Difference in Work-Related Violence by Nurse License Type

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Nurses are at considerable risk for work-related violence. This study compared the experiences of work-related violence among registered nurses (RNs) and licensed practical nurses (LPNs) to quantify differences in risks and exposures and to gain insight into possible interventions. A random sample (n = 6,300) of licensed Minnesota nurses was surveyed regarding the previous 12-month period. Nurses self-reported violent events and demographic information. After adjustment for potential confounders and nonresponse, LPNs had an increased risk for both physical assault (odds ratio = 1.4; 95% confidence interval = 1.1–1.9) and nonphysical violence (odds ratio = 1.2; 95% confidence interval = 1.0–1.5) compared to RNs. Some exposures resulted in increased risks for both types of violence for RNs and LPNs: working primarily in psychiatric departments and long-term care facilities. In contrast, working in clinics resulted in decreased risks for both license types. Some risks varied by license type. Risk of physical assault was increased for LPNs working with neonatal/pediatric patients, whereas RNs' risk was decreased. RNs' risk of physical violence increased while providing care, whereas LPNs' risk increased while supervising care. A better understanding of how this problem varies by license type and work setting will assist in designing efficacious interventions. (Index words: Violence; Work related; License type) J Prof Nurs 23:290-300, 2007. © *2007 Elsevier Inc. All rights reserved.*

HEALTH CARE WORKERS are among the most vulnerable in terms of work-related nonfatal violence. According to the Bureau of Labor Statistics, United States Department of Labor (2005), the incidence of assaults involving days away from work per 10,000 full-time workers in 2003 was 1.9 overall for private industry and 8.8 for education and health service workers. Nurses, in particular, appear to be at risk. Between 1993 and 1999 in the United States, nurses experienced the highest rate in terms of work-related violence (22 per 1,000 workers) among all types of health care workers (Duhart, 2001).

Love and Morrison (2003) stated that responses from nursing groups, administrative forces, and regulatory forces are not commensurate to the extent of work-related violence against nurses. Only recently have researchers begun to examine rigorously the rates, risk factors, circumstances, and consequences of work-related violence against nurses (Gerberich et al., 2004, 2005; May & Grubbs, 2002; McKenna, Smith, Poole, & Coverdale, 2003; Soares, Lawoko, & Nolan, 2000).

The type of nursing license may influence a nurse's chances of experiencing violence. In 1999, registered nurses (RNs) comprised the largest health care occupation in both the United States and Minnesota, and licensed practical nurses (LPNs) comprised the second largest group of health care workers (Minnesota Department of Health, Office of Rural Health Primary Care, 2001a, 2001b). Arnetz, Arnetz, and Soderman (1998) reported that Swedish practical nurses had an increased risk of work-related violence compared to RNs. In a retrospective review of work-related injuries

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at a Canadian general hospital (Yassi, 1994), LPNs were more likely to be assaulted than RNs. However, epidemiological studies specific to work-related violence and nurse license type in the United States are lacking. This study examined the relation between nurse license type and work-related violence.

Materials and Methods

Study Population

This study examined the population of RNs (n = 57,388) and LPNs (n = 21,740) who were licensed to practice in the state of Minnesota as of October 1, 1998. A random sample of 6,300 nurses was selected from the combined population (N = 79,128) and was surveyed between the months of August 1998 and March 2000 regarding the previous 12-month period. Of these 6,300 nurses, 78% (4,918) responded. For RNs and LPNs, the response rates were 80% and 74%, respectively.

Definitions

Work-related violence included any activity (including travel) associated with the job or events that occurred in the work environment involving the intentional use of physical force or emotional abuse against an employee, resulting in physical or emotional injury and consequences. This study examined both physical and nonphysical (threat, sexual harassment, and verbal abuse) forms of violence.

Physical assault occurred when one was hit, slapped, kicked, pushed, choked, grabbed, sexually assaulted, or otherwise subjected to physical contact intended to injure or harm.

A *threat* occurred when someone used words, gestures, or actions with the intent of intimidating, frightening, or harming (physically or otherwise).

Sexual harassment occurred when one experienced any type of unwelcome sexual behavior (words or actions) that created a hostile work environment.

Verbal abuse occurred when another person yelled or swore, engaged in name calling, or used other words intended to control or hurt.

Hypotheses

A condensed causal model, represented as a directed acyclic graph (DAG), guided this study analysis (Figure 1). The goal was to estimate the causal effect of license type on violence after controlling for important confounding factors. A detailed explanation on the use of the causal model to determine potential confounders is explained elsewhere (Gerberich et al., 2004). A more comprehensive model, including all variables assessed in this study, is available at the following Web site: www.umn.edu/cvpc/research.html.

