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Comparison of patients' diagnoses in a dermatology outpatient clinic during the COVID-19 pandemic period and pre-pandemic period

Dursun Turkmen[1] | Nihal Altunisik[1] | Irem Mantar[1] | Imge Durmaz[1] | Serpil Sener[1] | Cemil Colak[2]

[1]Department of Dermatology, Medical Faculty, Inonu University, Malatya, Turkey

[2]Department of Biostatistics and Medical Informatics, Medical Faculty, Inonu University, Malatya, Turkey

Correspondence
Dursun Turkmen, Elazığ Yolu 15. km., 44280, Battalgazi/Malatya, Turkey.
Email: dursunturkmen44@gmail.com

Abstract

Aim: In this study, we compared the current diagnoses of patients admitted to the dermatology outpatient clinic with the diagnoses during the non-pandemic period, and we examined the effect of COVID-19 on the patient profile.

Methods: Diagnoses were compared by examining the patient files of the 3-month period when the pandemic was influential in our country and the 2-week non-pandemic period corresponding to the same season a year ago. The outpatient diagnoses in the first month and the last month of the 3-month pandemic period were also compared.

Results: During the 3-month pandemic process, the most common reasons for applying to the outpatient clinic were acne, urticaria, psoriasis, and allergic/irritant contact dermatitis. Urticaria, psoriasis, allergic/irritant contact dermatitis, scabies, liken planus, mycosis fungoides, zona zoster, recurrent aphthous stomatitis and polymorph light eruption were statistically more common in the pandemic period. Moreover, acne, other eczematous dermatities, verruca, androgenic alopecia, and melanocytic nevus diagnoses were found to decrease statistically during the pandemic period when compared with the non-pandemic period.

Conclusion: Unlike other studies, the present study evaluated the patient diagnoses during the pandemic period and the period a year before and discussed the possible reasons for the changes in patient profiles.

1 | INTRODUCTION

Cases of pneumonia caused by a newly identified coronavirus appeared on December 31, 2019, in the Wuhan city of China. The World Health Organization (WHO) named the disease 2019 coronavirus disease (COVID-19) in February 2020.[1] COVID-19, which started in China, affected many countries in a short time and rapidly spread globally. The first case in Turkey was seen on March 11, 2020, the day when the WHO declared a pandemic.[2,3] Following the first confirmed case, the government soon took a series of radical measures, including a curfew, to ensure social isolation because of the emergence of new cases in all cities of the country. In this context, face-to-face education was suspended in schools and universities and was replaced by online education. Flexible working hours were established in all public institutions, including hospitals. Common areas such as shopping malls, places of worship, cafes, cinemas, and theatres were closed indefinitely. Domestic and international flights and intercity trips were halted. As of the last week of March and the first week of April, the curfew was imposed on individuals older than 65 and younger than 20 years of age. In some cities, curfews were imposed on all age groups only on weekends and public holidays. The call to "stay home" was repeated to all citizens continuously through

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all media channels. As a result of the "stay home" policy, there has been a decrease in the number of patient demands for dermatology outpatient clinic visits.[4,5]

During the pandemic, some methods have been developed for restricting outpatient treatment services and non-emergency complaints until the epidemic is taken under control.[6] In our institution, which is a tertiary healthcare provider, a flexible working model was applied; the number of outpatient clinics, which is usually three, was decreased to one, and the outpatient clinic patients who were admitted were examined under protective measures such as social distance, mask, etc It was thought that there might be a change in the profiles of patients who visit dermatology outpatient clinics because of curfews, "stay at home" policies, and COVID-19 risk perception. In this study, we compared the diagnoses of current patients admitted to the dermatology outpatient clinic with the diagnoses of patients who were admitted in the same period a year ago, and we examined the effects of COVID-19 on the dermatology patient profile.

What's known

- There are limited numbers of studies examining admission diagnoses to dermatology outpatient clinics during the COVİD-19 pandemic.
- In studies conducted during the COVID-19 pandemic, an increase has been reported in the incidence of diseases such as psoriasis and urticaria.

