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Violence against Nurses: A Neglected and Health-threatening Epidemic in the University Affiliated Public Hospitals in Shiraz, Iran

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Abstract

Background: Nurses are more likely to be exposed to violence at their workplace in comparison with other employees.

Objective: To determine various aspects of violence against nurses in Shiraz public hospitals.

Methods: This cross-sectional study was conducted from 2017 to 2018, using a multistage random sampling method. Violence including verbal threats, verbal abuse, physical and sexual abuse as well as ethnical types, violence from patients, patients' companions and coworkers, and causes of violence were investigated using a checklist.

Results: 405 nurses with a mean age of 30.2 (SD 7.1) years and female to male ratio of 4.2 were interviewed. 363 (89.6%) nurses had experienced at least one kind of violence; 68.4% suffered from more than one type of violence. Verbal abuse (83.9%), verbal threats (27.6%), physical violence (21.4%), sexual abuse (10.8%), and ethnical harassment (6.1%) were the most common types of violence experienced by the nurses. Patients' companions, patients, and physicians were reported as the sources of violence in 70.6%, 43.1%, and 4.1% of cases, respectively. Nurses with non-official employment status and non-Farsi ethnicity, having a disease, with non-evening shift work, and those with short or long employment period were more affected. Unrealistic expectations by patients' companions and long working hours were the most common attributing factors.

Conclusion: Violence against nurses, as a strenuous and health-threatening crisis, has become epidemic in public hospitals in our region. Effective interventions are warranted to sort out these problems.

Keywords: Violence; Nurses; Hospitals; Patients; Physicians

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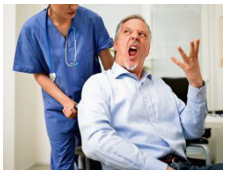

Introduction

Violence against medical staff has become widespread and a growing problem worldwide.[1,2] According to the Bureau of Statistical Studies, 60% of workplace violence occurs in health care settings;[3] health care employees are 16 times more likely to experience violence at their workplaces,[4] and nurses, due to

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direct contact with patients and their companions, are three times more likely to be exposed to violence.[5] The International Council of Nurses[6,7] and the Australian Institute of Criminology,[8] also reported that nurses are more likely exposed to violence than other groups. Evidence shows that violence in hospitals is a health-threatening factor for both care-givers and care-takers; and that it reduces the quality of care and the concentration of nurses during work; increases their errors; undermines ethics; causes emotional reactions such as anger, sadness, fear, self-reproach and decreased job satisfaction; and might even lead to resignation and death.[9-11] On the other hand, "violence" has not been fully defined yet.[12] In the eyes of the Emergency Nursing Association, workplace violence is any violent act, physical attack, emotional or verbal abuse, and forced or dangerous behavior in workplace that can lead to physical or emotional harm that ensues consequences.[12-17] It might be applied by patients and/or their companions, students, trainees or even by other health care team memebers.[18]

Among different types of violence, verbal violence—the most common form of violence—is experienced by 82%–96% of nurses in their workplaces.[19,20] They may also suffer from other forms of violence including physical abuse, assault, rape, harassment, bullying, hooliganism, and other obscene behaviors.[21]

The actual rate of violence in medical centers is still unknown, particularly, when it is only viewed from the perspective of health care workers' behaviors toward caregivers.[14,22-24] A large volume of related articles are about patients' rights; evidence regarding observance of nurses' rights by patients and their companions is scarce. Patients' and their companions' behaviors toward nurses has therefore become the focus of interest in recent years, especially in developing countries.[22]

Public hospitals in Shiraz, the capital of Fars province, southern Iran, are the main referral centers for patients due to implementation of urban family physician and health system reform program in the last 5–7 years. Hospital nurses working there are thus experienced burn out and reportedly face numerous incidents of violence. We therefore conducted this study to determine the prevalence, predictors and sources of various types of violence against nurses working in these hospitals.

Materials and Methods

This cross-sectional study was conducted from 2017 to 2018 and included nurses who were working in three out of four main university-affiliated public hospitals in Shiraz, southern Iran—Faghihi, Nemazee and Rajaei Hospitals. The sample size of 420 was calculated based on the assumed violence prevalence of 70%,[1,18] a maximum acceptable error of 5%, confidence interval of 95%, and a design effect of 1.3.

