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Nursing student evaluation of NIOSH workplace violence prevention for nurses online course☆

Maria Brann, [a,b,*] Dan Hartley, [c]

[a] Department of Communication Studies, Indiana University-Purdue University, 425 University Blvd., CA 309, Indianapolis, IN 46202, United States
[b] Injury Control Research Center, West Virginia University, Morgantown, WV 26506, United States
[c] NIOSH, 1095 Willowdale Rd., MS1811, Morgantown, WV 26505, United States

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ABSTRACT

Introduction: As primary targets of workplace violence in health care settings, nurses may suffer negative physical and psychological consequences. NIOSH created an online course to educate nurses about violence prevention techniques. *Method:* A mixed-methods approach assessed workplace violence awareness and knowledge among nursing students. A pre/post/post-test survey and focus group discussions evaluated participant awareness and knowledge, assessed course design, and solicited recommendations for increasing participation and strategies for improving message retention. *Results:* The mean awareness scores differed significantly between pre-course and both post-course time points (Wilk's $\lambda = 0.319$, $F(2, 46) = 49.01$, $p < 0.001$). Post hoc tests using the Bonferroni correction revealed that course participation increased awareness of workplace violence from pre-course scores ($M = 0.75$, $SD = 0.438$) to immediate post-course ($M = 2.13$, $SD = 0.789$) and four-week post-course ($M = 1.96$, $SD = 0.771$) scores on a 3-item measure. Similarly, mean knowledge scores increased between pre-course and both post-course time points (Wilk's $\lambda = 0.495$, $F(1.57, 73.66) = 37.26$, $p < 0.001$). Post hoc tests using the Bonferroni correction revealed that course participation increased knowledge of workplace violence from pre-course scores ($M = 6.65$, $SD = 1.45$) to immediate post-course ($M = 8.56$, $SD = 1.32$) and four-week post-course ($M = 8.19$, $SD = 1.42$) scores on a 10-item measure. Qualitative data from the focus groups reinforced the quantitative findings. Participants citing benefits from the content strongly recommended including the course in nursing curriculums. Incorporating the course early in the nursing educational experience will better prepare students to deal with workplace violence when they enter health care professions. *Conclusions:* The results indicate that NIOSH and its partners created an effective online workplace violence awareness and prevention course. *Practical applications:* Nursing students and professionals can be effectively educated about workplace violence using an online format.

1. Introduction

Workplace violence in health care is widely prevalent, and nurses are often the target of this violence (Demir & Rodwell, 2012). In 2014, health care workers accounted for slightly more than 11% of the U.S. workforce but experienced a disproportionate 57% of the nonfatal workplace violence-related injuries that involved days away from work (Bureau of Labor Statistics [BLS], 2015a). In fact, in the previous year, between 70 and 88% of nurses experienced workplace violence (Azar, Badr, Samaha, & Dee, 2016; Chapman, Styles, Perry, & Combs, 2010; Itzhaki et al., 2015; Speroni, Fitch, Dawson, Dugan, & Atherton, 2014). Workplace violence can have many negative physical and psychological effects. To address this problem and decrease these negative outcomes, researchers at the National Institute for Occupational Safety and Health (NIOSH) developed an online course for nursing professionals with the goal of increasing awareness and educating participants about violence prevention techniques to enhance safety.

The course starts by defining workplace violence as "violent acts (including physical assaults and threats of assaults) directed toward persons at work or on duty" (NIOSH, 2002, p. 1), which can include physical (e.g., hitting, kicking) and verbal (e.g., cursing, name-calling) abuse. Violence can occur in any work environment, but health care settings are one of the most common workplaces for nonfatal violence (Mohr, Warren, Hodgson, & Drummond, 2011). Repeated contact with multiple people in a high-stress setting may account for why nurses are the most frequently assaulted group of health care workers (Lanza, 2006; Winstanley & Whittington, 2004).

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* Corresponding author at: Department of Communication Studies, Indiana University-Purdue University Indianapolis, Indianapolis, IN 46202, United States.
E-mail addresses: mabrann@iupui.edu (M. Brann), dsh3@cdc.gov (D. Hartley).

