

# The Occupational Safety and Health in Hospitals from the Point of Nurses

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## ABSTRACT

*Hospitals have many forms of danger due to many different working conditions. Hospital personnel also take risks whilst providing health care which may cause health problems to themselves. The research, related to health and safety of nurses and other staff, was carried out in order to compare and determine the occupational health problems and evaluate the occupational safety precautions and applications of a private hospital accredited with JCI (Joint Commission International) and also a university hospital. The research took place amongst 162 nurses of a university hospital and 150 nurses of a private hospital, both in Istanbul, Turkey. The data was gathered between March and July 2007 using a survey consisting of 7 questions to find out the socio-demographic characteristics and 17 questions related to the occupational safety precautions and the occupational health problems of health personnel. According to the nurses, the safety applications and precautions of the private hospital were better than the university hospital. It was found out that the university hospital was poor at providing an ergonomic working environment and the private hospital was poor at planning the timetables of the nurses. In addition to this, – in both hospitals – sharp or pointed devices, blood/blood fluids and infected material were discovered to cause occupational diseases and other problems. In conclusion, the precautions and applications regarding occupational health and safety in the private hospital accredited with JCI were better than the university hospital.*

**Key words:** nursing, health and safety, hospital

## Introduction

One of the sectors which is considered important from the point of occupational safety and health is the sector of health services. There are many forms of danger due to many different working conditions (especially in the hospitals)<sup>1</sup>. The researches conducted show that, in a typical hospital, there are more than 1000 factors (medicines, infections, natural disasters, fire and inadequately designed working environment, etc.) which can be threaten human health<sup>2,3</sup>. Therefore, when we try to define the environment of a safe and healthy hospital, we see that the first definition was suggested in 1977 by National Institute for Occupational Safety and Health (NIOSH). In this definition, the healthy and safe hospital environment was defined as »the situation in which no occupational accidents or diseases related to dangers and risks caused by physical, chemical, biological, ergonomic, mechanical failures take place while work is carried out«<sup>4</sup>.

Hospital personnel who have received (or been receiving) medical education are aware of the risks which may cause health problems to them whilst they are providing health services<sup>3</sup>. Nurses, who are the biggest group of hospital personnel, face the most risks and problems; such as long working hours, excessive or heavy workload, time pressure, difficult and/complicated duties, having to look after patients with serious and terminal illnesses, inadequate breaks, monotonous and bad working conditions etc<sup>5</sup>. In addition, inadequacies in the health system as well as unbalanced distribution of the personnel cause disappointment and stress amongst nurses<sup>6</sup>. Queensland Nurses' Union in Australia called the attention of the government to occupational health and safety of nurses in hospitals. They indicated that safety is directly related to work-oriented pressure and stress, to long working hours and excessive overtime. The secretary of Australia Nurses' Union said that nurses have the right to carry

out their job without putting their health in danger and to work in a safe environment<sup>7</sup>.

All these reports tell us that occupational safety and health of nurses are under great risk. In addition, many researches indicate that nurses suffer from mechanical, physical, chemical, biological and psychological traumas and injuries, as well as many occupational diseases<sup>1,4,6</sup>. Occupational accidents and diseases cause loss of manpower, a reduction in efficiency, and a rise in costs of hospitals as well. In the USA, a country wide study showed that the cost of occupational accidents and diseases is \$2.200 million for nurse aides and orderlies, \$900 million for registered nurses, and \$40 million for licensed practical nurses (who are allowed to fulfill nursing duties)<sup>8</sup>. Therefore, it has been thought that many researches should be conducted to find out the factors and risks which lead to occupational accidents and diseases, and also the methods to protect nurses against these risks<sup>4</sup>.

In this paper, it was decided that the research was to be conducted in a private hospital in which the health and safety precautions of the health personnel are considered to be guaranteed with an accreditation certificate and in a university hospital which carries out quality management studies and gives advanced diagnosis, treatment and education and research services. Therefore, the research was planned in these hospitals, which are thought to epitomize other hospitals, in order to find out whether the precautions regarding occupational health and safety are taken or not. If they are, which precautions are taken, what the occupational health and safety problems encountered by nurses and other hospital personnel are; and what causes these problems. In addition, it was considered that asking the opinions of nurses, who are the biggest group of hospital personnel and face with occupational health and safety problems the most, would be valuable and beneficial.

#### *The purpose of the research*

The research, related to health and safety of nurses and other staff, was carried out in order to compare and determine the occupational health problems and evaluate the occupational safety precautions (and applications) of a private hospital accredited with JCI and a university hospital in Turkey; according to nurses.

