
**THE RELATION BETWEEN ENVIRONMENTAL
STRESSORS AND SEVERITY OF THE CLINICAL
PROFILE OF PSORIASIS IN AN EGYPTIAN SAMPLE**

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ABSTRACT

Psychological stressors have been reported to precede the onset of psoriasis in 44% of patients, initiate recurrent skin flares in 88% of psoriatic and may worsen psoriasis severity and may even lengthen the time to disease clearance.

This study aimed to: 1. Identifying the types of stressors, which are related to the forms and severity of clinical profile of psoriasis, 2. Identifying the types of psychosocial factors which are related to the forms and severity of clinical profile of psoriasis in Egyptian sample.

Methods: One hundred and fifty patients randomised samples were collected from dermatological out-patient clinic affiliated to ministry of health and universities hospitals. All subjects were exposed to the followings: A full dermatological history including exacerbating factors. General examination to exclude chronic diseases. Clinical examination, Socioeconomic data will be collected for all patients. Holms and Rahe for assessment of stressors. Psoriasis area severity index.

Results: The socio-demographic characteristics show that the mean age of patients with psoriasis of both sexes was 40.91 (standard deviation, SD 14.26) years, while the men:women ration was 2.66:1. Additionally, 68% of psoriatic patient were occupationally skilled person; 18% were un-employed; 10% were professional and 4% were students. A significant relation between weather condition and type of

psoriasis severity was noticed. It appears that psoriatic patients were improved in summer and worsened in winter. During autumn and springs, patients didn't notice changes in psoriasis signs. A significant relation between presence of psychological stress and degree of psoriasis severity. It appears that moderate degree of psoriasis was the most common among psoriatic patient with stress (45.5%) or without stress (65.3%).

Conclusion: The study showed that environmental stressors have relevant effects on severity of psoriasis. In addition, there is a specific relation between both climate and psychological stresses on the severity of psoriasis.

Keywords: Environmental stressors, Psoriasis, Holms and Rahe, Psoriasis area severity index, Psychosocial factors, Psychological stressors, Weather.

INTRODUCTION

Stress has long been reported to trigger psoriasis (Arnold, 2005 & 2007). High index of stressful life events associated with patients having more than double the risk of psoriasis compared to low scorers. However, the same study found that current and ex-smokers had approximately double the risk of psoriasis, Naldi *et al.* (2005).

Most patients who report episodes of psoriasis precipitated by stress describe disease-related stress, resulting from the cosmetic disfigurement and social stigma of psoriasis, rather than stressful major life events or nonspecific distress (Arnold, 2005 & 2007).

The mechanism of stress-induced exacerbations of psoriasis has been speculated to involve the nervous, endocrine, and immune systems, but no definitive pathways have been established. A more direct connection may be the effects of anxiety or depressive symptoms

in reducing the threshold for pruritus in psoriatic patients (**Gupta et al., 1994**).

Environmental risk factors include; trauma (Eyre and Krueger, 1982), infections (Tervaert & Esseveld, 1970 and Telfer *et al.*, 1992), drugs (Griffiths *et al.*, 2010), sunlight (Ros and Eklund, 1987), the 3-month postpartum period (Dunna and Finlay, 1989), social stress (Griffiths *et al.*, 2010), seasonal variation and climate change (Bell *et al.*, 1991), and smoking and alcohol (Griffiths *et al.*, 2010).

In this study it was aimed to investigate the following stresses, tobacco smoking, alcohol and drug abuse, climate weather changes, and social stresses, to psoriasis profile and severity.

AIMS OF THE STUDY

This study aimed at:

1. Identifying the types of stressors, which are related to the forms and severity of clinical profile of psoriasis.
2. Identifying the types of psychosocial factors which are related to the forms and severity of clinical profile of psoriasis.

SUBJECTS AND METHODS

SUBJECTS

A sample of 150 patients (old and new cases) has been collected from dermatological out-patient clinic affiliated to Ministry of Health and Universities Hospitals.

