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ORIGINAL ARTICLE

The assesment of dermatology life quality index in nurses with occupational skin diseases in Türkiye

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ABSTRACT

Objective: The skin acts as one of the body's first defense components against many external factors by creating a physical barrier. Therefore, it is significantly vulnerable to the irritating effects of protective personal equipment use. A wide range of occupational skin diseases (OSD) can be observed in the nurses who are in close contact with patients and frequently use personal equipment. We aim to identify different types OSD observed in the nurses and explore the impact of these skin diseases upon Dermatology Life Quality Index (DLQI).

Materials and Methods: A web-based questionnaire consisting of 24 questions related to the physician-confirmed cutaneous diseases observed in the participants who were actively working as nurses in Türkiye. DLQI was calculated by using DLQI score.

Results: Two hundred twenty nine participants were included in the study with a mean age of 33.74 years. The mean duration working as a nurse was 9.86 years. One hundred (43.7%) participants reported to have at least one skin disease; the most commonly observed occupational cutaneous skin diseases were xerosis, contact dermatitis, pruritus, brittle nail syndrome and callus formation. The median DLQI score was 4 (interquartile range=7.5). The time during which the participants worked as a nurse was significantly associated with the development of at least one OSD (p=0.02).

Conclusions: Our study show that OSD, most common ones being xerosis, contact dermatitis and pruritus seem to affect dermatologic life quality of the nurses in Türkiye.

Keywords: nursing, skin, surveys and questionnaires.

INTRODUCTION

Nurses are occupationally exposed to a wide variety of allergens such as protective gloves, disinfectants and medications. This condition, called occupational contact dermatitis, has a prevalence of up to 30%, especially among nurses and other healthcare professionals [1]. The most common occupational skin diseases (OSD) observed among the healthcare workers are reported to be chronic irritant contact dermatitis (ICD) and allergic contact dermatitis (ACD) [2].

Especially during the COVID-19 pandemic, with the increase of the frequency and duration of the use of protective personal equipment (PPE), many new-onset skin diseases have been observed in healthcare workers [3]. Daye et al. [3] reported that the most common skin diseases observed in healthcare workers during the pandemic period were dryness, itching, burning, peeling and lichenification, and 22.3% of the participants stated that the use of PPE increased the severity of their

pre-existing skin diseases. In this study, it was also reported that the frequency of acne has increased due to long-term use of protective masks, and the Dermatology Life Quality Index (DLQI) was reported to be significantly elevated, especially in women [3]. This study shows that there is an increased risk of developing OSD in the healthcare personnel, especially during the periods of more intense work such as pandemics during which the duration of PPE use is significantly extended.

In our study, we aimed to determine the types and frequencies of OSD observed in the nurses working in different institutions and various units affiliated with these institutions in our country. We also planned to disclose the effect of the OSD observed in nurses on the DLQI.

MATERIAL and METHODS

Design

This cross-sectional investigation study included subjects of >18 years who were currently working as a nurse at the time of the study. The study questionnaire was spread among the individuals who were employed in the nursing sector in different institutions in Türkiye between June and July 2024.

Ethical Approval

Before the start of the present study, approval of local non-interventional studies ethics committee was obtained (the date and decision number: May 9 2024, 2024/018). This study protocol was consistent with the Declaration of Helsinki and all participants gave informed consent to participate into the study.

A web-based questionnaire which composed of 24 questions was formed by Google forms (Google LLC, USA). This questionnaire was spread out via instant messaging or e-mail and the virtual snowball sampling method was used to convey the study. The study was filled out by the nurses who were working in the different units of various health care centers in Türkiye. The evaluation details were grouped into four sections in the survey: (I) demographical and work-related data of the nurses (gender, age,time spent as a nurse, chronic diseases current institution/unit, the presence of any physician-confirmed OSD) (II) the type of OSD (xerosis, hand dermatitis, miliaria, hyperpigmentation on the hands, paronychia, orolabial herpes, facial acne due to mask use, folliculitis, skin burn due to occupational exposure, perioral dermatitis, brittle nail syndrome, onychoschizia/onychorrhexis, onycholysis, skin atrophy, pruritus, palmar or plantar warts, palmoplantar peeling, airborne contact dermatitis, others) (III) DLQI scoring4 questions (10 item) (IV) treatment status for dermatologic disease.

Statistical Analysis

IBM SPSS 29.0 program was used for the analysis of the data. Qualitative variables are shown as frequencies and percentages; whereas quantitative variables are shown with mean, standard deviation (SD), median, interquartile range (IQR), quartile1-3 values.

Spearman's correlation testwas used to explore the direct association between two numerical variables with non-normal distribution whereas the association between categorical variables were determined via Chi-square test.

