

Original Article

Risks and Exposures Nurses Face at their Workplaces

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Abstract

Background: There are many risks which have a negative impact on employees' health in many hospitals where health care services are offered.

Objectives: This study was directed towards evaluating risks and exposures which nurses face in their working environment.

Methodology: The study has a descriptive design. The study was conducted in a university hospital between September and October in 2015. The study population included 626 nurses. Data were collected with a questionnaire developed by the researchers and composed of 26 questions. Data were analyzed with SPSS 21 and evaluated with percentages, mean, Chi-square test.

Results: The mean age of the nurses was 35 ± 7.83 years and the mean duration of work experience was 13.9 ± 8.6 years. Most of the nurses were working in the surgical units and were registered nurses. The most frequent risk threatening health is infectious diseases, followed by ergonomic problems and physical and verbal violence. Thirty-five percent of the nurses had a medical report in the previous year due to work related conditions. The nurses did not know whether there was a worker safety unit.

Conclusions: Nurses are exposed to numerous risks. Most of the nurses reported that the hospital administration did not take measures necessary to prevent abovementioned risks.

Keywords: Nursing; workplace; workplace risks; health care; hospital

Introduction

Health care services are one of the sectors harboring important health and safety related risks. There are many risks which have a negative impact on employees' health in many work places, especially hospitals where health care

services are offered (Janowitz et al., 2006). In our country, nurses comprise 20% of all workforce in hospitals and 80% of nurses with university education work in hospitals (Turkish Republic of Ministry of Health Statistics, 2013).

Occupational diseases most frequently seen in nurses originate from biological risks (European Union, 2011). Thirty different pathogens can be transmitted through blood and biological fluids and it is agreed that the pathogens with the highest risk are Hepatitis B virus, Hepatitis C virus and Human Immunodeficiency Virus (HIV) (CDC, 2011).

In studies evaluating occupational health risks in health professionals, the occupation having the highest incidence of exposure to blood and biological fluids and percutaneous injuries has been found to be nursing (Camacho-Ortiz et al., 2013; Chaiwarith et al., 2013; Darouiche et al., 2014; Khalil et al., 2015; Samancıoğlu, Ünlü, Akyol, 2013). In addition, psychosocial and organizational factors like high mental pressure, feeling tired after work, time constraints and staff shortages have been reported to have a gradually increasing relation with injuries due to sharp objects (Smith et al., 2006; Smith et al., 2010; Ashat et al., 2011; Ghannad, 2012; Dikmen et al., 2014)

Another important health problem causing morbidity and resultant loss of work force in nurses is musculoskeletal diseases (Abolfotouh et al., 2015; Munabi et al., 2014). According to data from Bureau of Labor Statistics, nurses are the second most frequent work force group having work leaves due to musculoskeletal diseases (Bureau of Labor Statistics, 2012).

It has been reported that back and neck pain is the most frequent musculoskeletal disease in nurses and that back pain is more common in female nurses and surgical nurses (Sikiru & Shmaila, 2009; Tinubu et al. 2010; Kabatas, 2012; Lorusso, Bruno, L'Abbate, 2007; Caruso & Waters, 2008). In a study by Carugno et al. evaluating musculoskeletal diseases

in nurses (2012), working for more than 38 hours a week was found to increase the risk of back pain. Munabi et al. (2014) showed that the prevalence of these diseases on any part of the body is 80.2% in nurses. They also revealed a relation between presence of these diseases and age, stress and working in state or private hospitals.

Latex allergy, antineoplastic drugs, antiseptics and disinfectants are the chemical risk factors nurses face. In a study performed by Petroglou et al. (2007) to evaluate occupational allergic reactions, 53% of nurses were found to experience allergies against antiseptics, disinfectants and gloves. In studies by Fransman et al. and Dranitsaris et al., nurses exposed to antineoplastic drugs were reported to have longer pregnancy and higher risk of premature birth and low birth weight (Fransman et al., 2007; Dranitsaris et al., 2005).

In addition, it has been shown in the literature that antineoplastic drugs cause genotoxic damage and increase the risk of breast cancer and leukemia in nurses (Mahboob et al., 2012; Gómez-Oliván 2014; Blair, Zheng, Linos, 2001; Ratner et al., 2010).