We used a multi-stage random sampling method. At first, the proportion of nurses working in each studied hospital was identified. A list of adults and pediatrics outpatient units (screening, emergency and acute care units) and adults and pediatrics inpatient wards (general internal medicine, general surgery, intensive care unit [ICU], cardiac care unit [CCU], neurosurgery) in each hospital was then created. In the next step, considering the mean number of referrals to each ward, the proportion of sample to be taken from each of the above-mentioned units or wards was calculated. We prepared a list of occupied nurses working in each unit or ward in each of the three defined shift works—morning, evening, and night. Interviewees were then selected by a random systematic sampling method. Data were collected using a three-section checklist. The first section consisted of 28 items in-

For a systematic review on workplace violence against physicians see http://www.theijoem.com/ijoem/index.php/ijoem/article/view/1573

cluding age, sex, marital status, education level, monthly income (adjusted to purchasing parity power in US$), second job, work tenure, employment status, duration of employment in the studied hospital and in the current position, current workplace, number of shift work per month, and the approximate number of patients and patients' companions that they faced during each shift work. The second part of the checklist included five items about violence, types of violence (categorized as verbal threat, verbal abuse, physical violence, sexual harassment, and ethnical harassment), and frequency, time, and sources of violence. The third section consisted of 35 items including predisposed factors of violence—those related to patients and their companions (9 items), factors related to hospitals (19 items), and some general questions (7 items)—scored based on a Likert scale. The checklist was first developed by World Health Organization (WHO) experts.[7,18] The checklist was then translated by Iranian experts into Persian. We checked the validity of the Persian version by nursing experts. After explaining the objectives of this study by a trained interviewer to volunteers, they were interviewed individually with full observance of privacy in a private place during their working hours. The only exclusion criterion was being reluctant to participate.

Ethics

We committed to the observance of ethics codes. Full explanation about the research objectives to the interviewees and their willingness to participate in this study, keeping confidentiality, and personal interview in a private place were amongst these commitments. This study was approved by Ethics Committee, Shiraz University of Medical Sciences.

Statistical Analysis

SPSS® for Windows® ver 20 was used for data analysis. One-sample Kolmogorov-Smirnov test was used to test if studied variables had normal distribution or not. Normally distributed variables were reported as mean (SD). Variables not normally distributed were presented as median (range). All independent (socio-demographic and job related) variables with $p<0.2$ in univariate analysis were entered into a logistic regression analysis (forward method) for modeling of each type of studied violence (verbal threat, verbal abuse, physical violence, sexual harassment, ethnical harassment) as dependent variables. A $p<0.05$ was considered statistically significant.

TAKE-HOME MESSAGE

- Workplace violence occurrs more frequently in nurses compared with other employees; it becomes a widespread and growing problem worldwide.
- Verbal threats, verbal abuse, physical and sexual abuse are various common types of abuse. Patients, patients' companions and coworkers are the main sources.
- In this study various aspects of violence against nurses were studeid.
- The epidemic of violence against hospital nurses should be considered a strenuous and health-threatening crisis. Comprehensive and urgent interventions are thus needed to overcome this phenomenon and its consequences.

Results

A total of 405 nurses with a mean age of 30.2 (SD 7.1) years and female to male ratio of 4.2 participated in this study. Two-hundred and seven (51.1%) nurses were selected from Nemazee Hospital; 100 (24.7%), from Faghihi; and 98 (24.2%), from Rajaei. The majority of nurses were full-time employees (98.3%) working in a department or ward of the studied hospitals (98.8%). The majority of nurses (84.2%) were not trained in facing violence and its control in

Table 1: Demographic, socioeconomic and job characteristics of studied nurses (n=405). Values are either median (range) or n (%).

Parameter	Statistics
Age, yrs	28 (20 to 57)
Female sex	328 (81.0%)
Education	
Up to the bachelor	389 (96.0%)
Master or higher	16 (4.0%)
Marital status	
Married	221 (54.6%)
Single	184 (45.4%)
Position at home	
Head of family	53 (13.1%)
Non-head of family	335 (82.7%)
Living alone	17 (4.2%)
Ethnicity	
Farsi	350 (86.4%)
Others	55 (13.6%)
Birthplace	
Fars province	380 (93.8%)
Elsewhere	25 (6.2%)
Hospital section	
Wards	214 (52.9%)
Intensive Care Units	114 (28.2%)
Emergency departments	77 (19.0%)
Period of employment, months	48 (1 to 354)
Period of employment in the studied hospitals, months	36 (1 to 336)
Period of employment in the studied unit, ward or department, months	24 (1 to 76)
Type of employment	
Official	57 (14.1%)
Non-official	348(85.9%)
Type of shift work	
Rotational	356 (87.9%)
Steady	49 (12.1%)
Shift work, per month	30 (8 to 60)
Morning shift work, per month	12 (1 to 36)
Evening shift work, per month	10 (0 to 25)
Night shift work, per month	8 (0 to 24)
Number of patients who were cared for in each shift work	9 (0 to 50)
Number of patients' companions that were faced with in each shift work	10 (0 to 60)
Being trained in violence	64 (15.8%)
Monthly income based on purchasing parity power, US$	912 (294 to 2353)

