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ZASTUPLJENOST KONTAKTNOG DERMATITISA KOD FRIZERA U BEOGRADU I NJEGOV UTICAJ NA KVALITET ŽIVOTA
THE PREVALENCE OF CONTACT DERMATITIS AMONG HAIRDRESSERS IN BELGRADE AND ITS IMPACT ON QUALITY OF LIFE

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Sažetak

Uvod. *Kontaktni dermatitis predstavlja jedno od najčešćih profesionalnih oboljenja, a upravo su frizeri među najčešće obolelim. Atopijska konstitucija i profesionalna izloženost iritansima smatraju se najznačajnijim faktorima rizika. Fizički, psihički i funkcionalni aspekt života mogu biti narušeni do te mere da oboleli napuste svoj posao.* ***Cilj rada.*** *Cilj rada je ispitati zastupljenost kontaktnog dermatitisa kod frizera koji rade u frizerskim salonima u Beogradu i uticaj na njihov kvalitet života.* ***Materijal i metode.*** *Istraživanjem po tipu studije preseka obuhvaćeno je 268 frizera. Korišćen je namenski kreiran upitnik od 50 pitanja. Za ispitivanje uticaja na kvalitet života korišćen je standardizovani DLQI upitnik (Dermatology Life Quality Index).* ***Rezultati.*** *Zastupljenost kontaktnog dermatitisa kod frizera je iznosila 14,92%, sa umerenim uticajem na kvalitet života. Psihički stres je označen kao faktor koji u najvećoj meri pogoršava simptome bolesti (35%). Od agenasa koji najviše pogoršavaju promene izdvojen je šampon (67,5%). Najčešći klinički simptom bila je kseroza kože (85%), pruritus i eritem. Značajne statističke korelacije između demografskih karakteristika sa učestalošću simptoma, faktora i agenasa koji pogoršavaju promene nije bilo. Prosečan DLQI skor je bio 6,7 ± 2,18 što odgovara umerenom uticaju bolesti na kvalitet života pacijenta.* ***Zaključak.*** *Kontaktni dermatitis je u značajnoj meri zastupljen među frizerima sa umerenim uticajem na kvalitet života. Potrebna su dalja ispitivanja zastupljenosti kontaktnog dermatitisa u različitim profesijama i identifikacija uzročnih faktora, čija bi eliminacija doprinela smanjenju prevalencije i uticaja bolesti na sve aspekte života.*
Ključne reči: *kontaktni dermatiris; profesionalna izloženost; faktori rizika; ekcem; kvalitet života; kozmetika; šamponi; psihološki stres; znaci i simptomi; ankete i upitnici*

Abstract

Introduction. Contact dermatitis is one of the most prevalent occupational skin diseases, particularly among hairdressers. An atopic constitution and professional exposure to irritants are the primary risk factors. This condition can severely disrupt physical, psychological, and functional aspects of life, potentially leading affected individuals to abandon their profession. **Objective**. This study aims to examine the prevalence of contact dermatitis among hairdressers in Belgrade and assess its impact on their quality of life. **Material and Methods**. A cross-sectional study was conducted with 268 hairdressers participating. Data were collected using a specially designed 50-question survey and the Dermatology Life Quality Index (DLQI) questionnaire to evaluate the impact on quality of life. **Results**. The prevalence of contact dermatitis among hairdressers was 14.92%, with a moderate impact on quality of life. Psychological stress was the most significant exacerbating factor (35%), while shampoo was the most common irritant (67.5%). The most frequent clinical symptom was skin dryness (85%), followed by pruritus and erythema. No significant statistical correlations were found between demographic characteristics and the frequency of symptoms, exacerbating factors, or agents. The average DLQI score was 6.7±2.18 indicating a moderate impact on the patients' quality of life. **Conclusion**. Contact dermatitis is notably prevalent among hairdressers, with a moderate impact on their quality of life. Further research is needed to evaluate the prevalence of contact dermatitis across various professions and to identify and mitigate causal factors, thereby reducing the disease's overall prevalence and impact on life quality.
Key words: Dermatitis, Contact; Occupational Exposure; Risk Factors; Eczema; Quality of Life; Cosmetics; Hair Preparations; Stress, Psychological; Signs and Symptoms; Surveys and Questionnaires