What's new

- Unlike other studies, our study evaluated the diagnoses of current patients with those admitted in the same season of the previous year, the changes in patient profiles were emphasised, and the possible reasons were discussed.
- Urticaria, psoriasis, allergic/irritant contact dermatitis, scabies, liken planus, mycosis fungoides, zona zoster, recurrent aphthous stomatitis, and polymorph light eruption had a statistical increase in the pandemic period when compared with the non-pandemic period.
- In the comparison of the peak period and non-pandemic period, urticaria, psoriasis, scabies, zona, drug reactions, and ichthyosis diagnoses were found to increase statistically.
- We also compared the diagnoses in the first and third months of the pandemic period. While urticaria was found to be statistically high in the first period, nail dystrophy was found to be high in the third period.

2 | MATERIALS AND METHODS

This study has a cross-sectional design concerning analytic observational studies. The study was carried out by reviewing the files of patients admitted to the dermatology outpatient clinic through the automation system. In order to attain accurate diagnoses, the dermatological examination notes of all patients were reviewed by three dermatologists. The age, gender, and admission diagnosis of all patients were recorded. Outpatient clinic admissions between March 16 and June 15, which is the period when coronavirus restrictions were increased, and outpatient clinic admissions were decreased in Turkey, were established as the pandemic period. Outpatient clinic admissions between April 9 and 22 (10 working days, excluding the weekend and public holidays), which is the period in which the number of coronavirus cases peaked in Turkey, were also recorded. We speculated that the patient profiles might change seasonally, so the outpatient clinic admissions a year before the period in which the number of coronavirus cases peaked (April 9-22, 10 working days) were taken as the control.

The 3-month-long coronavirus pandemic period diagnoses and peak period diagnoses were separately compared statistically with the 2019 diagnoses, which was the control period. The outpatient clinic diagnoses in the first month and last month of the 3-month-long pandemic period were also compared.

2.1 | Data analysis

The minimum sample size required to detect a significant difference between the pandemic and non- pandemic periods was calculated to be at least 473 in each period (946 in total), taking into account type I error (alpha) of 0.05, power (1-beta) of 0.8, an effect size of 0.18 for Urticaria and the two-sided alternative hypothesis (H_1). Data were summarised by median (interquartile range) or number and percentage. The suitability of quantitative data for normal distribution was examined with the Shapiro-Wilk test. In statistical analyses, the Pearson Chi-Square, Mann-Whitney U, and Fisher-exact tests were used in the appropriate situations. Values of $P < .05$ were found statistically important. All the analyses were performed with the IBM SPSS Statistics 26.0 programme.

3 | RESULTS

In a 3-month period between March 16, 2020 and June 15, 2020, 1286 patients were admitted to the İnönü University dermatology outpatient clinic. Of these patients, 142 were admitted between April 9 and 22, which is the period when COVID-19 patient numbers peaked in Turkey. During the 2-week period of the previous year, which corresponds to this year's peak period, the number of admissions to the outpatient clinic was 1403. While 718 (55.8%) of the patients who were admitted during the 3-month coronavirus period were female and 568 (44.2) were male, 884 (63%) of the patients who were admitted in the non-pandemic period a year ago were female, and 519 (37%) were male. Statistically, a significant difference was found in the comparison of pandemic and non-pandemic period

patients in terms of age and gender ($P = .001$, $P < .001$, respectively) (Table 1).