the workplace (Table 1); 70 (17.3%) of interviewees had a certain disease. Out of all the interviewees, 93 (23%), 205 (50.6%), and 148 (36.5%) had referred to a hospital during two years before this study was conducted, as a patient, patients' companion, or visitor, respectively.

We also found that 363 (89.6%; 95% CI 86.7% to 92.6%) of nurses had experienced at least one type of violence during the year before this study was conducted; 68.4% of them suffered from more than one type of violence. No significant (p=0.06) association was found between place of work in hospital and experiencing violence. Verbal abuse (83.9%), verbal threat (27.6%), physical violence (21.4%), sexual harassment (10.8%), and ethnical harassment (6.1%) were the most frequent types of violence experienced by nurses (Table 2). Among verbal abuse, insulting and bullying; among verbal threats, threats without weapon; among physical violence, throwing things and grappling; and among sexual harassments, gawking were the most common types of violence against nurses reported. Patients and their companions were the most important sources of violence (Table 2). Out of 405 studied nurses, 297 (73.3%) reported more than one source for the violence incidents they experienced. The distribution of types of violence committed by different sources was often not even (Table 2).

Univariate analysis revealed that verbal threat was more often experienced by nurses working in morning or evening shifts (Table 3). Verbal abuse was more common against married, unhealthy, and older nurses. Those with higher work tenure or more frequent contacts with patients' companions were also at higher risk of verbal abuse. Physical violence was reported more often by male nurses, unhealthy nurses and those with non-Farsi ethnicity than their counterparts. Sexual harassment were more common against

Table 2: Frequency, types and sources of violence committed against the studied nurses (n=405). The null hypothesis tested was that the source of violence was evenly distributed for each type of violence.

			Source of violence, n (%)					
Type of violence	**Subtype of violence**	**n (%)**	**Patient**	**Patients' companions**	**Physician**	**Other hospital staff**	**More than one source**	**p value**
Verbal threat (n=112)	Without weapon	105 (25.9)	32 (30.5)	40 (38.1)	1 (1.0)	0 (0)	32 (30.5)	<0.001
	With weapon	8 (2.0)	3 (37.5)	4 (50.0)	0 (0)	0 (0)	1 (12.5)	0.42
	Virtual	9 (2.2)	1 (11.1)	2 (22.2)	0 (0)	0 (0)	6 (66.7)	0.10
Verbal abuse (n=340)	Bullying	191 (47.2)	34 (17.8)	95 (49.7)	5 (2.6)	5 (2.6)	52 (27.2)	<0.001
	Insulting	193 (47.7)	36 (18.7)	88 (45.6)	6 (3.1)	10 (5.2)	53 (27.5)	<0.001
	Damning	150 (37.0)	43 (28.7)	54 (36.0)	1 (1.0)	2 (1.3)	50 (33.3)	<0.001
	Cursing	151 (37.3)	42 (27.8)	68 (45.0)	0 (0)	3 (2.0)	38 (25.2)	<0.001
	Virtual	12 (3.0)	3 (25.0)	4 (33.3)	1 (8.3)	1 (8.3)	3 (25.0)	0.56
Physical violence (n=87)	Spitting	14 (3.5)	7 (50.0)	4 (28.6)	0 (0)	0 (0)	3 (21.4)	0.40
	Throwing things	42 (10.4)	9 (21.4)	19 (45.2)	0 (0)	0 (0)	14 (33.3)	0.17
	Pushing/shoving	28 (6.9)	8 (28.6)	7 (25.0)	0 (0)	1 (3.6)	12 (42.9)	0.03
	Grappling	34 (8.4)	18 (52.9)	7 (20.6)	0 (0)	1 (2.9)	8 (23.5)	0.001
	Drawing knife	6 (1.5)	1 (16.7)	4 (66.7)	0 (0)	0 (0)	1 (16.7)	0.22
Sexual harassment (n=44)	Gawking	39 (9.6)	11 (28.2)	13 (33.3)	2 (5.1)	1 (2.6)	12 (30.8)	0.002
	Touching	8 (2.0)	4 (50.0)	2 (25.0)	0 (0)	0 (0)	2 (25.0)	0.61
	Telling joke	8 (2.0)	1 (12.5)	3 (37.5)	0 (0)	0 (0)	4 (50.0)	0.42
	Virtual	8 (2.0)	1 (12.5)	4 (50.0)	0 (0)	0 (0)	3 (37.5)	0.42
Ethnical harassment		24 (5.9)	8 (33.3)	11 (75.8)	1 (4.2)	1 (4.2)	3 (12.5)	0.002