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1.1. Outcomes of workplace violence

In 2014, the estimated rate of injuries for all private-sector workers due to workplace violence that resulted in days away from work was 1.7 per 10,000 workers, whereas the estimated rate for private-sector hospital workers was 8.9 per 10,000 workers, and 18.7 per 10,000 workers in nursing and residential care (BLS, 2015b). Even with these statistics highlighting the frequency and severity of workplace violence, the incidence is likely an underrepresentation of reality given that nurses often do not report workplace violence due to the belief that dealing with patient violence is a part of their job (Arnetz et al., 2015; Gillespie, Leming-Lee, Crutcher, & Mattei, 2016; Sato, Wakabayashi, Kiyoshi-Teo, & Fukahori, 2013).

Nurses may experience both physical and non-physical consequences as a result of workplace violence. Physical outcomes related to nonfatal workplace violence typically include bruises/contusions, temporary discoloration/slap marks, cuts/lacerations/scratches/abrasions, and bites/punctures (Gerberich et al., 2004; Speroni et al., 2014). Physical outcomes are often self-treated but may require treatment from another health care provider, and in some cases, hospitalization (Gerberich et al., 2004).

Even if health care workers are not physically affected by workplace violence, there can be many psychological and emotional effects. Nurses have reported feeling incompetent, helpless, overwhelmed, anxious, frustrated, angry, irritable, and guilty after experiencing workplace violence (Gerberich et al., 2004; Lanza, 2006; Ryan et al., 2008). Furthermore, nurses who have experienced workplace violence also have indicated experiencing post-traumatic stress, lower job satisfaction, reluctance to care for patients, and deterioration of personal relationships (Eric, 2011; Laschinger & Nosko, 2015; Laschinger, Wong, & Grau, 2012). These negative emotions may also have led to lower quality patient care (Arnetz & Arnetz, 2001; Laschinger, 2014), more absenteeism (Fujishiro, Gee, & de Castro, 2011; Gerberich et al., 2004), and increased costs for health care systems (Chapman & Styles, 2006; Speroni et al., 2014).

1.2. Workplace violence prevention training

Workplace violence against health care workers continues to be an issue with limited attention. The majority of research, to date, has focused on the patient — not the nurse (Lanza, 2006). Although workplace violence training has been touted for more than a decade as essential to preventing workplace violence, many health care workers have not been receiving this type of education (Beech & Leather, 2006; Wassell, 2009), which is one reason why NIOSH developed an online course.

Although other workplace violence prevention trainings do exist, there are limitations associated with most. For example, some training is available only on-site in a presentational style, which is typically inconvenient for many nurses. Additionally, of those that are available online, they may be restricted in other ways, such as limited availability (e.g., membership in an organization), no continuing education units, expense, and general content not specific to nurses.

NIOSH created an online course to raise awareness of the problem and to provide instruction on workplace violence prevention techniques (Hartley, Ridenour, Craine, & Costa, 2012). Through interactive video real-life cases and textual content, participants receive information about personal safety measures as well as violence recognition cues.

The online course is segmented into 13 units with 20-min modules that address the following areas:

1. Definition, types, and prevalence
2. Workplace violence consequences
3. Type II violence (patient/client violence)
4. Type III violence (co-worker violence)
5. Organizational prevention strategies
6. Personal prevention strategies
7. Intervention strategies
8. Post-event response
9. Case study of an agitated psychiatric patient in the emergency department
10. Case study of an aggressive family member
11. Case study of a homicidal home care patient
12. Case study of a cognitively impaired patient
13. Case study of an angry patient with inappropriate sexual behaviors (Hartley, Ridenour, Craine, & Morrill, 2014).

Upon completion of the free course, nursing professionals should have acquired an awareness of the problem of workplace violence as well as increased knowledge of how to prevent and de-escalate violence in their own workplaces.

Results from a focus group discussion of nine nurses in Boston, Massachusetts, suggested that the course was useful, and the nurses provided feedback for minor course revisions. One particularly salient recommendation was to collaborate with nursing schools to include the course as part of their curriculum (Hartley et al., 2014). NIOSH researchers were already considering this very issue, so a pilot study was launched to determine the course's viability to serve in such a capacity. The primary objective of this study was to evaluate the overall effectiveness of the course at raising awareness and increasing knowledge about workplace violence with a nursing student population. The secondary objective of the study was to obtain input regarding suggestions for improving the course to encourage participation and enhance message retention among nursing students.

