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Innovative Teaching Strategies for Genomic Content Integration Into Nursing Curriculum

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The effective use of technology to improve nursing education and practice, patient outcomes, and the value of nursing overall as a collaborative inter-professional leader is essential. Integrating technology and genomic science into nursing education is a natural progression. Genomic science is redefining the understanding of the continuum of human health and illness. With the advent of genomics as a required core competency, it is incumbent of all nurse educators to be knowledgeable in this content. The National Coalition for Health Professional Education in Genetics developed the Core Competencies in Genetics for Health Professionals, to encourage clinicians and other professionals to integrate genetics-genomics knowledge, skills, and attitudes into routine health care, thereby providing effective and comprehensive services to individuals and families (NCHPEG, 2007). The required competencies of providing essential information, support, guidance and education pertaining to genetic conditions is expected for all levels of initial pre-licensure preparation, as well as advanced practicing nurse professionals (AACN, 2008; Consensus Panel, 2009; Consensus Panel, 2011; Rogers, Lizer, Doughty, Hayden & Klein, 2017). Nursing students need to demonstrate an integrated knowledge of genetic principles and frameworks applicable to nursing, research, healthcare and/or health education. These 21st century healthcare providers must be proficient in interpreting scientific evidence relating to genomics in the clinical settings (Camak, 2016). They need to practice in an effective and efficient manner in the post-genomic era, actively participating in the education of patients, practice and policy-making regarding the application of genetic information and knowledge. The progress of genomic nursing competencies has global implications for all nurses and especially for nurse educators who are responsible for preparing the future nursing professional. The impact of nursing education science to embrace this competency must occur if nursing is to remain a collaborative member of the inter-professional healthcare team. By exploring innovative and creative formats, nurse educators will learn how to enhance their students learning process to become active participants, engaged and focused as they learn to apply their knowledge of genomics.

Engaging and innovative teaching strategies while maintaining a class community to facilitate the professional education and discussion while integrating genomics into pre-licensure through advanced degree students is a necessity in today's educational realm. Organizing online assignments and group discussions to enhance learner outcomes to increase knowledge base and comfort level is the nurse educators' primary expectation. Lack of knowledge of genomics and a lack of confidence in facilitating this complex content are significant obstacles to integrating this specialty into education. Inclusions of Mashup webpages [web applications], hyperlinks and YouTube videos can further advance students' pro-active learning.

Another innovative strategy is integrating a genetic patient scenario into a simulation. Augmenting required content into constrained nursing curricula is a challenge. Simulation prepares students for real-world experiences and simulation has an obvious role in expanding and developing genomic competencies (Weatherspoon, Phillips, Wyatt, 2015). Integrating a genetic component into simulation is an effective educational format to further enhance genomic knowledge of both students and facilitators. Pre-licensure students can be exposed to genomic content through simulations on newborn testing for PKU (phenylketonuria); sickle cell anemia, familial hypercholesterolemia, Marfan Syndrome and Alzheimer's Disease, as well as integrating concepts of patient education. Advanced degree students' simulation scenarios can provide an opportunity for students' to discuss complex multifactorial polygenetic conditions and the implications of pharmacogenomics, epigenetics and ecogenetics into clinical practice (Cheek, Bashore & Brazeau, 2015). Research has already proven that simulation is an

effective and efficient teaching tool and the inclusion of genetic conditions is the next logical advancement (Howard, Englert, Kameg & Perozzi, 2011; Holt, Tofil, Hurst, et al., 2013).

The clinical relevance of promoting the transformation of genomic knowledge and practice to advance global health practices and nursing competency is an ever-evolving process that begins with the realization that all educational levels must be involved and informed to integrate this knowledge and confidence into practice to improve patient health outcomes. Despite the growing use of genomic applications in clinical practice, health professional knowledge about genomic information and confidence in using it have not kept pace, as many nurses do not have the knowledge or the tools they need in order to apply genomic information in their professional practices (Munroe & Loerzel, 2016; Ward, Purath & Barbosa-Leiker, 2017).

This presentation will discuss the core competencies for all nurses, from pre-licensure baccalaureate to graduate degree practitioners. In addition, strategies to integrate these core competencies, either in a stand-alone course or threading through the curriculum, will be explored. With nursing students of all educational levels, is it necessary for nurse educators to provide a variety of learning strategies, to stimulate self-directed and collaborative learning. Finally, self-directed learning strategies will be explored to enhance the nurse educators' own genetic/genomic knowledge. Promoting the transformation of knowledge and practice to advance global health practices and nursing competency is an ever-evolving process that begins with understanding the educational level of all involved.

