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Association between the Academic Stress Level and Skin Disorders among Albaha University Medical Students, Saudi Arabia

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ABSTRACT

Objectives: *Medical students are usually exposed to academic and social isolation in addition to environmental and financial stressors. There is a growing concern about an association between increased academic stress levels and several skin disorders. This paper aimed at assessing perceived stressors and their origins by examining the relationship between academic stress and skin disorders among medical students at the University of Albaha.* ***Methods:*** *A cross-sectional study consisting of 251 medical students from both the male and female sections was conducted. The participants received a self-administered questionnaire consisting of sociodemographic profile and origin of stressors, such as academic, psychosocial, and environmental stressors, and a Perceived Stress Scale (PSS) with a modified form of the self-reported skin disorders. Skin examinations were done via dermatological consultant at Albaha University Medical Centre.* ***Results:*** *Academic stress, in comparison to other types of stressors, represents 80.5% of the origin of stressors affecting stressed medical students. Being female in academic years above the third year was associated with the highest, most significantly perceived stress levels among all students. Loss of hair, pimples beside oily, waxy patches on scalp, itchy skin and troublesome sweating were the top common highly significant dermatological symptoms among all students at different levels of perceived stress.* ***Conclusion:*** *Several skin disorders occur in response to academic stress among medical students.*

Keywords: Academic stress, Skin, Medical students, Albaha

INTRODUCTION

Academic stress is known as the body's feedback to academic environment that may exist under certain conditions and is severe enough to overcome the capacities of undergraduate students to handle the academic pressures [1]. Academic stressors can occur in different forms, such as academic commitments, several assignments, study loads, studying for frequent exams, competitive attitudes, financial pressure, and other academic-related stressors [2].

Medical education can be the origin of reasonable stress [3]. Medical students are usually exposed to academic and social isolation in addition to environmental and financial stressors [4-6]. These students experience significant levels of stress when compared to other types of university students. Great demands are placed on medical students that present a threat to their welfare and health and lead to a high rate of psychological distress [6]. The prevalence of perceived stress among medical students using various assessment methods ranged from 30% to 63% [7].

Academic stress causes and enhancement of substantial immunological dysregulation that are associated with powerful neurohormonal changes reflected by significant elevations in the levels of stress hormones, such as Adrenocorticotropic Hormone (ACTH) and cortisol, that are related to stressful academic demands on Saudi preparatory program medical

students [1]. These stressors can induce cardiovascular diseases, bronchial asthma, irritable bowel syndrome, and skin disorders [8].

The role of stress in either initiation or exacerbation of various dermatological conditions is well-established [6]. The skin reacts to stress through a mechanism of interaction between skin immune cells, hormones, and neurotransmitters. Inflammation of the tissue is regulated by skin immune cells that have pro-and anti-inflammatory responses, including cytokine secretion and activation of the peripheral Corticotropin-releasing Hormone (CRH)-proopiomelanocortin-ACTH-corticosteroid axis that causes the skin to have acute or chronic corticosteroid secretions [9].

Stress plays a potential role in affecting the course of many dermatological diseases, including psoriasis, some types of eczema, telogen effluvium, alopecia areata, pruritus, and neurotic excoriation [10,11]. Several studies have shown that high stress rates are associated with either localized or generalized itching, hair loss, oily/waxy/flaky patches on the scalp, increased sweating, scaly skin, onychophagia and trichotillomania [12]. Highly stressed medical students have substantially more pruritus, dry sore rash, scaly skin, alopecia, face rash, itchy hand rash, hyperhidrosis and trichotillomania than people with low stress [3].

This work aims to determine the perceived stress and their origins with assessment of the relation between the academic stress by using the Perceived Stress Scale (PSS) and skin disorders among medical students in Albaha University.

METHODS

A cross-sectional study invited all undergraduate students in both sections in the faculty of Medicine, Albaha University with males from first to final year and females from the first to fourth year. The sample size was estimated using a website (Raosoft), with a confidence level of (95%), error margin (5%). The total medical student number is 313. The sample size needed was found to be (173); the authors decided to increase the sample size required by (45%) to resolve the skipped or wrongly answered questionnaires.