During the 3-month pandemic period, the most common causes of admission to the outpatient clinic were acne, urticaria, psoriasis, and allergic/irritant contact dermatitis. During the non-pandemic period, the most common causes of admission to the outpatient clinic were acne and other eczematous dermatities. Table 2 shows the diagnoses of the patients who were admitted during the 3-month pandemic period, peak period, and the previous year, in order of frequency. Urticaria, psoriasis, allergic/irritant contact dermatitis, scabies, liken planus, mycosis fungoides, zona zoster, recurrent aphthous stomatitis, and polymorph light eruption had a statistical increase in the pandemic period when compared with the non-pandemic period ($P < .001$, $P < .001$, $P = .0074$, $P < .001$, $P = .0129$, $P = .0028$, respectively). Moreover, acne, other eczematous dermatities, verruca, androgenic alopecia, and melanocytic nevus diagnoses were found to decrease statistically in the pandemic period when compared with the non-pandemic period ($P < .001$, $P < .001$, $P = .221$, $P = .0174$, $P = .174$, respectively). In the comparison of the peak period and non-pandemic period, urticaria, psoriasis, scabies, zona, drug reactions, and ichthyosis diagnoses were found to increase statistically ($P = .002$, $P = .0008$, $P = .0004$, $P = .0235$, $P = .051$, $P = .0143$, respectively). Moreover, other eczematous dermatitis diagnoses were found to decrease in the peak period when compared with the non-pandemic period ($P = .163$) (Table 2).

The diagnoses in the first and third months of the pandemic period were also compared. While urticaria was found to be statistically high in the first period ($P = .0426$), nail dystrophy was found to be high in the second period ($P = .0120$), and these are shown in Table 3. Statistically significant p values ($P < .05$) in the tables were shown with bold letters.

4 | DISCUSSION

The present study compares the patient profiles during the 3-month pandemic period in which the COVID-19 pandemic was effective and in which staying home was encouraged, and during the non-pandemic period that corresponds to the same season as the pandemic period a year ago. In our study, in general, the rate of female patients and the average age during the pandemic period were lower than the non-pandemic period. This may be because of female patients being more concerned and more careful about the pandemic, and parents may have been hesitant about taking their children out and going to the hospital.

The percentage of diseases such as urticaria, psoriasis, allergic/irritant contact dermatitis, scabies, liken planus, mycosis fungoides, zona zoster, recurrent aphthous stomatitis, and polymorph light eruption was found to increase during the pandemic period. Moreover, the percentage of diseases such as acne, other eczematous dermatities, verruca, androgenic alopecia, and melanocytic nevus was found to decrease.

In studies conducted during the COVID-19 pandemic, an increase has been reported in the incidence of diseases such as psoriasis and urticaria, and it has been stated that the increase in the adverse effects of the epidemic on the quality of life as well as social anxiety and stress may have caused the increase in these diseases.[4,7-10] The results obtained in our study and the fact that these rates were increased during the period when the pandemic peaked in our country also support this. However, we believe that the decrease in the non-emergency admissions to outpatient clinics during the pandemic period when there were curfews, and the relative increase in admissions to outpatient clinics with diseases such as urticaria and psoriasis, which may cause emergency or stress, may have contributed to these changes. Indeed, the decrease in the non-emergent diagnoses in our study, such as verruca, androgenic alopecia, and melanocytic nevus during the pandemic period also supports our thought.

Consistent with other studies conducted in our country, acne was the most common disease in both the pandemic period and non-pandemic period in the present study.[4,5,11] The reason for this may be the fact that acne is a widespread disease amongst adolescents and young individuals and that a large number of patients receive isotretinoin treatment, which requires continuity. Furthermore, acne is a disease that is mostly seen on the face and which is essential for cosmetic appearance. Acne also has an important psychosocial effect on patients. For these reasons, a significant number of acne patients may have continued their outpatient clinic visits even when the curfews were intense. The majority of our society can directly apply to the tertiary level hospitals without referral within the scope of general health insurance. There is no secondary healthcare facility in our city, and this may have caused a high number of acne patients in both pandemic and non-pandemic periods in our study.

In our study, the percentage of visits related to scabies was found to increase during the COVID-19 pandemic. The incubation period is reported as approximately 2-3 weeks in scabies. Sarcoptes that can

TABLE 1 Age and gender distribution of the pandemic period and control period patients

Variable	Class	Pandemic period (n = 1286)	Non-pandemic period (n = 1403)	*P* values
Sex, n (%)	Female	718 (55.8)	884 (63)	**<.001**[a]
	Male	568 (44.2)	519 (37)	
Age, median (interquartile range)		34 (27)	29 (27)	**.001**[b]

[a]Pearson Chi-Square test.