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Uvod

Kontaktni dermatitis (CD) je akutna ili hronična neinfektivna inflamatorna dermatoza čije su dve glavne forme iritativni (ICD) i alergijski kontaktni dermatitis (ACD). Glavni patogenetski mehanizmi su oštećenje barijere kože, što olakšava prodor iritanasa i pokretanje imunološke reakcije IV tipa preosetljivosti [1]. Prema Centru za kontrolu i prevenciju bolesti (CDC) kontaktni dermatitis čini 90–95% svih profesionalnih oboljenja kože [2]. U najvećem riziku od razvoja bolesti su osobe izložene toksičnim agensima, kao što su sapuni i deterdženti, kiseline i baze, industrijski rastvarači, biljni i životinjski enzimi. Najčešće oboleli su upravo frizeri, kozmetičari, medicinski, zubni i veterinarski radnici, mehaničari, higijeničari, cvećari i kuvari. Aktivnosti u kojima su ruke u vodi više od dva sata ili podrazumevaju više od 20 pranja ruku (wet work), kao i nošenje okluzivnih rukavica smatraju se najznačajnijim faktorima rizika za razvoj CD-a [3]. Dužina rada u vodi (wet work) kod frizera se u proseku kreće između dva i četiri sata dnevno [4, 5]. Pored toga, frizeri su izloženi brojnim hemijskim sredstvima – šamponima, rastvorima za izbeljivanje, farbama za kosu, u kojima su najzastupljeniji alergeni parafenilendiamin, metilizotiazolinon i formaldehid (šamponi za kosu sadrže konzervanse koji oslobađaju formaldehid) [6–9].

Kontaktni dermatitis je najčešći uzrok hroničnog pruritusa šaka koji traje duže od šest nedelja, a dokazano je da je uticaj hroničnog pruritusa na kvalitet života jednak uticaju hroničnog bola [10, 11]. Osobe sa CD često pate od poremećaja raspoloženja i sna, teškoća u obavljanju svakodnevnih aktivnosti i hobija, čak u više od 80% slučajeva [12, 13]. Posledice bolesti se odražavaju i na globalnom socioekonomskom nivou (produženo bolovanje, visoki troškovi lečenja, napuštanje ili promena posla, smanjena radna sposobnost).

Materijal i metode

Istraživanje je po tipu studije preseka, sprovedeno u periodu od mesec dana u frizerskim salonima u Beogradu. Istraživanjem je obuhvaćeno 268 frizera sa teritorije grada Beograda. Korišćen je namenski kreiran upitnik sa pitanjima pretežno zatvo-

Introduction

Contact dermatitis (CD) is an acute or chronic non-infectious inflammatory reaction to substances that come into contact with the skin. CD manifests in two primary forms: irritant contact dermatitis (ICD) and allergic contact dermatitis (ACD). In ICD, the main pathogenic mechanism involves the disruption of the skin barrier, which allows irritants to penetrate and cause inflammation. Conversely, ACD is driven by an immune reaction through type IV (delayed, cell-mediated) hypersensitivity [1]. According to the Center for Disease Control (CDC), contact dermatitis accounts for 90–95% of occupational skin diseases [2]. Individuals most at risk are those exposed to irritant (toxic) agents such as soaps, detergents, acids, bases, industrial solvents, and plant and animal enzymes [3]. Occupations involving frequent contact with these substances and prolonged exposure to water, including more than 20 hand washings per shift ("wet work"), include hairdressers, cosmetologists, medical, dental, and veterinary workers, mechanics, hygienists, florists, and cooks [3]. Among hairdressers, direct observation has measured the duration of "wet work" to range between two and four hours daily [4, 5]. Hairdressers are particularly susceptible to skin changes due to daily exposure to various hair chemicals, with paraphenylenediamine (found in hair dye), methylisothiazolinone, and formaldehyde (released from preservatives in hair shampoos) being the most prevalent irritants [6–9].

Contact dermatitis is the leading cause of chronic hand itching persisting for more than six weeks. The impact of chronic pruritus on quality of life is comparable to that of chronic pain [10, 11]. Over 80% of individuals with CD experience significant psychosocial disturbances, including mood and sleep disorders, difficulties in performing daily activities, and the cessation of hobbies [12, 13].