Race, education, and facility were assumed to influence license type, activity at work, and work-related violence. License type was also assumed to influence activity at work. License type and activity at work also were assumed to have direct influence on work-related violence. In Minnesota, it is estimated that 35% of LPNs work in long-term care facilities and that the majority of LPNs have diplomas or associate degrees as their highest nursing educational credential (Minnesota Department of Health, Office of Rural Health Primary Care, 2001a). RNs most frequently graduate from associate or baccalaureate degree programs, and approximately 45% of RNs in Minnesota have baccalaureate degrees or higher, according to licensure data. In addition, RNs most frequently work in hospital inpatient settings (Minnesota Department of Health, Office of Rural Health Primary Care, 2001b). At the national level, in 2000, 68% of LPNs were White/non-Hispanic, whereas 87% of RNs were White/non-Hispanic, 21% of LPNs were Black, and 5% of RNs were Black (Seago, Spetz, Chapman, Dyer, & Grumbah, 2004; Spratley, Johnson, Sochalski, Freitz, & Spencer, 2000).

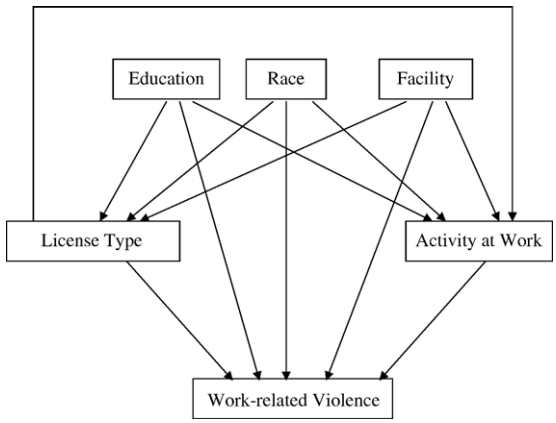

Figure 1. Condensed causal model (DAG): nurse license type.

Data Collection

The Minnesota Nurses' Study involved two phases: Phase 1 included a comprehensive survey to assess violence experiences, and Phase 2 used a nested case–control approach to identify risk and protective factors for work-related violence. This article is based upon Phase 1. Because no comprehensive occupational violence questionnaires existed at the time this study began, researchers developed a 12-page written survey based on the literature available and on the investigators' expertise. Study instruments are available at: www.umn.edu/cvpc/research.html. Following approval by the Human Subjects Committee of the University of Minnesota Institutional Review Board, the survey and study methods were pretested with 220 nurses. The survey utilized in Phase 1 established whether respondents worked as nurses in Minnesota in the past 12 months and ascertained descriptions of any work-related violence experienced during this time.

Contact Procedures

Initially, a packet containing a specially designed survey instrument, a cover letter inviting participation, and a postage-paid return envelope was sent to the

Table 1. Characteristics and Exposures of Comprehensive Phase Participants: The Minnesota Nurses' Study

Characteristics/Exposures	RNs		LPNs	
	n	%	*n*	%
Gender				
Female	2,660	95	927	98
Male	128	5	23	2
Age (years)				
< 30	125	5	70	7
30–39	526	19	198	21
40–49	1,085	39	353	37
50–59	750	27	233	25
≥ 60	302	11	96	10
Nursing education				
Diploma	604	22	837	89
Associate degree	973	35	85	9
Bachelor's degree	973	35	6	1
Master's degree	216	8	0	0
Doctorate degree	5	<1	0	0
Missing	15	0.5	20	2
Refused	2	0.1	2	0.2
Primary facility				
Hospital inpatient	1,267	45	187	20
Nursing home/long-term care/rehabilitation	353	13	335	35
School/college/university; independent practice/ consulting; insurance/utilization review; industry; split time equally between two or more facilities; other	394	14	89	9
Hospital/nonhospital outpatient	236	8	36	4
Clinic/health care provider office	258	9	238	25
Public health/home health agency	280	10	65	7
Primary department/unit/area				
Medical/surgical; obstetrics/gynecology; procedural/diagnostic	1,044	37	452	48
Intensive care unit	244	9	4	<1
Psychiatric/behavioral	171	6	93	10
Emergency	99	4	16	2
Occupational health; split time; other	386	14	103	11
Operating/recovery room	232	8	15	2
Public health/home care; school health; education/research	480	17	104	11
Family practice	130	5	159	17
Missing	1	0.0	3	0.3
Refused	1	0.0	1	0.1
Primary patient population				
Adult	1,317	47	276	29
Geriatric	522	19	353	37
Split time	626	23	245	26
Neonatal/pediatric/adolescent	310	11	71	8
Missing	10	0.4	5	0.5
Refused	3	0.1	0	0
Primary professional activity				
Nondirect care*	970	35	202	21
Provided patient care	1,623	58	695	73
Supervised patient care	188	7	49	5
Missing	7	<1	4	<1

*Nondirect care includes teaching, research, administration, case management, insurance/utilization review, telephone triage, health information, split time, and other.

random sample of nurses. Rigorous follow-up, including multiple mailings to nonresponders, was conducted to optimize response. Full surveys were sent with the initial mailing and the first three follow-up mailings. A condensed one-page survey, containing only the most important data related to eligibility and experience with work-related violence, was sent with the fourth follow-up mailing.

