Teaching Undergraduate Nursing Students About Environmental Health: Addressing Public Health Issues Through Simulation
Mary Jo Stanley, PhD, RN; and Deb Rojas, MS, RN

ABSTRACT
Schools of nursing are challenged to find clinical placements in public health settings. Use of simulation can address situations unique to public health, with attention to specific concerns, such as environmental health. Environmental health is an integral part of public health nursing and is a standard of professional practice. Current simulations focus on acute care situations, offering limited scenarios with a public health perspective and excluding environmental health. This study's simulation scenario was created to enhance nursing students' understanding of public health concepts within an environmental health context. Outcomes from the simulation include the need for integration of environmental issues in public health teaching. Students stated that this scenario provided a broader understanding of the environmental influences that can affect the client's and family's health. This scenario fills a void in simulation content, while providing an interactive teaching and learning strategy to help students to apply knowledge to practice. [J Nurs Educ. 2013;52(x):xxx-xxx.]

Schools of nursing are challenged to find clinical placements in public health settings; space and competition for these limited clinical sites adds to the conundrum in providing quality public health experiences (Phillips, Grant, Milligan, & Moss, 2012). Although simulation has been used extensively in schools of nursing to augment clinical time in medical–surgical, pediatric, and obstetric settings, it has been used sparingly in public health. Simulation can provide a public health perspective with objectives and learning outcomes specific to this setting and inclusive of an environmental health focus. Environmental health, as an integral component of public health, cannot be overlooked, as disease processes and physical determinants of health are closely intertwined within the environmental sphere (Healthy People 2020, 2013; Hill, Butterfield, & Kuntz, 2010). Environmental health has had limited inclusion within schools of nursing, yet it is listed as one of the Standards of Professional Nursing Practice (American Nurses Association [ANA], 2010; Davis, 2007; Hill et al., 2010). As public health clinical experiences can vary, simulation can augment these settings, introducing concepts such as environmental health while providing a safe and controlled environment in which learning can take place.

This study’s simulation scenario was created to enhance understanding of public health concepts within an environmental health context for undergraduate nursing students in their public health rotation. In looking at the client as a family or as a community, the nursing student moves beyond the needs of the individual and integrates family practices and beliefs, as well as community influences. An environmental health focus directs the student’s assessment of the client, family, and community in relation to the environment as it affects the health of the family unit and surrounding population. Current scenarios focus on acute care simulations but offer limited scenarios with a public health perspective that includes environmental health (Gasper & Dillon, 2012; Phillips et al., 2012). This simulation scenario was created to fill a void in simulation content, while providing an interactive teaching and learning strategy to help students apply knowledge to practice (Clapper, 2010).

Environmental Health
Environmental health can be traced to Florence Nightingale and her use of data collection to show the influence of environmental conditions on patients’ health (O’Fallon, 2006). This link between the patient and the environment reinforces the public
health nurse’s role in environmental health concerns, issues, and dangers that affect individuals and the community. Hill et al. (2010) stated that clients and families do not understand how the environment affects their health, that public health nurses do not have time to consider environmental health, and that nurses themselves do not understand how the environment can affect health. Davis (2007) reinforced the need for nurses to be aware of common environmental health hazards, as public health nurses are on the forefront to provide education, screening, and referral services. As public awareness of environmental issues increases, nursing knowledge regarding home environmental safety is essential (O’Fallon, 2006). Public health nurses are uniquely positioned to intercede on behalf of their clients. Nursing knowledge is key to advocacy and care in environmental health. Inclusion of an environmental focus in a public health simulation scenario provides nursing students with knowledge and understanding of environmental health and its impact on clients and communities.

The Simulation Scenario Preparation and Prebriefing

One week prior to the simulation scenario, students were asked to prepare for it in the following ways: (a) review asthma from a population focus (Centers for Disease Control and Prevention, 2013; Healthy People 2020, 2013) and (b) review school laws and regulations regarding asthma management and medication administration (Colorado Department of Education, 2013; National Association of School Nurses, 2013). On the day of the simulation, students were given this scenario (Gasper & Dillon, 2012):

Mia Peters is an 8-year-old female who has frequently missed school this school year due to asthma. Mia is in the 3rd grade and lives with her grandmother in an urban neighborhood in an apartment complex built in the late 1950s; the apartment has stairs. Mia and her grandmother are African American; English is spoken in the home. The grandmother states they have Christian values. Mia is 4 feet 4 inches tall and weighs 92 pounds. She receives health care from the local health clinic as needed. Mia has an albuterol inhaler with a spacer, which she uses for her asthma. She is an only child and has been in the guardianship of her grandmother for the past year; she has cousins in the neighborhood with whom she plays often. Mia has not had any surgery; she currently uses Child Health Care Plus for health coverage.

Mia has missed more than the allotted number of days for school this year. When questioned by the school, the grandmother indicates that Mia “is having problems with her asthma, again.” The meeting with Mia’s teacher and principal to address her attendance and missed class work was not attended by the family. Mia does not have an asthma plan in place with the school, and no medical documentation has been brought to school to substantiate her health condition. Mia’s teacher and the school principal would like the school nurse to make a home visit and address the health issues that are affecting Mia’s attendance.

