hudson, Plenderleith, Wirihana, & Gordon, 2013; Friedel & Treagust, 2005). Lecturers have also long observed challenges encountered by nursing students in learning biosciences (Jordan, Davies, & Green, 1999). Literature revealed the bioscience conundrum through the context of limited content, mismatch between expectations and of what was taught, and less emphasis on scope and depth within its integration in the preregistration nursing curriculum (Davis, 2010; Friedel & Treagust, 2005; McVicar & Clancy, 2001). Recent research had an increasing focus on effectively teaching biosciences to nursing students through innovative learning methods and utilizing teaching medium allowing best hands-on experience (Johnston, 2010).

¹ Author Contribution: MONTAYRE conceived the study, designed the methodology, and had the overall responsibility during data collection process. SPARKS supervised the conduct of the study, ethics application, and data collection. MONTAYRE provided statistical advice on study design and analyzed the data; SPARKS rechecked accuracy of data analysis and results. MONTAYRE drafted the manuscript, and all authors contributed substantially to its revision. MONTAYRE takes responsibility for the paper as a whole.

² The authors declare no conflict of interest.

* Corresponding author. Tel.: +64 9 921 9999x6056, +64 275131108 (Mobile).

E-mail addresses: jed.montayre@aut.ac.nz (J. Montayre), trena.sparks@sit.ac.nz (T. Sparks).

³ Tel.: +64 09921 9999.

⁴ Tel.: +64 3 2112699x8703; fax: +64 3 2 112 621.

Furthermore, there is a strong drive to expand the bioscience content within the nursing curriculum. While common bioscience topics taught to nursing students are anatomy and physiology (AP), pharmacology, pathophysiology, chemistry, and microbiology, there has been recent recommendations of integrating more complex concepts like genomics and genetics in the nursing program (Daack-Hirsch, Dieter, & Quinn Griffin, 2011; Williams et al., 2011).

Nurses who have advanced knowledge of bioscience concepts are confident and competent practitioners providing clinically effective patient care and positively contribute to multidisciplinary team effort resulting in desirable patient outcomes (Lyne & Prowse, 2000; Prowse & Heath, 2005; van Wissen & McBride-Henry, 2010). Evidence suggests that well-educated nurses have reduced percentage of patient deaths under their care (Aiken et al., 2014), proving quality preregistration nursing education critical to patient care delivery. Because biosciences form one of the core course components within nursing undergraduate curriculum, a long-existing question stands on how much bioscience do nurses need (Davis, 2010; Jordan, 1994). Furthermore, the dialog continues around effective undergraduate delivery of bioscience courses in preparing nursing students for practice (Taylor, Ashelford, Fell, & Goacher, 2015).

Background

AP is one of the major bioscience concepts covered within the undergraduate nursing curriculum. Bioscience papers taught to nursing students also include biochemistry, microbiology, pathophysiology,

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genetics, and pharmacology. While nursing students expressed great interest on how the human body works (Clifton & McKillup, 2016), AP is still considered one of the most difficult courses by health students (Craft et al., 2013; McKee, 2002). The AP course taught to nursing students follows a specific institutional structure and is taught through differing learning platforms catered toward students' learning styles and needs (Johnston et al., 2015). Because of this variation, there is no standard approach of how AP should be taught for nurses. Furthermore, there is limited evidence on which teaching format works best in teaching AP in nursing (Craft, Christensen, Bakon, & Wirihana, 2017; Davies, Murphy, & Jordan, 2000).

One existing method of bioscience teaching for nursing students is through interdisciplinary learning approach, where nursing students learn AP together with other health science students (Chapple, Allcock, & Wharrad, 1993). There is also the approach of stand-alone AP courses exclusively for nursing students (Clifton & McKillup, 2016), whereas other institutions embed AP with their core nursing courses and only apply AP concepts as the nursing course progress. Within these individual teaching approaches, there are also some differences on how AP theoretical learning and knowledge application take place, such methods can be in form of lectures, tutorials, and laboratory work as learning spaces.

