



Published in final edited form as:

AAOHN J. 2011 September ; 59(9): 401–407. doi:10.3928/08910162-20110825-02.

Promoting Occupational Health Nursing Training:

An Educational Outreach With a Blended Model of Distance and Traditional Learning Approaches

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Abstract

In 2009, occupational health nursing faculty and professionals at the University of Washington developed an innovative continuing nursing education offering, the OHN Institute. The OHN Institute was designed to meet the following objectives: (1) extend basic occupational health nursing training to non-occupational health nurses in Federal Region X, (2) target new occupational health nurses or those who possessed little or no advanced education in occupational health nursing, and (3) offer a hybrid continuing nursing education program consisting of on-site and distance learning modalities. Evaluation findings suggested that the various continuing nursing education modalities and formats (e.g., asynchronous vs. synchronous, online modules vs. live modules) were essentially comparable in terms of effectiveness. Perhaps most importantly, the OHN Institute evaluation demonstrated that quality continuing nursing education outcomes for occupational health nurses depended largely on knowledgeable and engaging faculty and a compelling vision of desired outcomes, including the application of learned content to professional practice.

Recent projections suggest that a renewed shortage of registered nurses (RNs) will likely develop in the next decade, with an estimated deficit of as many as 260,000 RNs by 2025. This projected shortage would be twice as large as any nursing shortage experienced in the United States during the past 50 years (Buerhaus, Auerbach, & Staiger, 2009). One factor driving this shortage is the aging nursing work force; aging has also affected occupational health nursing. In 2004, the average age of occupational health nurses was 51 years; occupational health nurses are the oldest of all nursing practice specialties and more than 5 years older than the average age of all employed RNs (Thompson, 2010). Accordingly, promoting occupational health nursing and educating more nurses to attend to the health and safety needs of the nation's workers is a priority.

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The authors disclose that they have no significant financial interests in any product or class of products discussed directly or indirectly in this activity.

Occupational health nurses in all types of positions face an array of professional practice demands and responsibilities, including combinations of direct care, administration, consultation, management, teaching, and research. Thompson (2010) found that 50% of occupational health nurses reported having no single activity that accounted for more than 50% of their current role's typical weekly functions. The existing multifaceted role demands, combined with the added challenge of a work force shortage, obligate occupational health nursing educators to prepare occupational health nurses in relevant and innovative ways. Although some occupational health nurses receive advanced occupational health specialty training designed to prepare them for diverse role demands, many acquire knowledge and skills on-the-job or via continuing education courses.

However, several barriers exist to participating in continuing education programs, including staffing shortages that limit shift coverage, registration and tuition expenses (Sheperd, 1995), and travel distances to training sites, especially for those in rural practice settings (Tilleczek, Pong, & Caty, 2005). Despite these barriers and the growing availability of distance learning technologies, many nurses continue to feel more comfortable with face-to-face, didactic learning (DeBourgh, 2003). On the other hand, "blended learning," which integrates classroom learning with online distance learning, has been suggested as a hybrid strategy for addressing access barriers. Additionally, the hybrid format combines pace flexibility and the convenience of online delivery with the spontaneity and interpersonal context of face-to-face learning (Dorrian & Wache, 2009; Stodel, Thompson, & MacDonald, 2006).

In 2009, occupational health nursing faculty and professionals at the University of Washington recognized these co-occurring realities and, in response, developed an innovative continuing nursing education offering, the OHN Institute. The OHN Institute was designed to meet the following objectives: (1) extend basic occupational health nursing training to non-occupational health nurses in Federal Region X (Alaska, Idaho, Oregon, and Washington), (2) target new occupational health nurses or those who possessed little or no advanced education in occupational health nursing, and (3) offer a blended educational program consisting of on-site and distance learning modalities. The purpose of this article is to describe the OHN Institute's development, format, and content, as well as lessons learned from the continuing education administrator and student perspectives.

