ORIGINAL ARTICLE

Evaluation of the effects of COVID-19 pandemic on hair diseases through a web-based questionnaire

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Abstract

Aim: Current quarantine conditions are a difficult process for individuals and can worsen the psychological state. Increased psychosocial stress can affect the course of many common "stress-sensitive" skin conditions. This study examined the possible effects of coronavirus disease 2019 (COVID-19) on hair and scalp diseases such as telogen effluvium (TE), alopecia areata (AA), and seborrheic dermatitis (SD) in individuals who had to stay at home for a long time and the patients' methods of dealing with these diseases.

Methods: The study was conducted using an online questionnaire. All the individuals were asked questions about pre- and post-pandemic TE, AA, and SD. Participants with complaints were asked what they did for treatment.

Results: During the pandemic, TE was seen in 27.9% of the participants, AA on the scalp was seen in 2.8%, AA on the face was seen in 2.5%, and SD was seen in 19.9%. Applying to a dermatologist for complaints during the pandemic was lower than before pandemic. TE was higher in women before and during the pandemic.

Conclusion: It was found that the rates of referring to a dermatologist for the complaints before the pandemic varied between 15% and 28% and that these rates decreased significantly during the pandemic (2.5%-12.5%).

KEYWORDS

telogen effluvium, alopecia areata, seborrheic dermatitis, COVID-19, hair diseases

1 | INTRODUCTION

In 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic causing coronavirus disease 2019 (COVID-19) appeared in the Wuhan city of China and spread to the whole world.[1,2] Although COVID-19 appeared late in Turkey, it showed quick progress.[3] A large number of preventive measures were taken in Turkey including the international travel ban, transition to distance education system, social distancing, restrictions for gathering and transportation, and the campaign that encouraged everyone to "stay home."[4] As a result of the "stay home" policy, there has been a decrease in the number of patient requests for visits to the dermatology outpatient clinic.[5]

The hair cycle consists of three stages: anagen, catagen, and telogen. The anagen phase is the growth phase of the hair cycle.

Approximately 85% of hairs are in the anagen phase at a time and this phase lasts between 2 and 6 years. The catagen phase is the transition phase, which occurs when anagenic follicle receives a signal and it ends the growth phase. The catagen phase lasts for 1 to 2 weeks. The telogen phase, which is also known as the resting phase, is the last stage of the hair cycle. This phase lasts 5 to 3 weeks until the anagen phase is restarted.[6,7] Telogen effluvium (TE) is a very common form of hair loss that is characterized by a diffuse hair loss resulting from the hair's entering the telogen phase early. Inducing factors can be listed as systemic diseases, stressful events, drugs, nutritional deficiencies, and major surgery. It occurs 3 months after the event that causes hair loss and it generally restricts itself, it lasts for about 6 months (acute TE). There is also a chronic form of TE in which the period of hair loss exceeds 6 months.[8-10]

Alopecia areata (AA) is a chronic inflammatory disease with sudden hair loss coursing with spontaneous remission and exacerbation.[11,12] There is strong evidence that AA is a tissue-specific autoimmune disease that develops based on genetic predisposition.[13] In several patients, acute or chronic psychoemotional stress may be causing the initiation and/or progress of AA.[14] It is suggested that psychological stress can trigger or exacerbate inflammatory skin diseases through the neuroendocrine system, which is an important connection between the brain and the skin.[15]