Health care institutions are the workplaces where violence is the most common and the health care professionals most frequently exposed to violence are nurses and doctors. It has been revealed in studies evaluating violence in health professionals that nurses are one of the highest risk groups and are most frequently exposed to verbal violence and that working in state hospitals and being a nurse increase the risk of exposure to physical violence (Alameddine, Mourad & Dimassi, 2015; Fute et al., 2015; Jiao et al., 2015).

Nurses working in hospitals face many risk factors including biological, chemical and ergonomic risks. Many complex structures including organizational factors, working conditions and work related factors have a negative effect on exposure of nurses to abovementioned risks. Therefore, the objective of this study was to determine the prevalence of health risks nurses are encountered in hospitals and factors affecting these risks.

Methodology

Study Setting and Time: The study has a descriptive design and was carried out in University Hospital.

Study Population and Sample: The study population comprised of a total of 626 nurses working in general internal medicine and surgery clinics of the university hospital. No sampling method was used and all study population was included into the study. However, 348 nurses not on work leaves at the time of the study and accepting to participate in the study formed the study sample.

Data Collection: Data were obtained at face to face interviews with a questionnaire created by the researchers taking account of the relevant literature. There were a total of 26 questions in the scale about socio-demographic characteristics, features of the working environment and risks likely to be encountered.

Evaluation of Data: Analyses of obtained data were made with Statistical Package Program for Social Sciences 21 and frequencies, percentages, mean, standard deviation and Chi-square test.

Study Ethics: Ethical approval was taken from the ethical committee of non-interventional clinical research of University Hospital (no. 2015/358) and a written permission was obtained from the administration of the hospital. The nurses to be included into the study were informed about the study and their oral informed consent was taken.

Results

The mean age of the nurses was 34.70±7.8 years. Most of them were female and married. Of all the nurses, 70% were university graduates, 51.4% were working in the general internal medicine clinics, 73.8% were working for eight hours a week and 11.5% were always working overtime. Twenty-nine point nine percent of the nurses noted that their workplace did not have an ergonomic design and 11.5% of the nurses stated that they did not know about occupational risks.

Twenty-four point four percent of the nurses were not aware of presence of a worker safety committee. Fifty-two percent of the nurses reported that preventive measures against risks were partly taken by the hospital administration. Fifty percent of the nurses said that they took precautions against risks. Eighty point two percent of the nurses were immunized against hepatitis B (Table 1).

Table 2 presents occupational exposures of the nurses in the last six months. Sixty-two point six percent of the nurses had varices due to standing for

long hours. A significantly higher rates of the female nurses and the nurses reporting that the hospital administration did not take sufficient precautions against occupational hazards had varices ($p<0.05$). Similarly, the rate of the nurses having musculoskeletal problems due to standing for long hours was 77.0%. The rate of musculoskeletal problems was significantly higher in the nurses working in the emergency department, working for more than 16 hours a day, occasionally working overtime, having no information about occupational risks, considering that their workplace did not have an ergonomic design and thinking that the hospital administration did not take preventive measures ($p<0.05$) (Table 3). Forty-nine point four percent of the nurses had injuries while transporting and changing positions of patients. The rate of sharp injuries was significantly higher in the nurses with a baccalaureate degree, working in the general internal medicine clinics, working in the shifts 08-16 and 16-08, occasionally working overtime, considering their workplace as partly ergonomic and thinking that the hospital administration did not take precautions against occupational threats ($p<0.05$) (Table 3). Fifty-four point six percent of the nurses had sharp injuries. The lowest rate of these injuries appeared in the nurses working in outpatient clinics, but the highest rate of these injuries was seen in the nurses working in the general internal medicine clinics, in the intensive care units, overtime and not considering their workplace as ergonomic ($p<0.05$) (Table 3). The rate of exposure to blood and biological fluids was 14.9% and it was significantly higher in the nurses working in the general internal medicine clinics and not even partly knowing about occupational risks ($p<0.05$) (Table 3).

The rate of exposure to chemotherapeutic agents and radiation was 29.9%. It was significantly higher in the nurses working in the general internal medicine clinics and thinking that the hospital administration partly took precautions against occupational hazards ($p<0.05$) (Table 3). The rate of allergic reactions due to spilling chemicals used in the workplace was 14.9%. It was significantly higher in the nurses thinking that the hospital administration did not take sufficient measures against exposure to chemicals ($p<0.05$) (Table 3). The rate of latex allergies due to wearing gloves was 37.4%. Twenty-five point three percent of the nurses had physical violence in their

workplace, 66.1% of the nurses had verbal violence in their workplace and 13.8% of the nurses had sexual assaults (Table 2). A higher rate of the nurses

not considering their workplace as ergonomic was found to experience verbal violence and sexual assaults.