All participants received a well-organized self-administered questionnaire. The questionnaire was divided into several sections:

1. Sociodemographic profile
2. Stressors: academic, psychosocial, and environmental
3. Perceived Stress Questionnaire (PSQ) is an objective evaluation tool that tests how stressful conditions are perceived in a person's life. The PSQ index is 0 to 1. The higher scores suggest greater stress [13].
4. A modified form of the self-reported skin disorders questionnaire

Skin examination was done by a dermatological consultant at Albaha University medical center. The exclusion criteria included questionnaires with more than 4 unanswered questions, incorrectly filled out forms and missed personal information forms. The participants received informed consent and ethical approval was obtained from the Ethical Committee of Albaha University.

Data Analysis

Data was analyzed by the computer using SPSS version 23. The participants were grouped into three stages of stress: 1. Low Stress (LS), 2. Moderate Stress (MS), and 3. High Stress (HS) by measuring the 25^{th} and 75^{th} percentile of the Perceived Stress Scale (PSS) questionnaire index. The answers concerning the stressors and skin symptoms were dichotomized to enable the computation of Odds Ratios (OR). The chi-square and Fisher's exact tests were used for categorical results. Gender and stress intensity were used as a covariate in the conditional logistic regressions, which were subsequently performed using the skin disorders as dependent variables. This type of analysis made it possible to report OR and 95% Confidence Intervals (CI) adjusted for sex. A p-value<0.05 was deemed statistically significant.

RESULTS

This study involved 251 out of 313 medical students at Albaha University with a response rate of (80.2%); two thirds were males, and students aged ≥ 20 years were 68% of the study group with a mean age of 20.73 ± 2.03 years. Approximately 80% of them were from the Albaha district and individuals with cumulative average of marks>2.5

were about three quarters of the sample with an average of 2.85 ± 0.8. The participation rate was inversely related to the academic year. The first year was 27.5% while the six-year was 6.4% (Table 1).

Table 1 General characteristics of the medical students in the study

General characteristics		Study group (n=251)
Age in years	<20 years	80 (32%)
	≥ 20 years	171 (68%)
Gender	Male	166 (66%)
	Female	85 (34%)
Residence	Albaha	200 (79.7%)
	Others	51 (20.3%)
Cumulative average of marks	<2.5	64 (25.5%)
	≥ 2.5	187 (74.5%)
Academic year	First	69 (27.5%)
	Second	59 (23.5%)
	Third	47 (18.7%)
	Fourth	39 (15.5%)
	Fifth	21 (8.4%)
	Sixth	16 (6.4%)

Table 2 Distribution of stressors among the medical students in the study

Stressors	Study group (n=251)	
	Yes-no (%)	No-no (%)
Academic		
Extensive academic curriculum	219 (87.3%)	32 (12.7%)
Frequency of examinations	215 (85.7%)	36 (14.3%)
Fear of poor performance on examinations	194 (77.3%)	57 (22.7%)
Lack of recreation	190 (75.7%)	61 (24.3%)
Psychosocial		
Loneliness	121 (48.3%)	130 (50.7%)
High parental expectations	113 (45%)	138 (55%)
Family problems	81 (32.3%)	170 (67.7%)
Financial problems	32 (12.7%)	219 (87.3%)
Environmental		
Traveling between faculty and home	111 (44.2%)	140 (55.8%)
Accommodations away from home	98 (39%)	153 (61%)
Quality of food in mess hall versus home	71 (28.3%)	180 (71.7%)
Living condition in hostel versus home	57 (22.7%)	194 (77.3%)

Table 2 shows that academic stress represents the major significant burden affecting the medical students by 70.22% in comparison to other stressors. Additionally, academic stress due to the medical education curriculum constitutes 80.5% among stressed students. The extensive academic curriculum and frequency of examinations affected>85% of medical students, while fear of poor performance on examinations and lack of recreation represented 77.3% and 75.7%, respectively. Environmental stressors (8%) were in the last rank (ranging between 44.2% and 22.7%) in which its items are arranged in a descending manner and include traveling between the faculty and home, accommodation away from home, quality of food, and living conditions in the hostel/home. Psychosocial stressors (9%) are located in the mid-range of stressors and include loneliness (48.3%), high parental expectation (45%), and family problems (32.3%). Financial problems represent the least amount of pressure on medical students (12.7%).