unhealthy nurses, nurses with non-Farsi ethnicity and those who had referred frequently to hospitals as patients during two years before conducting this study (Table 3). All four types of violence studied occurred more commonly against nurses with higher income.

Multivariate analysis revealed that nurses who had referred to the hospitals during two years prior to conduction of this study as patients' companions (OR 1.21; 95% CI 1.01 to 1.44), nurses with higher monthly income (OR 1.001; 95% CI 1.000 to 1.002), and nurses who had lesser duration of employment in the studied hospital (OR 1.01; 95% CI 1.005 to 1.02) suffered more from verbal threat in comparison with their counterparts. Verbal abuse occurred more often in nurses with non-official employment status (OR 3.03; 95% CI 1.01 to 9.09) and those with longer duration of employment (OR 1.01; 95% CI 1.01 to 1.02). Physical violence occurred more frequently in nurses with non-Frasi ethnicity (OR 2.34; 95% CI 1.07 to 5.09) and in nurses who were unhealthy (OR 2.20; 95% CI 1.07 to 4.54). Furthermore, the most important factors associated with

Table 3: Univariate analysis of factors associated with violence committed against studied nurses

	Verbal threat		Verbal abuse		Physical violence		Sexual harassment	
Characteristic	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
Sex, n (%)								
Male	28 (36.4)	49 (63.6)	64 (83.1)	13 (16.9)	32 (41.6)	45 (58.4)	12 (15.6)	65 (84.4)
Female (ref)	84 (25.6)	244 (74.4)	276 (84.1)	52 (15.9)	55 (16.8)	273 (83.2)	32 (9.8)	296 (90.2)
OR (95% CI)	1.66 (0.98 to 2.81)		0.93 (0.48 to 1.81)		3.53 (2.06 to 6.04)		1.71 (0.83 to 3.49)	
Marital status, n (%)								
Single	47 (25.5)	137 (74.5)	146 (79.3)	38 (20.7)	32 (17.4)	152 (82.6)	17 (9.2)	167 (90.8)
Married (ref)	65 (29.4)	156 (70.6)	194 (87.8)	27 (12.2)	55 (24.9)	166 (75.1)	27 (12.2)	194 (87.8)
OR (95% CI)	0.82 (0.50 to 1.28)		0.53 (0.31 to 0.92)		0.62 (0.38 to 1.01)		0.73 (0.39 to 1.39)	
Having disease, n (%)								
No	90 (26.9)	245 (73.1)	275 (82.1)	60 (17.9)	64 (19.1)	271 (80.9)	30 (8.9)	305 (91.1)
Yes (ref)	22 (31.4)	48 (68.6)	65 (92.9)	5 (7.1)	23 (32.9)	47 (67.1)	14 (20.0)	56 (80.0)
OR (95% CI)	0.80 (0.46 to 1.40)		0.35 (0.14 to 0.91)		0.48 (0.27 to 0.85)		0.39 (0.20 to 0.79)	
Ethnicity, n (%)								
Farsi	92 (26.2)	259 (73.8)	299 (85.2)	52 (14.8)	67 (19.1)	284 (80.9)	33 (9.4)	318 (90.6)
Other (ref)	20 (37.0)	34 (63.0)	41 (75.9)	13 (24.1)	20 (37.0)	34 (63.0)	11 (20.4)	43 (79.6)
OR (95% CI)	0.60 (0.33 to 1.10)		1.82 (0.91 to 3.63)		0.40 (0.22 to 0.74)		0.41 (0.19 to 0.86)	
Type of shift work, n (%)								
Morning	69 (29.9)	162 (70.1)	196 (84.8)	35 (15.2)	52 (22.5)	179 (77.5)	25 (10.8)	206 (89.2)
Evening	38 (29.9)	89 (70.1)	104 (81.9)	23 (18.1)	30 (23.6)	97 (76.4)	15 (11.8)	112 (88.2)
Night	5 (10.6)	42 (89.4)	40 (85.1)	7 (14.9)	5 (10.6)	42 (89.4)	4 (8.5)	43 (91.5)
p value	0.02		0.75		0.15		0.85	

