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## Workplace Violence and Training Required by New Legislation Among NJ Nurses

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### Abstract

**Objective:** The aim of this study was to examine nurses' knowledge of the state of New Jersey (NJ) Violence Prevention in Health Care Facilities Act, workplace violence training, and experience with workplace violence.

**Methods:** In 2013, 309 (22.5% response rate) nurses returned a mailed survey. Univariate and multivariate analyses were conducted.

**Results:** Ninety percent of respondents were female. When the perpetrator was a patient or a family member, the respondents experienced verbal abuse the most (57.8%), followed by threats (52.3%), and physical assault (38.3%). Respondents who had heard of the regulation (89.6%) received a higher proportion of training than those who had not heard of the regulation (57.9%) ( $P < 0.0001$ ).

**Conclusions:** Nurses who received at least 80% of the required training components were more likely to feel more secure at work, suggesting that training is an important tool to address workplace violence.

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In 2014, there were 9050 nonfatal workplace violence injuries among health care workers, which accounted for more than 57% of the nonfatal violence-related injuries occurring in all

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industries combined.<sup>1</sup> In the private industry health care and social assistance sector, the rate for injuries and illnesses that required days away from work as a result of violence was 14.4 cases per 10,000 full-time workers in 2014, 16.2 in 2013, and 15.1 in 2012.<sup>2</sup>

Nine states (California, Connecticut, Illinois, Maine, Maryland, New Jersey (NJ), New York, Oregon, and Washington) have laws requiring health care facilities to have a workplace violence prevention program. New York's law covers public employers only.<sup>3</sup> One previous study<sup>4</sup> examined the effectiveness of California's law—the Hospital Security Act (AB508)—in reducing workplace violence in acute care and psychiatric health care facilities. In this study, scores were calculated for the comprehensiveness of workplace violence programs in emergency departments and psychiatric units in 116 hospitals in California and were compared with 50 hospitals from a reference state (NJ). Data used in the comparison study included interviews, a facility walk-through, and a review of written policies, procedures, and training materials. In comparison to those in NJ, the hospitals in California had significantly higher scores for employee training and workplace violence prevention and response policies, but there was no difference for security and environmental approaches. Casteel et al<sup>5</sup> did an analysis of the same dataset and also demonstrated that the law was effective in reducing assault rates in smaller and for-profit hospitals, while an effect was not observed in nonprofit hospitals. Due to this discordance in the effect among different types of hospitals, it was unclear what other factors might be driving the results. Therefore, the results of their study comparing California (law requiring workplace violence prevention program) with NJ (no law) could not be directly attributed to AB508. Lipscomb et al<sup>6</sup> evaluated the impact of the 1996 New York State Office of Mental Health policy, which required all state-operated psychiatric facilities to develop and implement a violence prevention program based on the U.S. Occupational Safety and Health Administration guidelines.<sup>7</sup> They conducted an extensive worksite analysis, staff focus groups, and a baseline and postintervention survey of changes in staff perception of the quality of the program's elements and physical assault following implementation of the program. Staff perception of the quality of management commitment and employee involvement in violence prevention was significantly improved in all worksites postimplementation. This is notable because it has been found that perceptions of the risk of violence can vary across departments in hospitals and that many factors beyond the actual risk of violence can impact perception, including the perceived quality of security measures.<sup>8</sup>

In September 2011, the NJ Violence Prevention in Health Care Facilities Act was enacted and required acute care, psychiatric, and nursing home facilities to develop workplace violence prevention programs that included the following components: violence prevention policies, reporting systems for violent events, violence prevention committees, written violence prevention plans, violence risk assessments, post incident response, and violence prevention training. Health care facilities had until June 6, 2012, to fully comply with the components required by the regulation. Although previous studies have examined compliance and changes in violent events following enactment of state-level policies in California and New York for violence in health care, evaluations of implementation and impact of the NJ regulation have not been conducted.

The purpose of this study was to examine nurses' knowledge of the NJ Violence Prevention in Health Care Facilities Act, report what training the nurses received from their employer, examine nurses' experience of workplace violence, and examine the associations between them.