Table 1 The distribution of the socio-demographics and features of workplaces.

Socio-demographics features	n	%
Age	34.70±7.81	(Min 2-Max 56)
Gender		
Female	317	91.1
Male	31	8.9
Marital status		
Single	92	26.4
Married	256	73.6
Occupational education		
Nursing high school	26	7.5
Two-year university education	57	16.4
Four-year University Education	244	70.1
Master of Sciences	21	6.9
Features of Workplace		
Type of Workplace		
General Internal Medicine Clinics	179	51.4
Surgical Clinics	50	14.4
Intensive Care Units	68	19.5
Outpatient Clinics	34	9.8
Emergency Department	17	4.9
Working Hours		
08.00-08.00	42	12.1
08-16/16-08	257	73.8
08-16/16-24/24-08	49	14.1
Duration of Resting between Two Working Hours		
8 Hours	26	7.5
12 Hours	58	16.7
Other	264	75.8
Overworking		
Always	40	11.5
Occasionally	254	73.0
Never	54	15.5
Ergonomic Design of Workplace		
Completely Appropriate	29	8.3
Inappropriate	104	29.9
Partly Appropriate	215	61.8
Information about Occupational Risks		
Yes	219	62.9
No	40	11.5
Partial	89	25.6
Employees' Safety Committee		
Yes	263	75.6
No	23	6.6

Don not Know	62	17.8
Hospital Administrations' Taking Precautions against Occupational Risks		
Yes	60	17.3
No	107	30.7
Partly	181	52.0
Nurses' Taking Precautions against Occupational Risks		
Yes	174	50.0
No	15	4.1
Partially	159	45.7
Immunization		
Yes	279	80.2
No	69	19.8

Table 2 Occupational exposures in the previous six months.

	Yes		No	
	n	%	n	%
Vessel disorders/varices due to standing for long hours	218	62.6	130	37.4
Musculoskeletal disorders due to standing for long hours	268	77.0	80	23.0
Injuries due to transporting/changing positions of patients	172	49.4	176	50.6
Problems with the wrist due to using a computer for a long time	88	25.3	260	74.7
Falling off due to slippery ground	104	29.9	244	70.1
Injuries due to sharp objects	190	54.6	158	45.4
Exposure to blood and biological fluids	52	14.9	296	85.1
Exposure to chemotherapeutic agents and radiation	104	29.9	244	70.1
Allergic reactions due to spilling chemical substances	52	14.9	296	85.1
Latex allergy due to wearing gloves	130	37.4	218	62.6
Skin allergy due to use of antiseptics	152	43.7	196	56.3
Physical violence	88	25.3	260	74.7
Verbal violence	230	66.1	118	33.9
Sexual assault	48	13.8	300	86.2
Injuries due to electrical equipment	15	4.3	333	95.7
Accidents of hospital shuttles after night Shifts	25	7.2	323	92.8

Table 3 Effects of features of nurses and workplace on occupational exposures.