Continued

Table 3: Univariate analysis of factors associated with violence committed against studied nurses

	Verbal threat		Verbal abuse		Physical violence		Sexual harassment	
Characteristic	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
Number of referrals of nurses as patient to the hospitals during 2 years before conducting this study, n (%)								
Never	78 (25)	234 (75)	258 (82.7)	54 (17.3)	60 (19.2)	252 (80.8)	26 (8.3)	286 (91.7)
1	20 (40.8)	29 (59.2)	45 (91.8)	4 (8.2)	13 (26.5)	36 (73.5)	8 (16.3)	41 (83.7)
2	9 (29)	22 (71)	27 (87.1)	4 (12.9)	9 (29)	22 (71)	6 (19.3)	25 (80.7)
>2	5 (38.5)	8 (61.5)	10 (76.9)	3 (23.1)	5 (38.5)	8 (61.5)	4 (30.8)	9 (69.2)
p value	0.11		0.31		0.18		0.01	
Mean (SD) age, yrs	29.5 (5.7)	30.4 (7.6)	30.6 (7.3)	28.1 (5.2)	30.7 (6.8)	30.0 (7.2)	30.5 (7.0)	30.1 (7.1)
p value	0.25		0.001		0.46		0.78	
Mean (SD) employment duration, months	74.6 (66.0)	82.2 (88.3)	86.3 (85.5)	47.5 (56.3)	90.1 (80.5)	77.4 (83.2)	80.1 (84.4)	80.1 (82.6)
p value	0.41		0.001		0.20		0.99	
Mean (SD) monthly income based on purchasing power parity (US$)	1041 (281)	965 (273)	999 (280)	919 (247)	1045 (306)	970 (266)	107 (320)	976 (270)
p value	0.01		0.03		0.04		0.03	
Mean (SD) number of patients' companions who were handled in each shift work by nurses	15.8 (16.7)	16.0 (26.5)	16.8 (26.1)	11.1 (7.9)	18.3 (18.3)	12.3 (25.5)	16.9 (16.9)	15.8 (24.9)
p value	0.96		0.001		0.30		0.77	

