

Nursing Education Based on “Hybrid” Problem-Based Learning: The Impact of PBL-Based Clinical Cases on a Pathophysiology Course

Pathophysiology is a core course in nursing curricula, with the intent to bridge the gap between pathological concepts and clinical reasoning. Students frequently have difficulty in relating pathological concepts in the clinical setting. Thus, a problem-based (PBL) hybrid pathophysiology course was designed to enhance students’ comprehension of material and application in the clinical setting.

This course totals six European Credit Transfer System credits, corresponding to 70 contact hours. Despite the relevance of this scientific area for future nurses, they still experience difficulties when integrating learning from different theoretical contents. The lack of knowledge derived from these difficulties will likely lead to negative learning outcomes.

Traditional lecture-based formats tend to promote surface learning, whereas PBL promotes deep understanding and emphasizes meaning rather than the reproduction of facts. PBL seeks to foster active, collaborative, and self-directed learning by promoting the use of clinical scenarios (Spiers et al., 2014). Currently, the focus is empowering self-learning, which this hybrid course supports. Nurse educators are encouraged to be innovative, developing strategies that provide students with an active learning environment. Evidence highlights that these strategies “might help nursing students to improve their critical thinking” (Kong, Qin, Zhou, Mou, & Gao, 2014, p. 458). This will enhance the students’ comprehension of lecture content, clinical reasoning (i.e., critical thinking), and skill performance.

Aims and Strategy

The main goal of this hybrid model is to promote the continuous learning and effective follow up of course contents and to help students better assimilate knowledge. Critical clinical reasoning is pro-

moted, rather than factual memorization (Kong et al., 2014). The learning on-line platform Moodle[®] was selected as a pedagogical tool to implement this methodology (Shah, Walters, & McKillop, 2008). Based on PBL, clinical exercises known as case-of-the-week (COW) were developed to guide students to reflect on the pathophysiology of diseases using real-world scenarios and to encourage them to find the most appropriate solutions.

The final grade for this course is determined by the successful accomplishment of the COWs (20%) and a theoretical examination (80%).

At the beginning of the course, students are informed about the contents to which the COWs will refer. After attending the course, students are provided with a personal login and password to access the COWs. A maximum of four to five COWs are presented during each semester, focusing mainly on the cardiovascular, renal, respiratory, endocrine, and nervous systems. The COWs are programmed at the end of the subject lectures.

The COWs are composed of a clinical vignette, followed by 10 related multiple-answer questions with a progressive background in clinical reasoning. A 25-minute time limit is set: 5 minutes to understand the clinical scenario and 2 minutes to answer each question. During this period, the students may freely navigate between the questions and the clinical scenario, providing them the opportunity to review their answers. The COWs and the theoretical contents are revised and updated each semester.

Results

This method has been implemented since 2012 and included in each semester of the pathophysiology course for the second-year nursing degree students in a Portuguese faculty.

Since its implementation in 2012, the COWs indicators have been excellent. These indicators are:

- A positive final grade point average for the Pathophysiology course (≥ 9.5 on a scale of zero to 20).

- The high level of students’ personal satisfaction and learning outcomes (assessed through an online questionnaire).

- The positive feedback from the clinical education supervising teachers.

The success of this method is revealed through students’ approvals:

- 126 (4.6%) students in 2012 to 2013 ($n = 303$).

- 132 (39.3%) students in 2013 to 2014 ($n = 336$).

- 144 (44.3%) students in 2014 to 2015 ($n = 325$).

The students’ initial concerns, such as those related to additional learning requirements and still uncertain results, were ultimately overcome. We expect that this teaching methodology will help students to integrate pathophysiology theory into nursing practice by gradually enhancing their clinical reasoning.

References

- Kong, L.N., Qin, B., Zhou, Y.Q., Mou, S.Y., & Gao, H.M. (2014). The effectiveness of problem-based learning on development of nursing students’ critical thinking: A systematic review and meta-analysis. *International Journal of Nursing Studies*, 51, 458-469. doi:10.1016/j.ijnurstu.2013.06.009
- Shah, I.M., Walters, M.R., & McKillop, J.H. (2008). Acute medicine teaching in an undergraduate medical curriculum: A blended learning approach. *Emergence Medical Journal*, 25, 354-357. doi:10.1136/emj.2007.053082
- Spiers, J.A., Williams, B., Gibson, B., Kabotoff, W., MacIlwraith, D., Sculley, A., & Richard, E. (2014). Graduate nurses’ learning trajectories and experiences of problem based learning: A focused ethnography study. *International Journal of Nursing Studies*, 51, 1462-1471.

**Paulo Alexandre Oliveira Marques,
PhD, RN**

paulomarques@esenf.pt

Porto Nursing School (ESEP)

NursID CINTESIS Center for Health

Technology and Services Research

Nuno Candido Maia Correia

Department of Internal Medicine

Private Hospital of Gaia

The authors have disclosed no potential conflicts

of interest, financial or otherwise.

doi:10.3928/01484834-20161219-12