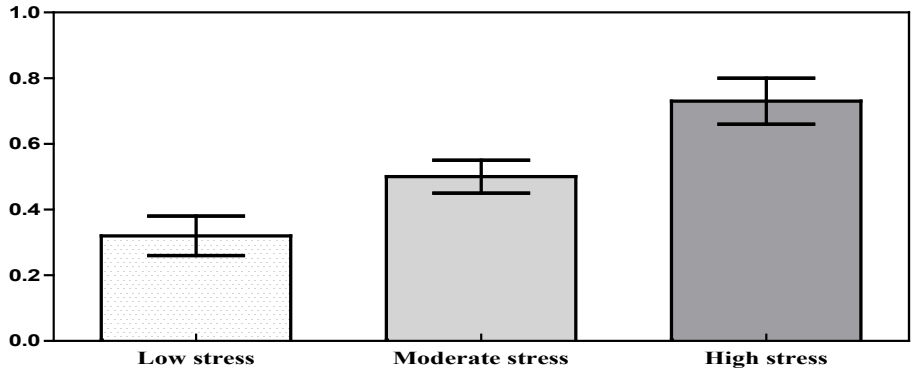

Figure 1 The mean perceived stress among the studied medical students

The moderate perceived stress group represented more than half of included subjects (50.2%). The HS group was located in the second-order (30.7%). Finally, the LS group accounted for 19.1%. The mean values of perceived stress for different levels of stress among the types of medical students are 0.73 ± 0.07, 0.5 ± 0.05, and 0.32 ± 0.06, respectively (Figure 1).

Table 3 The relationship between levels of perceived stress and general characteristics among the studied medical students

General characteristics		LS students (n=48)	MS students (n=126)	HS students (n=77)	p-value
		No (%)	No (%)	No (%)	
Age in years	<20 years	17 (35%)	34 (27%)	29 (38%)	0.24
	≥ 20 years	31 (65%)	92 (73%)	48 (62%)	
Gender	Male	41 (85%)	83 (66%)	42 (55%)	0.002*
	Female	7 (15%)	43 (34%)	35 (45%)	
Residence	Albaha	38 (79%)	104 (83%)	53 (75%)	0.46
	Others	10 (21%)	22 (17%)	19 (25%)	
Cumulative average of marks	<2.5	10 (21%)	29 (23%)	25 (32%)	0.23
	≥ 2.5	38 (79%)	97 (77%)	52 (38%)	
Academic year	1st to 3rd	43 (90%)	88 (70%)	44 (57%)	0.001*
	4th to 6th	5 (10%)	38 (30%)	33 (43%)	
*Significant difference (p value<0.05)					

Table 3 shows that age categories, gender, residence, cumulative mark average, and academic year groups are unequally distributed among the three perceived levels of stress. Being female has been correlated with significantly highest perceived stress rates ($p<0.05$) in academic years beyond the third year.

Table 4 The relationship between levels of perceived stress and skin disorders among the studied medical students

Skin disorders	LS students (n=48)	MS students (n=126)	HS students (n=77)	Total (n=251)
	No (%)	No (%)	No (%)	No (%)
Skin symptoms				
**Itchy skin	9 (19%)	42 (33%)	35 (45%)	86 (34%)
*Dry/sore rash	7 (15%)	37 (29%)	29 (38%)	73 (29%)
**Scaly skin	6 (13%)	34 (27%)	31 (40%)	71 (28%)
*Itchy rash on hands	8 (17%)	19 (15%)	23 (30%)	50 (20%)
**Pimples	18 (38%)	70 (56%)	51 (66%)	139 (55%)
**Other rashes on face	6 (13%)	19 (15%)	25 (23%)	50 (20%)
Warts	3 (6%)	8 (6%)	5 (6%)	16 (6%)