Socio-demographic features	Varices		Musculoskeletal disorders		Injuries during transporting changing positions of patients		Injuries due to sharp objects		Exposure to blood and biological fluids		Exposure to chemotherapeutic agents and radiation	
	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)
Gender												
Female	209(60.1)	108(31.0)	248(71.3)	69(19.8)	153(44.0)	164(47.1)	172(49.4)	145(41.7)	49(14.1)	268(77.0)	98(28.2)	219(62.9)
Male	9(2.6)	22(6.3)	20(5.7)	11(3.2)	19(5.5)	12(3.4)	18(5.2)	13(3.7)	3(0.9)	28(8.0)	6(1.7)	25(7.2)
X ²	16.429		3.001		1.917		.165		.742		1.801	
P	.000		.083		.166		.685		.389		.180	
Occupational Education												
Nursing High School	12(3.4)	14(4.0)	19(5.5)	7(2.0)	16(4.6)	10(2.9)	15(7.9)	11(3.2)	5(1.4)	21(6.0)	6(1.7)	20(5.7)
Two-year University Education	35(10.1)	22(6.3)	40(11.5)	17(4.9)	20(5.7)	37(10.6)	22(6.3)	35(10.1)	6(1.7)	51(14.7)	9(2.6)	48(13.8)
Four-year University Education	162(46.6)	82(23.6)	195(56.0)	49(14.1)	121(34.8)	123(35.3)	140(73.7)	104(65.8)	39(11.2)	205(58.9)	83(23.9)	161(46.3)
Master of Sciences	9(2.6)	12(3.4)	14(4.0)	7(2.0)	15(4.3)	6(1.7)	13(3.7)	8(2.3)	2(0.6)	19(5.5)	6(1.7)	15(4.3)
X ²	8.038		4.166		10.284		7.201		1.944		7.985	
P	.045		.244		.016		.066		.584		.046	
Features of Workplace												
Type of Workplace												
General Internal Medicine Clinics	111(32.8)	65(18.7)	132(37.9)	47(13.5)	88(25.3)	91(26.1)	99(28.4)	80(23.0)	30(8.6)	149(42.8)	54(15.5)	125(35.9)
Surgical Clinics	35(10.1)	15(4.3)	44(12.6)	6(1.7)	31(1.7)	19(5.5)	32(9.2)	18(5.2)	10(2.9)	40(11.5)	11(3.2)	39(11.2)

Intensive Care Unit	39(11.2)	29(8.3)	58(16.7)	10(2.9)	37(10.6)	31(8.9)	42(22.1)	26(16.5)	7(2.0)	61(17.5)	32(9.2)	36(10.3)
Outpatient Clinics	16(4.6)	18(5.2)	19(5.5)	15(4.3)	5(1.4)	29(8.3)	8(2.3)	26(7.5)	1(0.3)	33(9.5)	6(1.7)	28(8.0)
Emergency Department	14(4.0)	3(0.9)	15(4.3)	2(0.6)	11(3.2)	6(1.7)	9(2.6)	8(2.3)	4(1.1)	13(3.7)	1(0.3)	16(4.6)
X ²		8.404	16.909		21.828		16.487		7.467		18.166	
P		.078	.002		.000		.002		.113		.001	
Working Hours												
08.00-08.00	22(6.3)	20(5.7)	26(7.5)	16(4.6)	11(3.2)	31(8.9)	11(3.2)	31(8.9)	3(0.9)	39(11.2)	6(1.7)	36(10.3)
08-16/16-08	166(47.7)	91(26.1)	203(58.3)	54(15.5)	136(39.1)	121(34.8)	149(42.8)	108(31.0)	39(11.2)	218(62.6)	85(24.4)	172(49.4)
08-16/16-24/24-08	30(8.6)	19(5.5)	39(11.2)	10(2.9)	25(7.2)	24(6.9)	30(8.6)	19(5.5)	10(2.9)	39(11.2)	13(3.7)	36(10.3)
X ²		2.349	6.166		10.375		15.724		3.173		6.388	
P		.309	.046		.006		.000		.205		.041	
Overworking												
Always	20(5.7)	20(5.7)	24(6.9)	16(4.6)	21(6.0)	19(5.5)	25(7.2)	15(4.3)	5(1.4)	35(10.1)	9(2.6)	31(8.9)
Occasionally	166(47.7)	88(25.3)	206(59.2)	48(13.8)	133(38.2)	121(34.8)	145(41.7)	109(31.3)	41(11.8)	213(61.2)	81(23.3)	173(49.7)
Never	32(9.2)	22(6.3)	38(10.9)	16(4.6)	18(5.2)	36(10.3)	20(5.7)	34(9.8)	6(1.7)	48(13.8)	14(4.0)	40(11.5)
X ²		3.794	10.285		6.622		8.360		1.099		1.932	
P		.156	.006		.036		.015		.577		.381	
Ergonomic Design of Workplace												
Completely Appropriate	13(3.7)	16(4.6)	17(4.9)	12(3.4)	7(2.0)	22(6.3)	12(3.4)	17(4.9)	-	29(8.3)	4(1.1)	25(7.2)
Inappropriate	68(19.5)	36(10.3)	88(25.3)	16(4.6)	70(20.1)	34(9.8)	70(20.1)	34(9.8)	23(6.6)	81(23.3)	30(8.6)	74(21.3)
Partly Appropriate	147(39.4)	78(22.4)	163(46.8)	52(14.9)	95(27.3)	120(34.5)	108(31.0)	107(30.7)	29(8.3)	186(53.4)	70(67.3)	145(59.4)
X ²		4.374	9.111		23.084		10.474		*		4.371	
P		.112	.011		.000		.005				.112	
Information about Occupational Risks												
Yes	138(39.7)	81(23.3)	165(47.4)	54(15.5)	106(30.5)	113(32.5)	116(33.3)	103(29.6)	25(7.2)	194(55.7)	67(19.3)	152(43.7)
No	24(6.9)	16(4.6)	37(10.6)	3(0.9)	24(6.9)	16(4.6)	23(6.6)	17(4.9)	9(2.6)	31(8.9)	8(2.3)	32(9.2)
Partial	56(16.1)	33(9.5)	66(19.0)	23(6.6)	42(12.1)	47(13.5)	51(14.7)	38(10.9)	18(5.2)	71(20.4)	29(8.3)	60(17.2)
X ²		.135	6.174		2.059		.633		5.895		2.227	
P		.935	.046		.357		.729		.052		.328	