[b]Mann-Whitney *U* test.

TABLE 2 The diagnoses of the patients in dermatology polyclinics during the pandemic and non-pandemic periods

Diagnoses	Pandemic period (n = 1286)		Non-pandemic period (n = 1403)	P^* values	
	Three months (n = 1286)	Peak period (n = 142)	One year before the peak period	P^1	P^2
Acne	163 (12.7)	19 (13.4)	280 (20)	**<.001**	.0581
Urticaria & angioedema	118 (9.2)	17 (12)	65 (4.6)	**<.001**	**.0002**
Psoriasis	114 (8.9)	17 (12)	72 (5.1)	**.0001**	**.0008**
Allergic/Irritant contact dermatitis	76 (5.9)	9 (6.3)	52 (3.7)	**.0074**	.1292
Other superficial fungal S//N infection	54 (4.2)	6 (4.2)	65 (4.6)	.6138	.8278
Idiopathic generalised pruritus	52 (4)	6 (4.2)	39 (2.8)	.0852	.3459
Scabies	36 (2.8)	5 (3.5)	8 (0.6)	**<.001**	**.0004**
Bacterial skin/mucosa diseases	32 (2.5)	2 (1.4)	39 (2.8)	.6290	.3243
Alopecia areata	28 (2.2)	3 (2.1)	18 (1.3)	.0739	.4352
Hyperpigmentations	26 (2)	3 (2.1)	34 (2.4)	.4809	.8229
Telogen effluvium	25 (1.9)	1 (0.7)	30 (2.1)	.7117	.2529
Seborrheic dermatitis	24 (1.9)	2 (1.4)	30 (2.1)	.7117	.5736
Atopic dermatitis	23 (1.8)	0 (0)	20 (1.4)	.4078	.1560
Xerosis cutis & xerotic eczema	22 (1.7)	4 (2.8)	23 (1.6)	.8388	.2934
Rosacea & associated diseases	22 (1.7)	2 (1.4)	39 (2.8)	.0560	.3243
LP & other lichenoid dermatoses	21 (1.6)	2 (1.4)	9 (0.6)	**.0122**	.3243
Mycosis fungoides	20 (1.6)	0 (0)	10 (0.7)	**.0275**	.3174
Vitiligo & other hypopigmentations	17 (1.3)	0 (0)	25 (1.8)	.2962	.1071
Zona zoster & post-zoster nevralgia	16 (1.2)	3 (2.1)	7 (0.5)	**.0463**	**.0235**
Drug reactions	15 (1.2)	4 (2.8)	9 (0.6)	.0975	**.0051**
Other eczematous dermatitis & cheilitis	12 (0.9)	2 (1.4)	90 (6.4)	**<.001**	**.0163**
Recurrent aphthous stomatitis	12 (0.9)	1 (0.7)	3 (0.2)	**.0129**	.2518
Verruca	13 (1)	2 (1.4)	30 (2.1)	**.0221**	.5736
Nail dystrophies & others	11 (0.9)	1 (0.7)	19 (1.4)	.2267	.6017
Polymorph light eruption	11 (0.9)	0 (0)	1 (0.1)	**.0028**	.7063
Lichen simplex chronicus	10 (0.8)	2 (1.4)	5 (0.4)	.1766	.1047
İnsect bite	10 (0.8)	1 (0.7)	6 (0.4)	.1766	.6017
Pemphigus	9 (0.7)	1 (0.7)	10 (0.7)	1	.9
Idiopathic pruritus ani, scroti, vulva	8 (0.6)	0 (0)	7 (0.5)	.7257	.3985
Androgenic alopecia	8 (0.6)	0 (0)	20 (1.4)	**.0174**	.1560
Behçet's diseases	7 (0.5)	1 (0.7)	9 (0.6)	.7267	.8840
RA, SLE, Scl & associated diseases	7 (0.5)	0 (0)	9 (0.6)	.7267	.3548
Pityriasis versicolor	7 (0.5)	0 (0)	8 (0.6)	.7267	.3548
NIG & granulomatous diseases	7 (0.5)	1 (0.7)	5 (0.4)	.6981	.6017
Melanocytic nevus	7 (0.5)	0 (0)	19 (1.4)	**.0174**	.1560
Pityriasis rosea	6 (0.5)	1 (0.7)	4 (0.3)	.4093	.4332
Herpes simplex infections	6 (0.5)	1 (0.7)	8 (0.6)	.7267	.8840
Ichthyosis	6 (0.5)	2 (1.4)	3 (0.2)	.1842	**.0143**
Follicular occlusion tetrad	6 (0.5)	0 (0)	8 (0.6)	.7267	.3548
Bullous pemphigoid	6 (0.5)	1 (0.7)	2 (0.1)	.0546	.0835

