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### Environmental and Occupational Health Risks: Educating Undergraduate Student Nurses For Best Practice

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#### Recommended Citation

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**Environmental and Occupational Health Risks: Educating Undergraduate Student Nurses  
For Best Practice**

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NURS N749-01: Qualifying Project

Manuscript

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August 12, 2022

## **ENVIRONMENTAL AND OCCUPATIONAL HEALTH RISKS: EDUCATING UNDERGRADUATE STUDENT NURSES FOR BEST PRACTICE**

### **Introduction**

The environments we inhabit, whether homes, schools, workplaces, or the communities that envelop them, are replete with ubiquitous health risks that we routinely ignore to avoid analysis paralysis from worries. Environmental risks are hidden in food, drink, household and personal care products, furniture, and building materials; chemical hazards and physical residues of modern living contaminate air, water, and soil. Occupational hazards are prevalent in workplaces as diverse as agriculture, highways, and hospitals. A recent study by the Centers for Disease Control and Prevention (2022) found that out of 2,310 urine samples taken from a group of Americans from the United States population, more than 80% contained detectable levels of glyphosate, the active ingredient in herbicides sold around the world. Almost one-third of participants with detectable glyphosate levels were children aged six to 18. Among children screened for lead in 2019, five years after the onset of the 2014 Flint, Michigan water crisis, one in four —nearly seven times the national average and in Flint before the crisis—received a clinical diagnosis of elevated lead in blood levels. Those children were significantly more likely to experience issues such as learning delays, hyperactivity, emotional agitation, or skin rashes (Ezell et al., 2022). Nearly 13 million deaths are caused worldwide by the prevalence of environmental risk and occupational hazard exposure (Office of Disease Prevention and Health Promotion, 2021). “You can’t have healthy people on a sick planet,” write R. Guenther and G. Vittori (2015, p. xiii), architects of sustainable healthcare design and advocates for the “healing architecture” of hospitals.

Healthcare professionals who work in those facilities and treat patients within and beyond those walls must take action. The nursing workforce is strong in number—the largest of any healthcare profession (Schenk, 2015)—and could lead to mitigating environmental and occupational hazards with sufficient awareness, knowledge, and steadfast advocacy for effective practice. As they join teams of frontline caregivers, accomplished student nurses will have the opportunity to strengthen the healthcare workforce through advocacy and leadership in expanding patient care above its current standard parameters. Therefore, the need for environmental and occupational health education in undergraduate nursing programs is clear. If not provided, the nursing profession will have missed a critical opportunity in clinical, public, and community health nursing.

### **Background**

Currently, nursing research has expressed concern that many, if not most, undergraduate nursing programs lack environmental and occupational health content in their curricula (McElroy et al., 2021; Schenk, 2015). Additionally, student nurse clinical experience is heavily weighted toward traditional clinical nurse roles and hospital settings. Nursing academia must provide education beyond standard patient care. Providing the highest level of care stipulates instilling a solid health-promoting base in undergraduate programs. Health promotion education must include interventions to address the absence of environmental and occupational health knowledge necessary for practice. Optimal, holistic care requires environmental and occupational health education to address the prevalence of associated health risks. To inspire health-promoting behavior in the populations that novice nurses serve, they must be able to apply the knowledge acquired from their undergraduate curriculum to mitigate environmental and occupational health risks. Therefore, providing environmental and occupational health education

and promotion establishes nursing competency to address health risks that surpass conventional care. A solid environmental and occupational health nursing foundation will build competence in student nurses in their current and professional practice to advocate for themselves and their patients, clients, and communities (Bak et al., 2020; Schenk, 2015).

### **Discussion and Implications**

Environmental and occupational health education in undergraduate nursing curricula can awaken student nurses to the relationship between work and health and encourage them to advocate for their well-being authentically. As student nurses become accustomed to exercising self-advocacy and self-care, their nursing practice will reflect a virtuous work ethic (Bak et al., 2020).

Current student nurse clinical rotations focus on acute care patients, typically medical-surgical and specialty areas, such as intensive care, pediatrics, and maternity. However, with the scope of expanding primary care, pressure on hospitals to shorten patients' length of stay, and heightened attention to social determinants of health, comprehensive nursing education can no longer be limited to hospital-based care. Undergraduate programs concentrating on community health can introduce students to comprehensive patient care and clinical practice, including environmental, occupational, and social factors influencing health outcomes. Student nurses who have not acquired these broader competencies will lack the confidence to educate and advocate for holistic health.