Data Analyses

Analyses began with basic descriptive statistics. Response bias within rate calculations was controlled by weighting observed responses by probabilities of response, estimated as a function of characteristics available from the licensing database (Gerberich et al., 2004; Mongin, 2001). Multiple logistic regressions were based on the DAG (Greenland, Pearl, & Robins, 1999; Maldonado & Greenland, 2002).

Results

Sample

Study participant characteristics are presented in Table 1. Nearly all of the participants were women (95% of RNs and 98% of LPNs); the mean age was 46 years (*SD* = 11) for RNs and 47 years (*SD* = 10) for LPNs. With respect to the highest nursing educational credential, RNs most often had associate (35%) or baccalaureate degrees (35%), and LPNs most often had diplomas (89%). More than 96% of LPNs and > 97% of RNs reported being White/non-Hispanic. Other racial categories included < 1% each.

Work Environments

Also shown in Table 1, the facilities where nurses most frequently worked varied by license type. RNs worked primarily in hospital inpatient settings; LPNs worked primarily in nursing homes/long-term care facilities and clinic/health care provider offices. The departments in which RNs worked were primarily medical/surgical, followed by public health/home care; LPNs worked most often in medical/surgical departments, followed by family practice. RNs worked primarily with nongeriatric adults, whereas LPNs worked primarily with geriatric adults. Although the majority of both RNs (58%) and LPNs (73%) reported that their primary professional activity was providing patient care, a substantially greater proportion of LPNs was involved in providing direct patient care.

Violence Estimates

Four hundred seventy-six nurses reported 711 physical assault events. Adjustment for potential response bias resulted in physical violence rates for RNs and LPNs of 12.0 and 16.4 respectively, per 100 nurses per year (Gerberich et al., 2004). For RNs and LPNs, the adjusted nonphysical violence rates were 38.5 and 39.7 per 100 nurses, respectively (Gerberich et al., 2004). After adjustment for potential confounders of race, facility, and education, LPNs were still more likely than RNs to be assaulted (odds ratio [OR] = 1.4; 95% confidence interval [95% CI] = 1.1–1.9). Nonphysical violence was also more likely for LPNs than RNs (OR = 1.2; 95% CI = 1.0–1.5). Within the overall category of work-related nonphysical violence, the percentages of nurses reporting specific types of violence in the prior 12-month period were similar for both license types. Sexual harassment was reported by 7% of RNs and LPNs, threats were reported by 17% of LPNs and 18% of RNs, and verbal abuse was reported by 33% of RNs and 36% of LPNs.

Perpetrators

The majority of physical violence events were perpetrated by patients/clients for both RNs (96%) and LPNs (97%). Perpetrators of nonphysical violence were more varied and included patients/clients (64% RNs and 78%

Table 2. Consequences and Characteristics of Physical and Nonphysical Violence: The Minnesota Nurses' Study

Symptoms/Feelings Postassault*	RNs				LPNs			
	Physical (*n* = 464)		Nonphysical† (*n* = 1,601)		Physical (*n* = 247)		Nonphysical† (*n* = 571)	
	n	%	*n*	%	*n*	%	*n*	%
Frustration	212	46	993	62	120	49	331	58
Anger	155	33	1,016	63	78	32	293	52
Fear/anxiety/stress	104	22	682	42	63	26	184	32
Irritability	56	12	419	26	37	15	168	30
Fatigue	48	10	354	22	23	9	86	15
Sadness	34	7	355	22	19	8	101	18
Difficulty concentrating	16	3	278	17	3	1	62	11
Shame/low self-esteem	13	3	241	15	2	1	69	12
Depression	13	3	250	16	3	1	67	12
Headache	10	2	159	10	11	4	57	10
Difficulty sleeping	11	2	252	16	7	3	50	9
Flashbacks	4	1	55	3	2	1	9	2
Nightmares	1	0	60	4	1	0	18	3
Hallucinations	1	0	5	<1	0	0	4	1
Other	6	1	37	2	6	2	15	3
None	160	34	186	12	75	30	80	14
Missing	2	0	20	1	2	1	9	2

*The question denotes "check all that apply"; therefore, responses may total > 100.
†Nonphysical violence category combines threats, sexual harassment, and verbal abuse.

