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Healthy lifestyle behaviors and perceived stress in seborrheic dermatitis patients: A case-control study

Seboreik dermatit hastalarında sağlıklı yaşam biçimi davranışları ve algılanan stres: Bir vaka-kontrol çalışması

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ABSTRACT

Aim: This study investigated health-promoting lifestyle behaviors and perceived stress in seborrheic dermatitis (SD) patients compared with healthy controls and examined the associations of these measures with disease severity and duration.

Materials and Methods: One hundred SD patients and 100 healthy controls were enrolled. Participants completed the Health-Promoting Lifestyle Profile II (HPLP II) and the Perceived Stress Scale (PSS). Group comparisons were performed using independent t-tests and chi-square tests, while Spearman correlation analysis evaluated associations among HPLP II scores, SDASI, disease duration, and PSS. Statistical significance was set at $p < 0.05$.

Results: Overall HPLP II total scores did not differ significantly between groups ($p = 0.631$). However, SD patients had significantly lower Spiritual Growth ($p = 0.025$) and Stress Management scores ($p = 0.038$), and significantly higher Health Responsibility scores ($p = 0.027$) compared with controls. The PSS score was significantly higher in SD patients ($p = 0.048$). Among SD patients, severe disease was associated with lower Nutrition ($p = 0.030$) and Stress Management scores ($p = 0.016$). Additionally, the Stress Management subscale was inversely correlated with SDASI ($p = 0.030$) and disease duration ($p = 0.016$).

Conclusion: These findings indicate that SD patients exhibit deficits in key lifestyle domains—particularly in spiritual growth and stress management—along with elevated perceived stress. The results underline the potential for lifestyle and stress reduction interventions to improve clinical outcomes in seborrheic dermatitis and provide a solid basis for future integrative treatment strategies.

Keywords: Seborrheic dermatitis; stress; lifestyle; case-control

ÖZ

Amaç: *Bu çalışmanın amacı, seboreik dermatit (SD) hastalarında sağlıklı yaşam biçimi davranışları ve algılanan stres ölçeklerini sağlıklı kontrollerle karşılaştırmak ve bu ölçütlerin hastalık şiddeti ve süresi ile ilişkilerini incelemektir.*

Gereç ve Yöntem: *Çalışmaya 100 SD hastası ile 100 sağlıklı kişi dahil edildi. Katılımcılar tarafından Sağlıklı Yaşam Biçimleri Profili II (HPLP II) ve Algılanan Stres Ölçeği (PSS) anketleri doldurduldu. Grup karşılaştırmaları bağımsız t-testleri ve ki-kare testleri kullanılarak yapıldı, HPLP II skorları, SDASI, hastalık süresi ve PSS arasındaki ilişkiler Spearman korelasyon analizi ile incelendi. İstatistiksel anlamlılık $p < 0,05$ olarak belirlendi.*

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Bulgular: *HPLP II toplam skorlarında gruplar arasında anlamlı fark bulunmadı (p = 0,631). Ancak, SD hastaları, kontrollere göre anlamlı derecede daha düşük Manevi Gelişim (p = 0,025) ve Stres Yönetimi skorları (p = 0,038) ile anlamlı derecede daha yüksek Sağlık Sorumluluğu skorlarına (p = 0,027) sahipti. PSS skoru, seboreik dermatit hastalarında anlamlı şekilde daha yüksekti (p = 0,048). SD hastaları arasında, şiddetli hastalık durumunda Beslenme (p = 0,030) ve Stres Yönetimi skorları (p = 0,016) daha düşük bulundu. Ayrıca, Stres Yönetimi alt ölçeğinin SDASI (p = 0,030) ve hastalık süresi (p = 0,016) ile ters orantılı korelasyon gösterdiği tespit edildi.*

Sonuç: *Bu sonuçlar, seboreik dermatitli hastalarda özellikle manevi gelişim ve stres yönetimi başta olmak üzere temel yaşam biçimi alanlarında eksiklikler olduğunu ve yüksek düzeyde algılanan stres varlığını ortaya koymaktadır. Bulgular, yaşam tarzı düzenlemeleri ile stres azaltıcı müdahalelerin seboreik dermatitte klinik sonuçları iyileştirme potansiyeline işaret etmekte ve gelecekteki bütüncül tedavi stratejileri için önemli bir zemin sunmaktadır.*