2. Method

To assess the effectiveness of NIOSH's online workplace violence prevention course, a multi-methods approach was utilized with a sample of nursing students. First, a pre-test/post-test survey design was employed to assess awareness and knowledge. Then, focus group discussion method was used to evaluate the online course design as well as to solicit recommendations for increasing participation and strategies for improving message retention.

2.1. Participants

Nursing students enrolled in a Bachelor of Science in Nursing or Master of Science in Nursing program at a mid-Atlantic university at the beginning of the Spring 2014 semester were recruited for participation in this study. The principal investigator attended the nursing student orientation class the first week of the semester to distribute flyers and announce the study. Additionally, nursing faculty made announcements in their courses and posted study information on a nursing student listserv. Students were offered community service hours for participating in the study. Although 61 nursing students

Table 1
Course participation.

Interested survey participants	Withdrew prior to study start	Stopped participating after the pre-test	Did not complete second post-test	Entered inconsistent identifying number	Final number of participants
61	1(2%)	5 (8%)	4 (7%)	3 (5%)	48 (79%)

expressed interest in participating in the study, only 55 students completed the workplace violence prevention online course. The final survey sample included 48 students, resulting in a 79% participation rate (see Table 1 for course participation rates). Of those that left the study for various reasons, 92% were female, the majority were seniors, slightly below 70% were 21 years of age or younger, and 85% did not have any medical license (e.g., LPN, RN). The remainder of the study sample is representative of the study population. Forty-five students expressed interest in participating in the focus group discussions, and 40 students (33 females and 7 males) actually participated, resulting in an 89% participation rate. Four women and one man signed-up for a focus group discussion but did not attend.

2.2. Procedures and instrumentation

A previously developed survey based on the principles of the Theory of Planned Behavior (Ajzen, 1988, 1991) measuring awareness and knowledge of workplace violence was presented to three nursing students enrolled at the study site (these students did not participate in the study) to assess readability and comprehension. Based on their feedback, minor modifications were made to three questions to enhance clarity. Then, after making revisions to the questionnaire and receiving approval from the Institutional Review Board, students who agreed to participate in the survey were given a link to an online survey that served as a pre-test to assess baseline awareness and knowledge. The cover letter stated that by clicking on the survey button link, they were providing informed consent for becoming a study participant. Participants were asked a series of demographic questions (e.g., age, sex, year in school, work experience) and were required to enter the last four digits of their student identification number so that data from all three collection points could be linked. Then, participants proceeded to the three awareness items and 10 knowledge questions.[1] The first awareness statement was "Workplace violence is a problem for nurses" to which participants responded: "True," "False," or "I don't know." All of the remaining items included a question with a five-option multiple choice answer format. For example, one of the knowledge questions asked, "What is workplace violence?" Participants selected from four definitions and the common fifth alternative to all questions was "I don't know." This option was offered so that participants were not forced to guess at an answer if they did not know the correct response. The goal was to assess if the online course was a useful tool to raise awareness and increase knowledge about workplace violence with nursing students and how this course could be effectively utilized not only with nursing students but also with practicing nurses.

Correct answers to the three awareness questions were summed; therefore, scores on the awareness portion of the survey could range from 0 (completely unaware) to 3 (fully aware) for each participant. Likewise, correct answers to the 10 knowledge questions were summed, and therefore, scores on the knowledge portion of the survey could range from 0 (no knowledge) to 10 (very knowledgeable) for each participant.