**Troublesome sweating	9 (19%)	40 (32%)	35 (45%)	84 (33%)
**Loss of hair	21 (44%)	73 (58%)	64 (83%)	158 (63%)
**Oily, waxy patches on scalp	15 (31%)	56 (44%)	54 (70%)	125 (50%)
*Pull-out hair	8 (17%)	38 (30%)	28 (36%)	74 (29%)
**Bite your nails	7 (15%)	35 (28%)	36 (47%)	78 (31%)
Total	117	471	416	1004
Number of symptoms/number of medical students				
**No symptoms	18 (38%)	10 (8%)	3 (4%)	31 (12%)
*One symptom	8 (17%)	21 (17%)	4 (6%)	33 (13%)
Two symptoms	7 (15%)	23 (18%)	5 (6%)	35 (14%)
Three symptoms	6 (13%)	26 (21%)	7 (9%)	39 (15%)
Four symptoms	4 (8%)	25 (20%)	18 (23%)	47 (19%)
**Five symptoms	3 (2%)	14 (11%)	25 (32%)	42 (17%)
**Six symptoms and more	2 (4%)	7 (6%)	15 (19%)	24 (10%)
Diagnosed skin diseases				
**Acne	2 (4%)	8 (6%)	18 (23%)	28 (11%)
**Eczema	3 (6%)	7 (6%)	25 (23%)	35 (14%)
Seborrheic dermatitis	0 (0%)	0 (0%)	2 (1%)	2 (1%)
Urticaria	2 (4%)	2 (2%)	3 (4%)	7 (3%)
Vitiligo	0 (0%)	0 (0%)	1 (0.5%)	1 (0.5%)
****Skin diseases before starting a medical college**				
Improved or unchanged	2 (4%)	2 (2%)	3 (4%)	7 (3%)
Became aggressive	4 (8%)	6 (5%)	15 (19%)	25 (10%)
*Significant difference ($p<0.05$); ** highly significant difference ($p<0.01$)				

Table 4 reveals that the medical students with different levels of stress have a number of prominent skin symptoms. The average number of symptoms among LS, MS, and HS and all was 2.4, 3.7, 5.4 and 4, respectively. Loss of hair, pimples beside oily, waxy patches on scalp, itchy skin, and troublesome sweating were the top common dermatological symptoms among all students at different levels of perceived stress. In the LS group, these symptoms ranged from 44% to 19%, in MS students are the range was from 58% to 32%, in the HS group, the participants noted in an order from 83% and 45%, and in all students the range was between 63% and 33%. All investigated skin symptoms were highly significant in relation to stress levels among the medical students in the study ($p<0.001$) except for itchy rash on hands and pulling-out hair, which were significant but less so ($p<0.05$), while complaining of the presence of warts represents 6% in all students at different levels of stress without statistical significance ($p>0.05$). Thirty-one students (12%) did not report the presence of any skin symptoms. The greatest number of single skin symptoms appeared among LS students, and the least was among the HS group; these difference were highly statistically significant ($p<0.001$). Having a single skin symptom was in the upper significant rank among LS students reporting skin symptoms in comparison to other groups ($p <0.05$). The number of students reporting an increasing number of symptoms decreased as the number of symptoms increased. MS students with three cutaneous symptoms were the top in this group by 21%; the number of students increased to reach this level and then decreased after that point. Among the HS group, the number of reported symptoms increased to five symptoms (32%). There is an exceedingly important difference between the perceived stress level and the number of five or more skin symptoms ($p<0.001$). Four reported symptoms were the most frequently reported number of symptoms/number of all medical students in the collected modified form of the self-reported skin disorders questionnaire. Based on the skin examination that was performed by the dermatological consultant at Albaha University medical center, 73 dermatological conditions were diagnosed in the following order: 1. eczema (14%), 2. acne (11%), 3. urticaria (7%), 4. seborrheic dermatitis (1%), and 5. vitiligo (0.5%). A highly significant difference between the increased level of stress and the diagnosis of both eczema and acne ($p<0.001$) was noted. A history of previous skin diseases before starting medical college was reported in 32 (13%) of precipitants. A highly significant progression of these diseases occurred after starting medical school ($p<0.001$).