Table 3. Physical Violence Odds Ratios

	RNs		LPNs	
	OR	**CI**	**OR**	**CI**
Facility				
Hospital inpatient (referent)	1		1	
Nursing home/long-term care/rehabilitation	*2.13*	*1.60–2.83*	*3.84*	*2.31–6.39*
Outpatient	*0.48*	*0.29–0.81*	0.22	0.03–1.78
Other	*0.29*	*0.18–0.48*	0.89	0.39–2.02
Home care/public health	*0.16*	*0.08–0.35*	0.41	0.12–1.39
Clinic/health care provider	*0.12*	*0.05–0.29*	*0.25*	*0.11–0.59*
Primary department				
Medical/surgical; obstetrics/gynecology; procedural/diagnostic (referent)	1		1	
Emergency	*2.67*	*1.5–4.62*	–	–
Psychiatric/behavioral	*2.35*	*1.58–3.49*	*1.78*	*1.05–3.00*
Family practice	1.45	0.47–4.51	1.06	0.26–4.36
Intensive care unit	1.40	0.95–2.05	2.75	0.28–27.04
Occupational health/split time/other	0.70	0.46–1.05	0.94	0.49–1.80
Public health/school/education/research	*0.40*	*0.20–0.79*	0.78	0.29–2.09
Operating room	*0.34*	*0.18–0.64*	2.43	0.48–12.22
Patient population				
Adult (referent)	1		1	
Geriatric	*2.20*	*1.44–3.34*	*2.86*	*1.40–5.85*
Split time	*1.53*	*1.10–2.12*	1.36	0.65–2.82
Neonatal/pediatric/adolescent	*0.33*	*0.17–0.64*	*2.91*	*1.09–7.78*
Primary activity				
Patient care	*1.76*	*1.17–2.64*	1.73	0.94–3.16
Supervision	1.28	0.74–2.20	*2.81*	*1.20–6.60*
Other (referent)	1		1	
Gender				
Male (referent)	1		1	
Female	*0.51*	*0.34–0.77*	0.60	0.26–1.39
Age (years)				
20–29	*2.27*	*1.24–4.14*	2.14	0.89–5.12
30–39	1.56	0.96–2.53	1.83	0.86–3.88
40–49	1.33	0.84–2.10	1.39	0.66–2.89
50–59	1.39	0.87–2.24	1.22	0.56–2.64
60–84 (referent)	1		1	
Race				
Non-White (referent)	1		1	
White	0.58	0.31–1.08	1.16	0.44–3.05
Highest education level				
Diploma (referent)	1		1	
Associate degree	*1.59*	*1.09–2.33*	1.31	0.81–2.12
Baccalaureate degree or higher	0.91	0.63–1.33	0.41	0.10–1.70
Years worked as a nurse				
0–4	1.46	0.63–3.36	1.37	0.42–4.45
5–9	0.91	0.41–2.02	1.50	0.50–4.48
10–19	1.15	0.65–2.04	0.67	0.28–1.62
≥ 20 (referent)	1		1	
Years in the department				
0–4 (referent)	1		1	
5–9	1.24	0.89–1.73	0.94	0.55–1.61
10–19	0.93	0.64–1.35	1.78	*1.00–3.18*
≥ 20	0.85	0.50–1.42	*2.27*	*1.05–4.88*
Graduation year				
< 1970 (referent)	1		1	
1970–1979	1.05	0.69–1.61	0.54	0.28–1.06
1980–1989	1.49	0.93–2.39	1.08	0.56–2.09
1990–1999	*2.46*	*1.43–4.26*	0.77	0.37–1.59

Notes. Facility = adjusted for gender and race; Department = adjusted for gender and facility; Patient population = adjusted for gender, race, facility, and department; Primary activity = adjusted for gender, age, marital status, race, facility, department, patient population, education, years in the department, and years worked as a nurse; Gender = no adjustment; Age = no adjustment; Race = no adjustment; Highest education level = adjusted for gender, age, race, and marital status; Years worked as a nurse = adjusted for graduation year and age; Years worked in the department = adjusted for graduation year, department, and age; Graduation year = adjusted for age.
Entries in italics indicate that the confidence interval excludes 1.

LPNs), physicians (15% RNs and 6% LPNs), and other employees (11% RNs and LPNs). Consistent between license types, the majority of perpetrators of physical violence were perceived to be impaired because of disease/illness or prescribed medication (89% RNs and 90% LPNs), were male (57% RNs and 61% LPNs), and were aged ≥ 66 years (60% RNs and 74% LPNs). Perpetrators associated with nonphysical violence were perceived as nonimpaired (50% RNs and 38% LPNs) and were primarily male (72% RNs and 77% LPNs). However, a greater proportion of nonphysical violence perpetrators were younger (35–65 years; 59% RNs and 41% LPNs) than those associated with physical assault.

Locations of Violence

Physical assaults occurred primarily in patient rooms and hallways for both RNs and LPNs. Nonphysical violence events occurred primarily face-to-face (89% RNs and 91% LPNs) or on the telephone (18% RNs and 11% LPNs).