Once students completed the pre-test survey, they sent an email to the principal investigator stating their completion of the pre-test survey. The principal investigator then sent students a link to the online course, which they were able to access at their leisure, preferably during a four-week time period. The course had start-stop functionality, which allowed participants to return to the course where they exited so that it was not necessary to complete the course in one sitting. NIOSH estimated that the course would take three hours to complete. After students completed the online course, they once again contacted the principal investigator to access the first post-test survey (mean time frame was 11 days from pre-test date). In addition to the awareness and knowledge questions, students also were asked to respond to three statements measuring usefulness that were based on a 5-point scale with anchors ranging from "None" or "Not at all" to "Most" or "Very" (e.g., "No new information," "Not at all useful," "Most information was new," "Very likely"), one yes/no question regarding recommending the course to others, and three open-ended questions pertaining to most useful aspects, least useful aspects, and why useful/not useful. Finally, four weeks after completion of the immediate post-test survey, the principal investigator emailed participants a link to the second post-test survey, which asked respondents to answer the same post-test survey questions plus their application of course content, sharing of course material with others, and what portion of the course had the most impact.

Additionally, after the completion of the online course and first post-test survey, students were invited to participate in a focus group discussion to share ideas for course design, message retention, and participation enhancement.[2] Students discussed what they liked and disliked about the course, format and content changes they would make to the course, tips for presenting course material so it is easier to retain, and suggestions for encouraging and motivating health care providers and students to participate in the course. Five focus group discussions with a total of 40 participants were conducted. Two focus groups met on-campus in a private classroom ($n = 9$, $n = 11$, respectively). The conversations were audio-recorded and transcribed verbatim within two days after the conclusion of the focus groups. Three focus groups were conducted online using Chatzy (a private online chat room) ($n = 10$, $n = 4$, $n = 6$, respectively). Transcripts of discussions were printed. In total, 40 pages of single-spaced transcripts were used in data analysis.

2.3. Data analysis

At the conclusion of data collection, quantitative data from surveys were downloaded, cleaned, and entered into SPSS for statistical analysis. Descriptive statistics were used to characterize participants based on collected demographic information. Changes in awareness and knowledge at the three time points were assessed using one-way repeated measures ANOVAs.

Transcripts were analyzed qualitatively using a grounded theory and constant comparative methodology (Glaser & Strauss, 1967). First, the principal investigator open coded the data (Corbin & Strauss, 2015) to assess emergent themes in the data in relation to course design as well as strategies for message retention and participation enhancement. Then, the principal investigator engaged in axial coding to collapse open codes into larger thematic categories (Corbin & Strauss, 2015). Themes included two categories for enhancing participation: incentive and promotion. Incentive subthemes included continuing education units (CEUs), job/class advancement, and monetary/tangible reward. Promotion subcategories included specific types of print, electronic, and oral communication. Themes for message retention included content and format suggestions such as knowledge checks and interactive presentation. This coding process was used to create a codebook with detailed themes and subthemes, from which all the data were coded. Twenty percent of the data, twice the recommended minimum, was then coded by an independent coder to assess intercoder reliability (Lombard, Snyder-Dutch, & Bracken, in press; Tracy, 2013). Scott's pi (Scott, 1955) was an acceptable 0.91. Because the intercoder reliability was higher than the recommended minimum of 0.70, the standard practice of one researcher coding all of the data was utilized (Lombard et al., in press; Tracy, 2013).

3. Results

Table 2 presents the characteristics of the nursing student participants ($n = 48$). Among participants, the majority were women (83%), the average age was 25 years (SD = 6.43, range 19–48), and 16% had

[1] Survey items are available from the authors.

[2] The focus group interview guide is available from the authors.

Table 2
Nursing student participant characteristics.

Characteristic	Number	Percentage
Sex		
Female	40	83%
Male	8	17%
Class rank		
Sophomore	2	4%
Junior	5	10%
Senior	39	81%
Graduate	2	4%
Age (years)		
19–20	5	10%
21–25	31	65%
26–30	6	13%
31–35	3	6%
36–40	0	0%
41–45	1	2%
46+	2	4%
License type		
RN	1	2%
LPN	3	6%
CNA	2	4%
Non-nursing	2	4%

Note. Percentages may not equal 100% because of rounding.

already completed professional licensing before continuing their education (e.g., LPN).