Material and Methods

The research was conducted as a cross-sectional study over one month in various hair salons across Belgrade, involving 268 hairdressers. Data collection

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renog tipa. Pre distribucije upitnika ispitanicima je predočena anonimnost i dobrovoljnost pri učešću. Upitnik sadrži 50 pitanja o demografskim karakteristikama, životnim navikama, podacima u vezi sa kliničkim manifestacijama i tokom bolesti, ličnim i porodičnim bolestima, izloženosti iritansima pri obavljanju poslova u frizerskom salonu i kod kuće, preduzetim merama zaštite i lečenju ekcema. Pored namenski kreiranog upitnika korišćen je i DLQI upitnik.

Za statističku obradu podataka korišćen je SPSS verzija 21. Rezultati su dobijeni korišćenjem neparametarskih testova: Hi kvadrat test, Man-Vitnijev test. Povezanost između varijabli je izražena Spirmanovim koeficijentom korelacije.

Rezultati

Na osnovu anamnestičkih podataka dobijenih u usmenom razgovoru, uvida u postojeću medicinsku dokumentaciju i kliničkog pregleda postavljena je dijagnoza CD-a kod 40 od ispitanih 268 frizera što odgovara procentualnoj zastupljenosti CD-a od 14,92%. Demografske karakteristike ispitanika su prikazane u ***Tabeli 1****. Značajne statističke korelacije između demografskih karakteristika sa učestalošću simptoma, faktora i agenasa koji pogoršavaju promene nije bilo.*

Kontaktni dermatitis se ni kod jednog ispitanika nije javio pre zaposlenja. Prosečan uzrast javljanja CD-a iznosio je 25,4 ± 6,25 godina. Spirmanovim koeficijentom korelacije pokazano je da nema statistički značajne korelacije između dužine radnog staža i intenziteta simptoma, odnosno oni koji imaju duži radni staž nisu imali izraženije simptome.

was performed using a specifically designed questionnaire predominantly consisting of closed-ended questions. Participants were briefed on the anonymity and voluntary nature of the study before completing the questionnaire. The questionnaire comprised 50 questions covering various aspects, including demographic characteristics, lifestyle habits, clinical manifestations and disease progression, personal and family medical history, exposure to irritants both at work and at home, protective measures, and eczema treatment. Additionally, the DLQI questionnaire was utilized to assess the impact on participants' quality of life.

For data analysis, SPSS version 21 was employed. Results were obtained using non-parametric tests, specifically the Chi-square test and Mann-Whitney test. The associations between variables were expressed using the Spearman correlation coefficient.

Results

Based on anamnestic data obtained through oral interviews, review of pre-existing medical documentation, and clinical examination, a diagnosis of contact dermatitis (CD) was established in 40 out of the 268 surveyed hairdressers, corresponding to a prevalence of 14.92%.

The demographic characteristics of the participants are presented in **Table 1.** There were no significant statistical correlations between demographic characteristics and the frequency of symptoms, factors, and agents exacerbating changes.

None of the participants experienced contact dermatitis before employment.

Tabela 1. *Demografske karakteristike ispitanika*
Table 1. Demographic characteristics

Prosečna starost ispitanika (u godinama)/Age (in years)	33,7 ± 8,3
Ženski pol (n, %)/Females (n, %)	30 (75%)
Muški pol (n, %)/Males (n, %)	10 (25%)
Prosečna dužina radnog staža (u godinama)/Average length of employment (in years)	15,7 ± 7,6
Pušači (n, %)/*Smokers (n,%)*/Smokers (n, %)	35 (87,5%)
Konzumenti alkohola (n, %)/Alcohol consumers (n, %)	34 (85%)
Prosečan uzrast pri prvoj pojavi ekcema (u godinama)/Average age at firs onset of eczema (in years)	25,4 ± 6,25

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Tabela 2. *Pridružene atopijske manifestacije kod ispitanika*
Table 2. Prevalence of allergic manifestations among participants