Anahtar Sözcükler: *Seboreik dermatit, stres, yaşam tarzı, vaka-kontrol*

INTRODUCTION

Seborrheic dermatitis (SD) is a common chronic inflammatory skin disorder characterized by erythematous, greasy scaling patches on sebaceous gland-rich areas such as scalp, face and chest (1). It affects 4.38% of global population and tends to flare with triggers such as emotional stress or fatigue (2). The etiology of SD is multifactorial, involving *Malassezia* yeast overgrowth, sebaceous gland activity, and abnormal immune responses. Despite its prevalence and impact on quality of life, the role of modifiable lifestyle factors in SD has not been fully elucidated (3).

Emerging evidence links lifestyle habits with SD severity. A recent case-control study showed that SD patients had poorer nutrition habits (e.g., lower fruit and vegetable intake) and higher anxiety levels than healthy controls (4). In that study, higher body mass index and unhealthy diet correlated with SD severity, suggesting that lifestyle factors may influence the disease course. Stress is another frequently cited exacerbating factor in SD, and patients with moderate to severe SD have been found to report higher psychoemotional stress (5, 6). These observations imply that improving lifestyle behaviors and stress management could potentially benefit patients with SD. However, to date there has been no comprehensive assessment of overall healthy lifestyle behaviors in SD patients.

The Health-Promoting Lifestyle Profile II (HPLP II) is a validated instrument that measures self-reported engagement in health-promoting behaviors across six domains: health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management (7-9). It has been used to evaluate lifestyle in other dermatologic conditions. For example, psoriasis patients were found to have a moderate level of health-promoting lifestyle overall, lower than healthy individuals, with particularly lower scores in the spiritual growth domain (10). Given the parallels between psoriasis and SD as chronic inflammatory skin diseases affected by stress, we hypothesized that SD patients might similarly exhibit deficits in certain lifestyle domains and higher perceived stress.

In this study, we applied the HPLP II for the first time in an SD population. Our aim was to compare health-promoting lifestyle behaviors and perceived stress in SD patients versus healthy controls, and to examine associations of HPLP II domain scores with SD severity and disease duration. We sought to identify specific lifestyle areas that could be targeted to help manage SD.

MATERIALS AND METHODS

This case-control study included 100 adult patients with SD and 100 healthy controls, conducted at Ankara Etlik City Hospital after approval from the Institutional Ethics Committee (No: AEŞH-EK1-2023-006). SD patients aged ≥18 years were recruited from dermatology outpatient clinics. The diagnosis of SD was established clinically based on the presence of erythematous plaques with greasy, yellowish scales predominantly involving sebaceous areas such as the scalp, face, and upper trunk. Differential diagnoses, including sebopsoriasis, contact dermatitis, atopic dermatitis, and superficial fungal infections, were systematically evaluated through detailed clinical examination. Sebopsoriasis was

considered in cases with sharply demarcated plaques and silvery scale, particularly when coexisting with psoriatic lesions elsewhere on the body. Contact dermatitis was excluded based on patient history, lesion distribution, and, when indicated, confirmed by patch testing. Atopic dermatitis was differentiated by chronicity, personal or family history of atopy, and lesion morphology. Tinea infections were ruled out using potassium hydroxide (KOH) preparation when clinical suspicion was present. Atypical presentations and cases in which diagnostic certainty could not be achieved were excluded from the study. Controls were age and gender matched healthy controls with no personal or family history of SD or other chronic skin diseases. Individuals with any severe systemic illness, psychiatric disorder, pregnancy, or use of systemic treatments that could affect lifestyle or stress were excluded. All participants provided written informed consent.

Demographic data (age, gender, body mass index, smoking, alcohol use) and clinical information were recorded. SD disease duration (months since diagnosis) and presence of any comorbid chronic diseases were noted. SD severity was assessed using the Seborrheic Dermatitis Area and Severity Index (SDASI), which scores the extent and intensity of lesions in defined anatomical regions (maximum score = 12.6; higher scores indicate more severe disease) (11). In keeping with common practice in the literature, SDASI scores were grouped as mild (0–4.2), moderate (4.3–8.4) and severe (8.5–12.6) (12).