Hospital Administration's Taking Precautions against Occupational Risks												
Yes	30(8.6)	30(8.6)	35(10.1)	25(7.2)	20(5.7)	40(11.5)	20(5.7)	40(11.5)	4(1.1)	56(16.1)	8(2.3)	52(14.9)
No	75(21.6)	32(9.2)	96(27.6)	11(3.2)	56(19.0)	41(11.8)	77(22.1)	30(8.6)	21(6.0)	86(24.7)	50(14.4)	57(16.4)
Partly	113(32.5)	68(19.5)	137(39.4)	44(12.6)	86(24.7)	95(27.3)	93(26.7)	88(25.3)	27(7.8)	154(44.3)	46(13.2)	135(38.8)
X ²	6.640		21.763		12.911		24.716		5.080		24.059	
P	.036		.000		.002		.000		.079		.000	
Nurses' Taking Precautions against Occupational Risks												
Yes	101(29.0)	73(21.0)	132(37.9)	42(12.1)	80(23.0)	94(27.0)	87(25.0)	87(25.0)	17(4.9)	157(45.1)	45(12.9)	129(37.1)
No	11(3.2)	4(1.1)	12(3.4)	3(0.9)	9(2.6)	6(1.7)	8(2.3)	7(2.0)	5(1.4)	10(2.9)	5(1.4)	10(2.9)
Partly	106(30.5)	53(15.2)	124(35.6)	35(10.1)	83(23.9)	76(21.8)	95(27.3)	64(18.4)	30(8.6)	129(37.1)	54(15.5)	105(30.2)
X ²	3.404		.291		1.989		3.195		9.582		2.690	
P	.182		.865		.370		.202		.008		.260	

Table 4 Effects of certain characteristics of nurses and workplaces on occupational exposures.

Socio-demographic characteristics	Allergic reactions due to chemical substances		Latex allergy		Allergy due to antiseptics for hands		Physical violence		Verbal violence		Sexual assault	
	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)
Gender												
Female	49(14.1)	268(77.0)	124(35.6)	193(55.5)	122(35.1)	195(56.0)	78(22.4)	239(68.7)	207(59.5)	110(31.6)	46(13.2)	271(77.9)
Male	3(0.9)	28(8.0)	6(1.7)	25(7.2)	10(2.9)	21(6.0)	10(2.9)	21(6.0)	23(6.6)	8(2.3)	2(0.6)	29(8.3)
X ²	.742		5.678		.465		.875		.997		1.543	
P	.597		.128		.495		.350		.318		.282	
Occupational education												
Nursing high school	3(0.9)	23(6.6)	6(1.7)	20(5.7)	7(2.0)	19(5.5)	9(2.6)	17(4.9)	16(4.6)	10(2.9)	5(1.4)	21(6.0)
Two-year university education	8(2.3)	49(14.1)	19(5.5)	38(10.9)	20(5.7)	37(10.6)	19(5.5)	38(10.9)	43(12.4)	14(4.0)	13(3.7)	44(12.6)