Note: Values are presented as frequency (percentage).

Abbreviations: HSV, herpes simplex virus; LP, lichen planus; P^1, comparison of the whole pandemic period and the control group; P^2, comparison of the pandemic peak period and the control group; RA, rheumatoid arthritis; SLE, systemic lupus erythematosus.

*Fisher-exact test.

TABLE 3 Comparison of patient diagnoses in the first and last months of the COVID-19 pandemic

Diagnosis	Period I (n = 347)	Period II (n = 615)	P^* values
Acne	47 (12.6)	86 (14)	.5419
Urticaria & angioedema	43 (11.5)	47 (7.6)	**.0426**
Psoriasis	35 (9.4)	49 (8)	.4550
Allergic/Irritant contact dermatitis	20 (5.3)	37 (6)	.6544
Other superficial fungal S//N infection	22 (5.9)	20 (3.3)	.0547
Idiopathic generalised pruritus	12 (3.2)	26 (4.2)	.4385
Scabies	7 (1.9)	24 (3.9)	.0897
Bacterial skin/mucosa diseases	9 (2.4)	11 (1.8)	.5251
Alopecia areata	8 (2.1)	14 (2.3)	.8401
Hyperpigmentations	5 (1.3)	15 (2.4)	.2425
Telogen effluvium	5 (1.3)	16 (2.6)	.1802
Seborrheic dermatitis	5 (1.3)	14 (2.3)	.2804
Atopic dermatitis	5 (1.3)	13 (2.1)	.3719
Xerosis cutis & xerotic eczema	6 (1.6)	10 (1.6)	.9
Rosacea & associated diseases	6 (1.6)	14 (2.3)	.4618
LP & other lichenoid dermatoses	9 (2.4)	7 (1.1)	.1194
Mycosis fungoides	8 (2.1)	10 (1.6)	.5735
Vitiligo & other hypopigmentations	3 (0.8)	11 (1.8)	.2113
Zona zoster & post-zoster nevralgia	8 (2.1)	5 (0.8)	.0838
Drug reactions	4 (1.1)	3 (0.5)	.2896
Other eczematous dermatitis & cheilitis	5 (1.3)	5 (0.8)	.4500
Recurrent aphthous stomatitis	2 (0.5)	9 (1.5)	.1607
Verruca	4 (1.1)	7 (1.1)	.9
Nail dystrophies & others	0 (0)	11 (1.8)	**.0120**
Polymorph light eruption	5 (1.3)	4 (0.7)	.3486
Lichen simplex chronicus	2 (0.5)	5 (0.8)	.5900
İnsect bite	4 (1.1)	3 (0.5)	.2896
Pemphigus	4 (1.1)	4 (0.7)	.5152
Idiopathic pruritus ani, scroti, vulva	4 (1.1)	3 (0.5)	.2896
Androgenic alopecia	1 (0.3)	5 (0.8)	.3429
Behçet's diseases	1 (0.3)	3 (0.5)	.6483
RA, SLE, Scl & associated diseases	1 (0.3)	4 (0.7)	.4231
Pityriasis versicolor	1 (0.3)	4 (0.7)	.4231
NIG & granulomatous diseases	2 (0.5)	4 (0.7)	.7062
Melanocytic nevus	2 (0.5)	3 (0.5)	.9
Pityriasis rosea	1 (0.3)	1 (0.2)	.7590
Herpes simplex infections	3 (0.8)	3 (0.5)	.5657
Ichthyosis	2 (0.5)	3 (0.5)	.9
Follicular occlusion tetrad	1 (0.3)	5 (0.8)	.3429
Bullous pemphigoid	0 (0)	5 (0.8)	.0950

Note: Values are presented as frequency (percentage).