Participants completed the Health-Promoting Lifestyle Profile II (HPLP II) and the Perceived Stress Scale (PSS) questionnaires in their validated Turkish forms (8, 13). The HPLP II is a 52-item survey evaluating six domains of health-promoting behaviors: health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management. Each item is rated on a 4-point frequency scale (1=never, 4=routinely); higher subscale and total scores reflect more frequent practice of healthy behaviors. We used the Turkish version of HPLP II, which has demonstrated good reliability and validity (9). PSS, which comprises 14 items scored from 0 (never) to 4 (usually), was used to measure perceived stress over the past month, with higher scores indicating greater stress (13). Reliability and validity analyses of the Turkish version were previously carried out by Eskin et al (14).

Statistical Analysis

Data was analyzed using IBM SPSS version 26.0 (Chicago, IL, USA). Continuous variables were expressed as mean ± standard deviation. Between-group comparisons (SD vs. control) were made using independent samples t-tests for continuous variables and chi-square tests for categorical variables. Within the SD group, comparisons of HPLP II scores by disease severity (mild, moderate, severe) were performed with one-way ANOVA, and by comorbidity status with t-tests. Spearman rank correlation coefficients (ρ) were calculated to assess associations between HPLP II scores (total and subscales) and SDASI, disease duration, and PSS scores. A p-value < 0.05 was considered statistically significant.

RESULTS

Participant Characteristics

Seborrheic dermatitis patients and controls were similar in age (29.1±9.2 vs. 28.9±10.8 years) and gender distribution (34% vs. 40% female) (p=0.866 and p=0.380, respectively) (Table-1). Mean BMI was also comparable (25.3±4.6 vs. 25.2±4.4, p=0.934). Among the SD patients, the mean disease duration was 30.5±25.4 months and 22 patients (22%) had at least one comorbid chronic condition (e.g., hypertension, diabetes) (Table-1). Lesion sites were also recorded: 19 patients (19%) had involvement confined to the scalp only, 63 patients (63%) had both scalp and facial involvement, and 18 patients (18%) had lesions affecting the scalp, face, and inter-mammary region. No patient exhibited isolated involvement of any site other than the scalp.

Patients with SD were categorized by disease severity into mild, moderate, and severe groups. Among the 100 patients, 48 (48%) were classified as mild, 38 (38%) as moderate, and 14 (14%) as severe. Gender distribution was comparable across groups ($p = 0.134$), whereas age distribution differed significantly ($p = 0.004$), with mean ages of 27.17 ± 8.06, 29.03 ± 8.53, and 36.14 ± 11.34 years for the mild, moderate, and severe groups, respectively. There was a positive correlation with disease severity and age (Spearman's $\rho = 0.233$, $p = 0.019$). Mean BMI values were 24.76 ± 4.54, 25.74 ± 4.97, and 25.75 ± 3.64, respectively, with no significant differences

observed between the groups (p = 0.570) (Table-1). SDASI scores were significantly higher in male patients (mean SDASI 5.24 vs 3.49, p=0.002).

Healthy Lifestyle Behaviors and Perceived Stress (SD vs Controls)

The HPLP II total score was slightly lower in SD patients (129.8±20.9) than controls (131.1±15.5), but this difference was not statistically significant (p=0.631) (Table-1). However, specific lifestyle domains differ between the groups. SD patients had a significantly lower Spiritual Growth subscale score (26.0±4.8 vs. 27.4±3.7, p=0.025) and lower Stress Management score (18.4±4.4 vs. 19.5±3.2, p=0.038). In contrast, the Health Responsibility subscale was significantly higher in SD patients (22.1±4.6 vs. 20.7±4.6, p=0.027). There were no significant differences in the Physical Activity, Nutrition, or Interpersonal Relations subscales (p=0.937, p=0.694, and p=0.114, respectively). The mean PSS score was significantly elevated in the SD group, at 29.0±7.5 compared to 27.0±6.8 in controls (p=0.048).

