Oncology Nurses' Knowledge of Pharmacogenomics Before and After Implementation of an Education Module

Crystal Dodson, PhD, RN, MSN

OBJECTIVES: To assess the efficacy of an interactive continuing education module in improving knowledge of pharmacogenomics in oncology nursing practice.

SAMPLE & SETTING: 434 inpatient and outpatient oncology nurses from a large teaching hospital in Florida and oncology nurses who practice in North Carolina.

METHODS & VARIABLES: An interactive continuing education module was created based on key information elicited from a focus group of inpatient and outpatient oncology nurses regarding their lack of knowledge on pharmacogenomics. A pre-/post-test design was implemented. Purposive sampling of oncology nurses was used.

RESULTS: The mean pretest score was 72.7 and the post-test score was 85.9. A statistically significant difference was found between these scores. No difference in scores were found between the oncology nurses employed at urban hospitals compared to nurses at community hospitals or outpatient settings.

IMPLICATIONS FOR NURSING: Educational opportunities for pharmacogenomics should be threaded throughout nursing competencies. The continuing education module in the current article has been shown to significantly improve oncology nurses' knowledge of genomic and pharmacogenomic information.

Precision medicine has become a new innovation in cancer treatment and is growing exponentially (Das, 2017). Precision medicine is an evolving approach for disease prevention and treatment that considers variations in genes, environment, and lifestyle (Dodson, 2017). Pharmacogenomics, a subset of precision medicine, is the fastest growing specialty in pharmaceuticals. Interest in this field has risen from about 10% in 2010 to 70% in 2015, as evidenced by a poll taken by St. John's University College of Pharmacy and Health Sciences (Ramnarain, 2016). Pharmacogenomics is "the analysis of how a person's response to a particular drug is based on their genes" (Dodson, 2017, p. 739). This field combines pharmacology and genomics to develop safe and effective medications, along with proper dosages that should be customized to variations in a person's genes.

Despite growth within the field of pharmacogenomics, healthcare providers have been plagued by limited knowledge on the subject, which has been identified as a major cause of the lack of pharmacogenomics use in practice (Schwartz & Issa, 2017). In addition, a lack of capability to interpret and use pharmacogenomics information was also highlighted as a barrier for the use of precision medicine in practice (Rohrer Vitek et al., 2017; Schwartz & Issa, 2017). According to Bresnick (2016), 29% of healthcare providers use precision medicine in their treatment decisions. In addition, the American Association of Colleges of Nursing and the National Institutes of Health have identified the need for nurses to take part in genetic healthcare services (Calzone et al., 2013; Calzone, Jenkins, Prows, & Masny, 2011); however, inconsistent training and education in genetics permeates the field of nongenetic clinicians (Calzone, Jenkins, Culp, Caskey, & Badzek, 2014; Cheek, Bahshore, & Brazeau, 2015; Dodson, 2014; Hoffman et al., 2016; Riddle, Gregoski, Baker, Dumas, & Jenkins, 2016).