### **Materials and Methods**

This research is a descriptive study. The research took place amongst 180 nurses working in a university hospital, and 170 nurses who work in a private hospital accredited with JCI (N=350). These hospitals were chosen because the number of nurses in both of them are above 150 and are (approximately) the same. In the research, no sampling method was used, and a total of 162 nurses from the university hospital and 150 nurses from the private hospital agreed to participate in the research (n=312). Conducting the research results in only two hospitals and the fact that results of the research are limited

with the opinions of nurses are the limitations of this study.

The data, after both hospitals granted permission for the research, was gathered during March-July 2007 by researchers using a questionnaire composed of 7 questions about the socio-demographic characteristics of nurses (such as age, marital status, levels of education, years of professional experience, years of hospital and unit experiences, and positions in the hospital) and 17 basic questions related to the occupational safety and health in the hospitals. In the evaluation of the data, percentage, average, and  $\chi^2$ -tests have been used.

### **Results**

According to the socio-demographic characteristics of nurses, the average age of all the nurses is  $29.44 \pm 5.23$  years old and has  $8.22 \pm 5.94$  years of professional experience. 50% of them are married; 41% of them have a bachelor's degree, 86% are in the position of nurse. 52% of them work in the university hospital and 60% work in the units. The nurses working at the university hospital are  $32.07 \pm 5.25$  years old, with  $11.14 \pm 5.82$  years of experience. 59% of them are married; 51% of them have a 2 year diploma from an institution of higher education, 86% are in the status of nurse, and 68% of them work at the units. In the private hospital, the nurses are  $26.66 \pm 3.48$  years old; have  $5.09 \pm 4.24$  years of work experience. 59% of them are single; 62% have a bachelor's degree, and 86% of them are in the status of nurse.

When the safety of the nurses and other personnel in the hospitals was questioned, 71% of the nurses in the university hospital indicated that they did not have safety and 64% indicated that no safety precautions were being taken. In the private hospital, 86% of nurses stated that they did have safety and 96% of them stated that safety precautions were being taken in the hospital. When the two hospitals were compared with each other, it was observed that there is more safety ( $\chi^2=108.99$ ;  $p<0.001$ ) and more safety precautions taken ( $\chi^2=117.00$ ;  $p<0.001$ ) in the private hospital (Table 1).

When the precautions taken regarding the safety of the personnel were studied, more than half of the nurses in the university hospital stated that precautions were taken for medical and toxic wastes (58%), for monitoring rate of infection (56%), for the vaccinations of the personnel (56%) and having security personnel (54%). The nurses in the private hospital stated that precautions were taken for monitoring rate of infections (93%) and indicated that the following precautions are taken as well: vaccination of personnel (89%); having regulations for fire and other natural disasters (88%); having written policies towards personnel safety (85%); having sufficient heat and air conditioning (85%); for not using broken/defective equipment (83%); for the control of medical and toxic waste (81%); following up the accidents and keeping records of them (81%); the control and maintenance of equipment and use of tools (81%); protection from blood and other liquids (79%); the location and safe

**TABLE 1**  
THE CONDITIONS OF THE OCCUPATIONAL SAFETY IN HOSPITALS FROM THE POINT OF VIEW OF NURSES

Occupational safety in hospitals from the point of view of nurses	University Hospital, %	Private Hospital, %	Total, %	$\chi^2$ value
	(n=162)	(n=150)	(n=312)	
There is occupational safety	26	86	55	108.99**
There is no occupational safety	74	14	45	
Total	100	100	100	
Safety precautions were obtained	36	96	165	117.00**
Safety precautions were not obtained	64	4	35	
Total	100	100	100	

\*\* p<0.001

use of protective equipment in case of need (74%); safety training for personnel (risk management, etc.) (73%); having warning and safety posters in hospitals (72%); having security personnel (72%); the existence of committees for personnel safety (66%); the design of the working environment for the convenience of the personnel (65%); the improvement and the application of a registry systems (65%), improving problematic areas and data gathering for personnel safety (64%); the protection of women during pre/post maternity against the hazards of working environment and conditions (63%) (Table 2). Statistically significant differences were found in the safety precautions when safety precautions taken in both hospitals were compared, except »planning timetables conveniently« and »organizing arrangements and social activities in order to decrease the pressure on personnel«. These differences are in favor of the private hospital and have indicated that safety precautions of the private hospital are more sufficient (Table 2).

When the working environment was questioned in the university hospital, 59% of nurses said that the precautions taken against insects are effective, 49% of them said lighting was good enough; 40% found the heating satisfactory; 17% indicated that the floors are well insulated for noise and falls, 15% considered the rooms were painted in suitable colours with decent quality paints; 13% found that the reception/desk area was furnished with good quality, ergonomic office furniture which could prevent accidents; 7% stated that regular checks were conducted for dangers such as radiation and electricity with the necessary action taken; 5% said that the working environment and equipment were isolated in order to reduce noise. On the other hand, 34% said that storage was being handled incorrectly; 31% said that broken/defective materials were still being used; 24% indicated that there were insects in the hospital; 19% said the distance between the patients' rooms and the nurses' room/desk was too far; and 18% of the nurses indicated that the hospital was equipped with broken/neglected machinery and the building was also unmaintained.