Healthy Lifestyle Behaviors and Perceived Stress (Within SD Patients)

Perceived stress was significantly correlated with several healthy-lifestyle indicators. The HPLP II total score showed a moderate negative correlation with PSS (ρ=–0.391, p<0.001). Among the subscales, Spiritual Growth had the strongest inverse correlation (ρ=–0.436, p<0.001). Nutrition (ρ=–0.303, p=0.003), Interpersonal Relations (ρ=–0.218, p=0.033), and Stress Management (ρ=–0.312, p=0.002) were likewise inversely correlated with PSS, whereas Health Responsibility (p=0.176) and Physical Activity (p=0.070) did not correlate significantly with perceived stress. Additionally, HPLP-II and PSS scores did not differ significantly among patients when stratified by lesion site (scalp-only, scalp + face, or scalp + face + intermammary involvement; all p > 0.05).

Within the SD cohort, age correlated negatively with the HPLP II total score (ρ=–0.233, p=0.020) and with the Health Responsibility (ρ=–0.242, p=0.015), Physical Activity (ρ=–0.235, p=0.019), and Interpersonal Relations (ρ=–0.201, p=0.045) subscales. Female patients scored higher on Interpersonal Relations (p=0.043). Smokers had lower scores on the HPLP II total, Health Responsibility, Physical Activity, and Nutrition scales (p=0.017, 0.046, 0.011, and 0.034, respectively). Alcohol users showed reduced Nutrition and Stress Management scores (p=0.042). Body-mass index was not related to the HPLPII total score or any subscale (all p>0.05) (Table-4).

HPLP II Scores by Disease Severity

The mean HPLP II total score was comparable across mild, moderate, and severe SD groups (130.4 ± 20.2, 132.3 ± 21.7, and 121.3 ± 20.1, respectively; p = 0.236) (Table-2). Most subscale scores likewise showed no significant variation with disease severity. An exception was the Nutrition subscale, which was lowest in the severe group (18.2 ± 4.2) compared with the moderate (21.7 ± 5.0) and mild groups (20.7 ± 3.4) (p = 0.030). The Stress Management score was also reduced in severe SD (15.3 ± 4.0) relative to mild SD (19.0 ± 3.9) (p = 0.016). Spiritual Growth, Health Responsibility, Physical Activity, and Interpersonal Relations scores did not differ by severity (all p > 0.05). The Stress Management score was also found to be inversely correlated with SD severity (SDASI) (ρ = –0.217, p = 0.030) and disease duration (ρ = –0.240, p = 0.016) while other HPLP II domains showed no significant correlations with SDASI or duration (p>0.05) (Table-3).

Lifestyle and Comorbidity

We also compared HPLP II scores in SD patients with (n=22) vs. without (n=78) a comorbid chronic disease. Patients with comorbidities had slightly lower mean HPLP II total and subscale scores than those without (e.g., total 124.14 ± 22.15 vs. 131.42 ± 20.34), but none of these differences reached statistical significance (all p>0.05) (Table-4).

Table-1. Demographic, HPLP II subscale and total scores, and PSS scores comparison between seborrheic dermatitis patients and healthy controls.

Characteristic/Measure	SD Patients (n=100)	Controls (n=100)	*p*-value
Age (years)	29.13 ± 9.15	28.89 ± 10.85	0.866
Female gender (%)	34 (34%)	40 (40%)	0.380
Body mass index (kg/m²)	25.27 ± 4.57	25.21 ± 4.40	0.934
HPLP II – Total Score	129.82 ± 20.86	131.07 ± 15.47	0.631
HPLP II – Health Responsibility	22.11 ± 4.63	20.66 ± 4.55	**0.027**
HPLP II – Physical Activity	17.46 ± 5.72	17.52 ± 4.94	0.937
HPLP II – Nutrition	20.76 ± 4.29	20.54 ± 3.56	0.694
HPLP II – Spiritual Growth	26.01 ± 4.85	27.38 ± 3.65	**0.025**
HPLP II – Interpersonal Relations	24.97 ± 4.50	25.88 ± 3.56	0.114
HPLP II – Stress Management	18.39 ± 4.40	19.53 ± 3.22	**0.038**
PSS	29.04 ± 7.47	27.00 ± 6.84	**0.048**

HPL II: Health-Promoting Lifestyle Profile II, PSS: Perceived Stress Scale, SD: Seborrheic Dermatitis
Note: Values are given as mean ± SD or n (%). Higher HPLP II scores indicate more frequent engagement in health-promoting behaviors. Independent T-tests (for scores and continuous variables) and chi-square test (for categorical variables).