## METHODS

### Study Population

This study examined samples drawn from the populations of registered nurses (RNs) ( $N=114,841$ ) and licensed practical nurses (LPNs) ( $N=23,522$ ) licensed in the state of NJ as of October 31, 2010. This population data frame was obtained by the state of NJ Division of Consumer Affairs Board of Nursing. All nurses working in the state of NJ need to be licensed from the Division of Consumer Affairs Board. Random samples of 2000 RNs and 2000 LPNs were selected from the data frames by use of a random number generator in Excel (v.2013; Microsoft Corp., Redmond, WA).

### Data Collection Instrument

A four-page survey (for more information about the survey instrument, contact the corresponding author), developed by the study investigators, included multiple choice, open-ended, and Likert-scale questions. The survey was pilot-tested to ensure that the questions were understandable and yielded relevant information. The survey, which took approximately 20 minutes to complete, established whether the respondent currently worked in a NJ health care facility and assessed demographic information such as gender, race, years of nursing experience, and highest level of education. In addition, the survey covered topics specific to the NJ Violence Prevention in Health Care Facilities Act, such as knowledge of the Act, training received about violence-based safety, and experience of work-related violence events during the previous 12 months (included any activities associated with your job or events that occurred in your work environment). This survey enabled participants to provide information about the frequency of events by perpetrator type (ie, patient, patient's family member, coworker, or administrator).

The following types of violence were specifically mentioned in the survey: threats, sexual harassment, verbal abuse, bullying, physical assault, and electronic aggression. A threat was defined as someone using words, gestures, or an action with the intent of intimidating, frightening, or causing harm (physically or otherwise). Sexual harassment was defined as any type of unwelcome sexual behavior (words or actions) that created a hostile work environment. Verbal abuse occurred when someone yelled or swore at the respondent, called the respondent names, or used other words intended to control or hurt the respondent. Bullying was defined as one or more people teasing, threatening, spreading rumors, hitting, shoving, emotionally hurting the respondent over and over again, or consistently creating unfair/unsafe work assignments/schedules. Physical assault was defined as hitting, slapping, kicking, pushing, choking, grabbing, being sexually assaulted, or otherwise being subjected to physical contact intended to injure or harm. The nurses were asked to respond to their experiences of violent events regardless of the perpetrator's state of being, such as dementia or substance use. Electronic aggression occurred through words, pictures, or

videos and included someone telling lies, making fun of the respondent, making rude or mean comments, spreading rumors, or making threatening or aggressive comments through email, a cell phone, text messaging, a chat room, instant messaging, or a website.

To determine workplace violence training content, questions were asked regarding policies, procedures, risk factors, de-escalation techniques, self-defense, reporting, and resources (Table 1). If nurses responded to having at least 80% of these components of training (ie, had training in at least 11 of the components), it was assumed that the health care facility was generally complying with the state legislation. Values of 80% or greater were considered to be fully compliant in the analysis.

## Survey Methodology

This study was approved by the NIOSH Institutional Review Board. A tracking number was assigned to all potential respondents and used for mailing purposes only. Once all the mailings were completed, the tracking information was deleted from all data sources. The survey was mailed to the home addresses of nurses in the random samples, along with an introduction letter that described the purpose for the study, directions for participation, and information about informed consent. No personal identification was requested on the survey. Updated addresses were obtained for all undeliverable surveys before the next mailing. Participants returned the completed survey in postage-paid envelopes. A second mailing was sent to nonresponders 4 weeks after the first mailing. Two weeks later, a reminder postcard was sent to encourage completion of the survey. At the completion of the last mailing in 2013, all tracking numbers were deleted from all electronic databases so that no personal identifiers were able to be tracked back to individual respondents.