Seborrheic dermatitis (SD) is one of the most common skin conditions. It is seen in skin areas rich in sebaceous glands and manifests as red, sharp-edged lesions with greasy looking scales. The scalp is almost inevitably affected. Although the face and the chest are also commonly involved areas, the present study focuses on the seborrheic dermatitis of the scalp together with TE and AA. On the scalp, SD presents as dry, scaly desquamation (dandruff) or erythema and yellow, greasy scaling. Dandruff is a term commonly used for the mild seborrheic dermatitis of the scalp. However, any scalp condition that produces squama can be called dandruff.[16] Current quarantine conditions are a difficult process for most individuals and they can contribute to worsened psychological reactions (emotional exhaustion, anxiety, agitation, and increased anger).[17,18] Increased psychosocial stress can have an impact on the course of many common "stress-sensitive" skin conditions that lead to actual or perceived exacerbation of the disease.[17,19] This is valid especially for TE, which is a disease caused by stressful events.[20,21] The significance of the brain-skin axis has been emphasized continually.[17,21] The relationship between a stressor and any subsequent changes in the hair growth cycle has led to the determination of brain-hair follicle axis. In particular, the release of specific neuropeptides, neurotransmitters, and hormones along this brain-hair follicle axis can promote significant changes in the hair growth cycle by stimulating the transition of anagen hair into the telogen phase. A new psychodermatology sub-field called "Trichopsychodermatology" emphasizes the psychosocial aspects of hair disorders.[22]

This study examined the possible effects of COVID-19 on hair and scalp diseases such as TE, AA, and seborrheic dermatitis (SD) in individuals who had to stay at home for a long time in Turkey and the patients' methods of dealing with these diseases.

2 | MATERIALS AND METHODS

2.1 | Participants and questionnaire

The design of this study is an observational cross-sectional type. The study was carried out by using an online questionnaire. Sociodemographic characteristics of all the individuals who participated in the questionnaire such as age, gender, and occupation were recorded. All the individuals who participated in the study were asked questions about pre- and post-pandemic TE, alopecia areata on the scalp (SAA), alopecia areata on the face (FAA), and scalp seborrheic dermatitis. After they were asked whether they had these complaints, those who answered yes were asked what kind of a treatment they had.

The online survey was carried out based on virtual snowball sampling. Google form was used in the design of this web-based survey. The first dimension of the questionnaire includes demographic features (4 questions), and the second dimension includes skin diseases about pre- and during the pandemic (16 questions). Questions and options of the relevant questionnaire were reviewed by two dermatologists and a biostatistics specialist, and hence possible misunderstanding, grammar, and errors were corrected as far as possible. Ethical approval was obtained by applying to the noninterventional ethics committee of Inonu University for the research protocol of this study.

2.2 | Data analyses

Power analysis revealed a minimum of 527 respondents with a margin of error of 0.05, the confidence level of 98%, and the response distribution of 0.50. In the current study, 563 participants, which was higher than the calculated minimum sample size, were enrolled to increase the reliability of the findings to be drawn from this research.

Qualitative data were given as number and percentage, and quantitative data were summarized as mean ± SD with minimum and maximum values. Pearson chi-square and Yates' corrected chi-square tests with the exact method were employed to compare independent categorical variables. McNemar and chi-squared tests were used to compare dependent categorical variables. Comparisons of the categories of qualitative variables before and during the pandemic were realized by the chi-squared test. A value of $P < .05$ was accepted as statistically significant. All the data analyses were carried out by employing IBM SPSS Statistics (Statistical Package for Social Sciences) for Windows 26.0 software.

3 | RESULTS

Of the 563 individuals who participated in the study, 316 (56.1%) were male, while 247 (43.9%) were female. The average age was found as 33.4 ± 10.5 (min-max=11-65) years. 192 (34.1%) of the participants were students, 114 (20.2%) were healthcare professional, and 133 (23.6%) were officers. 437 (77.6%) of the participants were license or Graduate-PhD (Table 1).

During the pandemic, TE was seen in 27.9% of the patients, SAA was seen in 2.8%, FAA was seen in 2.5%, and SD was seen on the scalp in 19.9%. The presence of the same complaints in the pre-pandemic period was also asked and no significant difference was found when compared with the pandemic process ($P = .223$, $P = .064$, $P = .210$, and $P = .894$, respectively) (Table 2). In the comparison of what kind of treatment the participants received for these complaints before and during the pandemic, it was found that referring to a dermatologist during the pandemic decreased significantly in four disease groups (Table 3). When a comparison was made in terms of genders, it

was found that TE was statistically significantly higher in female patients when compared with male patients before and during the pandemic (P < .001, P < .001, respectively) (Tables 4 and 5).