Four-year university education	38(10.9)	206(59.2)	100(28.7)	144(41.4)	96(39.3)	148(27.6)	54(15.5)	190(54.6)	157(45.1)	87(25.0)	28(8.0)	216(62.1)
Master of Sciences	3(0.9)	18(5.2)	5(1.4)	16(4.6)	9(42.9)	12(2.6)	6(1.7)	15(4.3)	14(4.0)	7(2.0)	2(0.6)	19(5.5)
X ²		.358		5.678		1.957		4.557		2.798		5.966
P		.949		.128		.581		.207		.424		.113
Characteristics of Workplaces												
Departments where the participants worked												
General internal medicine clinics	36(10.3)	143(21.3)	74(30.2)	103(58.7)	63(18.1)	116(33.3)	52(14.9)	127(36.5)	130(37.4)	49(14.1)	29(8.3)	150(43.1)
Surgical clinics	8(2.3)	42(12.1)	19(5.5)	31(8.9)	25(7.2)	25(7.2)	11(3.2)	39(11.2)	36(10.3)	14(4.0)	6(1.7)	44(12.6)
Intensive care unit	6(1.7)	62(17.8)	24(6.9)	44(12.6)	31(8.9)	37(10.6)	18(5.2)	50(14.4)	37(10.6)	31(8.9)	9(2.6)	59(17.0)
Outpatient clinic	2(0.6)	32(9.2)	6(1.7)	28(8.0)	5(1.4)	29(8.3)	2(0.6)	32(9.2)	13(3.7)	21(6.0)	-	34(9.8)
Emergency department	-	17(4.9)	7(2.0)	10(2.9)	8(2.3)	9(2.6)	5(1.4)	12(3.4)	14(4.0)	3(0.9)	4(1.1)	13(3.7)
X ²		-		7.097		13.747		8.608		22.107		-
P				.131		.008		.072		.000		
Working hours												
08.00-08.00	2(0.6)	40(11.5)	6(1.7)	36(10.3)	7(2.0)	35(10.1)	6(1.7)	36(10.3)	20(5.7)	22(6.3)	1(0.3)	41(11.8)
08-16/16-08	45(12.9)	212(60.9)	103(29.6)	154(44.3)	109(31.3)	148(42.5)	69(19.8)	188(54.0)	176(50.6)	81(23.3)	38(10.9)	219(62.9)
08-16/16-24/24-08	5(1.4)	44(12.6)	21(6.0)	28(8.0)	16(4.6)	33(9.5)	13(3.7)	36(10.3)	34(9.8)	15(4.3)	9(2.6)	40(11.5)
X ²		5.623		11.000		10.839		3.062		7.288		5.676
P		.060		.004		.004		.216		.026		.059
Overworking												
Always	9(2.6)	31(8.9)	10(2.9)	30(8.6)	18(5.2)	22(6.3)	19(5.5)	21(6.0)	32(9.2)	8(2.3)	11(3.2)	29(8.3)
Occasionally	36(10.3)	218(62.6)	104(29.9)	150(43.1)	98(28.2)	156(44.8)	58(16.7)	196(56.3)	170(48.9)	84(24.1)	32(9.2)	222(63.8)
Never	7(2.0)	47(13.5)	16(4.6)	38(10.9)	16(4.6)	38(10.9)	11(3.2)	43(12.4)	28(8.0)	26(7.5)	5(1.4)	49(14.1)
X ²		2.082		5.385		2.475		11.946		8.418		7.559
P		.353		.068		.290		.003		.015		.023

