RESEARCH ARTICLE

Occupational safety in nurses working in a tertiary care hospital in Turkey

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Abstract

Objective: To determine the occupational safety of nurses working in a tertiary care hospital.

Methods: The cross-sectional and descriptive study was conducted at a tertiary care hospital at Kocaeli University, Turkey, from January to March 2016, and comprised nurses working at the hospital. A questionnaire and the occupational safety scale were used to collect data. The Occupational Safety Scale has seven subscales. Frequencies, percentages, mean values and standard deviations were calculated during data analysis.

Results: Of the 200 nurses, 180(90%) were female and 88(44%) had 6-11 years of professional experience. The overall mean score of the scale was 2.593±0.770. Nurses working in daytime had better score on the healthcare screening and registry systems subscale compared to nurses working in shifts (p=0.020). There were no differences between the other subscales and work patterns (p>0.05).

Conclusion: The nurses were found to have poor occupational safety.

Keywords: Nurse, Occupational safety, Occupational health, Occupational disease. (JPMA 71: 465; 2021)

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Introduction

The World Health Organisation (WHO) describes a healthy workplace as an environment where the staff and managers collaborate constantly to improve and maintain employees' safety, health and wellbeing, and healthy and safe physical conditions, psychosocial work setting and work culture are incorporated, individual health resources are available, the health of the employees and their families are improved, and their contribution to the whole is ensured. Since the 1950s, WHO and the International Labour Organization (ILO) have been undertaking the necessary work and arrangements for healthy workplaces.[1] Occupational accidents, injuries, diseases and major industrial disasters currently represent a national and international concern for human, social and economic costs. Several measures and strategies have been developed and implemented over the years to prevent, control, reduce or eliminate occupational accidents and adapt to technological and economic advances. Occupational accidents and diseases, however, are still very frequent. According to a recent ILO report, 2 million occupational deaths occur worldwide every year. Most of these deaths are due to occupational cancers, circulatory and cerebrovascular diseases and some infectious diseases. Fatal and non-fatal occupational accidents are estimated to have an annual incidence of 270 million. Based on the most recent data from ILO and WHO, the overall rate of occupational accidents and diseases shows a gradual decrease in most industrialised countries, while the rate remains unchanged or is increasing in developing and industrialised countries.[2] Of the 35 million employees worldwide, 2 million were exposed to hepatitis B virus (HBV), 0.9 million to hepatitis C virus (HCV) and 170,000 to human immunodeficiency virus (HIV). Of these injuries, 15,000 resulted in HCV, 70,000 in HBV and 500 in HIV infections. More than 90% of these infections occur in developed countries. Taking universal measures against these infections is essential.[3]

Most nurses inevitably have extended working hours and work overtime. Healthcare workers are charged with sudden, constant and unexpected tasks to increase the institution's quality. Additionally, new procedures, devices and novel medicines may negatively affect healthcare workers. Many advances introduced in hospitals aim at improving patients' condition, whereas they may pose a threat for healthcare workers' occupational health and safety. Healthcare workers face occupational accidents, occupational diseases and many healthcare problems. Occupational accidents and diseases are frequent in healthcare workers despite the measures taken for occupational health and safety.[4]

Occupational safety in nurses is not an area extensively studied. The current study was planned to fill the gap by determinng the occupational safety of nurses working in a tertiary care setting.

Subjects and Methods

The cross-sectional, descriptive study was conducted at a tertiary care hospital at Kocaeli University, Turkey from January to March 2016. After approval from the

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institutional ethics review board, the sample was raised from among the nurses working at the hospital at the time of the study. All eligible nurses were approached, and those who did not volunteer to participate were excluded.

Demographic and professional data was collected using a 16-item questionnaire exploring age, gender, education, work pattern, occupational experience, satisfaction from occupational safety practices, previous experience of occupational accident and disease, rate of occupational accidents and diseases in the institutions etc. The Occupational Safety Scale (OSS)[5] was also used to collect relevant data. The OSS has 45 items scored on a 6-point Likert scale ranging from "I completely agree" to "I completely disagree". The total score from the scale ranges from 45 to 270. Dividing the score with the number of items in the scale gives a score range of 1 to 6. High scores indicate good occupational safety. The OSS has six subscales: occupational diseases and complaints (ODC), healthcare screening and registry systems (HSRS), accidents and poisonings (AP), administrative support and approaches (ASA), materials and tools control (MTC), preventive measures and rules (PMR), and suitability of the physical environment (SPE).