In the private hospital, 85% of the nurses stated that the lighting was satisfactory; 73% said that the heating

and air conditioning were sufficient; 69% said the rooms and the desks of the nurses were ergonomic and furnished with good quality furniture that can prevent accidents; 69% said the environment was painted with good quality paint in suitable colours; 63% were happy with the floors which are well insulated against noise and falls; 57% said regular control and necessary precautions were taken against dangers such as radiation and electricity; 51% stated that the fight against insects was effective and 45% stated that environment was well-isolated against noise. On the other hand, 24% said insects were seen in the hospital; 15% said broken and neglected material was used, 12% said the distance between the reception/desk area and the patients' rooms was too far, 7% said storage was being handled incorrectly and 1% stated that the hospital was equipped with defective and broken machinery.

When job definitions and the way how nurses defined their working conditions were questioned, 64% of the nurses in the university hospital stated that their working conditions caused psychological pressure and fatigue; 61% complained about sleeplessness and tiredness and 60% said their job required physical strength. In the private hospital, 53% of the nurses expressed their opinion that their job required physical strength; 53% said they suffered from psychological pressure and fatigue; and 48% said their job caused sleeplessness and tiredness.

When the nurses were asked how they defined themselves, 59% in the university hospital complained of mental tiredness; 33% of monotonous working life; and 32% of job dissatisfaction. 46% of the nurses in the private hospital complained of mental tiredness; 28% of monotonous working life; and 19% of job dissatisfaction.

When the nurses were questioned about catching occupational diseases, 26% admitted that they had caught occupational diseases at some point during their profession and 74% said they had never caught any occupational diseases in their profession. 41% of the university hospital nurses and 21% of the private hospital nurses had suffered from occupational diseases – which they caught from the hospital they were working in – during the research. It was found that the number of the nurses

**TABLE 2**  
PRECAUTIONS FOR OCCUPATIONAL SAFETY ACCORDING TO NURSES

Precautions for occupational safety	University Hospital, %	Private Hospital, %	$\chi^2$ value
	(n=162)	(n=150)	
1. There are written policies regarding personnel safety	11.1	85.3	169.36**
2. Data about personnel safety is collected regularly and problematic areas are improved	3.7	64	125.96**
3. There are committees for personnel safety	9.9	66	103.01**
4. Working environment is designed for the convenience and safety of the personnel	6.8	65.3	114.87**
5. Equipment/tools are checked and maintained regularly	25.9	80.7	91.36**
6. Broken/defective equipment/tools are not used	30.2	83.3	86.84**
7. Best equipment /tools are bought for the hospital	3.7	38.7	56.26**
8. Personnel can find and use protective material easily	10.5	74	127.22**
9. Trainings for personnel safety (for example risk management, accidents, and etc.) are given	14.2	73.3	108.96**
10. Occupational accidents are monitored and recorded	7.4	81.3	170.71**
11. Timetables are designed in accordance with the requirements of personnel safety (8 hour shifts, etc;)	23.5	15.3	2.77
12. There are arrangements/social activities in hospital to reduce the psychological pressure on personnel	17.3	21.3	0.58
13. Motivation and satisfaction of the personnel are observed, precautions are taken	5.6	26.7	24.64**
14. Hospital takes responsibility when accidents happen	6.2	48	68.18**
15. The rate of infections in the hospital are monitored	56.2	92.7	61.67**
16. Precautions are taken against blood and such liquids	38.9	79.3	50.76**
17. Precautions are taken against medical/toxic waste	58	81.3	18.78**
18. Supportive organizational climate is established for safety	1.9	28	41.05**
19. The patient/nurse proportion is balanced	6.8	22.7	14.64**
20. There are arrangements for nurses in order to protect them against violent patient/relatives	7.4	26	18.35**
21. There are warning signs and safety posters in hospital	8.6	72	128.65**
22. Most suitable individuals are appointed for positions	6.2	39.3	47.81**
23. There is an ergonomic working environment	0.6	40	74.31**
24. Disciplinary punishment is given in cases of negligence	6.2	15.3	5.97*
25. Management acts responsibly and responds immediately when problems are diagnosed	15.4	40.7	23.59**
26. There is security personnel in hospital	54.3	72	9.67*
27. Security personnel generate effective solutions	6.2	32.7	33.94**
28. There are regulations and job descriptions for instances such as fire/natural disasters	8.6	88	193.83**
29. Registry system has been improved and established	18.5	64.7	66.82**
30. Personnel are vaccinated	55.6	89.3	42.23**
31. Heat, lighting and air conditioning are sufficient	18.5	84.7	133.69**
32. Personnel during pre/post maternity are additionally protected against working environment and conditions	23.5	62.7	47.46**

\* p<0.01; \*\* p<0.001

in the university hospital who suffered from diseases was higher than the number of the nurses in the private hospital ( $\chi^2=15.082$ ; p=0.000) (Table 3).