Ergonomic design of working environment												
Completely appropriate	-	29(8.3)	10(2.9)	19(5.5)	6(1.7)	23(6.6)	4(1.1)	25(7.2)	13(3.7)	16(4.6)	3(0.9)	26(7.5)
Inappropriate	18(5.2)	86(24.7)	43(12.4)	61(17.5)	41(11.8)	63(18.1)	34(9.8)	70(20.1)	78(22.4)	26(7.5)	22(6.3)	82(23.6)
Partly appropriate	34(9.8)	181(52.0)	77(22.1)	138(39.7)	85(24.4)	130(37.4)	50(14.4)	165(47.4)	139(39.9)	76(21.8)	23(6.6)	192(55.2)
X ²	-		1.028		3.995		5.516		9.733		6.761	
P			.598		.136		.063		.008		.034	
Knowledge about occupational risks												
Yes	30(8.6)	189(54.3)	77(22.1)	142(40.8)	85(24.4)	134(38.5)	60(17.2)	159(45.7)	146(42.0)	73(21.0)	32(9.2)	187(53.7)
No	9(2.6)	31(8.9)	16(4.6)	24(6.9)	17(4.9)	23(6.6)	10(2.9)	30(8.6)	28(8.0)	12(3.4)	6(1.7)	34(9.8)
Partial	13(3.7)	76(21.8)	37(10.6)	52(14.9)	30(8.6)	59(17.0)	18(5.2)	7(20.4)	56(16.1)	33(9.5)	10(2.9)	79(22.7)
X ²	2.072		1.247		1.101		1.725		.704		.662	
P	.355		.536		.577		.422		.703		.718	
Hospital administration's taking preventive measures against occupational risks												
Yes	6(1.7)	54(15.5)	11(3.2)	49(14.1)	11(3.2)	49(14.1)	16(4.6)	44(12.6)	35(10.1)	25(7.2)	7(2.0)	53(15.2)
No	27(7.8)	80(23.0)	56(16.1)	51(14.7)	54(15.5)	53(15.2)	22(6.3)	85(24.4)	77(22.1)	30(8.6)	14(4.0)	93(26.7)
Partly	19(36.5)	162(54.7)	63(18.1)	118(33.9)	67(19.3)	114(32.8)	50(14.4)	131(37.6)	118(33.9)	63(18.1)	27(7.8)	154(44.3)
X ²	12.883		20.042		16.995		1.849		3.322		.466	
P	.002		.000		.000		.397		.190		.792	
Participants' taking preventive measures against occupational risks												
Yes	18(5.2)	156(44.8)	55(15.8)	119(34.2)	57(16.4)	117(33.6)	43(12.4)	131(37.6)	109(31.3)	65(18.7)	22(6.3)	152(43.7)
No	3(0.9)	12(3.4)	7(2.0)	8(2.3)	7(2.0)	8(2.3)	4(1.1)	11(3.2)	11(3.2)	4(1.1)	2(0.6)	13(3.7)
Partly	31(8.9)	128(36.8)	68(19.5)	91(26.1)	68(19.5)	91(26.1)	41(11.8)	118(33.9)	110(31.6)	49(14.1)	24(6.9)	135(38.8)
X ²	5.791		5.001		4.043		.066		1.952		.422	
P	.055		.082		.132		.967		.377		.810	

Discussion

One important finding of the present study was that most of the nurses had varices caused by standing for long hours. Standing and working for long hours have also been reported in the literature to be culprits responsible for varices. Sharif et al. (2015) noted that 77.9% of the employees, especially female ones had varices. Burdelak, Bukowska Krysicka et al. (2012) showed that nurses working in night shifts were more likely to have varices. Longer work hours and work overload can quicken variceal development.

A similar finding of the current study was that 77% and 49.4% of the nurses had musculoskeletal problems due to standing for long hours and transporting and changing positions of patients respectively. Munabi et al. (2014) also revealed that the prevalence of musculoskeletal problems in nurses was 80.8%. Choobineh et al. (2010) reported the most frequent musculoskeletal problem in surgical nurses was back pain and Sikiru and Shmaila (2009) noted that the highest prevalence of back pain appeared in obstetrics and gynecology nurses. Guler et al. (2015) in their study on effects of hospital ergonomic conditions on occupational musculoskeletal disorders found that access to devices (50%), the nurses' desk (50%), the sink used to prepare medications (36.7%) and medication trolley (45%) were partly appropriate in terms of ease of work. They also showed that 61.7% of the nurses used a wrong form of body mechanics, an inclined posture and that 63.3% of the nurses had a musculoskeletal disorder resulting from their working environment. In the current study, these disorders were more prevalent in the nurses working in the emergency medicine department and for 16 hours or more per day, occasionally overworking, not knowing occupational risks, not finding their workplace to have an ergonomic design and thinking that the hospital administration did not take any precautions against occupational hazards. Workplace related factors in addition to individual features play an important part in musculoskeletal disorders as one of the leading problems of health professionals. Therefore, it is of particular importance to rearrange working conditions, to create ergonomic working places and to inform employees about the issue.

