

## Skin and Musculoskeletal Disorders among Nursing Staff of a Referral-Teaching Hospital in Tehran-Iran

ALIREZA ABDOLLAHI<sup>1\*</sup>; SHAHNAZ ADINEH<sup>2</sup>

<sup>1</sup>Department of Pathology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran;

<sup>2</sup>Department of Nosocomial Infections Control, Imam Hospital Complex, Tehran University of Medical Sciences, Tehran, Iran.

Received June 12, 2015; Revised July 20, 2015; Accepted July 27, 2015

This paper is available on-line at <http://ijoh.tums.ac.ir>

### ABSTRACT

Occupational diseases are any chronic ailment that occurs because of work or occupational activity. This cross-sectional study was conducted at Vali -Asr Hospital affiliated with Tehran University of Medical Sciences (governmental, General, referral and teaching hospital with 14 section and 337 beds in 2014 (Tehran-Iran). All 197 nurses in the hospital from different working shifts were engaged in the study. All nurses filled out a questionnaire containing demographic and occupational data. In the questionnaire, they specified the following: sex, age, job experience, any history of respiratory, skeletal and muscular diseases over the past year, chemicals and physical conditions they have been exposed to, history of allergy. Thirty-nine nurses had skin diseases. Those who did not regularly wear gloves were further susceptible to skin diseases. Sixty-eight nurses had musculoskeletal, respiratory and allergic diseases. The skin and respiratory diseases had nothing to do with gender, but skeletal, muscular and allergic diseases were more in women. In 93% of the cases, skin diseases left lesions in the elbows, wrists, palms and fingers. Thirty-nine nurses had skin diseases, and 68 had skeletal, muscular, respiratory and allergic diseases. Out of 93% of the cases, skin diseases were characterized by the appearance of lesions. The incidence of skin and musculoskeletal disorders had no meaningful relationship with age, height, employment and matrimonial status of the nurses, but it did have with the number of working shifts and beds under their supervision.

**KEYWORDS:** *Occupational diseases, Nurse, Staff, Hospital*

### INTRODUCTION

Occupational diseases are any chronic ailment that occurs because of work or occupational activity [1]. They occur due to exposure to physical factors like heat, cold and noise, chemical factors, biological factors like bacteria and viruses, psychological factors like workplace stress and ergonomic factors like the workplace design [1-3]. There is no definite treatment for these diseases, but they could be prevented [1]. Even though it seems that occupational diseases are of low incidence, there is evidence of a large number of people suffering from these diseases due to the nature of their jobs [4]. It would be possible to avoid keeping these diseases from becoming chronic if they were

diagnosed in their early stages. According to a study conducted in 2004 by Iran's Occupational Health Center, occupational diseases (Low back pain, DJD, Musculoskeletal disorder) are the most common diseases after cardiovascular conditions in Iran [5]. Official data from WHO indicate that low back pain is the second reason preventing people from working in the United States [4-6]. In Germany, muscular and skeleton diseases account for 20 percent of leaves of absence [7]. Back pain is the main reason behind early retirement in Western countries [7]. Skin diseases are the most common occupational diseases after skeletal and muscular ones [7]. Contact dermatitis is the most common one [7]. Contact with catechol and phenol causes depigmentation, toxic effect on melanocytes and skin disease at the end [7].

\* Corresponding Author: Alireza Abdollahi

Email: [alireza.a1345@yahoo.com](mailto:alireza.a1345@yahoo.com)

Given the harmful economic and physical impacts of occupational diseases (early retirement and disability, sick leave and healthcare costs) and the ability to prevent them by regular checkups and assessment of workplaces, this study was conducted at Tehran University of Medical Sciences to examine the frequency and risk factors of occupational diseases among nurses.

## MATERIALS AND METHODS

This cross-sectional study was conducted at Vali -Asr Hospital affiliated with Tehran University of Medical Sciences (governmental, General, referral and teaching hospital with 14 section and 337 beds in 2014 (Tehran-Iran). All nurses in the hospital, both men and women, from different working shifts were engaged. Those with previous or hereditary skeletal, muscular, skin, cardiovascular and respiratory diseases were excluded. The nurses were also divided into two groups; nurses involved in management work and nurses working in the wards. All nurses filled out a questionnaire containing demographic and occupational data (the questionnaire was standard and Validity and reliability of the questionnaire were approved by experts. The questions were constructed by an expert group and taken from validated questionnaires. In the questionnaire, nurses specified sex, age, job experience, education, any history of respiratory, skeleton and muscular diseases over the past years, chemicals exposure, physical conditions they have been exposed to, history of allergy and atopia, use of gloves and sick leaves. In the questionnaire, we asked participants to determine

- Skin disease (any symptom of acute contact dermatitis; rash, vesicle, ulcer and erythema) or chronic contact dermatitis (fissure, skin thickening hyperpigmentation, Lichen planus and onycholysis) - Respiratory diseases and allergy (a history of any respiratory condition having happened in the workplace).
- Skeletal and muscular diseases (back pain, shoulder and neck pain, history of any pain and motion restrictions).