PROGRAM DESCRIPTION

The OHN Institute arose initially through discussions within the UW Northwest Center for Occupational Health and Safety (UW-NWCOHS), an Education and Research Center funded by the Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health (CDC-NIOSH). In fulfillment of the continuing education portion of its mission, UW-NWCOHS has explored a variety of distance learning strategies to deliver continuing education to occupational health disciplines including nursing. The OHN Institute was conceived as a pilot project to evaluate blended learning approaches to reach nurses who might have an interest in occupational health nursing continuing education. The UW OHN Program, a graduate training program of the UW-NWCOHS, located in Seattle, Washington, is the only graduate occupational health nursing training program serving Federal Region X catchment area. Given potentially long commuting distances, as well as emerging demands for distance education offerings, the OHN Institute was structured using a hybrid format that included asynchronous (online) and synchronous (in-person and online) components, which resulted in a comparative evaluation of these training modalities. The OHN Institute was also envisioned as a way to potentially recruit students into the UW OHN training program, which offers doctor of philosophy (PhD), doctor of nursing practice (DNP), and master of nursing (MN) degrees.

Participant Recruitment

Several marketing strategies were used to attract prospective OHN Institute participants, including advertising through a contracted continuing nursing education provider; web listings on the UW-NWCOHS continuing nursing education offerings calendar; e-mail dissemination to contacts in professional organizations, academic institutions, and practice settings across the four-state region; and word-of-mouth. The intended target audience was current undergraduate and graduate nursing students, recent nursing graduates, and practicing nurses without formal training in occupational health. Because the program provided a useful introduction to the field of occupational health and safety, as well as nursing-specific content, it was also marketed to graduate students in related fields.

A total of 20 participants were sought representing Alaska, Idaho, Oregon, eastern Washington, and western Washington. Initially, 19 nursing participants registered, of 29 inquiries received: 2 from Alaska, 1 from Idaho, 3 from Oregon, 3 from outside of urban western Washington, and the remainder within 50 miles of the Seattle metropolitan area. Ultimately, attrition due to conflicting work schedules, inconsistent access to technology in some rural settings, family obligations, and an on-the-job injury winnowed the actual OHN Institute student/participant group of nurses to 15. The average age of this group was 47.6 years. All had worked as nurses for at least 1 year, with 7 practicing for more than 10 years. The duration of individuals' occupational health nursing experience ranged from less than 1 year ($n = 5$) to more than 6 years ($n = 2$), with the remainder split evenly between 1 to 2 years ($n = 4$) and 3 to 4 years ($n = 4$). Four OHN Institute participants reported their "highest nursing license held" as licensed practical nurse (LPN), 8 reported RN, 1 reported advanced practice registered nurse (APRN), 1 reported PhD, and 1 did not respond.

Participants were offered a \$50 incentive and 9 continuing education units as compensation for completing all course assignments and evaluation and feedback surveys. The entire OHN Institute was conducted during the first 2 weeks of June 2010.

Pedagogical Approach, Design, and Content

The pedagogical approach for the OHN Institute was guided by Vanderbilt University's "Anchored Modular Inquiry; Generate Ownership, Originality and Organizational (AMIGO³) Learning" project (Bransford, Vye, Bateman, Brophy, & Roselli, 2004). The AMIGO³ project explored how knowledge about learning styles can inform the design of web-enhanced and web-based learning environments. In the AMIGO³ model, "instruction is inquiry-based and anchored around key challenges that are packaged as modules that can be configured as needed," and the learning environment is designed so as to "adapt modules to one's individual needs, to create new resources and challenges, and to learn from one's colleagues by seeing how they have responded to various challenges" (Bransford et al., 2004, p. 2). The OHN Institute is consistent with and adheres to the AMIGO³ educational principles and guidelines.

A series of seven educational modules were developed for the OHN Institute (Table 1). The first five modules were prerecorded, narrated PowerPoint lecture presentations addressing introductory material in the following occupational health nursing content areas: occupational health nursing practice, principles of industrial hygiene, occupational medicine case studies, policy and regulatory matters focused on the Occupational Safety and Health Act and workers' compensation, and the occupational and environmental health history. Reflective of an interdisciplinary effort within the UW-NWCOHS, each lecture presentation was developed by a UW occupational health and safety faculty content expert and lasted approximately 1 hour.