3.1. Awareness of workplace violence

The first aim of the study was to assess what changes in awareness occurred among nursing students after completing NIOSH's online workplace violence prevention course. The mean awareness scores differed significantly between pre-course and both post-course time points (Wilk's $\lambda = 0.319$, $F(2, 46) = 49.01$, $p < .001$). Post hoc tests using the Bonferroni correction revealed that course participation increased awareness of workplace violence from pre-course scores ($M = .75$, $SD = .438$) to immediate post-course ($M = 2.13$, $SD = .789$) and four-week post-course ($M = 1.96$, $SD = .771$) scores on a 3-item measure (see Table 3). Although mean awareness scores decreased slightly comparing the immediate post-course score to the four-week post-course score, the increase from pre-test to four-week post-course was still significant. Participants were fairly unaware of workplace violence in health care settings prior to course participation.

3.2. Knowledge of workplace violence

The second aim of the study was to assess what changes in knowledge occurred among nursing students after completing NIOSH's online workplace violence prevention course. Mauchly's test indicated that the assumption of sphericity had been violated, $X^2(2) = 17.08$, $p < .001$; therefore, degrees of freedom were adjusted using the Huynh-Feldt correction ($\varepsilon = 0.784$). The mean knowledge scores differed significantly between pre-course and both post-course time points (Wilk's $\lambda = 0.495$, $F(1.57, 73.66) = 37.26$, $p < .001$). Post hoc tests using the Bonferroni correction revealed that course participation increased knowledge of workplace violence from pre-course scores ($M = 6.65$, $SD = 1.45$) to immediate post-course ($M = 8.56$, $SD = 1.32$) and four-week post-course ($M = 8.19$, $SD = 1.42$) scores on a 10-item measure (see Table 3). Similar to the awareness scores, although mean knowledge scores decreased slightly comparing the immediate post-course score to the four-week post-course score, the increase from pre-test to four-week post-course was still significant.

Table 3
Change in awareness and knowledge scores.

Measure	Pre-test M (SD)	Immediate post-test M (SD)	4-Week post-test M (SD)
Awareness	0.75 (0.44)[a]	2.13 (0.79)[b]	1.96 (0.77)[b]
Knowledge	6.65 (1.45)[a]	8.56 (1.32)[b]	8.19 (1.42)[b]

Note. [a] is significantly different than [b].

3.3. Workplace violence course suggestions

The third aim of the study was to assess what changes could be made to NIOSH's online workplace violence prevention course to enhance participation and message retention. Results revealed that the course was well-received and participants liked the course's content (e.g., Madison[3] stated, "I thought the course was very informative"), format (e.g., Debbie shared, "I liked how it was online and you could start and stop at your own pace and that made it a lot easier to complete"), and accessibility (e.g., Jeff highlighted, "Easy access. You could walk away from it and come back to complete"). In fact, participants overwhelmingly recommended that the course be offered to incoming nursing students to increase exposure to the information before working in a health care setting. Still, participants provided several suggestions for increasing participation not only among fellow nursing students but also among practicing nurses.

3.3.1. Course participation enhancement

To enhance participation in the course, two themes emerged: provide incentives and promote effectively. The most common suggestions made were to offer CEUs, which unbeknownst to the students are currently offered, to nurses or to make the course a job requirement for new employees or for annual review/certification. For example, James said, "It would be easiest to just make it part of work requirements, like a CPR card. You don't complete it, then you can't work." For those pursuing a degree and not yet in the workforce, the recommendation was to make this course part of the required curriculum, especially early in a student's academic career. Carly said, "I wish we had this when we first went into nursing school instead of when we are about to graduate." Participants suggested that offering CEUs or encouraging participation for employment or degree advancement would incentivize individuals to participate.

Effective promotion is another way to enhance participation. Participants suggested using supervisors to promote the course through email, social media, and word-of-mouth announcements. Mandy said, "I would prefer an email from my employer; that way I knew it was important." Additionally, promoting the course through flyers/posters in common areas of workplace settings (e.g., break rooms, bulletin boards) could increase awareness of the course and possibly increase participation, especially if there is already discussion by others about the course. Haley suggested, "Visual posters in the nurses break room to advertise the program," which could be enhanced by communication of colleagues as noted by Kim who said, "Word of mouth is the biggest thing, so I just say tell as many people as possible." Using common and respected channels of communication could enhance participation.