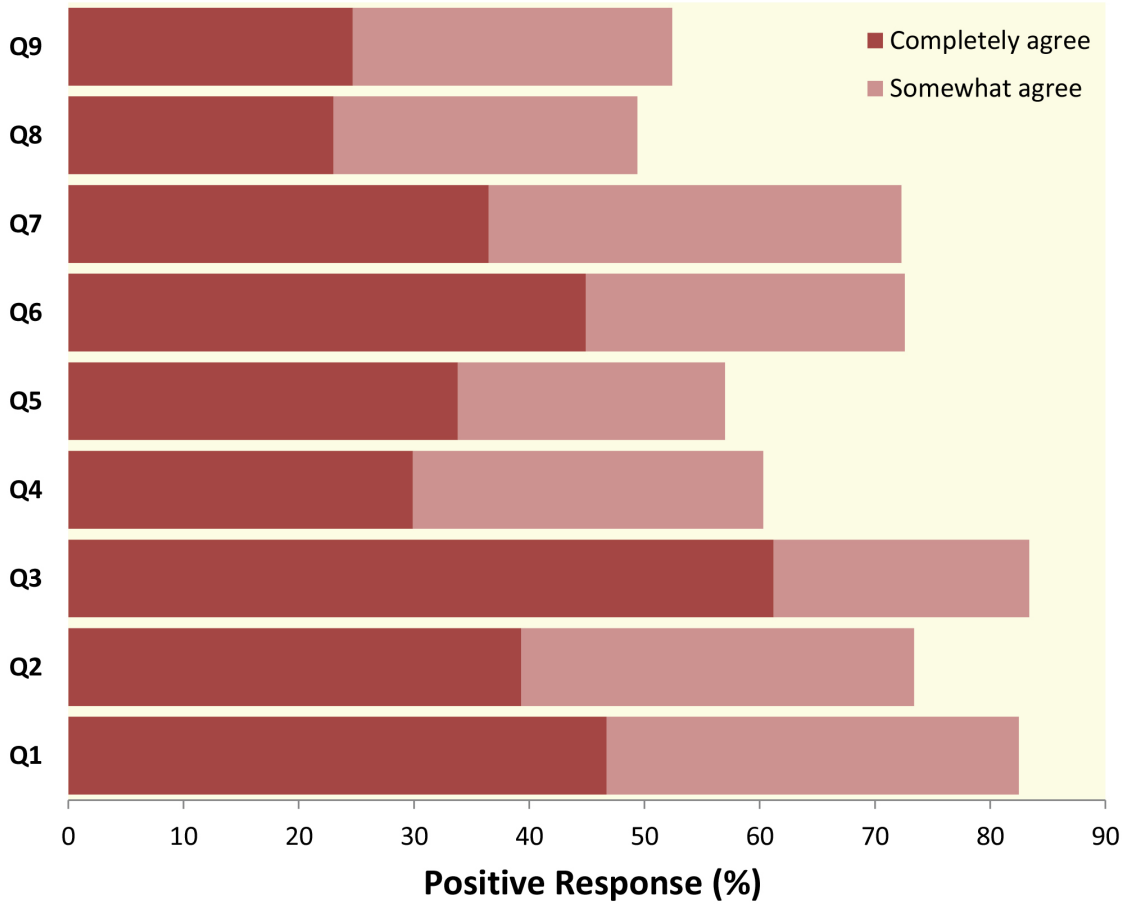

Figure 1: Factors related to patients or their companions that would affect occurrence of violence against nurses. Q1. Non-observance of hospital rules by patients and their companions; Q2. The absence of a specific person from the patient's family to follow their condition and do what is necessary; Q3. Extra expectations by patients' companions for caring their patients or repeated requests by them; Q4. Psychological problems in the perpetrators of the violence; Q5. Possibility of alcohol, drug or substance abuse by perpetrators of the violence; Q6. Request for providing cigarette, narcotics or alcohol for a patient; Q7. Severe illness (such as severe trauma or coma) or severe pain in a patient; Q8. Transferring prisoners to the hospitals for treatment; Q9. Uninsured patients.

sexual harassment toward nurses were the number of nurses' referrals to the hospital as patient (OR 1.67; 95% CI 1.18 to 2.35) or as patient companion (OR 1.43; 95% CI 1.09 to 1.88) during two years before conducting this study and the frequency of non-evening shift works (OR 1.22; 95% CI 1.10 to 1.35).

Nurses believed that unrealistic expectations by patients' companions regarding their patients care or repeated requests, non-observance of hospital rules by patients and their companions, and their requests for providing cigarette, narcotics or alcohol to their patients were the three most common factors related to patients or their companions that would trigger violence in hospitals (Fig 1). Long working hours and exhaustion of the staff, inadequate number of staff and insufficient equipment were the most common factors related to the hospitals' staff and manage-