Before viewing each module, participants were presented with a hypothetical scenario related to the content to be covered in the module. For example, prior to the industrial hygiene module, a case scenario was presented wherein participants were informed that a coworker had recently experienced a work-related injury. However, details regarding the work-related injury scenario, or subsequent outcomes, were not delineated. As part of this exercise, participants were then asked to think about types of hazards they may have encountered in their own workplaces that might pose a threat to health and safety and to submit their “initial thoughts” describing them. The purpose of the assignment was to capture participants’ “baseline” knowledge and insights prior to viewing the module. This initial thoughts exercise was designed to prepare participants to think about things they might or might not know about a particular workplace health and safety issue. Occupational health nursing faculty reviewed the participants’ initial thoughts and provided individualized feedback. After viewing a given module, four to five self-assessment questions were posed regarding the module’s key content. One of these self-assessment questions explicitly asked participants to refer back to their initial thoughts and describe how their perspective and understanding may have changed after viewing the module. Additionally, feedback and evaluation questions, conventional to continuing education programs and specific to each module and its respective presenter, were posed.

All five modules were posted, managed, and accessed through the web-based teaching platform Moodle™. Participants were given 2 weeks to complete the five online modules, including posting initial thoughts, answering self-assessment questions, and responding to evaluation queries. Completion of the five online modules was achieved asynchronously according to each participant’s self-paced learning within the allotted 2-week period.

Two additional modules, lecture presentations on occupational stress and hazards in the health care work-place, were presented synchronously in real time to all participants during a full-day Saturday class meeting. OHN Institute participants attended these synchronous module sessions in one of two ways: in-person at the University of Washington School of Nursing or remotely through a web-enabled, two-way video/audio communication transmission. Five participants (in Portland, OR; Boise, ID; Ilwaco, WA; and Tri-Cities, WA) chose to access these sessions remotely from their residences. These live modules were each approximately 1.5 hours long and included a combination of lecture and learning activities. Additionally, two 45-minute discussions of the online modules provided an opportunity to revisit, interact, and discuss content previously accessed asynchronously.

EVALUATION FINDINGS

In terms of their participation in the OHN Institute, the most commonly cited initial motivators were receiving continuing education units ($n = 10$), networking ($n = 8$), interest in developing current occupational health nursing practice ($n = 5$), or interest in entering the occupational health nursing specialty ($n = 4$). Participants could cite more than one initial motivator. Nurses with less than 2 years of experience in occupational health nursing settings tended to express more interest in continuing education contact hours and academic credit, if it were offered, whereas networking was more often identified by more experienced occupational health nurses. Among all participants, only two had not previously participated in an online course or training. Both of these participants attended in-person for the synchronously delivered content, but both also successfully completed all asynchronous online modules. Four of the five distance participants reported having previously attended five or more online courses or trainings prior to the OHN Institute.

Following completion of the 2-week experience, participants were asked which features of the OHN Institute they most liked. The most commonly cited positive feature was expert

presenters ($n = 7$), with two additional participants identifying “passionate” presenters, followed by viewing from home/distance component ($n = 6$), AMIGO³-style reflections and responses ($n = 5$), and synchronous/asynchronous hybrid delivery ($n = 4$). Due at least in part to difficulties with activating distance participants' microphones on the synchronous learning day of the OHN Institute, participants identified technical difficulties as the major area of opportunity for improvement ($n = 7$). Other participants ($n = 4$) stated they would have liked additional participatory learning activities, and a few ($n = 2$) expressed interest in more interaction with their fellow participants. Thus, in general, whereas continuing education contact hours, career advancement, and development opportunities were identified as the most appealing recruitment qualities, qualified presenters, engaging and convenient delivery, and clear application to practice appeared to be positive features that participants identified on completion.

After each module and on completion of the full program, participants were asked to evaluate their knowledge gain, the utility of the new information, and the anticipated impact of this knowledge on their professional practices (Table 2). Table 2 presents the percentage of participants in agreement with statements of these qualities' inclusion in the program. Asynchronously viewed module results are shown in aggregate, whereas modules 6 and 7 and the full program evaluation provided comparison between on-site and distance learning experiences.