When the factors that caused diseases or any other problems were looked at, they were found to be: – in university hospital – sharp/pointed devices (62%); blood and/or blood fluids (56%); infected materials (46%). Sharp/pointed devices (53%); blood and/or blood fluids (31%); and infected materials (29%) in the private hospital. It was found that occupational safety was under threat in the university hospital due to inconvenient

physical conditions (54%); working hours (41%); the relationships with other personnel (39%) compared with working hours (62%); relationships with other personnel (37%) and work speed (32%) in the private hospital.

When the occupational accidents and diseases suffered by nurses are looked upon, the nurses in the university hospital suffered from problems with waist, muscle, and joints (discal hernia, pains in legs, arms, back) (65%); vascular problems (varicose veins etc.) (57%); soft tissue trauma (needle-sticking, sharp injuries, bruises, burns, etc.) (56%). Whilst the private hospital nurses

**TABLE 3**  
THE CONDITIONS OF OCCUPATIONAL DISEASES FOR THE NURSES ACCORDING TO THE HOSPITALS THEY WORK IN

Occupational Diseases in Nurses	University Hospital, %	Private Hospital, %	Total, %
	(n=162)	(n=150)	(n=312)
Nurses having an occupational diseases	42	22	32
Nurses not having an occupational diseases	58	78	68
Total	100	100	100

$\chi^2=15.082$ ,  $p<0.001$

complained of back, muscle, and joints problems (37%); vascular problems (27%); and soft tissue trauma (26%).

In addition, when important safety training program that took place were looked at; in the university hospital, orientation programs for the new staff (81%); programs for infections and other diseases (66%); programs to improve occupational skills (38%). Whilst in the private hospital, orientation programs (93%); programs for infections and other diseases (87%); programs to improve occupational skills (67%); and programs for working conditions (67%) and programs for occupational accidents (65%) take place.

## Discussion

According to our research, all of the nurses are an average of 29 years old with 8 years experience. Half of them are married, 2/5 of them have a bachelor's degree, most of them work in the nurse positions and work in a university hospital. We taken separately, we see that nurses in the private hospital are younger, single, less experienced but better educated than the nurses in the university hospital. When the education/training curriculums of the nurses are analysed, we can see that nurses with the bachelor's degree have taken more theoretical and practical classes and hours on occupational health and safety than the nurses having a 2 year diploma<sup>9</sup>.

According to the findings about personnel safety, we see that nurses in the university hospital do not have occupational safety and no safety precautions are taken. On the other hand, in the private hospital, we understand that nurses have occupational safety and safety precautions are taken. Taking care of occupational health and safety in an institution is a serious indicator regarding for how much they care about the human factor<sup>10</sup>.

Occupational health and safety in Turkey is widely described in the Labor Law, numbered 4857, Chapter 5 as; employers take necessary precautions to provide occupational health and safety and keep all the safety equipment on the premises, and employees are to follow all the safety precautions, employers are to inspect whether employees follow all the regulations set up for occupational health and safety and to inform employees about the occupational risks and precautions and to educate employees about their rights and responsibilities at work and employers are obliged to give the training nec-

essary for occupational safety and health, and to inform the health directorate of the city in writing within two days regarding and occupational accident or disease<sup>11,12</sup>. But unfortunately, labor law is only valid for private sector in Turkey. It does not cover the civil servants who work for the state – all health personnel, nurses and other people working in state hospitals, university hospitals which are bounded to the Ministry of Health are civil servants. Therefore, they are not under the protection of the labor law. However, it has been explained that civil servants who have been attacked or have had an accident or who have caught an occupational disease during their service are entitled for a break until they are well again, and those who are exposed to radioactive rays are entitled to take another month off work (due to the article 103). But still, new precautions and arrangement are needed in order to correct the applications of the labor law to cover civil servants as it does for private sector<sup>13</sup>. In the private hospital, the application of JCI accreditation standards and the applications of the Labor Law, making personnel safety felt on the premises may be up to the institution's policies. Organization focused standards of JCI are explained in detail under the headings of quality improvement and patient's safety, control and prevention of infection, management and leadership, environment management, security, personnel training, and the management of information. Application of these standards in a hospital will make the hospital a safer place because the purpose of accreditation is to improve the quality and safety, to reduce costs, improve productivity, to maintain the confidence of the people/society, to improve the management of health services, to provide training, to increase the number of personnel, to set up database for qualitative information, to maintain recognition, to provide an outside and objective evaluation; maintain continuous development, improve quality; maintain a climate in which the institution can be compared favourably with other similar institutions, maintaining customer satisfaction, reduce risks and to make the institution work under the current legislation<sup>3,14</sup>. For these reason, it can be said that the obligation to follow the JCI accreditation standards has resulted in a safe atmosphere to work.