Table 5 Logistic regression analysis of skin symptoms adjusted for gender among LS medical students in comparison with HS medical students based on the Perceived Stress Questionnaire (PSQ)

Skin disorders	Gender adjusted OR	95% CI	p-value
Skin symptoms			
Itchy skin	3.6	1.54-6.4	0.004
Dry/sore rash	3.5	1.4-6.9	0.01
Scaly skin	4.72	1.8-9.4	0.002
Itchy rash on hands	2.31	0.86-4.2	0.15
Pimples	3.27	1.5-5.9	0.003
Other rashes on face	3.37	1.3-7.8	0.02
Warts	1.04	0.24-3.5	0.96
Troublesome sweating	3.6	1.54-6.4	0.004
Loss of hair	6.3	2.8-12.2	<0.001
Oily, waxy patches on scalp	5.1	2.4-10.1	<0.001
Pull-out hair	2.86	1.2-5.9	0.031
Bite your nails	5.14	2.0-10.8	<0.001
Diagnosed skin diseases			
Acne	1.41	0.9-2.23	0.13
Eczema	1.2	0.77-1.86	0.42

OR: Odds Ratio; CI: Confidence Interval; Significant difference: $p<0.05$; Highly significant difference: $p<0.01$

The binary logistic regression analysis of skin symptoms after gender adjustment among HS students when compared to LS group shows that loss of hair, nail-biting, oily, waxy patches on scalp, scaly skin, itchy skin, troublesome sweating, and pimples were the most frequently significant dermatological symptoms that occurred ($p<0.001$). Dry/sore rash, other rashes on the face and pulling out hair represent other significant symptoms ($p<0.05$). In contrast, an itchy rash and warts on the hands were insignificant ($p>0.05$). Diagnosed cases of acne and eczema in binary logistic regression analysis with gender adjustment among HS students in comparison with LS group were insignificant ($p>0.05$) (Table 5).

DISCUSSION

Medical school has long been described as a environment with multiple stressors that can influence students' well-being with increasing evidence indicating that medical students have encountered significant stress in connection with their medical education [13]. The possible stressors which affect medical students' lifestyles include academic, psychosocial and environmental stressors [8].

In this study, academic stress and psychosocial and environmental stressors represent 70.22%, 9%, and 8.02% of stress facing the medical students in the study group, respectively. Academic stress is the key potential source of perceived stress by 80.5% among the stressed medical students.

These data are in agreement with findings reported by many researchers in universities of the United Kingdom, India, Malaysia, and Thailand also highlighted that examinations and amount of taught content throughout the academic session were perceived as stressors by students [14-18]. Moreover, academic stressor factors predicted 78% variability in perceived stress among the students of medical school [19].

An extensive academic curriculum, frequency of examination, fear of poor performances on examinations, and lack of recreation represent 87.3%, 85.7%, 77.3%, and 75.7%, respectively. Psychosocial stressors were in the second rank of stressors and include loneliness (48.3%), high parental expectations (45%), and family problems (32.3%). Financial problems represent the least amount of stress on medical students (12.7%). Environmental stressors constitute the last order and include traveling between faculty and home, accommodations away from home, quality of food, and living condition in a hostel/home.

These findings were also reported by Al Rasheed et al. [20], who demonstrated that the majority of students perceived examinations (85%) and course load (74.1%) as stressors. Additionally, Anuradha et al. [8] noted that the most important reason for increased stress among medical school students was academic stressors. Key stress-related determinants included an comprehensive college curriculum, fear of failure or poor results at tests, and lack of leisure.