All the mentioned diseases should have been confirmed by a specialist or have compelled the nurses to take sick leaves and are beside the history of recovery subsequent to the discontinuation of occupational exposures. The sick leaves needed the approval of a trustworthy doctor.

The validity and reliability were evaluated and the scale was reliable for this sample ( $\alpha=0.80$ ).

All participants were assured that their data would remain confidential. After getting ethical permission and coordinating with the hospital, the nurses were invited to contribute. The questionnaires were submitted to the nurses' office and were filled at the time the nurses were changing shifts.

**Ethical approval:** Nurses' data were considered confidential, no extra cost was constrained and no intervention was performed in our study.

**Statistical analysis:** Most of the gathered data were descriptive in character. In the statistical analysis, differences between normally distributed continuous variables were tested with the Student t-test and differences between categorical variables were tested with the chi-square test. A P-value of  $<0.05$  was an indication of statistical significance. Data analysis was conducted by means of SPSS for windows 13.0 statistical package (Chicago, IL, USA).

## RESULTS

All 197 nursing staffs of Vali-Asr Hospital who were in the age range of 23-50 years with the mean  $32\pm3$  were interviewed. Among the participants, 9 were men aged between 25-50 (mean  $31\pm2$  years) and 188 were women aged between 23-46 (mean  $32\pm5$  years). Nobody was excluded. Three of the men were officially employed while six were on contract. Among women, 63 were officially employed, 90 were on contract and 35 were passing their apprenticeship. Nine men held BA but in the women group, 170 held BA, 4 held MA and 5 held associate diplomas. The average working background was eight years (ten years in men and eight years in women). Eight of the men and 119 of the women were married. The average number of patients under care was seven (five for women and seven for men). In total, 52 were working in the morning shift, 40 in the morning, evening and night shifts, 25 in the morning and evening shifts, 22 in the evening and night shifts and 58 in the night shifts. The average number of working shifts for men was 1.4 and for women was 1.

Thirty-nine nurses had skin diseases as specified in Table 1. The average time for the emergence of skin disease was 1.2 years after the start of work in the hospital. In this study, 116 nurses used to wear gloves while working and 81 wore gloves from time to time. Chi-square test showed that those who did not regularly wear gloves were further susceptible to skin diseases. Sixty-eight nurses in this study had skeletal, muscular, respiratory and allergic diseases. Fisher Exact test showed that the skin and respiratory diseases had nothing to do with gender, but skeletal, muscular and allergic diseases which were more in women (P value=0.0001). In 93 percent of the cases, skin diseases left lesions in the elbows, wrists, palms and fingers.

All skin and musculoskeletal disorders were meaningfully higher in the nurses working in the wards than those in offices (P value=0.003). The average weight of nurses was 65 kg and their average height was 152 cm (BMI=28.1).

The incidence of skin and musculoskeletal disorders had no meaning in relation to age, height, employment and matrimonial status of the nurses (P value = 0.06), but it did have with the number of working shifts and beds under their supervision (P value = 0.0003).

**Table 1.** Frequency of skin diseases versus gender

Skin Diseases	Men	Female	Total
Contact Dermatitis	1	17	18
Onycholysis	1	5	6
Nail Hyperpigmentation	0	4	4
Mouth Aphthous	1	3	4
Pruritus	0	3	3
Seborrheic Dermatitis	3	0	3
Alopecia Areata	1	0	1
Total	7	32	39

## DISCUSSION

Nursing is considered as one of the harmful and hard works in the hospital so that after several years a nurse has feelings of dissatisfaction about her/his work; in this result, patients and their companions do not have satisfied services of this nurse [8-11].

Occupational health nurses can make a major contribution to the sustainable development, improved competitiveness, job safety and increased profitability in enterprises and communities by addressing those factors that are related to the health of the working population. By helping to reduce ill health, Occupational Health nurses can contribute to the increased profitability and performance of organizations and reduce health care costs. Nurses are faced with a variety of occupational damages and disorders due to the nature of their work [12-14].

Nursing is a business and occupation that has the highest rate of muscular-skeletal disorders and these damages are demonstrated in nursing with related ergonomic risk factors [15-17]. In America, this disorder causes a decrease in the working time of more than six hundred thousand employees whose incomes are about 45-54 billion dollars [18].