Binary logistic regression analysis was used to investigate the relationship between the target dependent variable and one or more independent variables. $p<0.05$ was accepted to be statistically significant.

RESULTS

The study included 229 participants with a mean age of 33.74 years (SD)=8.62 and female predominance (86%). The average duration during which the participants have worked as a nurse was 9.86 years (SD=9.34).

One-hundred three (44.9%) were working in government hospitals, 38 (16.6%) in university hospitals, 33 (14.4%) in research and training hospitals, 21 (9.2%) in family health centers whereas 6 (2.6%) and 19 (8.3%) were working in private hospitals and other institutions (community health centers, schools etc.), respectively. If we were to look at the individual institution units, 51(22.4%) subjects were responsible for inpatient service, 44 (19.3%) for polyclinic, 27 (11.8%) for emergency department, 23 (10.1%) for operating room, 18

(7.9%) for vaccination, 12 (5.3%) for intensive care unit (ICU), 12 (5.3%) for community health-related department and 42 (18.5%) in other units (delivery room, infirmary, etc.).

Only 100 (43.7%) subjects were reported to have at least one OSD which was confirmed by a physician. The most commonly reported ones were xerosis (74.8%) followed by pruritus (49.6%) and hand dermatitis (43.5%). The distribution of the OSD is shown in Figure 1. Seven (7%) subjects presented with at least one skin disease were also diagnosed with hypothyroidism, six (6%) ones had a diagnosis of allergic asthma whereas two (2%) had allergic rhinitis and one (1%) had chronic urticaria. Only fourty two (23.1%) participants were currently under treatment for their dermatological disease.

DLQI was calculated for the participants who reported to be affected by at least one cutaneous disease, by using DLQI questionnaire.The mean DLQI score was 5.96 (SD=6.32) whereas median DLQI score was found to be 4 and IQR was 7.5 (Figure 2). Twenty four (24%) participants had a DLQI score of 0-1 (no effect on the person's life) and 76 ones had a score of ≥ 2.

No significant relationship was found between the type units that the participants have been working and the presence of any OSD (Chi-square test, p=0.14).

There was no statistically significant relationship between the number of years working as a nurse and DLQI scoring [Spearman's coefficient= 0.14 (low correlation) and p=0.17] (Figure 3).

Binary logistic regression analysis showed that gender, age,workplace,were not associated with a significant risk of developing a skin disease (odds ratio:0.98; 95% confidence interval: 0.45-2.11; p=0.95 for gender, odds ratio: 0.98; 95% confidence interval: 0.94-1; p=0.06 for age,odds ratio: 0.98; 95% confidence interval: 0.86-1.11; p=0.78 for workplace. When the participants were divided into two groups as ICU nurses and non-ICU nurses, logistic regression analysis still didn't show any significant correlation between being ICU nurse and having an OSD (odds ratio: 0.34; 95% confidence interval:0.12-1.03; p=0.06). However, the years worked as a nurse seemed to be significantly associated with developing an OSD (odds ratio:1.04; 95% confidence interval: 1.01-1.07; p=0.02).