4 | DISCUSSION

In this study, the incidence of hair diseases in individuals who could not go out in social environments due to the "stay home" policy was examined through a questionnaire and compared with the pre-pandemic period. As far as we could scan, we could not find a study on this during the COVID-19 pandemic. TE and SD were found to increase to some extent during the pandemic, although not statistically significant. Kutlu et al in a study they conducted in our country, they compared the frequency of AA patients in the period of May 2020 and May 2019 and reported that AA patient density was significantly higher in the COVID-19 pandemic period compared to a year ago. With these results, they stated that stress-related autoimmune diseases may increase during the COVID-19 outbreak. [23] In this study, we investigated a short 2-month epidemic process; we detected the incidence of AA on the scalp and face at 2.8% and 2.5%, respectively. The rate of AA development on the scalp and facial area in the pre-pandemic life of our participants in our study was found as 4.4% and 3.6%, respectively. It is stated that 1.7% to 2% of individuals have AA at some point in their lives.[24-26] However, prevalence can vary between 0.1% and 6.9% depending on the population studied.[27] The data obtained in our study are compatible with the literature. The fact that questions about how much of these diseases seen during the pandemic were the continuation of previous situations and how much of these were new cases is a limitation of our study. Besides, another limitation of our study can be considered as the fact that the participants were not examined by a dermatologist and the results were based on the examination and diagnosis of the participants.

In a study conducted in our country, Kutlu et al examined the diagnoses of the patients who applied to the dermatology outpatient clinic before and during the COVID-19 pandemic. They found a statistically significant negative correlation between the number of deaths due to COVID-19 in the country and the number of patients who visited the dermatology polyclinic in secondary and tertiary hospitals.[5] In our study, the individuals' states of applying to dermatology or looking for another treatment were examined. It was found that the rates of applying to a dermatologist for these four disease groups before the pandemic were found to vary between 15% and 28%, while these rates were between 2.5% and 12.5% during the pandemic. Similar to the results of Kutlu et al's study, it was found that almost 80% of the participants did not look for any treatment during the pandemic. Considering the positive developments in the health system of our country in recent years and the fact that a great majority of the society got the opportunity to be treated for free with general health insurance, we think that the rate of referring to a dermatologist was very low especially during the pandemic. Considering these low rates, we think that the "teledermatology" method, which came up recently, can be used in the assessment and follow-up of patients at least in special situations such as a pandemic.

TABLE 1 Demographic characteristics of the respondents

Features	Subgroups	n (%)
Sex	Male	316 (56.1)
	Female	247 (43.9)
Profession	Health employee	114 (20.2)
	Student	192 (34.1)
	Officer	133 (23.6)
	Worker	23 (4.1)
	Artisan	19 (3.4)
	Retired	3 (0.5)
	Inoperative	32 (5.7)
	Other	47 (8.3)
Education status	Primary school	8 (1.4)
	Middle school	11 (2.0)
	High school	51 (9.1)
	License	311 (55.2)
	Graduate-PhD	126 (22.4)

TABLE 2 Hair diseases in the participants before and after COVID-19 pandemic

Disease	Option	Before the pandemic n (%)	Pandemic period n (%)	P[a] value
TE	Yes	144 (25.6)	157 (27.9)	.223
	No	419 (74.4)	406 (72.1)	
SAA	Yes	25 (4.4)	16 (2.8)	.064
	No	538 (95.6)	547 (97.2)	
FAA	Yes	20 (3.6)	14 (2.5)	.210
	No	543 (96.4)	549 (97.5)	
SD	Yes	110 (19.5)	112 (19.9)	.894
	No	453 (80.5)	451 (80.1)	

Abbreviations: FAA, face alopecia areata; SAA, scalp alopecia areata; SD, seborrheic dermatitis; TE, telogen effluvium.
[a]McNemar test.