There were 108 surveys that were returned as undeliverable from either the first or second mailing. A total of 876 surveys were returned for a response rate of 22.5%. Of the 876 returned surveys, 392 did not work in a NJ health care facility (eg, worked in private doctors' offices or home health care agencies or were licensed in NJ but worked in another state), 6 were returned blank, and 169 did not work in a hospital or nursing home. Due to the anonymous nature of the survey, no link between the final dataset and the returned surveys was kept. Therefore, response rates as well as calculations of weights by RNs and LPNs are based on survey responses and not on the actual sampling frame. A total of 309 surveys (203 RNs, 97 LPNs, 9 unknown) were used for analysis consisting of nurses who worked in hospitals and nursing homes only. Thus, all results are based on the 309 surveys.

## Data Analysis

As this was a stratified random sample by nurse type, which oversampled LPNs, weights were calculated by nurse type to ensure that the weighted proportion of RNs to LPNs in our sample matched the proportion of RNs to LPNs in the population based on the data frames. RNs were assigned a weight of 1.35, LPNs were assigned a weight of 0.44, and nurses of an unknown type were assigned a weight of 1.00. These weights were then used in all analyses. The survey covered violence-based safety programs in health care, knowledge of the regulations, and demographics. Two separate outcomes—experiencing violence and training—were examined: the first being “no training versus any training,” and the second

being “partially training compliant versus fully compliant (80% or better).” Associations between experiencing different types of violence by nurse type (RN, LPN) and the facility type (hospital, nursing home), shift (day 7 AM to 3:30 PM, evening 3 PM to 11:30 PM, night 11 PM to 7:30 AM, rotating—working day or evening or night shifts), gender (female, male), heard of NJ regulation (yes, no), felt more secure at work (always, mostly, rarely), tenure (years), and training were evaluated univariately with a logistic regression based on Wald Chi-square statistics. Separate models were run using each of the six types of violence as an outcome (ie, threat vs no threat) and stratified by perpetrator type (patient or family member, coworker, or administrator). Associations between receiving the required training by nurse type, facility type, shift, gender, heard of NJ regulation, felt more secure at work, and tenure were evaluated univariately with a logistic regression based on Wald Chi-square statistics. Variables found to be significantly related ( $P < 0.05$ ) to training were then considered for a multivariate analysis to assess confounding. The multivariate analysis was performed using a forward stepwise multivariate logistic regression, and variables were kept in a final model if the Wald Chi-square  $P$  value was less than 0.05. All analyses were performed using the SAS version 9.3 software (SAS Institute Inc., Cary, North Carolina) with the procedure survey logistic.

## RESULTS

Ninety percent of the respondents were female, which is similar to the nursing population in NJ. The majority of respondents (54%) self-identified as RNs, followed by LPNs (38%).

When the perpetrator was a patient or family member, the respondents experienced verbal abuse the most (57.8%), followed by threats (52.3%), and physical assault (38.3%) (Table 2). Respondents experienced a higher proportion of threats on rotating shifts (64.3%) and evening/night shifts (63.5%) than on-day shifts (45.6%) ( $P = 0.084$ ) (Table 3). For sexual harassment ( $P = 0.0456$ ) and physical assault ( $p < 0.0001$ ), respondents experienced a pattern similar to threats. If the respondents received any training, verbal abuse was significant ( $P = 0.0543$ ). Respondents who received 80% training experienced threats ( $P = 0.0241$ ), bullying ( $P = 0.039$ ), and physical assault ( $P = 0.003$ ).

When the perpetrator was a coworker or administrator, the respondents experienced bullying the most (30.1%), followed by verbal abuse (25.7%) and threats (19.8%) (Table 2). Due to small numbers, the breakdown of physical assault and electronic aggression were not presented. There were no significant differences with regard to experience with violence by nurse type, facility, gender, heard of the regulations, any training, and 80% training when the perpetrator was a coworker or administrator (Table 4). Respondents experienced a higher proportion of threats on rotating shifts (69.7%) than on day shifts (21%) and evening/night shifts (15.2%) ( $P = 0.0046$ ). A higher proportion of respondents who heard of the regulation experienced sexual harassment ( $P = 0.0474$ ) than respondents who had not heard of the regulation.