Consequences

The physical injuries reported most frequently were bruises/contusions, temporary discolorations/slap marks, cuts/lacerations/scratches, abrasions, and bites/punctures. Very few nurses reported hospitalization resulting from work-related violence (n = 7). The majority of nurses denied receiving treatment for injuries resulting from physical violence (75% RNs and 74% LPNs); those indicating some type of treatment often reported self-care (19% RNs and 20% LPNs). A greater percentage of nurses reported treatment following nonphysical violence (9% RNs and 9% LPNs) than following physical violence (5% RNs and 5% LPNs).

The most commonly reported consequences of both physical and nonphysical violence were frustration, anger, fear/anxiety/stress, and irritability, with much greater proportions reported for nonphysical violence for each of the consequences (Table 2). Persistent problems resulting from the event were reported by 9% of RNs and 6% of LPNs experiencing physical violence, compared with 14% of RNs and 10% of LPNs reporting persistent problems resulting from nonphysical violence. Changes in job status (quitting, voluntary transfer, and work restrictions) were also more frequent for nurses experiencing nonphysical than physical violence for both license types: 9% of RNs and 11% of LPNs had job changes following a physical violence event, compared with 20% of RNs and LPNs following a nonphysical violence event.

Reporting

Of those nurses who indicated on the survey that they experienced physical violence events, 76% of LPNs and 65% of RNs reported events to management, verbally, in writing, or both. LPNs were more likely to report nonphysical violence to management than were RNs, with 80% of LPNs reporting events compared to 68% of RNs.

Multivariate Modeling

Results for multivariate modeling, using DAGs based on a causal model, are shown in Table 3 for physical violence and in Table 4 for nonphysical violence. Table 5 summarizes the direction of risk for RNs and LPNs by exposure, highlighting those exposures that had confidence intervals that excluded 1.

Multivariate Modeling: Physical Assault

Some exposures resulted in an increased risk of physical assault for both RNs and LPNs: (a) working primarily with geriatric patients (compared with nongeriatric adults); (b) working primarily in psychiatric/behavioral departments (compared with medical/surgical); and (c) working in nursing home/long-term care facilities (compared with hospital inpatient facilities). Decreased risks were found for both RNs and LPNs working primarily in clinics/health care provider offices.

Risks of other exposures varied by license type. RNs had an increased risk of physical assault when (a) their primary activity was providing patient care (compared to "other" activities); (b) they were 20–29 years old (compared with those aged > 60 years); (c) they had associate degrees as the highest nursing degree (compared with those with diplomas); (d) they graduated between 1990 and 1999 (compared with those who graduated before 1970); and (e) they worked in emergency departments (compared with medical/surgical). LPNs had an increased risk of physical assault when (a) supervising patient care (compared to "other" activities); (b) working with neonatal/pediatric patients (compared with adults); and (c) they have worked in their department for ≥ 10 years (compared with those who have worked in their department for < 5 years).

RNs had decreased risks of physical assault in a variety of situations: (a) working with neonatal/pediatric patients (compared with adults); (b) working in public health/school/education/research departments, or operating rooms (compared with medical/surgical departments); or (c) working in outpatient or home care/public health facilities (compared with inpatient hospitals). Female RNs had a lower risk of physical assault than male RNs.

Multivariate Modeling: Nonphysical Violence

For nonphysical violence (Table 4), some exposures consistently appeared to increase the odds of violence regardless of license type: (a) working in psychiatric/behavioral departments (compared with medical/surgical departments); (b) working in nursing home/long-term care facilities (compared with inpatient hospitals); (c) having an associate degree as the highest level of nursing educational credential (compared with diplomas); and (d) having graduated from nursing school between 1990 and 1999 (compared to graduation before 1970). Decreased risks of nonphysical violence for both RNs and LPNs were observed for those working primarily in home care/public health or