3.3.2. Course content retention

In terms of how to enhance retention of content, participants particularly liked the knowledge-check questions embedded throughout the course and actually recommended adding more of those types of questions. Haley said, "I appreciated the questions … to make sure you were paying attention," and Cooper commented, "I like how there were questions throughout instead of all at the end." These interactive knowledge checks were effective in assisting participants in retaining

[3] All names have been changed to protect the identity of the participating students.

content. Additionally, participants suggested engaging formats that allowed participants to not only interact with the content but also empathize with the presented experiences. The video accounts of real-life experiences resonated with participants, and they claimed that the compelling stories would help them remember the information. Elizabeth commented, "Hearing the stories and what counts as violence made me realize how much it really happens in my work environment, so that was pretty surprising." Finally, students offered a final common suggestion to help with message retention after completion of the course. They recommended including a downloadable or printable handout that summarized (in bullet format) the most important points that they could refer back to if faced with a workplace violence situation. Ben summarized this suggestion: "a short handout or sheet with important points, printable sheet of some kind."

4. Discussion

The results of this study indicate that for this study sample of nursing students, NIOSH has created an effective online course to help address workplace violence in health care settings. The participants in this study were mostly juniors, seniors, and graduate students in the nursing program. The age and sex of the study participants is typical for this stage of earning a degree in nursing. Participants in this study praised the course content as well as the ease and accessibility of the format, and every participant in the focus group discussions strongly recommended that all nursing students take this course, especially early in their coursework to help prepare them before entering the health care system while completing training.

The course helped increase students' awareness of the prevalence of workplace violence, which was supported in the quantitative analysis of awareness responses and by the anecdotal responses shared in focus group discussions. Nearly 98% of students stated that the course contained new information for them ($M = 4.06$; $SD = .767$). Students were genuinely surprised by the prevalence of workplace violence. Although many practicing nurses are victims of, or witnesses to, violence during their careers, most nursing students are not aware of the frequency of workplace violence faced by those already in the nursing profession. The prevalence is high enough that many nurses, and others, assume violence is part of a nurse's job (e.g., Taylor, 2010). After taking the course, however, participants were able to identify instances of workplace violence in which they had been exposed either personally or as a bystander. As noted by Amy, "I think the course was a huge eye opener for me; I pay attention now." In fact, awareness scores nearly tripled after completing the course, and participants retained that awareness four weeks after completing the course.

Participants' knowledge also increased to help them recognize these acts of violence, and through the course, they became more knowledgeable in various areas including the types of workplace violence, consequences, and prevention and intervention strategies. Again, these results were confirmed both quantitatively and qualitatively. Participants increased their workplace violence knowledge score by 20% after completing the course, and they retained that knowledge four weeks later. This was not surprising because students valued the course design and content presented, which is important for learning. Participants were motivated to learn (i.e., they self-selected to participate), and they were taught information in the online course that was applicable to their desired profession. Additionally, most of this information was new to them, which also enriches learning. Finally, the course presented information in small units to enhance retention. Motivation, applicability, and initial learning are important components critical to the acquisition of knowledge (Gillespie, Farra, & Gates, 2014; National Research Council, 2000), and "chunking" information decreases cognitive overload, which helps individuals remember information (Gillespie, Farra, Gates, Howard, & Atkinson, 2013).

Students commented on how much they learned in the course and provided several specific examples that were supported by the quantitative assessment of specific knowledge items and an overall usefulness rating of the course ($M = 4.42$; $SD = .642$; all but one student, who was neutral about usefulness of the course, stated the course was useful or very useful). Students retained the information, and 52% of nursing students ($n = 25$) both shared information with colleagues *and* applied the information in their personal experiences after exposure to the course. They did, however, recommend providing even more suggested responses that they could use if faced with a workplace violence situation. The response strategy knowledge question was the only question that students did not differ significantly on their pre- and post-test scores, which supports the need to add more clarity and specificity to this section.

4.1. Limitations

Because students completed the course at their own pace, there is no way of knowing if other information may have influenced the participants (e.g., other training, communicating with peers who were participating). Similarly, there is no way of assessing how participating in the focus group discussions may have affected awareness and retention of the course content. Meeting to discuss the course before the four-week follow-up may have enhanced retention of information. Because the survey data were collected anonymously, comparison of data between those who participated in the focus group discussions with those who did not is not possible. Finally, the small sample size is a limitation for generalizability.