Alergija na nakit/metal (n, %)/ Jewelry/Metal allergy (n, %)	19 (47,5%)
Alergija na hranu (n, %)/Food allergy (n, %)	7 (17,5%)
Bronhijalna astma (n, %)/Asthma (n, %)	7 (17,5%)
Atopijski dermatitis (n, %)/Atopic dermatitis (n, %)	6 (15%)
Alergijski rinitis (n, %)/Allergic rhinitis (n, %)	5 (12,5%)
Alergija na lek (n, %)/Drug allergy (n, %)	5 (12,5%)

Tabela 3. *Faktori koji dovode do agravacije kutanih promena*
Table 3. Factors aggravating symptoms and skin changes

Psihički stres (n, %)/Psychological stress (n, %)	14 (35%)
Hladnoća (n, %)/Cold (n, %)	13 (32,5%)
Rukavice (n, %)/Gloves (n, %)	9 (22,5%)
Trauma (n, %)/Trauma (n, %)	9 (22,5%)
Menstruacija (n, %)/Menstruation (n, %)	4 (10%)
Znoj (n, %)/Sweat (n, %)	2 (5%)
Hrana (n, %)/Food (n, %)	1 (2,5%)

*U najvećem broju slučajeva (85%), CD se od trenutka pojave do trenutka ispitivanja nije komplikovao bakterijskom ili gljivičnom infekcijom, niti je bilo diseminacije promena na druge delove tela (97,5%). Iako su ispitanici pretežno bili dobrog opšteg stanja, primećena je zastupljenost atopijske konstitucije i drugih alergijskih manifestacija (**Tabela 2**).*

Kod jedne četvrtine do jedne trećine ispitanika bila je pozitivna porodična anamneza i to za astmu, alergijski rinitis, atopijski dermatitis, alergiju na hranu i alergiju na nakit.

Ispitanici uglavnom nisu imali druga dermatološka oboljenja (60%), a od onih koji jesu, to su najčešće bili seboroični dermatitis, akne, vitiligo i psorijaza.

*Faktori koji su uticali na agravaciju akutnih promena prikazani su u **Tabeli 3**. Agensi koji su uticali na pogoršanje promena su prikazani u **Tabeli 4**. Najzastupljeniji simptomi i znaci bolesti su prikazani u **Tabeli 5**. Dužina izloženosti vodi je kod većine frizera bila veća od dva sata, jer tokom posla najčešće pružaju usluge pranja i feniranja kose, zatim farbanja i šatiranja.*

Kontantni dermatitis je u značajnoj meri otežavao bavljenje poslom (72,5%), ali na pitanje da li bi zbog toga napustili

The average age of onset for CD was 25.4±6.25 years. Spearman's correlation coefficient showed no statistically significant correlation between the length of employment and symptom intensity, indicating that those with longer work experience did not have more pronounced symptoms.

In the majority of cases (85%), CD was not complicated by bacterial or fungal superinfection, nor was there dissemination of changes to other parts of the body (97.5%). Although most participants were in good general health, the presence of atopic constitution and other allergic manifestations was observed **(Table 2)**.

A positive family history was present in 25-33% of the participants, mainly for asthma, allergic rhinitis, atopic dermatitis, and allergies to food and jewelry.

Most patients did not have any other dermatological diseases (60%). Among those who did, the most common were seborrheic dermatitis, acne, vitiligo, and psoriasis.

Factors aggravating skin changes are shown in **Table 3**, while agents exacerbating symptoms are presented in **Table 4**. The most prevalent symptoms and signs of the disease are shown in **Table 5**. The duration of water exposure exceeded two hours for

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Tabela 4. *Agensi koji dovode do agravacije kutanih promena*
Table 4. Agents aggravating symptoms and skin changes

Šampon (n, %)/Shampoo (n, %)	27 (67,5%)
Sredstva za izbeljivanje (n, %)/Bleaching agents (n, %)	23 (57,5%)
Farba za kosu (n, %)/Hair dye (n, %)	21 (52,5%)
Voda (n, %)/Water (n, %)	18 (45%)
Rastvori za mini val (n, %)/Perming solutions (n, %)	10 (25%)
Deterdženti (n, %)/Detergents (n, %)	7 (17,5%)
Sapuni (n, %)/Soaps (n, %)	6 (15%)
Pene (n, %)/Foams (n, %)	4 (10%)
Uljani proizvodi (n, %)/Oily products (n, %)	0 (0%)
Gelovi (n, %)/Gels (n, %)	0 (0%)

Tabela 5. *Najzastupljeniji simptomi i znaci bolesti*
Table 5. Prevalence of symptoms among participants

Kseroza kože (n, %)/Skin dryness (n, %)	34 (85%)
Pruritus (n, %)/Pruritus (n, %)	32 (80%)
Eritem (n, %)/Erythema (n, %)	31 (77,5%)
Ragade (n, %)/Fissures (n, %)	29 (72,5%)
Krvarenje (n, %)/Skin bleeding (n, %)	26 (65%)

posao većina obolelih je odgovorila negativno (80%).