When precautions for occupational safety in both hospitals were studied, the university hospital was found to be successful/competent for the precautions against medical and toxic material, monitoring rate of infection, vac-

cinations of the personnel, having security personnel in case of need, and the private hospital has been found successful or competent for monitoring the rate of infection, vaccination of the personnel, having regulations and job descriptions in case of fire/natural diseases, having written policies for occupational safety, having sufficient heat, lighting and air conditioning, for not using broken/defective equipment/tools, monitoring any occupational accidents and reporting on same; for taking precautions regarding medical and toxic waste, regular checks and maintenance of equipment/tools used, taking precautions in order to be protected from blood and other fluids; the location and safe use of protective materials; holding training sessions for occupational safety, having posters and warnings for safety posters; having security personnel in case of need, the existence of committees for occupational safety; designing working environment to facilitate the work of personnel and to ensure safety, the improvement and establishment of registry systems, of collecting data regularly for occupational safety, the improvement of the problematic areas, protection of the personnel's conditions during pre/post maternity. It has been found that the private hospital is more efficient or adequate regarding the precautions and applications taken for the safety of the personnel when the safety precautions in both hospitals were compared (Table 2). In addition to these, when the inadequacies regarding the precautions taken for personnel safety are evaluated, first of all, the working environment in the university hospital is not ergonomic enough. In the study of Owen, 17% of the nurses working in nursing homes have suffered from ergonomic injuries<sup>15</sup>. In the study of Bayik, Erefe and Ozsoy, it is understood that 73% of the nurses have suffered from stress, 56% have experienced the risk of infection, 25% have exposed to x-rays/or radiation and 1% have suffered from noise, all caused by bad working conditions<sup>16</sup>. However, providing ergonomic working environment will result in a better performance of the personnel because working in such an environment is healthier, more humane and causes less fatigue. Such an environment will help reduce the number of the occupational accidents, make physical and psychological problems disappear, help nurses avoid unnecessary and extreme strains, protect the working environment against damage, and improve the productivity of the personnel<sup>4,17</sup>. Also, when the working environment in hospitals is studied, in the university hospital, the conditions are good as far as the fight against insects are concerned and there are no problems in lighting, heat and air conditioning. However, there are insufficiencies in the areas of ergonomic elements (floor cover, painted rooms in suitable colours, the use of ergonomic rooms and material, electricity, radiation checks, the use of equipment/tools which reduce noise, poor storage solution, broken and neglected material, the distance between the reception desk and the patients' rooms. It has also been found that 1/3 of the material used is broken/defective. In one study that Okdemir et al., conducted in a university hospital, nurses stated that heat, lighting, air conditioning and the lay out of units were insufficient<sup>18</sup>. In the private

hospital, where this research conducted, it has been found that the working environment is ergonomic and safe, however, 1/6 of the material used is broken or defective and insects have been detected in 1/4 of the hospital. In a safe and healthy environment which is comfortable and pleasant to work in, the motivation and satisfaction of the personnel will go up to the highest level<sup>19</sup>. In our research, it has been found out that broken/defective material is used, although the amount is not much. In Okdemir et al.'s study, it has been stated that the motivation of nurses is affected negatively by the use of insufficient material<sup>18</sup>. In the Code of Labor Health and Safety, article 26, and the articles 78 and 79 of the Labor Law there are definitions for tools and materials and in the same code, article 30 there are definitions for taking precautions for insects<sup>11,20</sup>.

When the inadequacies regarding the precautions taken for personnel safety in the private hospital have been studied, it has been found that planning of the timetables of nurses is insufficient (8 hour shifts, etc.) (Table 2). In one study by Okdemir et al., whilst almost half of the nurses have stated that their working hours were suitable for them, the remainder claimed the opposite since they have to work night shifts as well as other shifts, which appears to be the most important reason<sup>18</sup>. In another study, it has been claimed that 20% of the occupational accidents are caused by shift work systems, working hours, and excessive load of work<sup>10</sup>.