RNs (78.7%) received a higher proportion of any of the components of training than LPNs (56.2%) ( $P = 0.0022$ ) (Table 5). Respondents working in a hospital (77.8%) received a higher proportion of training than those working in a nursing home (62.3%) ( $P = 0.0122$ ).

Respondents who had heard of the regulation (89.6%) received a higher proportion of training than those that had not heard of the regulation (57.9%) ( $P < 0.0001$ ). Thirty-eight percent of respondents received training on at least 80% of the components required by NJ regulations. For respondents who received 80% training, the following results were significant: day shift 35.3% versus evening shift 46.3% ( $P = 0.0242$ ), female 35.6% versus male 53.4% ( $P = 0.0419$ ), heard of the regulation 53.2% versus not heard of the regulation 21.8% ( $P < 0.0001$ ), and always secure at work 51.1% versus mostly secure at work 30.9% versus some/rarely/never secure at work 35.8% ( $P = 0.0043$ ).

The multivariate logistic regression showed respondents who received any training of the required components were more likely to be RNs [odds ratio (OR) = 3.33,  $P = 0.0034$ ], had heard of the NJ regulation (OR = 7.28,  $P = 0.0001$ ), and had less tenure (OR = 0.69,  $P = 0.0044$ ) (Table 6).

The multivariate logistic regression showed respondents who received training for at least 80% of the required components were more likely to be RNs (OR = 3.84,  $P = 0.0034$ ), work the evening shift (OR = 2.32,  $P = 0.0066$ ), males (OR = 3.09,  $P = 0.0127$ ), had heard of the NJ regulation (OR = 4.68,  $P = 0.0001$ ), felt more secure at work ( $P = 0.0126$ ), and had less tenure ( $P = 0.0042$ ) (Table 7).

## DISCUSSION

The distribution of violence types varied by perpetrator. Similar to previous studies, we found that verbal abuse (57.8%) and physical assault (38.3%) were the most common events that the nurse experienced when the perpetrator was a patient or family member. According to a recent American Nurses Association (ANA) survey of 3765 RNs and nursing students, 43% of respondents had been verbally and/or physically threatened by a patient or family member of a patient. In addition, 24% of respondents had been physically assaulted by a patient or family member of a patient while at work.<sup>9</sup> In the Minnesota Nurses' Study,<sup>10</sup> verbal abuse (34%) was the leading event for nonphysical violence. We also found that the evening shift demonstrated a significantly higher rate of violence than the day shift for physical incidents when the perpetrator was a patient, which is similar to the results of Ridenour et al.<sup>11</sup> Taylor et al<sup>12</sup> found that patients experiencing sundowning syndrome (behavioral changes that often occur in the late afternoon or evening in people with Alzheimer's disease and similar conditions) had periods of extreme agitation on the evening shift. Other studies have found that patients acted out physically around medication times (4 to 6 PM).<sup>13</sup>

When the perpetrator was a coworker or administrator, the most frequently experienced violent events for RNs and LPNs were bullying, verbal abuse, and threats. Bullying often involves an abuse or misuse of power, creates feelings of defenselessness and injustice in the target, and undermines an individual's inherent right to dignity.<sup>14</sup> Bullying may be directed from the top down (employers against employees), from the bottom up (employees against employers), or horizontally (employees against employees). Top-down bullying from organizational leaders allows bullying to become an accepted and condoned workplace norm.<sup>15-17</sup> Hutchinson et al<sup>18</sup> survey of 370 nurses revealed specific organizational



characteristics, including misuse of authority, certain policies and procedures, organizational tolerance, and informal alliances as the critical antecedents to bullying and its frequency. Sofield and Salmond<sup>19</sup> found in a survey of 1000 nurses at a large hospital system that 91% of respondents had experienced verbal abuse in the prior month and the most frequent aggressor was a physician. Rosenstein and O'Daniel<sup>20</sup> found that nurses were reported to have behaved disruptively (bullying) almost as frequently as physicians. Bullying is often studied as horizontal or lateral violence perpetrated by nurses on their nurse colleagues.<sup>21</sup>