Table-2. HPLP II scores stratified by SD disease severity (mild, moderate, severe).

HPLP II Domain	Mild SD (n=48)	Moderate SD (n=38)	Severe SD (n=14)	*p*-value
Total Score	130.35 ± 20.17	132.29 ± 21.72	121.29 ± 20.07	0.236
Health Responsibility	21.88 ± 4.70	22.47 ± 4.37	21.93 ± 5.37	0.830
Physical Activity	17.44 ± 5.25	17.89 ± 6.46	16.36 ± 5.32	0.694
Nutrition	20.73 ± 3.44	21.74 ± 4.97	18.21 ± 4.15	0.030
Spiritual Growth	26.17 ± 4.61	25.74 ± 5.49	26.21 ± 4.02	0.909
Interpersonal Relations	25.17 ± 3.92	25.50 ± 5.19	22.86 ± 4.00	0.157
Stress Management	18.98 ± 3.92	18.79 ± 4.72	15.29 ± 4.01	0.016

HPL II: Health-Promoting Lifestyle Profile II, SD: Seborrheic Dermatitis
Note: Values are mean ± SD. *p*-values by one-way ANOVA for overall differences among severity groups. Post-hoc analysis indicated significantly lower Nutrition and Stress Management scores in severe vs. moderate or mild SD.

Table-3. Correlations of HPLP II scores with SDASI (disease severity), disease duration, and PSS in SD patients (n=100).

HPLP II Score	SDASI	Disease Duration	BMI	PSS
Total Score	–0.068 (0.499)	–0.146 (0.146)	-0.078 (0.439)	–0.391 (<0.001)
Health Responsibility	0.036 (0.725)	–0.138 (0.170)	-0.098 (0.332)	–0.140 (0.176)
Physical Activity	–0.001 (0.995)	–0.115 (0.254)	-0.165 (0.101)	–0.187 (0.070)
Nutrition	–0.094 (0.351)	–0.107 (0.290)	-0.076 (0.453)	–0.303 (0.003)
Spiritual Growth	–0.021 (0.836)	–0.013 (0.895)	0.087 (0.392)	–0.436 (<0.001)
Interpersonal Relations	–0.089 (0.380)	–0.059 (0.557)	0.014 (0.893)	–0.218 (0.033)
Stress Management	–0.217 (0.030)	–0.240 (0.016)	-0.135 (0.180)	–0.312 (0.002)

HPL II: Health-Promoting Lifestyle Profile II, PSS: Perceived Stress Scale, SD: Seborrheic Dermatitis, SDASI: Seborrheic Dermatitis Area and Severity Index
Note: Values are Spearman's ρ (rho) and p-value. Negative correlations indicate that higher HPLP II scores (healthier lifestyle behaviors) are associated with lower values of the clinical measure. Significant correlations ($p<0.05$) are highlighted in bold.

Table-4. HPLP II scores in SD patients with vs. without comorbid chronic disease.

HPLP II Domain	Comorbidity (n=22)	No Comorbidity (n=78)	*p*-value
Total Score	124.14 ± 22.15	131.42 ± 20.34	0.149
Health Responsibility	21.50 ± 4.19	22.28 ± 4.75	0.487
Physical Activity	15.59 ± 4.79	17.99 ± 5.87	0.082
Nutrition	20.41 ± 5.01	20.86 ± 4.10	0.666
Spiritual Growth	24.41 ± 5.73	26.46 ± 4.51	0.080
Interpersonal Relations	25.00 ± 5.08	24.96 ± 4.35	0.972
Stress Management	17.18 ± 4.96	18.73 ± 4.20	0.146

HPL II: Health-Promoting Lifestyle Profile II, SD: Seborrheic Dermatitis
Note: Values are mean ± SD. *p*-values by independent t-tests (none significant at p<0.05).