Na osnovu DLQI upitnika kontaktni dermatitis je kod najvećeg broja ispitanika u maloj meri prouzrokovao pruritus, zatezanje, bol, peckanje, osećaj zbunjenosti i upadljivosti, uticao na društvene ili slobodne aktivnosti i oduzimao vreme ili stvarao nered u kući zbog lečenja. Najčešće su naveli da im je CD u maloj meri ometao posao ili učenje. Prosečan DLQI skor je bio 6,7 ± 2,18 od 30 što odgovara umerenom uticaju bolesti na kvalitet života obolelih.

Diskusija

Ekcem šaka kod frizera je dobro poznat problem sa mnogo većom prevalencijom u odnosu na opštu populaciju. Više je razloga za to. Pre svega profesionalna izloženost dugotrajnom radu sa vodom, iritansima i alergenima, što remeti prirodnu lipidnu barijeru, uzrokuje suvoću i pucanje kože. U studiji o prediktivnim faktorima za ekcem šaka, profesionalna izloženost je bila na visokom, trećem mestu [14]. U razvijenim zemljama kao što je Velika Brita-

most hairdressers, as their work primarily involves tasks such as hair washing, blow-drying, coloring, and highlighting.

Contact dermatitis significantly interfered with job performances for a considerable proportion (72.5%), but most affected individuals (80%) responded negatively when asked if they would leave their job because of it.

Based on the DLQI questionnaire, contact dermatitis caused pruritus, tightness, pain, burning sensation, feelings of embarrassment, and affected social or leisure activities. It also consumed time or created disorder at home due to treatment, but only to a small extent in most respondents. Most hairdressers reported that eczema slightly interfered with their work or studies. The average DLQI score was 6.7±2.18 out of 30, indicating moderate impact of the disease on their life quality.

Discussion

Hand eczema among hairdressers is a well-documented issue with a much higher prevalence compared to the general popu-

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nija u periodu 2008–2017. godina, profesija frizera je bila druga najčešće pogođena ekcemom [15]. Kao najvažniji prediktivni faktori za pojavu CD-a označeni su atopijski dermatitis, ženski pol, astma i alergija na polen [14]. Istraživanje je sprovedeno na trenutno radno sposobnim frizerima, pa je prevalencija verovatno još veća među onima koji su napustili struku.

U prospektivnim kohortnim studijama je uočeno da se stopa novih slučajeva sa vremenom smanjuje, te da su prva radna godina, a posebno prvih nekoliko meseci periodi visokog rizika za ispoljavanje oboljenja [16].

Kao najčešći pogoršavajući faktor označena je izloženost vodi (wet work) [17], dok je za naše ispitanike to bio šampon. Dokazano, šamponi sadrže veliki broj alergena, od kojih su najčešći kokamidopropil betain, metilhloroizotiazolinon/metilizotiazolinon, supstance koje oslobađaju formaldehid, propilen glikol, vitamin E, parabene, benzofenon [18]. Trenutno nema zlatnog standarda za procenu dužine wet work-a. Bez obzira na etiologiju ekcema potrebno je da identifikujemo pogoršavajuće faktore kako bismo obolelima dali dobar savet o njihovom izbegavanju. Iz istog razloga, potrebno je da svi sastojci kozmetičkih proizvoda budu jasno navedeni na etiketama proizvoda.