A higher number of RNs received the workplace violence-based safety training than LPNs. The following are potential reasons why LPNs received less training: higher turnover, lesser status in the hierarchy of employees, or working night shift exclusively. Although many nurses receive training in violence prevention in NJ, the distribution of those who receive training is not uniform. Training is an important component of workplace violence prevention program for all employees. In the Occupational Safety and Health Administration (OSHA) *Guidelines for Preventing Workplace Violence for Healthcare and Social Service Workers*,<sup>7</sup> safety and training is one component of a violence prevention program. It recommends that all staff members receive training annually to help ensure that they are aware of potential hazards and how to protect themselves and their coworkers through established policies and procedures. The degree of risk/hazard for employees should determine the nature of the training.<sup>22</sup>

California passed the California Hospital Security Act (AB508), which included requirements for acute care facilities to provide safety and security training to employees, conduct assessments of facility safety and security, develop and implement a security plan, and report to authorities all assault and battery acts within 72 hours of occurrence.<sup>23</sup> Peek-Asa et al<sup>24</sup> found that 96% of California hospital psychiatric units provided workplace violence prevention training to employees and 93.3% of NJ hospitals (no legislation at the time of the study) provided training to their employees. Over 91% of California hospital emergency departments provided workplace violence training to their employees, and 72% of NJ emergency departments provided training.<sup>4</sup> In the current study, those who had heard of the NJ regulations were more likely to have received training than staff who had not heard of the regulations. The regulations raised awareness, which potentially led to the increased training; training could also have raised awareness of the regulation. The NJ regulation is an important step for protecting hospital and nursing home workers. Enacting a workplace violence prevention program regulation provides specifics on its components; each health care facility needs to customize its program to its patient population.

Limitations of this study include recall bias and reporting bias since participants self-reported violence events and training that they received. Recall of violent events was limited to the previous 12 months to minimize recall bias; however, it is very likely that more extreme violent events were recalled more often than the less extreme violent events.<sup>25</sup> It is also possible that persons who experienced a violent event may be more likely to respond to the survey, which would overestimate our assault rates. Further, we had a better response rate from RNs than LPNs. Although weights were calculated on the basis of our response rates so that our calculations were assumed to generalize to all NJ nurses, biases based on this differing response rate may have affected our calculations. Although the nurses sampled

represented all nurses in NJ, the nurses included in this study may not be representative of nurses throughout the nation. In our analysis, we looked for potential confounding among the available data; however, other potential confounders may not have been captured in our survey.

## CONCLUSIONS

Nurses can experience workplace violence (ie, verbal abuse, threat, physical assault, and bullying) from patients, family members, coworkers, and administrators. The NJ regulations require covered facilities to have violence prevention policies, reporting systems for violent events, violence prevention committees, written violence prevention plans, violence risk assessments, postincident response, and violence prevention training. Training is one important tool to address workplace violence, as it provides skills to avoid or defuse conflict. Future research should emphasize the underserved nurses (ie, LPNs and nurses working in nursing homes) identified in this study to increase the reach and effectiveness of the training required by regulations. Workplace violence prevention regulations are a mechanism to ensure health care facilities have a workplace violence prevention program. Quality of each of the regulation components needs to be assessed.

## Acknowledgments

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**TABLE 1.**

## Violence-Based Safety Training Components

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<b>1</b>	Review of the facility's violence-based safety policies
<b>2</b>	Identification of predicting factors for aggression and violence
<b>3</b>	Verbal methods to diffuse aggressive behavior
<b>4</b>	Physical methods to diffuse or avoid aggressive behavior
<b>5</b>	Obtaining a history on a patient with violent behavior
<b>6</b>	Techniques for restraining violent patients
<b>7</b>	Self-defense if preventive action does not work
<b>8</b>	Appropriate use of medications to subdue aggressive patients
<b>9</b>	Requirements and procedures for reporting a violent event
<b>10</b>	Location and operation of safety devices
<b>11</b>	Resources for employee victims of violence
<b>12</b>	Worksite-specific summary of risk factors for violence and preventive actions taken in response
<b>13</b>	Information on multicultural diversity to increase sensitivity to racial and ethnic issues and differences

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Violence Prevention in Healthcare Facilities Act, New Jersey Senate and General Assembly Pub. L. 2007, c. 236, (C.26:2H-5.17 et seq.) (2008).