DISCUSSION

To our knowledge, this is the first study to assess lifestyle behaviors in seborrheic dermatitis (SD) using the Health-Promoting Lifestyle Profile II (HPLP II). Although SD patients and healthy controls achieved comparable total HPLP II scores, the SD cohort displayed substantial deficits in the domains of Stress Management and Spiritual Growth and reported markedly higher perceived stress. Together, these findings point to a pattern in which psychosocial and behavioral dimensions may influence the clinical expression of SD.

Psychological stress is a well-established trigger and exacerbating factor for many dermatoses. The conspicuous nature of skin lesions intensifies stigma and emotional distress, creating a feedback loop in which stress worsens disease activity (15-18). Prior work has linked stress exposure to both the frequency and severity of SD flares (3, 6, 16). Elevated anxiety and depressive symptoms are also common in SD and parallel declines in quality of life (3, 19-21). Consistent with that literature, our patients reported higher Perceived Stress Scale (PSS) scores and lower Stress Management scores than controls. Furthermore, Stress Management scores correlated inversely with SDASI and disease duration, suggesting that suboptimal coping skills may contribute to more severe or persistent disease.

Lower Spiritual Growth scores in SD mirror findings in other chronic dermatoses, notably psoriasis, where reduced spiritual well-being is associated with greater psychological distress and disease burden (13, 22, 23). Spiritual engagement is believed to enhance resilience to stress and buffer the impact of chronic illness (22-24). Interventions that foster spiritual well-being—such as mindfulness-based or cognitive-behavioral programs with a spiritual component—may therefore benefit individuals with SD (25, 26).

The relationship between poorer Nutrition scores and severe SD aligns with reports that diet influences SD pathogenesis (27). Although BMI did not correlate with severity in our cohort, previous studies have linked higher BMI and energy-dense diets to worse disease. These observations reinforce the value of nutritional counselling in SD management (4).

Interestingly, SD patients scored higher than controls in Health Responsibility, likely reflecting a greater tendency to seek medical advice and adhere to therapy—similar to patterns noted in psoriasis (23). Despite shortcomings in stress-related domains, SD patients appear motivated to engage with healthcare services.

Our demographic analyses yield additional insight. Women achieved higher Interpersonal Relations scores, reflecting broader evidence that females typically cultivate stronger social networks (28, 29). Advancing age correlated negatively with the HPLP II total and with Health Responsibility, Physical Activity, and Interpersonal Relations, echoing literature on reduced physical activity and social engagement in older adults (30). Long-standing habits, comorbidities, and mobility constraints may limit lifestyle change in this population.

Smoking emerged as a modifiable factor: smokers recorded lower HPLP II totals and lower scores in Health Responsibility, Physical Activity, and Nutrition. Similar findings have been documented in several populations, where smoking consistently predicts poorer health behaviors (31, 32). Alcohol use showed a comparable pattern, with lower Nutrition and Stress Management scores among drinkers (33). Addressing these

behaviors could therefore enhance overall lifestyle profiles and potentially improve disease outcomes.

Collectively, these observations have practical implications for patient care. Routine assessment of stress, coping strategies, and lifestyle habits should complement standard dermatological evaluation. Brief screening tools can identify high stress, poor coping, and unhealthy habits, allowing dermatologists to tailor interventions. Multidisciplinary strategies—including stress-reduction techniques, spiritual-well-being programs, and nutrition counselling—may complement topical and systemic therapies and improve overall outcomes (22, 23, 25, 26).

The study's cross-sectional design limits causal inference, and reliance on self-reported questionnaires may introduce recall or desirability bias, although validated instruments were employed. Future longitudinal and interventional studies are warranted to determine whether targeted lifestyle modification can alleviate SD severity and enhance quality of life.

CONCLUSION

In conclusion, while overall health-promoting behavior is similar between SD patients and healthy individuals, SD is characterized by significant deficits in Stress Management and Spiritual Growth and by heightened perceived stress. The association between these domains and clinical severity highlights the need for holistic, behavior-focused care. Since this is the first study to employ the HPLP II in SD patients, our findings provide compelling evidence for integrating stress reduction and lifestyle modification interventions into SD management, with the potential to enhance clinical outcomes and overall quality of life.

Conflict of Interest

The authors declare that they have no conflicts of interest.

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