Table 4. Nonphysical Violence Odds Ratios

	RNs		LPNs	
	OR	**CI**	**OR**	**CI**
Facility				
Hospital inpatient (referent)	1		1	
Nursing home/long-term care/rehabilitation	*1.39*	*1.10–1.77*	*1.49*	*1.03–2.15*
Outpatient	1.13	0.85–1.50	0.89	0.43–1.87
Home care/public health	*0.68*	*0.51–0.89*	*0.25*	*0.12–0.54*
Clinic/health care provider	*0.63*	*0.47–0.84*	*0.57*	*0.38–0.85*
Other	*0.62*	*0.48–0.79*	0.93	0.55–1.56
Primary department				
Medical/surgical; obstetrics/gynecology; procedural/diagnostic (referent)	1		1	
Emergency	*3.30*	*2.11–5.17*	2.33	0.86–6.32
Psychiatric/behavioral	*3.14*	*2.23–4.43*	*2.16*	*1.35–3.44*
Family practice	1.57	0.97–2.53	0.93	0.51–1.71
Intensive care unit	*1.34*	*1.00–1.79*	5.49	0.60–50.29
Occupational health/split time/other	1.24	0.96–1.61	1.47	0.92–2.33
Operating room	1.15	0.85–1.57	0.33	0.07–1.57
Public health/school/education/research	1.03	0.74–1.43	*0.45*	*0.22–0.94*
Patient population				
Adult (referent)	1		1	
Geriatric	1.19	0.89–1.58	1.24	0.74–2.07
Split time	1.18	0.96–1.44	*1.78*	*1.20–2.64*
Neonatal/pediatric/adolescent	0.79	0.60–1.04	1.44	0.74–2.78
Primary activity				
Patient care	0.88	0.70–1.11	1.18	0.80–1.74
Supervision	1.30	0.90–1.87	1.57	0.75–3.27
Other (referent)	1		1	
Gender				
Male (referent)	1		1	
Female	0.93	0.67–1.30	*0.38*	*0.18–0.79*
Age (years)				
20–29	*2.78*	*1.81–4.27*	1.11	0.57–2.13
30–39	*2.06*	*1.49–2.85*	1.38	0.81–2.33
40–49	*2.03*	*1.50–2.74*	1.26	0.76–2.09
50–59	*2.07*	*1.51–2.83*	1.21	0.71–2.04
60–84 (referent)	1		1	
Race				
Non-White (referent)	1		1	
White	1.11	0.67–1.84	0.65	0.33–1.28
Highest education level				
Diploma (referent)	1		1	
Associate degree	*1.33*	*1.03–1.70*	*1.50*	*1.02–2.20*
Baccalaureate degree or higher	1.23	0.97–1.55	*0.33*	*0.13–0.86*
Years worked as a nurse				
0–4	1.13	0.62–2.04	1.58	0.63–3.95
5–9	0.89	0.52–1.54	2.09	0.89–4.95
10–19	0.76	0.52–1.11	0.98	0.54–1.77
$\geq$ 20 (referent)	1		1	
Years in the department				
0–4 (Referent)	1		1	
5–9	1.16	0.93–1.45	1.07	0.73–1.55
10–19	1.20	0.95–1.50	1.02	0.66–1.58
$\geq$ 20	0.98	0.71–1.36	1.25	0.71–2.20
Graduation year				
$<$ 1970 (referent)	1		1	
1970–1979	1.15	0.88–1.51	1.06	0.66–1.70
1980–1989	1.25	0.91–1.71	*1.64*	*1.00–2.70*
1990–1999	*1.46*	*1.00–2.14*	*1.89*	*1.12–3.19*

Notes. Facility = adjusted for gender and race; Department = adjusted for gender and facility; Patient population = adjusted for gender, race, facility, and department; Primary activity = adjusted for gender, age, marital status, race, facility, department, patient population, education, years in the department, years worked as a nurse; Gender = no adjustment; Age = no adjustment; Race = no adjustment; Highest education level = adjusted for gender, age, race, and marital status; Years worked as a nurse = adjusted for graduation year and age; Years worked in the department = adjusted for graduation year, department, and age; Graduation year = adjusted for age.
Entries in italics indicate that the confidence interval excludes 1.

Table 5. Comparison of License Types, by Risk of Violence

Exposure Type	RNs		LPNs	
	Physical Violence	Nonphysical Violence	Physical Violence	Nonphysical Violence
Facility (referent: hospital inpatient)				
Nursing home/long-term care/rehabilitation	Increased	Increased	Increased	Increased
Outpatient	Decreased			
Home care/public health	Decreased	Decreased		Decreased
Clinic/health care provider	Decreased	Decreased	Decreased	Decreased
Department (referent: medical/surgical; obstetrics/gynecology; procedural/diagnostic)				
Emergency	Increased	Increased		
Psychiatric/behavioral	Increased	Increased	Increased	Increased
Public health/school/education/research	Decreased			Decreased
Operating room	Decreased			
Intensive care		Increased		
Population (referent: adult)				
Geriatric	Increased		Increased	
Neonatal/pediatric/adolescent	Decreased		Increased	
Activity (referent: all "other" activities)				
Patient care	Increased			
Supervision			Increased	
Female gender	Decreased			Decreased
Age (years; referent: 60–84 years)				
20–29	Increased			
20–59		Increased		
Highest education level (referent: diploma)				
Associate degree	Increased	Increased		Increased
Baccalaureate degree or higher				Decreased
Years in the department (referent: 0–4 years)				
10–19			Increased	
≥ 20			Increased	
Graduation year (referent: < 1970)				
1980–1989				Increased
1990–1999	Increased	Increased		Increased

clinic/health care provider offices (compared with hospital inpatient facilities).

There were discrepancies between license types for some exposures with respect to nonphysical violence. For example, RNs had an increased risk when they were aged 20–59 years (compared with ≥ 60 years) and when they worked in emergency or intensive care units (compared with medical/surgical units). LPNs had increased risk of nonphysical violence when they graduated from nursing school between 1980 and 1989 (compared with graduation before 1970); however, LPNs had decreased risks of nonphysical violence when they (a) worked in public health/education/school/research departments (compared with medical/surgical units); (b) were female; and (c) had baccalaureate degrees or higher for their most advanced nursing educational credential (compared with diplomas).