**TABLE 2.**

## Workplace Violence by Perpetrator

	Patient or Family Member		Coworker or Administrator	
	<i>n</i>	Proportion *	<i>n</i>	Proportion *
Threat †	159	52.3	56	19.8
Sexual harassment †	59	19.5	24	9.0
Verbal abuse †	175	57.8	69	25.7
Bullying †	64	22.5	81	30.1
Physical assault †	118	38.3	6	2.3
Electronic aggression †	15	4.9	22	8.5

\* Weighted.

† Not mutually exclusive.

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**TABLE 3.**

Weighted Proportion of Nurses Experiencing Workplace Violence When the Perpetrator was a Patient or a Family Member by Selected Variables\*

	Threat		Sexual Harassment		Verbal Abuse		Bullying		Physical Assault	
	Proportion	P †	Proportion	P †	Proportion	P †	Proportion	P †	Proportion	P †
Nurse type										
RN	53.7		20		58.2		23.2		38.1	
LPN	51.6	0.8	20.4	0.9489	60.4	0.789	19.6	0.6076	43.5	0.5135
Facility										
Hospital	51.7		19.8		56.4		22.5		36.8	
Nursing Home	57.3	0.4146	18.4	0.806	63	0.3352	22.3	0.9675	43.9	0.2854
Shift										
Day	45.6		16.1		52.2		21.4		27.9	
Evening/Night	63.5		23.2		63.9		22.7		55	
Rotating	64.3	0.0084	50.2	0.0456	71.4	0.1078	23.2	0.9627	64.3	<0.0001
Gender										
Female	52.9		20.2		57.9		22.2		36.3	
Male	46.8	0.4926	10.1	0.1509	50.5	0.4027	20.5	0.8317	43.8	0.3845
Heard NJ regulation										
No	50.3		15.3		58.4		20.8		38.4	
Yes	55.2	0.3774	23.4	0.0682	57.3	0.8418	23.4	0.5847	37.9	0.9278
Secure at work										
Always	34.1		6.4		42.5		14.8		25	
Most	63.3		27.6		67.3		21.8		44.3	
Some/Rare/Never	69.3	<0.0001	24.5	<0.0001	69.2	<0.0001	42.4	0.0016	54.3	0.0004
Any training										
No	46		15.3		48.1		17.1		31.9	
Yes	56.5	0.1153	22.5	0.179	60.8	0.0543	24.2	0.2126	41.3	0.1463
80% training										
No	48.8		18.8		54.2		18.4		32.4	
Yes	62.1	0.0241	23.9	0.2867	63.1	0.1306	28.8	0.039	49.5	0.003

LPN, licensed practical nurse; NJ, New Jersey; RN, registered nurse.

\* Nurse type, facility, shift, gender, heard nj regulation, secure at work, any training, 80% training

<sup>7</sup>Based on weighted logistic regression.

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**TABLE 4.** Weighted Proportion of Nurses Experiencing Workplace Violence When the Perpetrator was a Coworker or Administrator by Selected Variables\*