Because of these differences, it is critical to revisit how students learn AP effectively and explore the learning environment that enables students to maximize and efficiently learn the structure and function of the human body. In New Zealand, bioscience courses within the nursing programs of universities and tertiary education providers are delivered differently according to the individual curriculum framework for bioscience integration. These curricular differences can also be identified internationally, for example, the nursing education in China and the United States, which greatly differs in terms of the nursing schools' focus and inclusion of specific subjects within their nursing curriculum (Xu, Xu, & Zhang, 2002). Previous New Zealand research on biosciences in nursing education mainly focused on the factors influencing academic performance of nursing students in relation to the bioscience entry criteria (Shulruf, Li, McKimm, & Smith, 2012; Shulruf, Wang, Zhao, & Baker, 2011; van Rooyen, Dixon, Dixon, & Wells, 2006). There is also very limited literature highlighting the delivery of bioscience papers within the undergraduate nursing curriculum from a New Zealand context (Friedel & Treagust, 2005; Lapkin, Levett-Jones, & Gilligan, 2012; Nicol, 2002).

Objective

The current research aims to examine nursing students' perception of the laboratory sessions for the AP course.

Methods

Research Design

A descriptive quantitative approach was utilized to evaluate nursing students' perception of laboratory classes for their first year AP course. A survey tool was applied in a New Zealand context, which was adapted with permission from the previous study of Johnston and McAllister (2008) on nursing students' perception of hands-on laboratory work for AP. The use of scales and scoring in the survey tool measured student responses on specific items reflecting perception of the AP laboratory sessions.

Setting

This study was conducted at a New Zealand School of Nursing. A convenience sample was drawn from first year undergraduate nursing students enrolled in the year one bachelor of nursing AP

bioscience paper. First year students were selected as the bioscience paper content includes a large component of AP. A variety of teaching methods are used in teaching the AP paper: lectures, laboratory sessions, and small group tutorials. The lectures, which last for 1 1/2 hours, are delivered to the whole group of first year students. The students are divided into smaller groups of 10–15 students for the laboratory sessions and tutorials, which last for 1 1/2 hours. The purpose of the laboratory session is to increase the students' understanding of AP through practical experiments and the opportunity to view anatomical models. Each student has 27 hours of timetabled compulsory laboratory sessions for the AP paper.

Data Collection

Data were collected in October 2015. Data gathering took place in the first semester when first year nursing students are enrolled in their initial bioscience paper. The survey tool used has 19 items to rate in a 5-point Likert scale from *strongly agree* to *strongly disagree*. Of the possible 70 students enrolled in the year one bioscience paper at the time of the data collection, 60 students completed the survey giving a response rate of 86%. To determine an adequate sample size, the Raosoft Sample Size Calculator (Raosoft, 2004) was used. For a confidence level of 95% and a margin of error of 5%, a minimum sample size of 60 students was required. The actual sample size was 60, so therefore, it was deemed to be statistically adequate. The survey tool was administered by an independent research officer to avoid influencing student's responses with lecturers being the researchers.

Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences 23 statistical program. Descriptive statistical treatment was utilized in computing for the percentage for each item in the survey questionnaire. The results of analysis lead to statistical presentation of results through tabular form.

Ethics

Ethical approval to conduct this research study was granted by the researchers' institutional human research ethics committee prior to collecting data. Consent was implied by the completion and return of the survey questionnaire. Researchers were not present during the completion of the survey to preserve anonymity and for students not to feel pressured to participate in the research. Instead, a research assistant was employed to administer the surveys. There was no identifying information included in the survey tool.

Results

The current research examined the perceptions of nursing students on laboratory sessions for AP course. The main findings revealed the complementary benefit of laboratory sessions in learning AP among nursing students. Table 1 presents the percentage of responses for each item assessing nursing students' perception based on the items found in the survey tool (see Table 1).

Discussion

The current study results conducted in a New Zealand School of Nursing presented positive student perception toward laboratory sessions for AP, particularly on how the sessions' format and delivery complement student learning of AP. This was evident with nursing students valuing laboratory sessions as real hands-on in performing real clinical tests and dissections and finding the small group learning effective in creating meaningful interactions. This positive perception

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