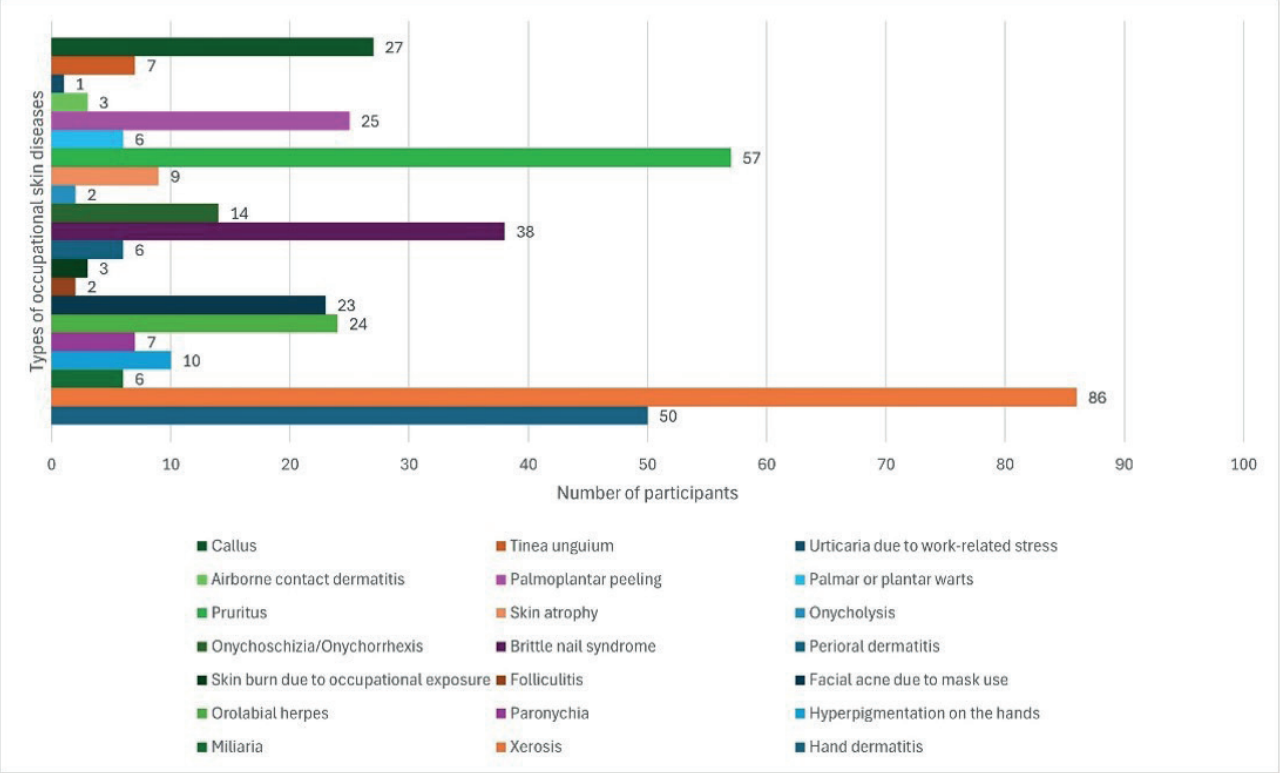

Figure 1. The distribution of cutaneous skin diseases seen in the participants

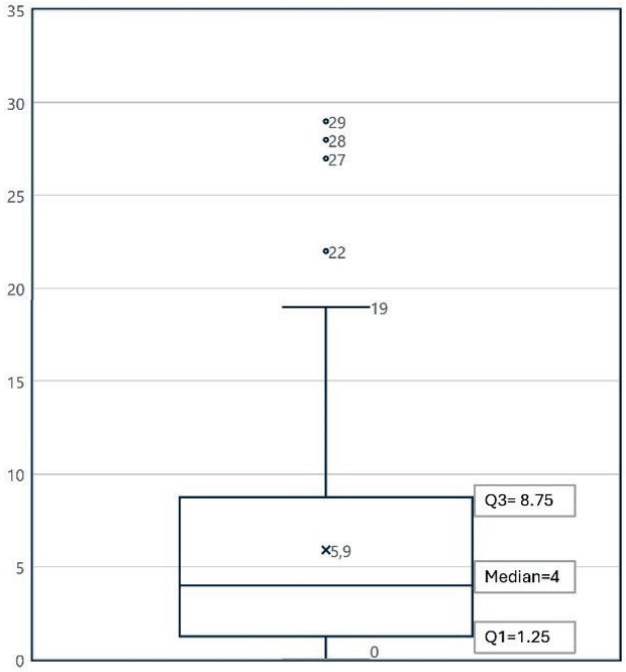

Figure 2. Boxplot representing median values, 25–75% range (box) and minimum–maximum range (bars) of DLQI score

DISCUSSION

In the present study, 43.7% of the participants reported to have at least one OSD; the most common ones being xerosis, hand dermatitis, pruritus, brittle nail syndrome and callus. The median DLQI was found to be 4 which falls into the category of 'small effect on patient's life'. The results show that nearly half of the nurses participated into our study are influenced by at least one OSD. Even though no statistically significant association was detected between the number of years working as a nurse and DLQI score; the duration during which the participants worked as a nurse seemed to be significantly correlated with developing at least one OSD.

Work-related skin diseases seem to be a common, emerging problem among healthcare workers.ACD andICD are the most prevalent OSD [5]. Nurses who are exposed to various allergens such as rubber glove chemicals and hand cleansers due to intense, prolonged working hours, are prone to develop numerous OSD [2]. In a study by Kieć-Swierczyńska and Krecisz [6], the prevalence of contact allergy was reported to be 66.4%, whereas another research from a USA hospital showed that55% of