Studije rađene na mladim budućim frizerima ukazuju da je rizik od ekcema trostruko veći kod osoba sa atopijskim dermatitisom [19]. Eksperimentalne studije su ubedljivo dokazale da koža osoba sa atopijskim dermatitisom pokazuje veći transepidermalni gubitak vode i veću penetraciju i apsorpciju iritanasa i alergena u poređenju sa zdravom kožom [20, 21]. Povećana podložnost kožnim iritansima je uočena i kod osoba sa kserozom kože [22]. Sve ovo ukazuje na značaj savetovanja pri izboru karijere kod mladih ljudi sa atopijskim dermatitisom i željom da postanu frizeri. Oni bi trebalo da izbegavaju profesije sa prolongiranim izlaganjem ruku vodi, iritansima i alergenima. Međutim, medicinske razloge za promenu zanimanja bi trebalo pažljivo proceniti iz psihosocijalnih razloga [23].

Nemačka profesorka Mahler ističe i značaj genetskih etioloških faktora, posebno mutaciju gena za filagrin (FLG) koji doprinosi mehaničkoj snazi kožne barijere i

lation. This can be attributed to several reasons. Firstly, hairdressers are professionally exposed to water, irritants, and allergens from products used in their daily work, which strip natural lipids from the skin, causing dryness and cracking. A large study on predictive factors for hand eczema ranked occupational exposure as a significant factor, placing it third overall [14]. In developed countries like the UK, from 2008 to 2017, the hairdressers were the second most common profession affected by eczema [15]. Moreover, childhood eczema, female gender, occupational exposure, asthma, and pollen allergy are noted as key predictive factors for the onset of eczema [14], aligning with our findings. Since our study included currently working hairdressers, it is likely that the prevalence is even higher among those who have left the profession.

Prospective cohort studies have shown that first few months of employment represent a high-risk period for the manifestation of the disease [16]. Many studies identify exposure to water ("wet work") as the most crucial exacerbating factor [17], although for our respondents, it was shampoo. Shampoos contain numerous allergens, such as cocamidopropyl betaine, methylchloroisothiazolinone, methylisothiazolinone, formaldehyde releasers, propylene glycol, vitamin E, parabens, and benzophenones [18]. Currently, there is no gold standard for assessing the duration of "wet work". Regardless of the eczema's etiology, identifying exacerbating factors is crucial to provide patients with advice on avoiding them. Consequently, all cosmetic product ingredients should be clearly listed on product labels.

Studies on young hairdressers indicate that the risk of eczema is three times higher in individuals with atopic dermatitis [19]. Experimental studies have demonstrated that the skin of individuals with atopic dermatitis exhibits higher transepidermal water loss and greater penetration and absorption of irritants and allergens compared to healthy skin [20, 21]. Increased susceptibility to skin irritants is also observed in individuals with dry skin [22]. This strong association underscores the importance of career counseling for young people with atopic dermatitis who aspire to become hairdressers. They should avoid professi-

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predstavlja polaznu tačku za produkciju prirodnog hidrirajućeg faktora (natural moisturising factor – NMF) [24]. Takođe, Mahler navodi i značaj ove mutacije u patogenezi alergije na nikl, koja je i bila prisutna kod nešto više od trećine naših ispitanika, a objašnjava se povećanom penetracijom nikla usled nedostatka metabolita filagrina – ostataka histidina koji formiraju helate nikla.

Većina naših ispitanika su bili pušači, a pušenje može biti povezano sa pojavom ekcema, iako trenutni podaci nisu potpuno usaglašeni. Dve od pet studija o ozbiljnosti bolesti uočile su pozitivnu povezanost između pušenja i ozbiljnosti dermatitisa, dok ni u jednoj nije uočen protektivni efekat pušenja [25].

Sve ovo ukazuje da je etiologija ekcema multifaktorska i da su egzogeni faktori (izlaganje alergenu i iritansima), kao i endogeni u smislu oštećenja kožne barijere (dijateza atopijske kože) etiološki značajni.

Postoje brojni standardizovani instrumenti za procenu ozbiljnosti dermatitisa i njegovog uticaja na kvalitet života. U našem istraživanju je korišćen DLQI (Dermatologic Quality of Life Index) sa deset pitanja o uticaju ekcema na psihički, fizički i funkcionalni aspekt života. U samoproceni ozbiljnosti ekcema pacijenti na vizuelno analognoj skali značajno češće ocenjuju svoju bolest kao ozbiljnu u poređenju sa procenom lekara [26].