	Threat		Sexual Harassment		Verbal Abuse		Bullying	
	Proportion	P †	Proportion	P †	Proportion	P †	Proportion	P †
Nurse type								
RN	20.6		9.7		27.5		32.3	
LPN	18.6	0.7736	5.8	0.4246	17.1	0.1683	19.1	0.0941
Facility								
Hospital	20		9.3		26		31.6	
Nursing Home	18.7	0.8115	7.9	0.7324	24.4	0.7945	24.4	0.2679
Shift								
Day	21		11.2		28.7		28.7	
Evening/Night	15.2		5.7		21.8		31.5	
Rotating	69.7	0.0046	0	0.2038	23.2	0.4192	46.5	0.5994
Gender								
Female	19.3		8.9		24.9		29.8	
Male	23.3	0.5852	7.8	0.8429	36.9	0.133	33	0.7027
Heard NJ regulation								
No	20.1		5.6		26		31.7	
Yes	19	0.8221	12.1	0.0474	25	0.8291	28.4	0.5236
Secure at work								
Always	7.5		5.1		15.6		14.4	
Most	16.6		9.6		24.2		29.2	
Some/Rare/Never	54.6	<0.0001	16.5	0.0757	51.2	<0.0001	66	<0.0001
Any training								
No	24.7		5.6		27.9		23.8	
Yes	16.5	0.1185	10.2	0.24	24	0.504	31.3	0.2202
80% training								
No	22.9		8.4		25.4		31.7	
Yes	11	0.0112	10.2	0.5925	24.3	0.8212	25.6	0.2686

LPN, licensed practical nurse; NJ, New Jersey; RN, registered nurse.



\* Nurse type, facility, shift, gender, heard nj regulation, secure at work, any training, 80% training.

<sup>†</sup>Based on weighted logistic regression.

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**TABLE 5.**

Weighted Proportion of Nurses Who Received Training by Selected Variables \*

	Any Training (Total $n = 204$ ) <sup>†</sup>		80% Training (Total $n = 102$ ) <sup>‡</sup>	
	Proportion	$P$ §	Proportion	$P$ §
Nurse type				
RN	78.7		40.6	
LPN	56.2	0.0022	24.7	0.0565
Facility				
Hospital	77.8		39.6	
Nursing home	62.3	0.0122	32.8	0.3255
Shift				
Day	71.9		35.3	
Evening/Night	78.5		46.3	
Rotating	78.9	0.4486	0	0.0242
Gender				
Female	73.7		35.6	
Male	78	0.5869	53.4	0.0419
Heard NJ NCFA				
No	57.9		21.8	
Yes	89.6	<0.0001	53.2	<0.0001
Secure at work				
Always	75.3		51.1	
Most	76.6		30.9	
Some/Rare/Never	72.6	0.8748	35.8	0.0043

LPN, licensed practical nurse; NJ, New Jersey; RN, registered nurse.

\* Nurse Type, Facility, Shift, Gender, Heard NJ Regulation, Secure at Work.

<sup>†</sup> Received at least 1 component of training.<sup>‡</sup> Received at least 80% of training components.<sup>§</sup> Based on logistic regression.

**TABLE 6.**

## Final Multivariate Model for Nurses Receiving Any Training

Variable	OR	P	CI
Nurse			
LPN	—		
RN	3.33	0.0034	(1.49–7.45)
Heard NJ regulation			
No	—		
Yes	7.28	0.0001	(3.76–14.11)
Tenure (ordinal)			
	0.69	0.0044	(0.53–0.89)

CI, confidence interval; LPN, licensed practical nurse; NJ, New Jersey; OR, odds ratio; RN, registered nurse.

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**TABLE 7.**

Final Multivariate Model for Nurses Receiving at least 80% of Training Components

Variable	OR	P	CI
Nurse			
LPN	—		
RN	3.84	0.0107	(1.37–10.78)
Shift			
Day	—		
Evening	2.32	0.0066	(1.26–4.27)
Rotating	*		
Gender			
Female	—		
Male	3.09	0.0127	(1.27–7.50)
Heard NJ Regulation			
No	—		
Yes	4.68	0.0001	(2.53–8.68)
Secure at work			
Always	—		
Mostly	0.32	0.0004	(0.17–0.60)
Rarely	0.3	0.0126	(0.12–0.77)
Tenure			
0 to 1	—		
>1 to 5	0.26	0.0098	(0.07–0.70)
>5 to 10	0.22	0.0087	(0.07–0.68)
>10 to 20	0.22	0.0096	(0.07–0.69)
>20	0.15	0.0042	(0.04–0.56)

CI, confidence interval; LPN, licensed practical nurse; NJ, New Jersey; OR, odds ratio; RN, registered nurse.

\* No observations in this category so this category removed in this modeling.