Discussion

Rates by License Type

Work-related violence is a significant problem for this population of RNs and LPNs. Even after controlling for potential confounders, response bias, and eligibility, LPNs appeared to have an increased risk of both physical and nonphysical violence compared to RNs. This is consistent with some previous research (Yassi, 1994), although a comparison of prior literature with these study results is limited because this appears to be among the initial efforts to investigate the effect of the license type of nurses in the United States.

Perpetrator Characteristics

Relationship Nearly all occurrences of physical violence, and most occurrences of nonphysical violence, were perpetrated by patients/clients for both RNs and LPNs; however, perpetrators of nonphysical violence were more varied, consistent with some previous research (Anderson, 2002; Duncan et al., 2001; Findorff, McGovern, & Sinclair, 2005; Lee, Gerberich, Waller, Anderson, & Mc Govern, 1999; Soares et al., 2000; Sofield & Salmond, 2003). Perpetrators of nonphysical violence against RNs were much more likely to be supervisors, physicians, patient visitors, or subordinates. This may be due to the extent of exposure of RNs to a wide variety of both internal and external personnel in health care compared to LPNs. Based on job responsibilities, RNs

may have more potentially conflictual contacts with physicians, with subordinates they supervise, and with patient visitors, compared to LPNs. Findings that the perpetrators of physical assaults were more frequently patients, whereas the perpetrators of nonphysical violence were more varied, suggest that violence intervention strategies must be targeted specifically to the type of work-related violence (i.e., physical assault or nonphysical violence) and the type of perpetrator (e.g., patient vs. physician vs. other). A general approach to all perpetrators would not be effective.

Impairment Perceived perpetrator impairment, including the presence of disease, use of medications, and impairment by drugs, alcohol, or both, has been analyzed by some researchers (Lyneham, 2000; Mayer, Smith, & King, 1999). An increased risk of violence has been reported for staff caring for patients with cognitive disorders (Chou, Lu, & Chang, 2001; Lee et al., 1999; May & Grubbs, 2002), consistent with the results reported here. The majority of perpetrators of physical violence were perceived to be impaired, whereas perpetrators of nonphysical violence were less frequently perceived as impaired. When comparing license types, LPNs most often perceived perpetrators of nonphysical violence to be impaired, whereas far fewer (nearly half) of the RNs perceived perpetrators as nonimpaired. Perhaps this difference is based upon the settings in which nurses work because LPNs more frequently worked in long-term care settings, whereas RNs worked in acute care settings. LPNs in long-term care settings may be more likely to encounter perpetrators who have some type of chronic cognitive impairment, whereas RNs working in hospitals may have more exposure to patients with acute conditions. Long-term care facilities also have much lower staffing levels than hospitals and, therefore, fewer personnel resources to manage patients with cognitive impairments.

Age and Gender Perpetrators of nonphysical violence varied in terms of age more than physical violence perpetrators; however, nonphysical violence perpetrators against LPNs were more likely to be geriatric compared to perpetrators against RNs. This finding is also likely due to the setting in which nurses work. Perpetrator age has been assessed in some studies; however, most have described ages of perpetrators younger than those found in this study. Grange and Corbett (2002) reported that patients between the ages of 30 and 44 years committed the highest percentage of violent acts toward emergency medical services personnel. In contrast, Chou et al. (2001) found that perpetrators were primarily patients in their 20s and 30s. The majority of perpetrators of violence in this study were male, consistent with the findings of Chou et al., Duhart (2001), and Grange and Corbett.

Locations and Consequences of Violence

Physical location of violence, sources of injury, and injury outcomes appeared consistent between license types, and few nurses required treatment other than self-care following violent events. Despite the lack of physical treatment required following violent events, nurses frequently reported frustration, anger, and fear/anxiety/stress resulting from both types of violence. Both RNs and LPNs reported more problems following nonphysical violence than following physical violence, and changes in job status were more frequent for nurses experiencing nonphysical than physical violence for both license types. This finding—that the sequelae of nonphysical violence may be greater and of longer duration than those of physical violence—warrants further investigation. Findorff et al. (2005) postulated that substantive consequences associated with nonphysical violence might be related to the ongoing nature of nonphysical violence, which gradually diminishes a worker's sense of well being. Additional follow-up on these significant consequences, specifically in terms of nonphysical violence, is needed.

Physical Violence

Some exposures were consistent and resulted in an increased risk of physical assault for both RNs and LPNs (a) working with geriatric patients, (b) working in primarily psychiatric/behavioral departments, and (c) working in long-term care facilities. This increased risk by department is consistent with some previous research (Baxter, Halner, & Holme, 1992; Duncan et al., 2001). Although it has been recognized previously that specific departments or types of facilities may experience increased or decreased risks of violence, additional research detailing specific activities and situations that increase or decrease risk is now warranted. For example, if violence is found to occur typically when transferring patients or administering medications, organizational policies can be targeted to control risks specific to these activities.