Kvalitet života može biti vidno narušen pojavom bolesti. Pored modifikacije svakodnevnog života – otežanog obavljanja kućnih poslova, izbegavanja hobija i sporta, osećaja upadljivosti i zbunjenosti, te povlačenja u sebe i izbegavanja društvenih aktivnosti, što je pokazano i kod naših ispitanika; ekcem nesumnjivo utiče i na karijeru, čak do te mere da oboleli moraju napustiti posao. O tome svedoči i nedavno sprovedena studija u Danskoj koja je pokazala da frizeri rade prosečno samo 8,4 godina pre napuštanja posla, a ekcem šaka značajno utiče na odluku o promeni karijere [27]. Procena kvaliteta života bi trebalo da bude važan parametar za praćenje ozbiljnosti i toka bolesti.

Zaključak

Profesionalna izloženost ruku vodi i iritansima može imati ozbiljne i štetne po-

ons with prolonged exposure to water, irritants, and allergens. However, any medical advice to change careers should be carefully considered for social reasons [23].

German professor Mahler emphasizes the importance of genetic etiological factors, independent of atopic diathesis. He highlights a strong association with a mutation in the filaggrin gene (FLG), which plays a crucial role in the terminal differentiation of keratinocytes, contributing to the mechanical strength of the skin barrier and the production of the natural moisturizing factor (NMF) [24]. Mahler also notes this mutation's significance in the pathogenesis of nickel allergy, which was present in over a third of our respondents. This can be explained by increased nickel penetration due to a lack of filaggrin metabolites, specifically histidine residues that form nickel chelates.

Most of our respondents were smokers, and while smoking may be associated with the onset of eczema, current data are inconsistent. Two out of five severity studies have found a positive correlation between smoking and dermatitis severity, whereas none have identified a protective effect of smoking [25]. This suggests that the eczema's etiology is multifactorial, involving both exogenous factors (exposure to allergens and irritants) and endogenous factors related to skin barrier damage (atopic skin diathesis).

Numerous standardized instruments exist for assessing the severity of dermatitis and its impact on quality of life. In our study, we used the DLQI. Patients often rate their eczema severity as higher than physicians do [26]. Eczema can significantly impair quality of life, affecting daily activities, hobbies, sports, self-consciousness, social interactions, and career decisions. A recent study in Denmark found that hairdressers work an average of only 8.4 years before leaving their jobs, with hand eczema significantly influencing their decision to change careers [27]. Therefore, assessing quality of life should be a vital parameter for monitoring disease progression.

Conclusion

Professional exposure to irritants can have serious consequences, including nu-

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sledice po zdravlje, sa brojnim komplikacijama. Trebalo bi sprovesti dalja ispitivanja uticaja iritanasa i alergena na razvoj CD-a kod različitih profesija, što bi moglo da obezbedi osnovu za napredak u prevenciji, dijagnostici, lečenju osoba sa ekcemom. Time bismo mogli prilagoditi terapiju lečenjem uzroka, a ne samo simptoma inflamacije. Osobe sa CD-om bi trebalo podvrgnuti pač (patch) testiranju radi identifikovanja eventualnih uzročnih alergena.

Preventivne mere u smislu izbegavanja alergena i iritanasa značajno doprinose rezoluciji promena, što omogućava vraćanje uobičajenim dnevnim aktivnostima i može sprečiti napuštanje posla, odnosno sačuvati pun kvalitet života. Edukacija frizera o značaju mera prevencije – korišćenju zaštitnih rukavica i nezi kože emolijentnim kremama trebalo bi da doprinese smanjenju prevalencije ekcema u ovoj visokorizičnoj populaciji.

merous complications such as contact dermatitis (CD). Further research is essential to identify the impact of irritants and allergens on the development of CD across various professions. This could enhance prevention, diagnostics methods, and treatment of individuals with eczema, allowing for therapies that address the root causes rather than just the symptoms of inflammation. Individuals with CD should undergo patch testing to identify potential causal allergens.

Preventive measures, such as avoiding allergens and irritants, significantly reduce disease symptoms, enabling individuals to maintain normal daily activities and potentially prevent job abandonment, thereby preserving a high quality of life. Educating hairdressers about the importance of preventive measures, such as using protective gloves and emollient creams, should contribute to reducing the prevalence of eczema in this high-risk population.

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