Title:

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Abstract Summary:

Genomic competences must be integrated into nursing education for the pre-licensure and advanced degree student to remain an active inter-professional member of the healthcare team. Strategies for curricula integration and promoting self-directed learning opportunities for nurse educators will be explored.

Content Outline:

I. Introduction – Discuss core genetic-genomic competencies for pre-licensure and advantaged degree

A. Define the essential genetic and genomic competencies for all registered nurses

1) Three baseline competencies (the minimum of what each health care professional should be able to do) and three main core competencies (knowledge, skills and attitudes) relating to what all healthcare professionals should know

B. Discuss the Essentials of Baccalaureate Education for Professional Nursing Practice

1) Briefly review Essentials IIX that delineates the outcomes expected of graduates of baccalaureate nursing programs.

C. Discuss the Essentials of Genetic and Genomic Competencies for Nurses With Graduate Degrees

II. Innovative teaching strategies [Threading through curricula and stand-alone course]

A. Facilitating online group discussions while maintaining a sense of class community

1. Creating Assignments for Enhancing Student Learning Outcomes

a) Weekly focused topics for discussion

i. Assignments, both individual and group work, designed to scaffold one another

ii. In-class group activities, as additional application of the content

questions a. Vocabulary definition games, pedigree analysis and construction and patterns of inheritance questions

iii. Examples of Mashups, YouTubes, Hyperlinks

b) Healthy People 2020
inclusion <https://www.healthypeople.gov/2020/topicsobjectives/topic/genomics>

with i. Specific questions for a facilitated online group discussion were provided
posted summary

B) Simulation Scenario Integrating Genetic Component

1. Pilot study [Author, 2015] on integration of genetic component into simulation scenario

a) Briefly discuss study methodology and findings

b) Discuss additional simulation scenarios with genetic component integration

C. Clinical Relevance/ Linking Genomics to Practice

1. Clinical specialty areas can infuse genetic concepts and expand on students' genetic literacy by providing additional opportunities for assessments and exploration of genetic conditions (including discussions on dysmorphology).

a) Genetics and genomics content touches upon numerous nursing areas, including but not limited to: pediatrics, cancer care, pharmacology, medical-surgical care, obstetrics and newborn care, and neuropsychiatric care.

2. Discussion of pharmacogenomics

III. Competency Enhancement of Nurse Educators to Educate

1. Self-directed learning opportunities for nurse educators

a) Programs and numerous online resources provide nurses with an array of genomic learning opportunities to foster an enhanced understanding of this content

2. Explore how nurse educators, in the design and implementation of learning experiences, can assist students/learners/practicing nurses achieve these genetic and genomic competencies

IV. Conclusion

A. Practical implications of integrating genomic content into nursing care begins with broadening students' perceived and actual knowledge while providing them with the tools to further their own self-directed learning

B. Clinical relevance requires a broad knowledge of genomic competency, staying abreast of genomic technology and being able to integrate genomic information through informed comprehensive nursing practice

C. As the nurse educators' confidence increases with their genomic knowledge and skill, they will be better equipped to provide their students [and patients] with essential genomic information and resources

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Professional Experience: Leighsa Sharoff is an experienced educator, practitioner, nurse leader, mentor and researcher with numerous publications, presentations, invited lectures, and funded research grants and projects to her credit. Dr. Sharoff is a national and international speaker at nursing and educational conferences, has presented lectures and research findings to nursing and multidisciplinary audiences, including presentations in Hong Kong, the United Kingdom, Dublin Ireland and the Netherlands. She has authored multiple peer-reviewed articles, is a peer-reviewer for numerous high-impact nursing and medical journals and is an Associate Editor for the Journal of Holistic Nursing [JHN]. Recently one of her articles was a finalist in the JHN Excellence in Writing Awards: Practice and Education. She is a member of many professional organizations and has served in numerous leadership positions. Dr. Sharoff is a Fellow in the New York Academy of Medicine.

Author Summary: Dr. Leighsa Sharoff is an Associate Professor and Simulation Coordinator at Hunter College in New York City. She has presented nationally and internationally on integrating concepts of holistic nursing, simulation, technology and genetics in nursing curricula, from baccalaureate to doctoral programs.