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Environmental health 101: Incorporating environmental health into the nursing curriculum

Kathryn P. Jackman-Murphy RN, MSN*

Naugatuck Valley Community College, Waterbury, CT 06708, USA

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Abstract
Environmental Health 101: Incorporating Environmental Health into the Nursing Curriculum program for nursing faculty was presented at the National League for Nursing's annual conference in November 2011. This faculty program provided by the Connecticut League for Nursing was designed in response to the American Nurses' Association inclusion of environmental health into the 2010 Scope and Standards of Practice for Registered Nurses. State and national leaders in environmental health and nursing presented to representatives from licensed practical nurse, associate, and bachelor's degree nursing programs in Connecticut. Follow-up surveys revealed that attendees had incorporated environmental health information into lectures and clinical experiences and have shared information gained from the programs with families and communities. This interactive program was positively evaluated and can be duplicated by other providers.

The registered nurse practices in an environmentally safe and healthy manner (American Nurses Association, 2010).

The environment is one of the primary determinants of health, and maintaining a healthy environment increases the quality and years of life. Environmental health hazards affect all areas of life, and nurses must be aware of these hazards to address the health of individuals and communities. Environmental health has been defined as "freedom from illness or injury related to exposure to toxic agents and other environmental conditions that are potentially detrimental to human health" (Pope, Snyder, & Mood, 1995, p. 3), "preventing or controlling disease, injury, and disability related to the interaction between people and their environment" (U.S. Department of Health and Human Services, 2010), and "addresses all the physical, chemical, and biological factors external to a person, and all the related factors impacting behaviours. It encompasses the assessment and control of those environmental factors that can potentially affect health. It is targeted towards preventing disease and creating health-supportive environments" (World Health Organization, 2014).

The inclusion of environmental health into nursing practice is long standing in the foundation of nursing's heritage. Florence Nightingale wrote in *Notes on Nursing*; "No amount of medical knowledge will lessen the accountability for nurses to do what nurses do; that is, manage the environment to promote positive life processes" (Nightingale, 1898). American Nurses Association (2010) Scope and Standards of Practice reflects the evolution of nursing practice with the inclusion of environmental health. Standard 16 states: "The registered nurse practices in an environmentally safe and healthy manner" (American Nurses Association, 2010). Registered nurses in every role and setting need to provide care that protects the health of those in their care. Nurses also need to protect themselves from environmental health risks.

* Corresponding author. Tel.: +1 203 596 8673.
E-mail address: kmurphy@nv.edu

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Nursing programs must prepare future practicing nurses with the knowledge, attitudes, and skills to competently incorporate environmental health into their daily practice. Nursing faculty must have the tools to integrate environmental health content into existing nursing curricula, including clinical, simulation, and classroom experiences to prepare future nurses. Most of the current nursing faculty were educated in programs that did not include environmental health content, this deficit in faculty's knowledge was noted in the 1995 Institute of Medicine report, *Nursing, Health and the Environment* (Pope, Snyder & Mood), and has resulted in the continued shortfall of environmental health subject matter included in current nursing curriculum. This program aimed to address this insufficiency.

In response to the new environmental health standard, the Connecticut League for Nursing applied for and received a grant from the Alliance of Nurses for Healthy Environments (ANHE) to provide an education program for nursing faculty. The ANHE is an international group of nurses vested in environmental health and is a key resource for all practicing nurses, students, and faculty when implementing changes in the curriculum. The program entitled "Environmental Health 101: Incorporating Environmental Health into the Nursing Curriculum" included environmental health topics for inclusion into existing content areas and, more importantly, resources for faculty and students. Faculty attendees represented LPN, associate, and baccalaureate degree nursing programs in Connecticut and Massachusetts.

The program started with a 10-question pretest assessment on items related to nursing and environmental health. To fully assess the knowledge of the participants, the questionnaire included the response choice "I don't know" to avoid having the participant from guessing a response correctly or incorrectly. The outcome of the pretest netted an average score for participants of just over 20%. Many faculty stated that they were not aware that the updated *Scope and Standards for Nursing Practice* (American Nurses Association, 2010) included environmental health as part of nursing practice, and some had not known that the update had even occurred.

Toxic chemicals are present in many of the everyday products that are part of our everyday life. A participant of the "*Is It In Us*?" biomonitoring project began the program by presenting the results of her body burden survey done in 2007. Body burden is defined as "The total amount of a substance in the body" (Glossary of Terms, 2009). Body burden is further defined as the total exposure to toxic chemicals and includes all routes of entry: breathing, eating, and absorbing via skin (Steingraber, 2010). Some of these chemicals are lipophilic, which accumulate in the body's fat tissue and persist in the body over long periods of time.

The *Is It In Us?* study tested the urine and blood of 30 participants from seven states for 20 toxic chemicals. The speaker discussed that it was detected that she had 17 of the 20 chemicals surveyed detected, which was the highest number of all participants (Is It In Us-Participants, 2011). She was quite surprised at the result of the accumulation of these toxins in her body because she had thought that she had made good decisions for herself and her family to avoid exposure to toxins. She believed her chemical exposure, the toxic trespass, had occurred without her knowledge or permission, a direct result from toxic chemicals that were in the food she ate, air she breathed, and items she touched daily in her work, play, and home environments. She expressed worry for the possible health effects of this toxic trespass, such as cancer and diabetes as a concern for herself and her family.

Currently, there are over 80,000 chemicals used in commerce (Steingraber, 2010), and according to the National Library of Medicine (NLM), 62,000 have not been tested for safety (Minutes of the Board of Regents, 2011). Less than 200 chemicals have been comprehensively tested for safety, and only five chemicals have been banned from use in the Unites States (Steingraber, 2010). Unfortunately, safety testing is primarily based on risks to an otherwise healthy adult male, and often safety testing does not include children, pregnant women, and other vulnerable populations.

Children are a more vulnerable population when it comes to environmental concerns as pound for pound, they eat more food and breathe more air, accumulating an increasing amount of these toxic chemicals in their bodies over their lifetime (California Environmental Protection Agency, 2011). Developmentally, small children often put just about anything in their reach into their mouths, which can increase their exposure to toxins such as lead in paint. Children also tend to eat the same foods on a regular basis. For example, the toddler that eats grapes, drinks grape juice, and then has grape jam on a sandwich. This may expose children to the same toxins over and over, increasing their body burden during childhood. Nurses are in an ideal position to provide education to parents to help protect children from toxic trespass.

Faculty were given examples of opportunities where environmental health content could be integrated into commonly presented nursing content such as the above pediatric example. A variety of environmental health learning activities for nursing students, which include environmental health, can begin from the first lecture in nursing school. For example, when describing leaders in nursing, faculty often present Lillian Wald and. Florence Nightingale. Lillian Wald worked tirelessly to protect public health in New York, which included improving housing conditions. Florence Nightingale included in her training of future nurses that water, air, and food quality could affect the health and healing of her patients.

Environmental Health 101 participants were reminded that clinical sites offer opportunities for environmental health instruction. Care facilities have "no scent" policies to avoid possible triggers for clients with difficulty breathing or creating a "toxic cloud" of smells that may trigger nausea or offend clients. Exposure to perfumes and scented personal care items, cleaning products, room deodorizers, air fresheners, poor ventilation, carpet, smoke, paint, mold, and renovation/construction projects in the indoor environment (Gibson, 2009) can result in exacerbations of symptoms. This is particularly true for patients with asthma, allergies,