Prior to starting the simulation scenario, students first completed the Pediatric Home Assessment (form online at http://www.odh.ohio.gov/~media/ODH/ASSETS/Files/eh/asthma/pediatricenvironmentalhomeassessmenttool.aslx) using the Healthy Homes training program (National Center for Healthy Housing, 2013). The students were responsible for (a) reviewing the Healthy Homes videos (welcome, kitchen, living room, bedroom, and wrap-up discussion) and (b) reviewing the Healthy Homes photos (kitchen, living room, bedroom, bathroom, basement, and outside).

The Home Visit

A standard simulation laboratory was used for the simulation scenario. All hospital equipment was removed, and a photography backdrop was used to simulate a wall. The backdrop display had bricks and a window, which also doubled as a cover for the remaining equipment (hospital monitors and headwalls). The hospital bed was converted to the family room sofa and was covered with a bedspread and pillows. Standard classroom chairs were covered with dining room slip covers, and a cardboard box simulated the television. Props such as pictures, vases, books, and a book shelf created a warm “home” feeling. A Laerdal VitalSim® Kid mankin simulated 8-year-old Mia Peters. Voice streaming was enabled though SimPad® audio within the simulation control room allowed the driver and observers to hear responses. The mankin was dressed in clothes appropriate for the age and gender of the child; an inhaler with a spacer was included in the simulated home.

Two simulation rooms were used concurrently with 20 students, and one faculty member was assigned to each room. Each cohort of 20 students had four groups of five students, and 20 minutes for the simulation scenario and 20 minutes for debriefing (one faculty member was assigned to each cohort for debriefing) were allowed. Two students performed the home visit—one as the school nurse and one as the nursing student assigned to the school setting. One student played the role of the grandmother, and two students observed. Student preparatory and prebriefing materials assisted everyone with their roles. Scenario objectives were carefully defined, with verbal cues for the child, grandmother, and school nurse or nursing student to keep the scenario moving. Observers and faculty used a worksheet to review the objectives and observed behavior, with expected outcomes for further discussion in debriefing (Table).

Debriefing

Each group of five students debriefed with a faculty member following completion of the simulation scenario. No video was used for these scenarios. Debriefing rules included:

- Debriefing is based on the objectives and the desired outcomes of the experience.
- When debriefing the scenario, respectful and supportive communication is expected; if corrective feedback is needed, make sure that it is constructive.
- If you have been asked to take part in the observer role, you are required to take notes on what transpires in simulation, as you will participate in debriefing. Be sure to identify where the student did well and where he or she may need to improve.
- Student performance in the scenario is to be kept confidential; faculty is not to discuss the scenario with students outside the group.

The questions that guided the debriefing process and were aligned with the objectives and outcomes for the scenario are presented in the Table.
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<th>Objective</th>
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<td>Using the Healthy Homes Web site, Pediatric Environmental Health Assessment form, and the simulated home, assess the environment for health issues as they relate to the client, the client's family, and the community.</td>
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<tr>
<td>Demonstrate asthma treatment and medication regimen as it applies to the client and the client's family.</td>
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<td>Communicate appropriate strategies and interventions for addressing environmental health problems for the client and family.</td>
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<td>Demonstrate respect and caring for client and family through awareness and integration of social, cultural, and spiritual factors, and patient preferences.</td>
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<td>Evaluate the effect of environmental hazards on the client's, the client's family's, and the community's health, including the community health nurse's role.</td>
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Comments from participation in the pediatric environmental health simulation were positive. Those students who had already performed a home visit in their public health setting affirmed a sense of realism with preparatory and home assessment. Students stated that this simulation scenario challenged their ability to integrate multiple aspects of care. The larger context of environment and a population focus were difficult for the students to naturally incorporate. Students stated that this experience was different from previous semesters, when the focus was on acute care and specific skill sets. Students identified that they had not previously thought to integrate environmental issues into the home assessment and that this scenario provided a broader understanding of the influences that can affect the client’s and family’s health. Of note, students did not consider cultural beliefs and practices, despite cues embedded into the scenario; instead, students focused on diagnosis and medication management.

Lessons Learned

Although the simulation ran smoothly, reflection on the process provided areas for further improvement. Management mistakes included inadequate reduction of noise in the control room. The control room is shared for both simulation rooms; when using the audio for the simulation room, the noise from the simulation can be heard in the control room. With both simulation rooms running, there was too much noise in the control room. During the simulation, noise was managed by having one group of observers wear headsets. As this problem was not anticipated, future simulations with this scenario would provide headsets for both groups. In addition, it took more time than anticipated to have students prepare for the simulation with the Healthy Homes Web site. Although this preparation was necessary for a full environmental assessment, more time needs to be added when running this simulation.

Conclusion

A public health simulation scenario can provide nursing students with the opportunity to partake in a controlled home visit inclusive of health concerns—specifically, those related to environmental health. Environmental health is an integral part of public health nursing; this scenario allowed students to assess the health of the client, family, and community as influenced by their environment. Given that limited public health simulations were found as a template for our simulation needs, this scenario may significantly benefit other schools of nursing as they work to provide simulation scenarios representative of all clinical settings.

References