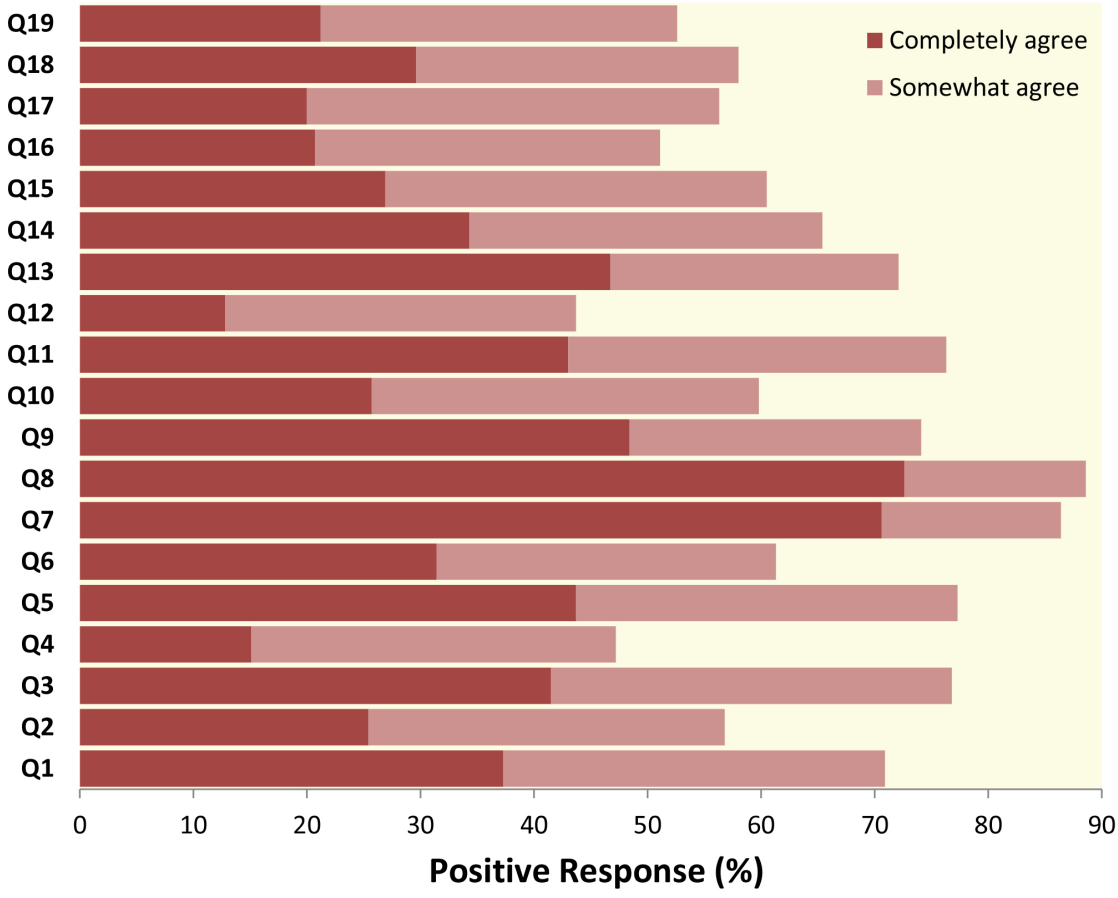

Figure 2: Hospital-based factors expressed by nurses they believe they would trigger violence against nurses. Q1. Patients' companions are not well-explained about their patient's condition or the hospital rules at the time of admission of patients in hospital; Q2. Patients' companions are not well-explained about what they should do at the time of their patients discharge from hospital or thereafter; Q3. Prohibition of patients' companions for entering hospital or admission place (in non-visiting hours or in visiting-forbidden wards); Q4. Communication (language, *etc*) problems with patients' or their companions; Q5. Delay in response or providing the necessary service to patients by physicians and/or nurses; Q6. Inappropriate or disproportionate hospital's space; Q7. Inadequate number of hospital staff; Q8. Long working's hours and burnout of staff; Q9. Insufficient equipment; Q10. High cost of services provided; Q11. Crowding in hospital or its wards; Q12. Lack of attention or motivation by hospital staff for responding to patients or their companions; Q13. Death of patients; Q14. Problems or weakness in hospital's security and guarding systems; Q15. Lack of proper reporting system for violence in the hospital; Q16. Low awareness of staff about violence reporting system in hospitals; Q17. Under-reporting of violence occurred to the hospital managers; Q18. Hospital managers are not serious about pursuing and investigating a violence occurred in hospitals; Q19. Hospitals staff are not trained in management of violence in the workplace.

ment system that would be associated with occurrence of the violence (Fig 2).

Discussion

We found that nearly all nurses experi-

enced at least one type of violence; that two-thirds suffered from more than one type of violence; and, that patients' companions and patients were the main sources of violence. Physicians were the source of violence against nurses in <5% of instances. Verbal abuse, verbal threat, physical violence, sexual and ethnical harassment were the most frequent types of violence experienced by the nurses. Unrealistic expectations by patients' companions for giving care to their patients and long working hours were the most common attributing factors to the hospital clients and hospitals management system that triggered violence, expressed by the study participants. Nurses with non-official employment status, non-Farsi ethnicity, and a disease, and those working in non-evening shifts, and those with short or long years of working experience in hospitals were amongst those who suffered most from various types of violence.

Various types of violence may occur in hospitals. More than half of medical personnel practicing in developing countries have experienced either physical or psychological violence.[22] Overall, two-thirds of nurses practicing in Asia and in the Middle East;[21], 62%, in Taiwan;[25] 98.6%, in Iran;[16] 86.1%, in Cairo;[26] 74.4%, in Turkey;[27] and 59%–70%, in Sweden and England[28] have experienced one type of workplace violence annually. Occupational Safety and Health Administration (OSHA) reported that 80% of serious violence in the health care settings occurs due to interactions of nurses with patients.[18] These results are similar to our findings.