4.2. Future directions

This study can serve as a starting point for future research in this area. Because workplace violence among nurses is a problem, it is imperative to find ways to address this issue for the health and safety of all involved. Continued assessment is likely beneficial. For instance, a next step could be to evaluate the questions that course participants can answer to receive CEUs if they are working professionals. Additionally, it is important to assess this course in other nursing student populations. For example, a few of the participants had already completed a "lower" level nursing program (e.g., CNA, LPN). It may be beneficial then to begin even earlier and at different levels because all levels and types of health care providers are at risk. It may also be useful to assess the workplace violence course with other affiliated health care professionals to assess transferability of the content.

Finally, besides assessing this course with additional and different health care providers, it is very important to conduct an even longer longitudinal study to assess behavior. Although it is valuable to recognize knowledge increases, it is more beneficial to assess if this increased knowledge actually leads to behavior change. Then, we will be able to determine if the course is effective in reducing workplace violence.

5. Practical applications

This study highlights the potential effectiveness of NIOSH's workplace violence prevention course among a sample of nursing students. The results suggest that a student population can be reached regarding this important topic. The significant and sustained effects from exposure to the course in increased awareness and knowledge and the overwhelming consistent responses from students that this course should be required at the beginning of the nursing curriculum provide evidence and support for future research and efforts targeting a nursing student population with this easily accessible and user-friendly educational tool.

The results also suggest that an online format can be useful for disseminating information to a broad audience of health care professionals because of its convenience and ease of accessibility. This may be because many students like using an online education format (Karaman, 2011)

that utilizes technology similar to that used in the present study because of the convenience it offers by allowing students to complete the course at a time (or times) and location desired by the student. Beyond just the format preference, other medical fields also have shown effective use in online training (e.g., see Yeh et al., 2014 for assessment of online education for pharmacy interns).

Most importantly, this study shows the effectiveness of this online course to increase knowledge about workplace violence. Before any type of behavior, or even attitudes, can be changed, individuals need to be made aware of a problem and learn how to respond to the issue. Once awareness and knowledge levels are raised then efforts can be made to influence intentions and ideally behaviors. Ultimately, the goal of this course is to help health care providers respond in proactive ways to reduce, and ultimately prevent, workplace violence from occurring. This can have ramifications for the health of individuals as well as communities. Health care administrators, communicators, and other professionals who are interested in preventing workplace violence should be made aware that this online training course can be used to assist them in providing safer environments for health care providers, patients, and community members.

6. Conclusions

The results from this study support the implementation of NIOSH's online workplace violence prevention course in a nursing school curriculum. Completion of this course suggests that students can become more aware of, and have sustained knowledge about, workplace violence. By participating in this course, nursing professionals should be better equipped to recognize and prevent workplace violence from occurring in the health care environments in which they work. Patients should benefit from having less stressed nurses showing up to work and caring for them. Healthier patients, and nurses, invest in their communities by working, playing, spending, etc., all of which can increase the vitality and health of a community.

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Dr. Brann received her PhD in health communication from the University of Kentucky and her MPH in social and behavioral sciences from West Virginia University. She is an associate professor in the Department of Communication Studies at Indiana University-Purdue University Indianapolis, and she continues to hold affiliate faculty status with the Injury Control Research Center at West Virginia University. She has published and presented safety research related to ATV, pedestrian, and driver safety. She continues to research the communication of health and safety issues with her most recent safety research including workplace violence in health care settings and retail.

Dr. Hartley holds Masters degrees in Safety Management and Industrial and Labor Relations from West Virginia University (WVU). He also received his doctorate in Technology Education from WVU. In 1998, Dr. Hartley joined the Division of Safety Research at the National Institute for Occupational Safety and Health in Morgantown, WV. He has published and is currently working on manuscripts related to the costs of occupational homicides, occupational-related assault cases reported through emergency departments, and workplace suicides. He was one of the developers and currently maintains the NIOSH Workplace Violence Prevention for Nurses online course.