OSS reliability was established with r=0.47-0.74 and Cronbach alpha 0.96. After after taking informed consent from the subjects, they were given the data collection tools which were taken back three hours later. Incomplete questionnaires were excluded.

Frequencies, percentages, mean values and standard deviations (SDs) were calculated using student's t-test. Level of significance was set at $p<0.05$.

Results

Of the 200 nurses, 180(90%) were female, 131(65.5%) were married, 98(49%) were aged 20-29 years, 135 (67.5%) had bachelor's degree, 88(44%) had 6-10 of professional experience, 90(45%) had 6-10 years of experience in the current institution, and 118(59%) worked in shifts (Table 1).

Overall, 100(50%) nurses reported sleep disturbances, 78(39.2%) psychosocial diseases, 73(36.7%) skin diseases, 68(34.2%) musculoskeletal diseases and 58(29.2%) had gastrointestinal diseases.

Also, 120(60%) nurses said they had been exposed to verbal violence, 118(59.2%) had chronic fatigue, 105(52.5%) had soft-tissue trauma, 88(44.2%) had emotional problems, 80(40%) had been exposed to psychological violence and 63(31.7%) had muscle and joint injuries (Table 2).

Nurses had a mean total OSS score of 2.593±0.770 which, along with subscale scores, was low (Table 3).

Nurses working daytime had better significantly better score on the HSRS subscale than nurses working in shifts ($p=0.020$). No significant differences were found between the other subscales and work patterns ($p>0.05$).

Table-1: Demographical and Occupational Details (n=200).

Variable		n (%)
Gender	Female	180 (90.0)
	Male	20 (10.0)
Marital Status	Married	131 (65.8)
	Single	69 (34.2)
Age	20-29	98 (49.2)
	30-39	93 (46.7)
	40-49	9 (4.1)
Education	Occupational School of Health	23 (11.7)
	Undergraduate (2 years)	27 (13.3)
	Bachelor (4 years)	135 (67.5)
	Master	15 (7.5)
Years of Occupational Experience	0-5 years	63 (31.7)
	6-10 years	88 (44.2)
	11-15 years	34 (16.7)
	16-20 years	15 (7.4)
Experience in the Current Institution	0-5 years	78 (39.2)
	6-10 years	90 (45.0)
	11-15 years	23 (11.7)
	16-20 years	9 (4.1)
Work pattern	Daytime	82 (40.8)
	In shifts	118 (59.2)
Total		200 (100)

Table-2: Nurses' past experience of occupational disease and occupational accident/injury (n=200).

Past experience of occupational disease	Yes n (%)	No n (%)
Sleep disturbances	100 (50)	100 (50)
Psychosocial diseases (panic-attack, depression etc.)	78 (39.2)	122 (60.8)
Skin diseases (eczema, dermatitis, alopecia, etc.)	73 (36.7)	127 (63.3)
Musculoskeletal diseases (herniated disc, Carpal tunnel s. etc.)	68 (34.2)	132 (65.8)
Gastrointestinal system diseases (ulcer, colitis, constipation, etc.)	58 (29.2)	142 (70.8)
Cardiovascular diseases (hypertension/varicosis etc.)	53 (26.7)	147 (73.3)
Nervous system diseases (Cerebrovas. D., herniated disc, etc.)	25 (12.5)	175 (87.5)
Respiratory diseases (asthma, bronchitis, COPD, etc.)	17 (8.3)	183 (91.7)
Infectious diseases (hepatitis, AIDS, etc.)	5 (2.5)	195 (97.5)
Cancer	2 (0.8)	198 (99.2)
Past experience of occupational accident/injury		
Exposure to verbal violence (patient relative/staff, etc.)	120 (60)	80 (40)
Chronic fatigue	118 (59.2)	82 (40.8)
Soft-tissue trauma (needle-stick/cut/bruise, etc.)	105 (52.5)	95 (47.5)
Emotional problems (loneliness, burnout, etc)	88 (44.2)	112 (55.8)
Exposure to psychological violence (hospital staff)	80 (40)	120 (60)
Muscle and joint injuries (waist/back/arm/leg pain, etc.)	63 (31.7)	137 (68.3)
Slips/falls etc. traumas	42 (20.8)	158 (79.2)
Exposure to physical violence (patient/relative)	33 (16.7)	167 (83.3)
Poisonings (ethylene oxide, food, drug, X ray, etc.)	23 (11.7)	177 (88.3)
Electric shocks and burns	3 (1.7)	197 (98.3)

COPD: Chronic obstructive pulmonary disease; AIDS: Acquired immunodeficiency syndrome.