Medical students were designated as a well-known model of perceived stress risk factor. High rates of psychological disorders among medical students are most likely associated with the academic, financial, and social demands placed on students by medical school environments at a time when they are included in lifestyle and career issues [7]. Academic stress in medical students is a good indicator of their psychological well-being, capacity for hard work related to rigorous curricula, regular exams, adjustment to clinical practice and the challenging necessity to obtain clinical competencies and interpersonal skills while coping with their medical studies and patients [21].

Results of this research indicate that females were correlated with the most perceived stress rates after the third academic year. These results are consistent with previous studies showing that female is especially vulnerable to stress during everyday activities and in schooling [22,23]. In addition, Bin Saif et al. [7] found that the female gender was correlated with the highest perceived stress rates during their fourth and fifth years of medical school. Additionally, Al Rasheed et al. [20] found that levels of stress increased as students progressed from preparatory year to fourth year and decreased in fifth and sixth year students. On the other hand, Schut et al. [12] recorded no significant association between academic years and the degree of stress experienced by students.

In the present study, the majority of students (50.2%) have moderate perceived stress. The HS group (30.7%) was in the second order. Finally, the LS group accounted for 19.1% of reported stress. The mean values of perceived stress for the three different levels of stress among medical students were 0.73 ± 0.07, 0.5 ± 0.05, and 0.32 ± 0.06 respectively.

These findings were supported by Schut et al. [12], who found that 109 LS, 201 MS, and 112 HS subjects were classified among 422 American college students. In addition, Stewart et al. [3] noted that there were 120 LS, 232 MS and 119 HS allocated among 471 Australian university students. Moreover, in Saudi Arabia, Bin Saif et al. [7] reported that medical students were arranged in descending manner according to the frequency in MS (48.8%), HS (25.7%), and LS (25.5%), and the mean PSQ index among medical students was for the MS group (0.5 ± 0.06), HS group (0.71 ± 0.08), and LS group (0.31 ± 0.06).

In our study, medical students experienced a number of prevalent skin symptoms. The average number of symptoms in relation to stress levels among LS, MS, and HS were 2.4, 3.7, and 5.4 respectively. Four symptoms were reported as the most frequent number of symptoms/number of all medical students based on the collected self-reported skin disorders questionnaire. A highly significant number of non-symptomatic students and a significant number had one skin symptom among LS group when compared to the other groups. Among the HS group, the difference between other groups was very significant when the number of skin symptoms was five or more.

These results were approximated to data reported by Stewart et al. [3] which demonstrated that a number of specific skin complaints were significantly correlated with perceived stress rates among the students in the study. In addition, HS students indicated that Bin Saif et al. [7] had multiple skin complaints consisting of five complaints (19.1%) followed by six and four complaints (17.6% and 12.5% respectively), more than in MS and LS classes..

The results of the present work revealed that loss of hair, pimples beside oily, waxy patches on scalp, itchy skin, and troublesome sweating were the most prevalent dermatological symptoms occurring in all students at different levels of perceived stress. Perceived stress was different in each group; in the LS group, perceived stress was between 44% and 19%, in the MS group, it was between 58% and 32%, in the HS group, it was between 83% and 45%, and in all students, perceived stress was between 63% and 33%. These results were similar to observations reported by several researchers [3,7,12].

All investigated skin symptoms were highly significant in relation to the level of stress among the medical students in the study, but an itchy rash on the hands and pulling-out hair were barely significant. On the other hand, complaining of warts was insignificant. Such results were supported by similar findings reported by Schut et al. [12], which showed that increased levels of stress are correlated with itching, hair loss, oily/waxy/flaky patches on the scalp, increased sweating, scaly skin, onychophagia, trichotillomania, and itchy hand rash.

The magnitude of skin disorders among HS students in comparison with LS group after gender adjustment showed that loss of hair, nail-biting, oily, waxy patches on scalp, scaly skin, itchy skin, troublesome sweating, and pimples was highly significant, dry/sore rash and other facial rashes, and pulling-out hair were slightly significant, whereas an itchy rash on the hands, warts, acne, and eczema were insignificant.