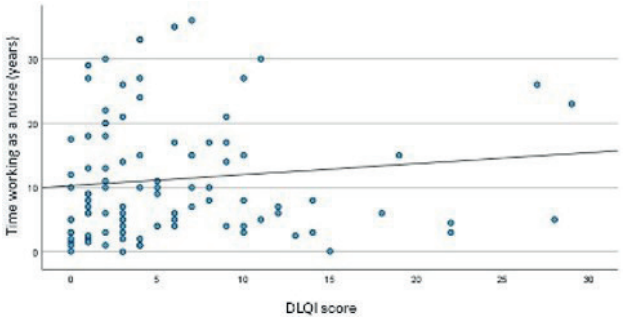

Figure 3. Scatter plotof nursing time (years) vs. DLQI score

the nurses had symptoms of hand dermatitis with a prevalence of 65% among the nurses who worked in ICU and a prevalence of 50% among non-ICU nurses [7]. Rubber glove chemicals, antiseptics and preservatives are the most commonly blamed substances in the etiopathogenesis of ACD in health care workers [2]. On the other hand, occupational ICD is linked to the irritating effects of wet, sweat, heat and hand sanitizers [2]. In our study, the prevalence of hand dermatitis was 43.5% and accompanied xerosis was found in 74.8% of the participants. No significant correlation was found betweenthe type of hospital unit worked and the presence of any OSD.

Another study from Poland by Kurpiewska et al. [8] showed that inflammatory OSD associated with xerosis and erythema seem to affect 80% of the cases. In this study, other professions such as hair stylists, cleaners, food service and textile workers were also included; the most prevalent OSD was found to be ICD and ACD [8]. Among these high risk occupations, healthcare professionals had the biggest exposure and latex gloves were blamed in 60% of hand dermatitis cases for midwives and 20% for hospital personnel [8]. Our current investigation showed a higher frequency (43.5%) for hand dermatitis in the nurse staff. These findings underline again the fact that hand dermatitis is a significant, ever-increasing OSD commonly seen in healthcare professionals.

In a different study from Taiwan, nursing staff was evaluated for the existence of hand eczema via a validated questionnaire, interestingly only 22% of the participants reported to have the clinical symptoms of hand eczema [9]. Working as a nurse for >10 years and being in charge of a special

care unit were significantly correlated with the development of hand dermatitis [9]. Similarly, the results of our current study revealed that longer nursing duration in years was associated with an increased risk of developing an OSD. We believe that longer exposure time to various allergens such as latex hand gloves, disinfectants and preservatives might have caused sensitization to these allergens thereby leading emergence of new-onset OSD. Similar to the findings of the study by Lan et al.[9] a self-reported survey showed a prevalence of20% for hand eczema among 1322 nurses worked in three different hospitals in China [10]. In this study the occurrence of hand eczema wasn't found to be significantly related to the gender and workplace which supports the results of our current investigation since we weren't able to find any correlation between the gender, the kind of hospital unit worked and the presence of any OSD.

DLQI is a basic, practical 10-item questionnaire which is developed to measure the psychological effects of different dermatological diseases on the patients [4]. In a recent study by Omrane et al. [11] it was shown that occupational dermatitis (OD) was most prevalently seen in nurses among all healthcare workers. In this study, a total of 37 OD cases were defined and the most prevalent OD was ACD [11]. The median DLQI was found to be 5 and about 1/3 of the affected subjects had an impaired DLQI [11]. In the current study, the median DLQI score was 4 and 76% of the participants had a score of ≥2, which means that the particular disease has an impact on the life quality of the patient [4,12].

Facial mask-induced acne seems to be an emerging problem among healthcare personnel and has drawn attention with the start of COVID-19 outbreak. In a study from Pakistan by Yaqoob et al. [13] during COVID-19 outbreak, acne was observed in 53.4% of the participants with female predominanceand development of facial acne was significantly correlated with the use of N-95 masks. Another recent study from Türkiye, which investigated the skin problems of COVID-19 ICU nursesrelated to the use ofPPE during COVID-19, showed that 90.24 % of the subjects were influenced by at least one skin disease induced by PPE [14]. The relevant skin problems included acne, contact urticaria, pressure sores and contact dermatitis [14]. In the current investigation, mask-induced or mask-exacerbated acne was found in only 23 (10%) participants, we believe that due to the decreased frequency of mask use in hospitals after COVID-19, facial acne cases might have declined in number.

Since the present study has a small sample size, further studies with larger sample sizes are needed to confirm our findings.

CONCLUSION

The present study shows that a significant proportion of nurse staff is affected by OSD and the extendednursing duration seems to be associated with higher risk of OSD development.

Author contribution

Study conception and design: EB; data collection: EB, HNB; draft manuscript preparation: EB, HNB. All authors reviewed the results and approved the final version of the manuscript.

Ethical approval

The study was approved by the Karatay University Non-Interventional Studies Ethics Committee (Protocol no. 2024/018, May 9 2024).

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Conflict of interest

The authors declare that there is no conflict of interest.

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