In the present study, more than half of the nurses were exposed to sharp injuries. These injuries are considered as one of the most important risks among nurses, comprising a large proportion of health professionals (Camacho-Ortiz et al., 2013; Chaiwarith et al., 2013; Darouiche et al., 2014; Khalil et al., 2015; Samancioglu, Unlu, Akyol, 2013). Sharp injuries have been reported to occur more frequently in intensive care units and general internal medicine and surgery clinics. In addition, as duration of night shifts and age increase, so does the number of these injuries (Bozkurt et al. 2013, Samancioglu, Unlu, Akyol 2013). In the current study, the lowest rate of sharp injuries occurred in the outpatient clinics, but the highest rate of these disorders appeared in the nurses working in the general internal medicine clinics and intensive care units and the overworking nurses. This can be attributed to the high number of invasive procedures and patients in these clinics. Most of these injuries may cause exposure to many biological agents and especially hepatitis B virus, hepatitis C virus and HIV are among these agents with the highest risk. Therefore, it is essential to equip nurses with appropriate knowledge about the issue and to supply safe material. Exposure to blood and biological fluids can pose similar risks. In the current study, 29.9% of the nurses were exposed to chemotherapeutic agents and radiation. Boiano, Steege and Sweeney (2014) also reported that 12% of the nurses experienced skin rashes during administration of chemotherapy in the previous week and that 4.2% (n=84) had a direct skin contact with chemotherapy drugs (solid or liquid) in the previous week. They added that 1.4% of the nurses (n=27) were exposed to sharp injuries during administration of chemotherapy in the previous year. Momeni, Danaei and Askarian (2013) evaluated side-effects emerging during or just after preparation of chemotherapy drugs and found that the most frequent acute side-effect was headache, followed by skin reactions, lacrimation, vertigo and nausea and that chronic side-effects were abortion (3%), stillbirth (3%), infertility (3%) and low birth weight (3%). In the present study, the rate of exposure to chemotherapeutic agents and radiation was higher in the nurses working in the general internal medicine clinics and the nurses thinking that the hospital administration partly took measures

against occupational risks. It is crucial that the hospital administration should take measures preventing these exposures and that the nurses should be educated about taking personal preventive measures. Another important finding of the present study was related to allergic reactions due to spilling chemical agents and latex allergy due to wearing gloves. Xelegati in a study describing chemical substances which nurses contact and related health problems found that nurses experienced lacrimation caused by formaldehyde (50%) and allergic reactions due to latex (83%) (Xelegati et al. 2006). Petroglou et al. (2007) reported that 53% of the nurses had a history of workplace related allergic reactions and that the agents producing allergies were antiseptics and disinfectants in 58.4% of the nurses and gloves in 57% of the nurses.

They also noted that 74.5% of the nurses experienced redness on their skin. Hospital environments have many risks and chemical agents are one of these risks. In the current study, the nurses mentioned that measures necessary to prevent exposure to chemicals were not taken. Therefore, it is necessary to establish a worker safety unit, to make risk analyses regularly and to take appropriate precautions.

Violence against health professionals is a serious problem in our country as in other countries. In the present study, the most frequent violence was verbal violence (66.1%), followed by physical violence (25.3%) and sexual assaults (13.8%), which is consistent with the literature. In fact, it has been reported that the rate of verbal violence can reach 89.5% and that nurses are at the highest risk (Alameddine, Mourad & Dimassi, 2015; Fute et al., 2015; Jiao et al., 2015). In the current study, the nurses working in the internal diseases clinic were more frequently exposed to violence. This can be ascribed with the high number of patients and the high rate of patient circulation in this clinic. In addition, the number of the nurses noting that the administration took precautions against risks was quite low (10.1%).

The findings of study are restricted with the nurses working in the general internal medicine and surgery clinics of a university hospital and volunteering to take part in the study and cannot be generalized to nurses working in other hospitals.

Conclusion: Hospitals are one of the most dangerous workplaces harboring many kinds of risks. Therefore, health professionals, especially nurses are exposed to numerous risks. This study also showed high rates of musculoskeletal disorders, sharp injuries, exposure to spilling blood and biological fluids, allergies due to use of latex gloves and chemicals and violence. Most of the nurses reported that the hospital administration did not take measures necessary to prevent abovementioned risks. However, nurses should also be aware of possible risks and take personal measures wherever and whenever necessary. In the present study, half of the nurses noted that they took personal measures. This finding reveals the importance of in-service training. In addition, committees directed towards promoting health in health professionals should be established and made to work effectively in hospitals so that possible risks can be determined, health staff should be more sensitive to preventive measures and necessary preventive measures should be enforced.

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