When the working conditions and explanations/definitions of the nurses have been looked upon, it has been understood that nurses in both hospital suffered from psychological pressure, sleeplessness, extreme tiredness and physical work. In the study of Okdemir et al., 86% of the nurses are said to be suffering from sleep disorders, digestion problems, malnutrition, and psychological problems because of their working conditions<sup>18</sup>. In the Owen's study, it has been stated that acute and chronic sleeplessness causes damage to physical, sensational, and emotional functions. And it has also been stated that there are other health problems amongst health staff related to sleeplessness and fatigue. Another claim is that working long hours in different shifts also cause physical, sensational and emotional problems<sup>21</sup>. In the study of Yapucu, 83% of the nurses stated that their job involves many arm, hand, foot and leg movements, 67% stated that they stand up in almost every application of treatment in the patients' rooms and all stated that nursing requires a great amount of physical involvement<sup>22</sup>. All these explanations support our findings. In both hospitals, nurses define themselves as mentally tired, dissatisfied with their jobs, tired of leading a monotonous life. In the study of Dindar, Issever and Ozen, due to the traumas originating from nursing applications, it has been indicated that nurses suffer from concentration disorder, anxiety, exhaustion syndrome<sup>6</sup>. In the study of Khorshid and Demir, due to work load and unfavorable working conditions which caused stress, nurses suffered from stress originated illnesses as well as some behavioral and psychological problems, resulting in

general job dissatisfaction and resignations<sup>4</sup>. In the study of Alcelik et al., it has been stated that stress causes head aches, feeling down, anger, sleep disorder, stomach cramps, difficulty in concentration, and job dissatisfaction among nurses<sup>5</sup>.

When the factors which cause diseases and other problems for nurses are studied, the ones that stick out are sharp/pierce devices, blood and blood products, and infected material. These rates are lower in the private hospital, In the studies of Dindar et al., Khorshid, Demir and Aygun, the most common injury is by sharp/pointed devices (needle sticking, etc.)<sup>1,4,23</sup>. In the research that Clarke, Schubert and Korner conducted (in 4 different countries), there are more needle-stick injuries in the medical-surgery departments in Germany than the USA and the number of injuries caused by sharp devices is higher in operating rooms or peri-operative care units in the USA and Canada amongst nurses<sup>24</sup>. According to the study of Ayrançı and Kosgeroglu, the majority of nurses have been injured with hollow-bored needles, and in the study of Ergor, Kılıç and Gürpınar, half of the health personnel have experienced pointed device injuries<sup>25,26</sup>. However, injury with pointed devices comes third after the more common problems which are faced i.e. violence, acute back, waist, and neck aches. But, in the study of Dindar, Issever and Ozen needlestick injuries are on the top of the list bruises coming second<sup>6</sup>. Another problem amongst nurses is dealing with the contaminated material such as; AIDS, Hepatitis, etc; which usually ends up with lawsuits for compensations<sup>4</sup>. Nurses are the highest risk group that face the dangers of infections through blood<sup>23</sup>. In the study of Kosgeroglu et al., shows that 19% of the nurses have suffered from Hepatitis B (either currently or previously) and 5% have infected with Hepatitis C. His findings include 3% HBsAg and 5% anti-HCV positive. These findings show that nurses are regularly exposed to such diseases from blood<sup>27</sup>. In the study of Tarantola and friends, for 60% of nurses and student nurses, blood and body fluids are problematic<sup>28</sup>. Furthermore, more than half of the nurses in the university hospital have stated that impracticality of the physical conditions creates difficulty while working hours and relations with colleagues constitute problems for the 2/5 of nurses; on the other side, majority of nurses in the private hospital have stated that working hours and 1/3 have stated that relations with colleagues and work speed are problematic areas for occupational safety. In the study of Dindar, Issever and Ozen, it has been indicated that the biggest reason for intensive trauma during the care application is physical environment disharmony<sup>6</sup>. These findings support all our findings and information we have come up with within the research we have conducted.

When the conditions of the nurses in infection-wise are studied, 1/4 of the nurses have had the unfortunate personal experience of occupational diseases. 2/5 of the nurses in the university hospital and 1/5 of the nurses in the private hospital have been victims of occupational diseases. The nurses in the university hospital appear to

have been infected more, statistically, than the nurses in the private (Table 3). The majority of the nurses questioned in both hospitals have said other personnel have also suffered from occupational diseases or accidents. In our opinion, these high infection rates affect the quality of the personnels' lives and also cause great loss to the work force, which can not be tolerated. Dragon, says that there are too many injuries in hospitals and nursing homes<sup>7</sup>. In the Zontek's study, those who worked in care service formed the 2<sup>nd</sup> biggest group in occupational injuries and diseases and this rate was higher than the rate of the occupational accidents and diseases in the construction sector<sup>29</sup>. In the study of Waehrer, Leigh and Miller, the most costly areas (due to the high rates of injury and disease) in the health services are hospitals with 52%; nursing homes with 38%; nursery care units with 6%; physicians' offices with 4%; and laboratories with 1%<sup>8</sup>.