Nurses working in the emergency department are more likely to be affected by violence compared with those working elsewhere. A survey in the United States shows that 25% of nurses working in the emergency department experience physical violence in a year.[29] Other reports also indicate the highest rates of violence against health personnel in the emergency, special care, and psychiatry units. Emergency health care workers, as the first line of contact with patients and their companions, experience higher rates of violence.[23,30,31] However, these results are in contrast with our findings that working in the emergency department was not associated with a higher rate of violence compared with those working elsewhere.

Rafati Rahimzadeh, *et al*, concluded that 72.5% of nurses experience workplace violence, and that patients' companion (40.4%) and patients (30.8%) are the most common sources of violence, respectively.[5] Hossein Abadi, *et al*, conducted a study in Khorramabad, West of Iran, and reported that verbal violence is the most common type of violence committed against hospital nurses by patients and their companions (78.5%), and their superiors (46.2%) and colleagues (43.1%).[10] They also reported that sexual violence was the rarest type of violence committed against nurses.[10] Another study shows that 74.7% of Iranian nurses experience psychological violence.[32] Soheili, *et al*, found that verbal violence (92.1%), physical violence (34.2%) and verbal threat (31.7%) are the most common types of violence committed against emergency ward nurses in Urmia, northwestern Iran; patients' companions are the main source of the violence (73.8%).[8] A study conducted in Ilam, West of Iran, shows that, respectively, 83.1% and 22.1% of the nurses are subjected to verbal and physical violence by patients, and 88.3% and 31.2% are subjected to verbal and physical attacks by patients' companions.[33] In another study conducted in Rasht, North of Iran, 54.1% of the nurses suffered from verbal violence committed by patients' companions; 11.1% reported that they were victims of physical violence, mostly committed by patients.[4] One study conducted by Najafi, *et al*, in Tehran, Iran, reveals that verbal and physical violence are expe-

rienced by 87% and 28% of nurses.[4] In Tabriz, northwest of Iran, verbal and physical violence are reported by 72.1% and 46.2% of nurses. In Bandar Abbas, South of Iran, the prevalence of verbal and physical violence committed against nurses is 72.2% and 9.1%, respectively.[4] The prevalence of verbal violence ranges from 64% to 77%; that of physical violence ranges from 7% to 18% in hospitals of Hamedan, Arak, and Zanjan.[4] Another study found that 85% of nurses has not been trained in how to deal with workplace violence, despite the rising incidence of workplace violence.[4] This finding is in line with our findings, showing that the majority of hospital nurses were not trained in how to manage violence in workplace. Among other factors related to poor management of violence is under-reporting of workplace violence, that in turn, is mainly associated with lack of a reporting policy, lack of trust in reporting team, and fear of revenge.[18] Problems of reporting of violence in hospitals are mainly attributed to lack of proper reporting system for violence in hospitals, lack of information about violence reporting system, under-reporting of violence to their superiors, and finally hospital managers who are not being serious about pursuing and investigating violence in their hospitals. It should be noted that preventing violence is the most important means for dealing with workplace violence.[3] Therefore, zero-tolerance policy has been introduced as a solution to maintain the nurses' security; meaning that every violent agent must be considered a negative factor to avoid its justification.[34] It should be emphasized that implementation of such policy needs establishment of a link in the Ministry of Health, nursing associations, the judiciary system, the legislatures, and the executive representatives.[34] Another study presents five approaches to reduce the violence against health care staff. It consists of management commitment and worker participation, worksite analysis and hazard identification, hazard prevention and control, safety and health training, record keeping, and program evaluation.[18] However, strengthening the security has also been reported to be effective in reducing the rate of violence in hospitals.[6]

Our study is one of few studies in Iran that besides reporting the prevalence of violence against nurses, analyzed the associated factors by presenting a model to reveal the most significant and modifiable factors for upcoming interventions. Our study, however, was limited because it was based on self-reporting of violence by nurses, which could be to some extent exaggerated or unfair. We therefore recommend taking into account the views of patients and their companions in the future studies. Comparison of violence against nurses between public and private hospitals might also shed light over how to manage violence in hospitals.

In conclusion, epidemic of violence against hospital nurses should be considered a strenuous and health-threatening crisis. Comprehensive and urgent interventions are thus needed to overcome this phenomenon and its consequences.

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