Introducing Genomics to Novice Baccalaureate Nursing Students

The Essentials of Baccalaureate Education for Professional Nursing Practice (American Association of Colleges of Nursing, 2008) indicates that nurses must be informed about genetics and genomics. Knowledge of the influence of genomics on health and disease is expanding rapidly as a result of gene mapping and sequencing. For nurses to integrate this knowledge into practice, they must begin to develop competency in genomics during their undergraduate education (Daack-Hirsch, Dieter, & Quinn Griffin, 2011).

Genomics is introduced in an honors section of a survey course, Introduction to Professional Nursing, which is required for all freshman students. Consistent with the course objective to “describe the dimensions of nursing as a discipline with emphasis on theory, research, and evidence-based practice (EBP),” a group project integrates these elements using health problems in the United States that have a genomic basis.

Project Topics

The context for the class was genomics in Healthy People 2020 (U.S. Department of Health and Human Services, 2013). Healthy People identifies science-based, 10-year national objectives aimed at improving the health of all Americans. As noted on the Healthy People Web site, genomics is new to the United States and has the potential to change the way health care is practiced. Genomics is the study of the genetics and genomic variations in all of the human genome. Healthy People includes genomics in the following:

- Development and detection of genetic tests for risk assessment.
- Drug development based on genes (pharmacogenomics).
- Consideration of ethical questions associated with disclosure of a genetically-based disease.

Pedagogical Learning Theory and Project Development

Consistent with the constructivist perspective, students who are active learners construct their own knowledge, making sense as to what they have read and learned, as well as through social interactions with their group members. Students were assigned to develop a class project presentation based on the concepts of genomics and evidence-based practice.

To facilitate students’ ability to locate current appropriate resources, the faculty member provided an in-class demonstration on how to conduct an electronic literature search in nursing and health care on the topics using several scholarly databases such as CINAHL® and PubMed®. A step-by-step written guide accompanied the demonstration. Working in small groups of three to four, students located evidence from scholarly literature in nursing and reputable government and health organization Web sites related to their selected topic.

The reports and journal articles were reviewed by the faculty, and feedback was provided. Required project content included characteristics of and scope of the health problem, the nurse’s role in intervening with those experiencing or at risk for developing the disease, and options for prevention.

Similar to one of the clinical performance indicators in the Essentials of Genetic and Genomic Nursing competencies (American Nurses Association, 2009) to “discuss the role of genetics and genomic, environmental and psychosocial factors in maintaining health and preventing disease” (p. 31), the purpose of the project presentation was to educate others about the selected diseases with a genomic basis using research findings to address its origin and prevention, fundamental to EBP. EBP is defined as integration of the best evidence available, nursing expertise, and the preferences of the individuals who are served (Sigma Theta Tau International, 2005). A separate class had been devoted to the topic of EBP previously. The group project included giving a detailed oral presentation to the class and creating a poster that displayed and summarized their findings. Following faculty approval of poster content and citations, posters were fabricated by a professional poster company, presented to the class, and displayed at the college’s annual Scholarship Day.

Project Evaluation and Outcomes

Student comments in the course evaluation identified the project as a favorite assignment. Comments included:

- I have always enjoyed science so learning about genomics in nursing was fascinating.
- I did not know what was meant by evidence-based practice before [the course] but now realize it is the basis for everything the nurse does.
- I learned about the importance of teaching in nursing.
- I’ve learned a lot from this project and have enjoyed the research I’ve done.

One unexpected outcome was that the group who created the breast cancer project was invited by faculty to present to senior students in the Maternal and Women’s Health course. Students identified several well-known personalities in pop culture who were diagnosed with genetic breast cancer and revealed how the celebrities chose to manage it, reinforcing personal preferences and values essential to EBP. Feedback provided by the faculty member indicated that the students did an overall terrific job sharing their knowledge and insights with the senior students. A remark overhead more than once at Scholarship Day was, “These posters were done by freshmen!”

Syllabus Selections Innovative Learning Activities
References

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