Abbreviations: LP, lichen planus; NIG, non-infectious granulomas; Period I, 16 March-15 April; Period II, 16 May-15 June; RA, rheumatoid artritis; S//N, skin//nail; Scl, scleroderma; SLE, systemic lupus erythematosus.

*Fisher-exact test.

live outside the body for 3 days at average room temperature may remain contagious for up to 10 days in hyperkeratotic shells.[12,13] In a study conducted by Cengiz et al in our country, it has been reported as one of the most crucial admission causes of scabies disease.[11] In Kutlu et al's study, it was reported that scabies increased during the pandemic, and the rates of scabies patients applying to the hospital

because of severe itching and insomnia may have increased.[4] In our study, it was also found that the rate of scabies increased in the last month of the pandemic when compared with the first month. This increase also suggests that intrafamilial transmission may have increased because of the homestay. Supporting this hypothesis, in a study conducted in Turkey, Kutlu, and Aktaş stated that scabies patients showed a significant increase two months after the first COVID-19 case. The authors stated that increased intrafamilial contact as a result of the closure of workplaces might have caused this increase.[14]

In our study, the rate of PLE during the pandemic period was found to be significantly higher than the control period. PLE mainly occurs in the northern hemisphere in April, May, so we think that the number of PLE increases is expected regardless of the pandemic. The absence of any PLE during the peak period, which corresponds exactly to the same seasonal period as the control period also supports this idea.

In our research, it was established that the diagnosis of allergic and irritant contact dermatitis was higher during the 3-month pandemic period when compared with the non-pandemic period. In Kutlu et al's study, it was reported that there was a significant increase in contact dermatitis cases, and the possible reason for this increase was cologne, liquid soap, and other irritating hand disinfectants.[4] Preventive factors such as informing the public correctly, decreasing the use of unnecessary disinfectants, minimising the irritant properties of antiseptics, and consistently moisturising the hands will decrease admission because of contact dermatitis. Although the diagnosis of allergic / irritant contact dermatitis was not an urgent complaint, it was found in the third frequency in this study during the pandemic period. Altunisik Toplu et al reported that the use of gloves and especially the use of alcohol-based disinfectants significantly increased hand dryness and hand eczema in their survey of healthcare workers.[15] We assume that a large proportion of the patients involved in our study were healthcare workers and may have contributed to the increase in the diagnosis of allergic/irritant contact dermatitis during the pandemic period.

In another study, we evaluated hair diseases such as telogen effluvium, alopecia areata, and seborrheic dermatitis during the pandemic; we reported that a significant part of the patients did not go to the hospital during the pandemic period and preferred not to receive treatment.[16] The fact that there were no increases in admissions related to these diseases during the pandemic can be interpreted as patients' preferring not to go to the hospital because of concerns about the transmission of COVID-19.

In conclusion, there are limited numbers of studies examining admission diagnoses to dermatology outpatient clinics during the COVİD-19 pandemic. Unlike other studies, our study evaluated the diagnoses of current patients with those admitted in the same season of the previous year, the changes in patient profiles were emphasised, and the possible reasons were discussed. We assume that, during this time, when the pandemic is still ongoing, the data obtained from this study will contribute to the literature.

DISCLOSURE

The authors have declared no conflicts of interest for this article.

ORCID

Dursun Turkmen https://orcid.org/0000-0001-9076-4669
Nihal Altunisik https://orcid.org/0000-0001-6844-1097

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