Based on a study on 125 nurses, it showed that 36.8% of nurses suffer from musculoskeletal disorders. Approximately 12% of nurses had suffered backache disorders. Transmission of the patients, changing the cloths and bed sheets are important factors in creating musculoskeletal disorders [19]. Backache is the most common workplace and occupational disorder of physicians and nurses, as well as the most common complication that they caused to applicant to the physicians for treatment and playing important roles in occupational disorders by spreading more than 56-90 percent, which is contrary to the views of other people [20]. There is spread of musculoskeletal disorders between nurses. A spread of about 45.2% of backache disorders is

reported among nurses while a study reported the backache disorders of about 80% in Philippines [21-22].

Other common occupational disorders are contact with pathogens and chemical hazards. According to a report, there are about 61 percent of the incidences of occupational disorders. Research shows that nurses are at risk of disorders when they work with sharp objects. During the last year, it was reported that about 40% of nurses experienced these disorders [23].

Many of workplace problems are eliminated with relying on workplace ergonomics methods. Ergonomics must be used to achieve maximum technologic methods, the welfare of employees and the efficiency of production facilities and services for improving higher production, hygienic status recovering, health maintenance and educational work-place satisfaction and it is the new knowledge that is playing an important rule for increasing productivity and employee's healthy levels [8-9, 23].

Men are considered as a living organisms in the science of ergonomics by answering the requirements and needs of different conditions of work by critical, external, mechanical and internal biomechanical factors and then providing a suitable environment for people who could work without stress and tiredness by trying to limit nerve tension in the workplace and to create a suitable environment for working. Employees (nurses) could increase their efficiencies of work easily, decrease their stresses in their work places, provide the best tools, and support themselves when they work with different dangerous tools and instruments [20-23].

Ergonomics have noticeable effects due to increased production, reduction of expenses and medical care, decrease of stress, increase in job satisfaction and productivity and generally increase in the national income and economic benefits by observing the related principles [22].

Occupational diseases are diseases that occur within the nature and environment of work and are capable of causing harmful impact on the health of workers, they increase despite the fact that such diseases and infections can occur in patients who are unable to perform activities [8-10]. Individuals should be working in order to satisfy some of their needs such as Income, purposeful mental activity, creating opportunities for communication and social contact, feelings of competence and self-esteem [11]. In our study, 39 nurses had skin diseases. Sixty-eight nurses in this study had skeletal, muscular, respiratory and allergic diseases. Out of 93% of the cases, skin diseases were characterized by the appearance of lesions. The incidence of occupational diseases had no meaningful relationship with age, height,

employment and matrimonial status of the nurses, but it did have with the number of working shifts and beds under their supervision.

Our study had some limitations. We did not consider other factors such as life style, sport, Second job and physical activity that may have influence on our results.

There are relationships between the provision of nursing services in the hospital with their quantities and qualities of work. Each hospital had the largest nursing department with skilled and experienced nurses that are playing an important role in improving hospital care with their high capacity of responsibilities. These nurses worked hard to care for patients night and day then they are faced with severe psychological forms of stress during their working hours. Occupational disorders are far too high among nurses because of their job pressures and non- standard facilities and equipment and this leads to decrease in the provision of nursing services by neglecting their professions. Therefore, by observing the standard situations in the hospital could be decreasing the nurses` occupational disorders and psychological stress as recommended by occupational preventive performances as follows:

- It is necessary to reduce infections by washing hands frequently. Therefore, it is required to use skin moisturizers for preventing dryness of skin.
- Learning the proper techniques to prevent disorders and injuries.
- During working hours, people must always wear personal protective equipment, including the latex gloves for cleaning or working with chemicals.
- Wearing good, medical shoes for walking and standing during working hours.
- Learning good techniques for lifting patients and instruments.
- Observing ergonomic principles in a special situation such as holding hands above the shoulders and acting the repeated performances.

## CONCLUSION

Occupational disorders are high among nurses because of their job pressures and non-standard facilities and equipment. This leads to decrease in the provision of nursing services by neglecting their professions. Therefore, by observing the standard situations in the hospital could decrease the nurses` occupational disorders and psychological stress.

## ACKNOWLEDGMENTS

We would like to thank nurses of our hospital for their kind cooperation. There was no funding for this research. The authors declare that there is no conflict of interests.