Table-3: Nurses' Occupational Safety Scale (OSS) mean scores and comparison of nurses' mean occupational safety scores and work patterns.

Subscales	Mean±SD	Minimum	Maximum
Occupational Diseases and Complaints	1.70±.70	1.00	5.23
Healthcare Screening and Registry Systems	2.72±1.11	1.00	5.67
Accidents and Poisonings	3.05±1.26	1.00	5.60
Administrative Support and Approaches	1.80±.82	1.00	5.14
Materials and Tools Control	2.76±1.26	1.00	6.00
Preventive Measures and Rules	3.21±1.23	1.00	6.00
Suitability of the Physical Environment	2.88±1.30	1.00	6.00
Scale total	2.59±.77	1.00	4.81

Comparison of nurses' mean occupational safety scores and work patterns

Subscales	Daytime Mean±SD	In shifts Mean±SD	t*	*p*-value
Occupational Diseases and Complaints	1.75±.69	1.66±.70	0.730	0.467
Healthcare Screening and Registry Systems	3.01±1.14	2.53±1.05	2.367	0.020
Accidents and Poisonings	3.03±1.32	3.07±1.22	-0.143	0.887
Administrative Support and Approaches	1.92±.93	1.72±.74	1.31	0.191
Materials and Tools Control	3.00±1.22	2.59±1.26	1.74	0.084
Preventive Measures and Rules	3.35±1.32	3.11±1.16	1.031	0.30
Suitability of the Physical Environment	3.03±1.39	2.78±1.2	1.027	0.30
Scale total	2.73±.77	2.49±.75	1.645	0.10

* Student's t-test; SD: Standard deviation.

Discussion

The mean total OSS score found in the current study was lower than that reported from an earlier study, while the subscale scores fluctuated between the two studies.[6]

In a study performed to determine security climate perceptions, healthcare staff had a low perception of overall security climate. Employees working in medical units had lower perceptions regarding "communication", "work setting", "occupational health and safety education and feedback", "management dependence" subscales of security climate compared with those working in administrative and support units.[7]

Compared to literature,[8-10] the current study demonstrated poor scores for OSS, especially for ODC and ASA subscales. The differences may be explained by administrative patterns adopted in various hospitals or different policies adopted for occupational health and safety.

In our study, the most common occupational accident the nurses experienced was soft-tissue trauma (52.5%). In a study in Germany, 31.4% healthcare workers reported experiencing needle-stick injury at least once during the preceding month. It was found that 34% of the needle-stick injuries were due to not using safety equipment.[11] In another study, needle-stick injury was the most common accident among healthcare workers (52.9%), followed by blood splash from patients (21.7%).[12] In another study, the prevalence of needle-stick injuries over the preceding one year was 28.1%. Of them, 46.5% had two or more needle-stick injuries. More than half of the injuries had occurred during intravenous (IV) injections. A huge majority (96%) of nurses were not using gloves when the needle-stick injury occurred. Of them, 46.5% washed their hands with soap and water immediately after the needle-stick injury.[13] In another study with 655 nurses, about 40% had experienced at least one injury or disease in the preceding year.[14] In one study, needle-stick injury was noted in 14% physicians and nurses. More than 80% of them had not received the three doses of hepatitis B vaccine.[15] Needle-stick injuries are known to be under-reported despite their frequent occurrence.[14,16]

In a study in India with 120 healthcare employees, 2% nurses and 57% laboratory technicians practised universal measures for protection against infections. Only 7% nurses and 6% technicians were familiar with correct handling of patient waste material. Good hand-washing was performed by 17% nurses, while none of the technicians washed their hands properly.[17] In a hospital providing tertiary care, only 31% of the nurses took appropriate measures against needle-stick injury.[18]

The current study is limited owing to the fact that it was done at a single hospital, and, as such, the findings cannot be generalised.

Conclusion

Nurses had poor occupational safety. It may be improved through effective supervision and monitoring of the trainings given regarding occupational safety.

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