Other exposures varied by license type. RNs had an increased risk of physical assault when their primary activity was providing patient care; LPNs had an increased risk when supervising patient care. Perhaps the nuances of specific activities require additional investigation to understand better what specifically occurred prior to the violent event.

Younger RNs with associate degrees and more recent RN and LPN graduates also had an increased risk of physical violence. The increased risk for younger nurses is consistent with findings reported by Soares et al. (2000), who found that victims of violence in Swedish psychiatric settings were significantly younger than nonvictims (among nurses and psychiatrists). In addition, Riopelle, Bourque, Robbins, Shoaf, and Kraus (2000) reported that, among various occupations in Los Angeles, younger and more highly educated workers were more likely to report assault. This finding regarding education level is contrary to that found in this study. Female RNs had a lower risk of physical assault than male RNs, consistent with some other findings of women being at lower risk (Duhart, 2001; Liss & McCaskell, 1994).

LPNs had an increased risk for physical assault when they had worked in their department for ≥ 10 years. Perhaps this finding is also related to the facility in which nurses work most frequently. Increased exposure time in a riskier environment would logically lead to an increased risk of experiencing a violent event.

Interestingly, increased and decreased risks of physical violence for LPNs and RNs, respectively, were identified for those working with young patients. Perhaps this difference is based upon the severity of the patients' illnesses/injuries, regardless of the setting in which care occurred. One hypothesis may be that, because LPNs are more likely to work in long-term care and RNs are more likely to work in inpatient hospitals, it is possible that the young patients RNs care for are more compromised and not as able to become violent with staff.

Nonphysical Violence

Consistent with physical violence findings, the risk of nonphysical violence increased for RNs and LPNs when working in psychiatric/behavioral departments and nursing home/long-term care facilities. Decreased risks of nonphysical violence for both RNs and LPNs were observed when working primarily in home care/public health and clinic/health care provider offices, which underscores the need for further research to better understand what characteristics of these departments and facilities increase risks, so that control measures can be properly implemented.

Also similar to physical violence risks for RNs, nurses with an associate degree as their highest level of nursing education, younger RNs, or more recent RN or LPN graduates also had an increased risk of nonphysical violence. Perhaps those nurses with associate degrees have had less preparation on handling violent situations at work compared to those with more advanced degrees. The shorter coursework in associate degree programs may not allow time to cover all pertinent topics. In addition, as work-related violence issues have become more recognized, new graduates or younger nurses may be more likely to have had some training on violence prevention in school and may be more likely to interpret events as "violent" than nurses with a longer work history. Alternatively, new graduate nurses or younger nurses may find themselves in violent situations more often than more tenured nurses who have adopted methods to avoid these types of situations. An additional explanation may be that nurses with more experience who graduated before 1990 may have left the profession if it was felt that work-related violence was a problem.

Policy Implications

Work-related violence is a serious problem for RNs and LPNs, and has policy implications for nursing schools and organizations that employ nurses. First, nursing students should have a basic understanding of this problem—a crucial policy change for incorporation into their curricula. Work-related violence should not be accepted as part of a nurse's job.

Second, some risks were consistent between license types, whereas others varied; however, it is important for administration to have a better understanding of specific activities nurses are performing (when, where, and with whom) when violence occurs. It is also essential to ensure that violent events are reported to the respective institution appropriately. Among LPNs and RNs, only 76% and 65%, respectively, reported physical violent events, and 80% and 68%, respectively, reported nonphysical violent events. Therefore, relying solely on currently reported events will underestimate the problem. Initially, reporting processes and procedures must be improved so that administration can better understand the circumstances of all violent events. Nurses should not be penalized for reporting violent events. Armed with a better understanding of event characteristics for specific organizations and data from population-based research studies, more effective policies and procedures that are specific to the organization can be developed. It will be crucial to focus on both physical and nonphysical violence, as it appears that nonphysical violence may result in more symptoms, more treatment, and more work changes, compared with physical violence. It is clear that risks vary by license type, facility, department, and patient population, and that a simple broad approach will not eliminate this problem. Research is needed to evaluate the effectiveness of various models of institutional policies on violence prevention and control.

Conclusions

Work-related violence is an important problem for nurses. Compared to RNs, LPNs appeared to be at increased risk for both physical and nonphysical violence. Some risk and protective factors are consistent between license types, whereas others vary. Further research is needed to understand the nuances of work activities and specific risk factors by license type, which may lead to more efficacious interventions targeting factors specific to license type and type of violence. A simple broad approach to resolving the problem of work-related violence is unrealistic; work environments must be assessed individually. Understanding specific risks within an employee population may lead to a more efficient use of limited resources. Given the growing nursing shortage, it will be critical for nurses and administrators to work diligently to improve the safety of nurses at work.

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