ILO describes occupational accident as an unexpected, unplanned, sudden incident which causes damage or injury<sup>10</sup>. In Turkey, occupational accident is described within the Institution of Social Security (SSK) law (numbered 506, Article 11 Chapter A). An occupational accident is described as an unexpected incident which results in personal injury or material damage in every kind of industry and business after the employment of that person<sup>10,30</sup>. Occupational disease is described as an illness or psychological or bodily problem that one faces according to the nature or handling of the job whilst one is working under an employer's order. On the other hand, a similar definition is given in the law of Institution of Social Security (SSK) Article 11 Chapter B<sup>10,30</sup>. Under the light of this information, when the occupational accidents and diseases of the nurses are studied, majority of the nurses in the university hospital and 2/5 of the nurses in the private hospital have suffered from waist, muscle and joint problems, vascular problems, and soft tissue trauma. In the many studies researched by Yılmaz, Khorshid and Demir, the majority of the nurses suffer from back ache<sup>4,31</sup>. In the study of Yılmaz, according to NIOSH (National Institute of Occupational safety and Health), occupational back aches are in the second place of all occupational accidents and are commonly seen amongst nurses<sup>31</sup>. More than half of the nurses suffered from back ache in the studies of Alcelik et al., Ergor et al., and Dindar et al.<sup>5,6,26</sup>. In the study of Ozyaral et al., health personnel working in operating rooms and intensive care units primarily suffer from discal hernia, varix and pain the legs<sup>32</sup>. In the study of Waehrer, Leigh and Miller, it has been understood that the common types of injuries in the health sector are sprains, hurts, breaks, and the types of diseases are carpal tunnel syndrome, respiratory diseases and the most vulnerable places in the body are back, shoulders, knees, wrists and neck<sup>8</sup>.

Apart from these, when the training programs for safety are studied, the majority of the nurses in the university hospital are provided with orientation programs, programs for infection and other diseases; whilst for the nurses in the private hospital, orientation programs, pro-

grams for infection and other diseases, programs for the improvements of occupational skills, programs for working conditions and occupational accidents are provided. The findings show that the precautions for occupational health and safety are taken in a better manner in private hospital. The reason why the private hospital provides training programs on safety and health could be that the hospital has been accredited with JCI and JCI accreditation programs demanding the hospital to provide personnel trainings, risk management, safety programs. As Khorshid and Demir stated there must be training programs for the new nurses to show them what kind of risks they may come across<sup>4</sup>. They also stressed that institutions have the role to provide training for safety to the personnel<sup>10,30</sup>.

## Conclusion

The nurses who participated in the research are on average 29 years old with 8 years work experience, almost half of them are married, 2/5 have a bachelor's degree, in order to work in the status of nurse the units of the university hospital.

It has been observed that the nurses in the university hospital do not have occupational safety and precautions for safety are not taken; on the other hand, nurses have occupational safety and precautions are taken in the private hospital.

According to the results regarding precautions for occupational safety, the precautions and applications are better in the private hospital than the university hospital.

When the precautions taken for personnel safety are evaluated, the university hospital was found inadequate in providing ergonomic working environment. In the same hospital, when the conditions of the working environment are studied, it was observed that precautions were being taken for insects, that lighting and heating were sufficient, but other elements were found insufficient, such as floor coverings, the usage of ergonomic rooms and material etc. In addition, it has been observed that 1/3 of the material used are broken/defective. In the private hospital, the rate of seeing insects is 1/4 and the rate for the usage of broken/defective material is 1/6, but the working environment has been found safe and ergonomic.

In the private hospital, amongst the precautions taken for occupational safety, nurses have found that the planning of their timetables is not suitable to their needs.

It has been understood from the answers given by the nurses regarding working conditions that the conditions in both hospitals cause psychological pressure, sleeplessness, excessive tiredness, and that physical strength is required. Additionally, nurses have defined themselves as mentally fatigued, lead monotonous lives and have job dissatisfaction.

When the results of the factors that caused disease or problems were analysed, it was determined that sharp/pointed objects, blood (and blood products), as well as infected materials are the main source of problems for nurses in both hospitals. Besides, more than half of the nurses in the university hospital complained about physical conditions, about 2/5 of them complained about working hours and relations with colleagues, whilst in the private hospital, majority of the nurses stated their working hours problematic, 1/3 stated that relations with colleagues and work speed are problematic.

According to the evaluation of the conditions of nurses about catching occupational diseases, 1/4 of the nurses have caught occupational diseases sometime in their lives. The nurses in the university hospital appear to have caught more occupational diseases than the nurses in the private hospital.

When the occupational accidents and diseases are analyzed, it has been realized that the majority of the nurses in the university hospital and 2/5 of the nurses in the private hospital have suffered from waist, muscle, joint problems, vascular problems and soft tissue traumas.