Within 2 weeks of completing the OHN Institute, all participants “agreed” or “strongly agreed” that their current knowledge of occupational health nursing had been enhanced by the OHN Institute. Some participants ($n = 12$) expressed intent to change their clinical practices as a result of what they had learned. In the full program evaluation, no distinctions were found between in-person and distance participants. However, in specific module evaluations, the distance group more frequently reported gaining new and useful information, and the on-site group more frequently anticipated making practice changes as a result. The researchers speculate that this difference may be due to differences in the characteristics of the two groups. Although the two groups had comparable occupational health nursing experience, the on-site group included more experienced nurses, with 70% having worked more than 6 years in nursing versus 40% of distance participants. It may be that less experienced nurses more readily identify knowledge gain, whereas more experienced nurses are more likely to have established practices to which new knowledge can be applied. More formal research is needed to evaluate this small-sample observation.

In their post-viewing self-reflections, participants frequently described experiencing a perspective shift from a task-completion orientation to a “big picture view” of their role. For example, one student stated, “Occupational health nurses do much more than my original thoughts. As clinicians, single nurse units, health promotion specialists, and manager/administrators Occupational health nursing is a new ‘frontier’ for health care.” This perspective, or paradigm shift, led several participants to express renewed interest in their occupational health nursing role. One participant reflected, “The concept of ecological occupational health nursing is intriguing to me. Being able to understand the complexities of the responsibility, in the context of the various levels of influence surrounding a particular employee and their job position, adds remarkable clarity to the ability to thoroughly assess and troubleshoot on behalf of the worker.” Others identified practice implications of this broader occupational health nursing perspective. One participant stated, “I am now aware that some ideas for improvement must be suggested with the knowledge that workers may not want to comply or it may interfere with the work flow,” indicating a new awareness of workplace realities to which the occupational health clinic patient will return, as well as the impact of organizational factors on employee outcomes. Another participant recognized relevance for all areas of nursing practice, stating, “Occupational health and safety issues are

important for all nurses to consider in relation to their patients and clients, because almost all of their patients and clients spend part of their time in the work environment. The work environment has a great impact on a worker's health and wellness.”

In addition to these qualitative learning outcomes, two participants subsequently inquired about pursuing graduate study in occupational health nursing. Another, who currently works in nursing education, reported that she is developing future lesson plans that will incorporate occupational health nursing content for the first time.

SUMMARY

In a longitudinal study of factors associated with nursing turnover, Estry-Behar, van der Heijden, Fry, and Hasselhorn (2010) identified dissatisfaction with development opportunities as one of the primary work-related reasons for departure. The aging occupational health nurse work force and an anticipated renewal of the nursing shortage call for a preemptive bolstering of nursing retention strategies, which should include access to meaningful continuing nursing education programs. In June 2010, the UW OHN program piloted the OHN Institute with the intent of implementing and evaluating a continuing nursing education program using a blended learning format designed to maintain interactivity while reducing costs and promoting educational access. Although a pilot project, the OHN Institute demonstrated that various continuing nursing education delivery modalities and formats could be used to provide topical occupational health nursing education for nurses from a variety of backgrounds and practice settings. Evaluation findings suggested that the educational modalities and formats (e.g., asynchronous vs. synchronous, online modules vs. live modules) were essentially comparable in terms of overall student learning and professional practice applicability. This is consistent with the recently published evidence-based meta-analysis of online versus traditional college classroom student outcomes (U.S. Department of Education, 2010). Perhaps more importantly, the OHN Institute demonstrated that quality educational outcomes for experienced and novice occupational health nurses alike depended largely on knowledgeable and engaging faculty and a compelling vision of desired outcomes, including professional practice applications and big picture thinking. When educators focus on balancing lecturer expertise and participatory exercises, the blended learning format offers a viable strategy for ensuring that occupational health nurses from all practice settings have access to high-quality professional development experiences.