Student nurses are prone to encountering occupational risks in the clinical learning environment. Outside the classroom, awareness must be developed during clinical experiences to prepare students to anticipate what they will experience as professionals. Awareness is vital to take steps to diminish harm to themselves, their coworkers, and patients. Student nurses in

clinical training are inexperienced in communicating as healthcare professionals, and insufficient clinical knowledge further impedes effective communication (Aksoy et al., 2022). As a result, feelings of vulnerability and hesitation diminish the effectiveness of their clinical practice, directly impacting patient care. The ability for students to speak to patients about environmental and occupational health issues provides an avenue to enhance nurse-patient/client dialogue and foster a trusting relationship. As environmental and occupational health affects the world at large, it is a relatable topic for student nurses to build trust with their patients. Supporting student nurses with the proper environmental and occupational health education bolsters their communication, confidence, and effective care.

In clinical rotations, student nurses are likely to be unfamiliar with safety precautions, unaware of safe handling protocols, and unsure of the proper use of personal protective equipment, such as gloves and face masks. In the hospital, disinfectants are routinely used to eliminate microorganisms in patient rooms. According to Healthcare Without Harm, disinfectant wipes contain glutaraldehyde, which is a potent skin irritant and causes occupational asthma, yet currently is not regulated in the United States (2002). Other commonly used medical supplies made out of plastic are IV tubing and IV bags that contain a chemical known as phthalates. This chemical is associated with adverse effects to the lungs, liver, kidneys, and the male reproductive system (Healthcare Without Harm, 2021).

Awareness of the hazards and knowledge to mitigate them provide a fundamental underpinning, from self-advocacy and self-care, for the deliberate practice of safety in other situations and settings. Deliberate practice of safety, motivated by self-advocacy and self-care, can be achieved if environmental and occupational health education is threaded throughout

undergraduate nursing curricula. As their nursing knowledge progresses, so will their appreciation of self-advocacy, self-care, and safe practices as they enter the workforce.

However, possible barriers to including environmental and occupational health education in undergraduate nursing curricula may consist of the following:

- Students may resist learning additional and non-traditional content.
- Faculty may not welcome teaching new content on top of existing learning objectives and outcomes.
- Clinical faculty may oppose preparing students as it is outside the scope of standard nursing care.
- Nursing leadership in academe and healthcare organizations may not provide sufficient support for sustainability.

Traditional nursing program requirements for accreditation are often perceived to have already exceeded unit capacity at the undergraduate level. The current nursing workforce is already burdened with time constraints and staff shortages that threaten to meet a healthcare organization's expectation for quality, safe patient care. Executive nursing leadership may not recognize the relationship between environmental and occupational health to the health and safety of healthcare staff and patients; thus, they fail to advocate for the necessary investment in labor and financial resources.

With obstacles come opportunities for education, knowledge, and awareness.

Environmental organizations, regulated by professional, passionate expertise, are accessible to healthcare professionals and the public through various platforms. Virtual simulation, databases, webinars, podcasts, videos, and social media are effective learning modes to increase health-promoting awareness. To illustrate, for nursing students and practitioners, the organizations at

hand are the Alliance of Nurses for Healthy Environments (ANHE) and Climate, Health, and Nursing Tool (CHANT) are resources pertinent to clinical practice. For the general public's interest, Environmental Working Group's EWG Clean 15 and Dirty Dozen and EWG Skin Deep Personal Care Products are resources applicable to everyday living. To serve healthcare professionals and the general public, Healthcare without Harm is an organization appropriate to any individual. These resources will support and directly benefit student nurses and the patient/client of different populations, whether inpatient, outpatient, or in the community.

### **Conclusion**

Environmental toxins and workplace hazards are ubiquitous byproducts of modern life that affect the population's and the environment's health. Growing awareness of environmental, occupational, and social determinants of health, and the need for appropriate interventions, offers an opportunity for student nurses trained in environmental and occupational health to expand patient care beyond its current parameters. Nursing practice must move from the long-established status quo toward educating on current and related safety and health issues, trends, and problems affected by environmental and occupational risks. Experts, organizations, and resources are available for healthcare professionals and the general public to improve and sustain much-needed awareness. Environmental and occupational health awareness prevents the development of a sick planet and preserves the holistic wellness of the global population and our earth.



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