These results are consistent with data comparing skin conditions among HS subjects who reported statistically significantly more pruritus, dry sore rash, scaly skin, hair loss, other face rashes, itchy hand rash, hyperhidrosis and trichotillomania than LS subjects, and wart complaints were negligible ($p<0.05$) [3]. In addition, Bin Saif et al. [7] found that HS students suffered from substantially more oily skin, waxy patches on the scalp and/or flakey scalp (or dandruff), dry/sore rash, pimples, itchy skin , hair loss, pulling out their own hair, scaly skin, distracting sweating, nail-biting, and other forms of facial rash compared to LS category.

In comparison, Schut et al. [12] found negligible discrepancies between groups about pimples, dry/sore rash and other face rash between the two extremes of perceived levels of psychological stress. Moreover, Stewart, et al. [3] noted no significant association for pimples, onychophagia or oily, waxy patches on scalp and/or flaky scalp when comparing the HS to the LS groups. Additionally, Bin Saif et al. [7] reported itchy rashes on hands and warts as highly significant among HS students in when compared with LS subjects.

Skin examination performed in this research diagnosed eczema (14%), acne (11%), urticaria (7%), seborrheic dermatitis (1%) and vitiligo (0.5%) in all examined medical students. There was a highly significant difference between of the increased level of stress and the diagnosis of eczema and acne. A highly significant progression of previously diagnosed dermatological diseases developed after starting their medical education and was associated with the increased levels of stress.

Such results agree with evidence recorded by the authors who reported that many dermatological disorders were caused or aggravated by persistent perceived stress or correlated with certain personality characteristics [24-26]. Perceived stress was suspected in a wide variety of skin disorders, including some forms of eczema, such as atopic and seborrheic dermis. In particular, acne (23.8%) and eczema (10.2%) were the most prevalent cutaneous diagnoses among Saudi medical students, both of which represented the most common diagnoses in the HS population (31.6% and 13.2%, respectively). Seborrheic dermatitis was found only in the HS group. There were no statistically relevant variations with regard to previous skin diagnoses between HS and LS [7].

Data support these findings based on the fact that skin has the dual role of being both the target and the source of stress mediators. In many skin diseases (such as Psoriasis Vulgaris, Atopic Dermatitis, Chronic Urticaria, Viral Warts, Hair Loss, and Acne Vulgaris), this dual role has been proved with the identification of complex stress-induced networks that are expressed locally. Skin reactions to stress may provide a prognostic guide for disease severity and risk of exacerbation, depending on the amounts of locally secreted corticosteroids and other mediators affecting skin integrity, inflammation and potential healing [9].

The strengths of this study are based on the considerable number of surveyed medical students from both male and female sections with a good response rate (80.2%). Additionally, the validated questionnaire was effective for detecting the origin of stressors, perceived stress, and skin conditions. Moreover, the presence of a dermatological consultant ensured accurate student diagnoses.

It is possible to conclude that academic stress, in comparison to other stressors, constitutes the key origin of stressors affecting stressed medical students. Female students in the academic years past the third academic year were associated with significantly higher perceived stress levels. Loss of hair, pimples beside oily, waxy patches on scalp, itchy skin and troublesome sweating are the major common highly significant dermatological symptoms among all students at different levels of perceived stress. There is a substantial difference between the perceived stress and the number of five and more skin symptoms. The correlation between elevated stress levels and the diagnosis of eczema and acne is crucially relevant. A highly significant progression of previous diagnosed skin diseases developed after being medical student. Hair loss, nail-biting, oily, waxy patches on scalp, scaly skin, itchy skin, troublesome sweating, and pimples were the highly significant dermatological symptoms in highly stressed students after sex adjustment.

CONCLUSION

These results reveal that academic stress on medical students should be reduced via modification of the academic curriculum and decreasing the frequency of examinations in addition to creating a plan to provide psychological and environmental support. Furthermore, this work raises attention about the presence of skin disorders among medical

students, which is influenced by high academic stress. Moreover, psychiatric care (drugs or psychotherapeutic methods) can also have beneficial effects on skin diseases triggered by exposure to stress.

DECLARATIONS

Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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