Future developments to this pilot OHN Institute will take into consideration seeking a sustainable source of funding or charging participants a registration fee; marketing to early practice nurses, including those in occupational health, in both urban and rural settings; creating a recruitment pipeline into graduate occupational health nursing education; and keeping pace with evidence-based occupational health nursing practice and technological developments in program delivery. Production costs will vary by institution, depending on the availability of in-kind instruction and costs of technology and administrative support. The researchers hope to offer the OHN Institute biannually, with refinements to the established modules and possible addition of new content areas. Recurring expenses would likely include revisions to module content, technology support for synchronous and asynchronous access, room reservations for synchronous day(s), and advertising and marketing. Additional information is needed to determine whether two-way audio/video technology is a necessary component of distance learners' experience on the synchronous broadcast day, or whether two-way audio with slide viewing only is sufficient. Future programming will also consider whether regional programming is most appropriate or whether a broader reach, perhaps in partnership with a professional organization or other

NIOSH Education and Research Centers, is a more sustainable model for advancing occupational health nursing practice.

Acknowledgments

The authors thank Ms. Karen Bowman, Ms. Janice Camp, Dr. Gary Franklin, Dr. Betsy Gilbert, Mr. Steve Hecker, Dr. Mary Salazar, Dr. Noah Seixas, and Dr. Victor Van Hee for their support of this project, which was made possible by grant number 3T42OH008433 awarded by the Centers for Disease Control and Prevention-National Institute for Occupational Safety and Health to the University of Washington Northwest Center for Occupational Health and Safety and grant number 5 KL2 RR025015 from the National Center for Research Resources (NCRR), a component of the National Institutes of Health (NIH). Its contents are solely the responsibility of the authors and do not necessarily represent the official view of NCRR or NIH.

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Table 1

OHN Institute Program Content

Module	Content Addressed
Asynchronously delivered modules	
Module 1: "What is Occupational Health Nursing?"	Occupational health and safety introduction Occupational health as a nursing specialty Ecological model for occupational setting
Module 2: "Workplace Hazards: Recognition, Evaluation, Control"	Anticipating workplace hazards Identifying workplace hazards Hazard control strategies and hierarchy of controls
Module 3: "Work-Related Injuries and Illnesses: How Your Job Can Make You Sick"	Common occupational health injuries and illnesses Role of occupational health history in diagnosis Critical elements of the occupational history
Modules 4A and 4B: "Occupational Health Policy and Regulatory Matters" and "Workers' Compensation 101"	Occupational Safety and Health Act Federal agencies, state plans, and standards Enforcement processes Workers' compensation
Module 5: "Expanding Nursing Assessment Skills: Practicing the OEH History"	Review of content Case study and sample health history tools Confidentiality
Synchronously delivered modules	
Module 6: "Work Stress and Health for Occupational Health Nurses"	Sources and consequences of work stress Workplace bullying Workplace stress management interventions
Module 7: "Hazards in the Healthcare Workplace"	Hazard mapping exercise Bloodborne pathogens Back and musculoskeletal injuries Workplace violence

Note. *OEH* = occupational and environmental health.

Table 2

Participants' Evaluation of Information Presented in the OHN Institute

	Module 1		Module 2		Module 3		Module 4A		Module 4B		Module 5		Module 6		Module 7		Full Program ^a	
	On-site	Distance	On-site	Distance	On-site	Distance	On-site	Distance	On-site	Distance	On-site	Distance	On-site	Distance	On-site	Distance	On-site	Distance
This session enhanced my current knowledge of occupational health nursing.	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	93%	78%	100%	100%	89%	100%	100%	100%
I gained new ideas or information that I expect to use.	94%	100%	100%	100%	100%	100%	79%	79%	80%	80%	73%	67%	80%	67%	67%	100%	100%	100%
I intend to make changes and/or apply what I've learned to my practice	94%	79%	100%	100%	100%	100%	57%	57%	64%	64%	67%	67%	40%	67%	60%	80%	80%	80%

Note.

^a Possible answers for modules 1 to 7 were "not at all," "not sure," "somewhat," or "yes." Table indicates percentage responding "somewhat" or "yes." Full program responses were on a scale of 1 to 5, with 1 being "strongly disagree" and 5 being "strongly agree." Table indicates percentage responding "agree" or "strongly agree."