## REFERENCES

1. Cuming R, Rocco TS, McEachern AG. Improving compliance with Occupational Safety and Health Administration standards. *AORN J* 2008;87(2):347-56.
2. Trautner K. Occupational injury and disease: standards in the healthcare workplace. *Ohio Nurses Rev* 2013;88(3):6-7.
3. Caruso CC. Negative Impacts of Shiftwork and Long Work Hours. *Rehabil Nurs* 2014; 39(1):16-25.
4. Dorrian J, Lamond N, van den Heuvel C, Pincombe J, Rogers AE, Dawson D. A pilot study of the safety implications of Australian nurses' sleep and work hours. *Chronobiol Int* 2006; 23(6):1149-63.
5. Beam EL, Gibbs SG, Hewlett AL, Iwen PC, Nuss SL, Smith PW. Method for investigating nursing behaviors related to isolation care. *Am J Infect Control* 2014; 42(11):1152-6.
6. Adriaenssens J, De Gucht V, Maes S. Determinants and prevalence of burnout in emergency nurses: a systematic review of 25 years of research. *Int J Nurs Stud* 2015; 52(2):649-61.
7. Van Til L, Fikretoglu D, Pranger T, Patten S, Wang J, Wong M, et al. Work reintegration for veterans with mental disorders: a systematic literature review to inform research. *Phys Ther* 2013; 93(9):1163-74.
8. Umann J, da Silva RM, Benavente SB, Guido Lde A. The impact of coping strategies on the intensity of stress on hemato-oncology nurses. *Rev Gaucha Enferm* 2014; 35(3):103-10 [In Portuguese].
9. Arsalani N, Fallahi-Khoshknab M, Josephson M, Lagerström M. Musculoskeletal disorders and working conditions among Iranian nursing personnel. *Int J Occup Saf Ergon* 2014; 20(4):671-80.
10. Diken A, Yalçınkaya A, Aksoy E, Yılmaz S, Özşen K, Sarak T, et al. Prevalence, presentation and occupational risk factors of chronic venous disease in nurses. *Phlebology* 2015;10.
11. Chang PJ. Taiwan occupational health nursing: practices, policies and future trends. *Hu Li Za Zhi* 2014; 61(3):29-35. Chinese.
12. Tiwari RR, Sharma A, Zodpey SP, Khandare SM. Does occupational health nursing exist in India? *Indian J Occup Environ Med* 2014; 18(3):113-7.
13. Köse S, Mandiracıoğlu A, Tatar B, Gül S, Erdem M. Prevalence of latex allergy among healthcare workers in Izmir (Turkey). *Cent Eur J Public Health* 2014; 22(4):262-5.
14. Kalm-Stephens P, Sterner T, Kronholm Diab K, Smedje G. Hypersensitivity and the working environment for allergy nurses in sweden. *J Allergy (Cairo)* 2014; 2014:681934.

15. Nkoko L, Spiegel J, Rau A, Parent S, Yassi A. Reducing the risks to health care workers from blood and body fluid exposure in a small rural hospital in Thabo-Mofutsanyana, South Africa. *Workplace Health Saf* 2014; 62(9):382-8.
16. Dumas O, Varraso R, Zock JP, Henneberger PK, Speizer FE, Wiley AS, et al. Asthma history, job type and job changes among US nurses. *Occup Environ Med* 2015; 24.
17. Shirey MR. Stress and coping in nurse managers: Two decades of research. *Nurse Econ* 2006; 24:203-11.
18. Flego V, Lender DM, Bulat-Kardum L. Pericardial effusion as the first manifestation of occupational tuberculosis in a health care worker. *Arh Hig Rada Toksikol* 2014; 65(4):417-22.
19. Orme NM, Rihal CS, Gulati R, Holmes DR Jr, Lennon RJ, Lewis BR, et al. Occupational Health Hazards of Working in the Interventional Laboratory: A Multisite Case Control Study of Physicians and Allied Staff. *J Am Coll Cardiol* 2015; 65(8):820-6.
20. Morrison MT, Edwards DF, Giles GM. Performance-based testing in mild stroke: identification of unmet opportunity for occupational therapy. *Am J Occup Ther* 2015; 69(1):6901360010p1-5.
21. Haldiya KR, Sachdev R, Mathur ML, Saiyed HN. Knowledge, attitude and practices related to occupational health problems among salt workers working in the desert of Rajasthan, India. *J Occup Health* 2005; 47(1):85-8.
22. Burns CJ, Wright JM, Pierson JB, Bateson TF, Burstyn I, Goldstein DA, et al. Evaluating Uncertainty to Strengthen Epidemiologic Data for Use in Human Health Risk Assessments. *Environ Health Perspect* 2014; 122(11):1160-5.
23. Senel E, Doğruer Şenel S, Salmanoğlu M. Prevalence of skin diseases in civilian and military population in a Turkish military hospital in the central Black Sea region. *J R Army Med Corps* 2015; 161(2):112-5.