TABLE 3 The search for treatment for complaints that develop before and during the pandemic

Disease	Treatment method	Before the pandemic, n (%)	Pandemic period, n (%)	P[a] value
TE	Going to a nondermatologist doctor	2 (1.3)	1 (0.6)	.529
	Going to a dermatologist	23 (15.9)	4 (2.5)	**<.001**
	Getting help from a nondoctor[b]	2 (1.3)	6 (3.8)	.174
	Buying products at the pharmacy	16 (11.1)	15 (9.5)	.648
	Stay untreated	97 (67.3)	127 (80.8)	**.007**
	Consult a dermatologist by phone	4 (2.7)	4 (2.5)	–
SAA	Going to a nondermatologist doctor	–	–	–
	Going to a dermatologist	7 (28)	2 (12.5)	.913
	Getting help from a nondoctor[b]	2 (8)	1 (6.2)	.543
	Buying products at the pharmacy	2 (8)	1 (6.2)	.543
	Stay untreated	12 (48)	10 (62.5)	**.011**
	Consult a dermatologist by phone	2 (8)	2 (6.2)	.543
FAA	Going to a nondermatologist doctor	–	–	–
	Going to a dermatologist	3 (15)	1 (7.1)	**.028**
	Getting help from a nondoctor[b]	–	–	–
	Buying products at the pharmacy	2 (10)	–	–
	Stay untreated	15 (75)	13 (92.9)	**<.001**
	Consult a dermatologist by phone	–	–	–
SD	Going to a nondermatologist doctor	–	1 (0.8)	–
	Going to a dermatologist	29 (26.3)	9 (8)	**<.001**
	Getting help from a nondoctor[b]	–	–	–
	Buying products at the pharmacy	20 (18.1)	25 (22.3)	.366
	Stay untreated	61 (55.4)	75 (66.9)	**.041**
	Consult a dermatologist by phone	–	2 (1.7)	–

Note: Bold values are statistically significant values (p <0.05).
Abbreviations: FAA, face alopecia areata; SAA, scalp alopecia areata; SD, seborrheic dermatitis; TE, telogen effluvium.
[a]Chi-squared test.
[b]Hairdresser or cosmetologist.

TABLE 4 Distribution of complaints before pandemic by gender

Disease	Option	Male n (%)	Female n (%)	P value
TE	Yes	55 (17.4)	89 (36)	**<.001**[a]
	No	261 (82.6)	158 (64)	
SAA	Yes	18 (5.7)	7 (2.8)	.153[b]
	No	298 (94.3)	240 (97.2)	
FAA	Yes	12 (3.8)	8 (3.2)	.900[b]
	No	304 (96.2)	239 (96.8)	
SD	Yes	54 (17.1)	56 (22.7)	.097[b]
	No	262 (82.9)	191 (77.3)	

Note: Bold values are statistically significant values (p < 0.05).
Abbreviations: FAA, face alopecia areata; SAA, scalp alopecia areata; SD, seborrheic dermatitis; TE, telogen effluvium.
[a]Pearson's chi-square test.
[b]Yates' corrected chi-square test.

TABLE 5 Distribution of complaints in the pandemic period by gender

Disease	Option	Male n (%)	Female n (%)	P value
TE	Yes	59 (18.7)	98 (39.7)	**<.001**[a]
	No	257 (81.3)	149 (60.3)	
SAA	Yes	11 (3.5)	5 (2)	.437[b]
	No	305 (96.5)	242 (98)	
FAA	Yes	9 (2.8)	5 (2)	.726[b]
	No	307 (97.2)	242 (98)	
SD	Yes	61 (19.3)	51 (20.6)	.692[a]
	No	255 (80.7)	196 (79.4)	

Abbreviations: FAA, face alopecia areata; SAA, scalp alopecia areata; SD, seborrheic dermatitis; TE, telogen effluvium.
[a]Pearson's chi-square test.
[b]Yates' corrected chi-square test.

In their study, Rivetti and Barruscotti conducted face-to-face interviews with TE patients by using video consultation method during real-time COVID-19 pandemic, they confirmed that tele-dermatology method was useful.[8]

In conclusion, the data obtained in our study showed that there were a large number of especially TE patients during the short pandemic process and that a great majority of these patients did not receive treatment to avoid the risk of COVID-19. Considering that TE

increases 3 months after stressful situations, we think that the number of patients will increase gradually in the future and that the tele-dermatology method will become more important.

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