When the training programs regarding the personnel safety were studied, it has been realized that orientation and training programs against infectious diseases are given to the majority of nurses in the university hospital; in the private hospitals, training programs to improve their occupational skills, working conditions and to reduce occupational diseases and accidents are provided to nurses, along with the programs provided in the university hospital.

All these results have indicated how important are sufficient personnel/occupational safety and precautions taken for the personnels' health in order to prevent and/or decrease work accidents and occupational diseases, to increase work efficiency and to decrease costs.

When all these results are considered, we come to the conclusion that more precautions must be taken for occupational health and safety in the university hospital, the working environment must be more ergonomic, the usage of broken/defective material must be minimized, more precautions must be taken against sharp/pointed devices, blood (and blood products) and infected material, provision of protective material must be increased, relations among colleagues should be improved by organizing social programs, arrangements must take place to reduce the number of reasons causing job dissatisfaction, expectations must be evaluated while timetables are made, and Regulations for Occupational Health and Safety, and ILO agreement criteria must be followed accordingly to prevent occupational accidents and diseases. If possible, programs and committees regarding risk management and personnel safety should be created, training should be given and a safety culture should be generated and maintained. As ACNSI (Advisory Committee on The Safety of Nuclear Installations, 1993) defined, safety culture is the outcome of behavior styles, skills, perceptions, attitude and values that belong to an individual or



to a group and determination of promises as well as the style in the management of health and safety of an institution. Apart from this, the safety culture is not related only to the promise of the employer for safety, forms of communication and reporting the mistakes, but also to the attitudes of the personnel about their own motivation and morale, the forms of perception about mistakes and factors that affect the mistakes<sup>33</sup>.

In the private hospital, although there are safety precautions, the hospital has been found inadequate in taking some precautions in some areas, such as the existence of insects (though not many), the usage of broken and impaired material (though not much). Therefore, the precautions must be studied once again in these areas and improvement must take place. Also, the nurses timetables must be planned more suitably and expectations should be taken into account. More precautions must be taken against sharp/pointed devices, blood (and blood products) and infected material, studies about work speed should be carried out and work speed must be lowered. Although the rate of occupational accidents

and diseases is lower than the university hospital, intensity of related applications should be higher, improvement should take place and training should be provided to those who have not taken before.

Furthermore, there should be more social activities and work enrichment programs should take place in hospitals in order to reduce the number of complaints related to job dissatisfaction, psychological pressure, tiredness and monotonous work lives.

Along with these suggestions, every business, regardless its size and type of service they offer should have occupational health and safety committee, a doctor and a nurse should be present and entities should have a health unit on the premises. A follow up capacity should be made available after retirement.

In addition, conducting similar studies in order to determine whether occupational safety precautions are taken or not as well as conducting studies in a broader sample group (thus increasing the scale) is suggested to the researchers.

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## **ZAŠTITA NA RADU I ZDRAVLJE U BOLNICAMA SA STAJALIŠTA MEDICINSKIH SESTARA**

### **S A Ž E T A K**

Bolnice su izvor mnogih opasnosti s obzirom na uvjete rada i bolničko osoblje preuzima znatan rizik pružajući usluge zdravstvene njege pacijentima, što također može utjecati i na njihovo osobno zdravstveno stanje. Istraživanje, temeljeno na zdravlju i sigurnosti medicinskih sestara i ostalog bolničkog osoblja, provedeno je kako bi se usporedili i utvrdili problemi zaštite na radu te kako bi se procijenila razina mjera predostrožnosti na radu u privatnim bolnicama (odobrenim od Udružene Internacionalne Komisije), u usporedbi sa sveučilišnim bolnicama. Istraživanje je provedeno na uzorku od 162 medicinske sestre jedne sveučilišne bolnice i 150 medicinskih sestara jedne privatne bolnice, obje u Istanbulu, u Turskoj. Podaci su prikupljeni u periodu od ožujka do srpnja 2007. godine, a koristila se anketa sastavljena od 7 pitanja vezanih uz socio-ekonomske karakteristike te od 17 pitanja vezanih uz mjere predostrožnosti u sklopu zaštite na radu i uz zdravstvene probleme bolničkog osoblja. Prema mišljenju sestara, mjere predostrožnosti u sklopu zaštite na radu bolje su u privatnim nego u sveučilišnim bolnicama. Uspostavljeno je da sveučilišne bolnice zaostaju u pružanju ergonomskog radnog okruženja, dok privatne bolnice imaju problema sa planiranjem i sastavljanjem rasporeda za medicinske sestre. Osim toga, u obje vrste bolnica je utvrđeno da su oštri i našiljeni predmeti, tekućine poput krvi i zaraženi materijali izvor zaraze osoblja raznim bolestima na radnom mjestu i drugim problemima. Zaključno, mjere predostrožnosti u sklopu zaštite bolničkog osoblja na radu bolje su u privatnim nego u sveučilišnim bolnicama.