Inclusion Criteria:

Age: above 18 years.

Sex: Both sexes were included in this study.

Exclusion Criteria:

- 1- Patients having chronic diseases associated with psoriasis.
- 2- Patients that may receive drugs that affect psychological conditions, except drug medications of psoriasis e.g. corticosteroids and methotrexate.

METHODS

Procedures:

All subjects were exposed to the followings:

1. Socioeconomic data will be collected for all patients.
2. A full dermatological history including exacerbating factors.
3. Holms and Rahe for assessment of stressors. It is a list of 43 stressful life events that can contribute to psychiatric illness. To measure stress according to Holmes and Rahe stress scale the number of life change units that apply to events in the past year of an individual life were added and the final score gave a rough estimate of how stress affect health.
4. General examination to exclude chronic diseases.
5. Clinical examination Grattage test and histopathology. Grattage test is to remove the scales by a glass slide to examine the pin point hage appearance of psoriasis.

6. Psoriasis area severity index, it includes 4 parameters including itching, erythema, scaling and thickness. The severity parameters were measured on a scale of 0 to 4 from none to maximum.

Design of Study:

Biphasic Study:

Phase I: Descriptive study.

Phase II: Analytical study.

Research Tools:

1. The social Readjustment Rating Scale, Holms and Rahe for assessment of stressors (Okasha *et al.*, 1981), and 2. Psoriasis area severity index (PASI) (Kreft *et al.*, 2006).

Statistics:

Data entry and editing data were entered on sheet of SPSS ver. 16 (Statistical Package of Social Science), and, Statistical analysis: (Chi-square and analysis of variance) were used to examine group differences.

RESULTS

The socio-demographic characteristics show that the mean age of patients with psoriasis of both sexes in the sample was 40.91 (standard deviation, SD 14.26) years, while the men: women ration was 2.66: 1. Among the psoriatic patients, 72.6% were male and 24.6%, were female and 66% were married versus 34% were unmarried. Additionally, 68% of psoriatic patient were occupationally skilled person; 18% were un-employed; 10% were professional and 4% were

students. Moreover, 56% of psoriatic patients had educational level of high school or equivalent (diploma); 26% illiterate Person; 10% college graduated and 8% of primary schools levels. One third of patients smoked tobacco (34 %), and of these patients, the median daily tobacco consumption was 16 cigarettes. Fifteen patients (8.7%) admitted to drinking more than 40gm of alcohol per day (Table 1).

Table (1): Demographic characteristic data of psoriasis in Egypt sample.

	Number	Percentage
Age in years (means± SD)	40.91±14.26	
Gender		
Male	109	72.6
Female	41	27.4
Marital Status		
Unmarried	51	34
Married	99	66
Occupation		
Professional	15	10
Skilled	102	68
Unemployed	27	18
Student	6	4
Educational Level		
Illiterate	39	26
Primary	12	8
High school	84	56
College level	15	10
Tobacco	51	34
Alcohol		
○ on weekend only	30	20
○ >40gm (usually)	15	10

According to Psoriasis Area Severity Index (PASI), 58% of psoriatic patients reported with moderate severity (>3-15), 28% with mild severity (0-3) and 14% with severe cases (>15-72).

A significant relation between gender and the type of psoriasis severity was noticed where $\chi^2=31.99$ as shown in table 2. It appears that severe type of psoriasis was less common (4.59%) among psoriatic patient men, while it is most common in women (39%). On the other hand moderate type was the most common among men (67.88%) versus 27.52% for mild severity while no significant difference between mild & moderate type of psoriasis severity among women recorded as 29.3% & 31.7%, respectively.

Table (2): Co-relation between Psoriasis Area Severity Index (PASI) and gender.

Psoriasis Severity	Gender		Statistics	
	Male	Female	χ^2	P
Mild	30 (27.52%)	12 (29.27 %)	31.99	<0.01
Moderate	74 (67.88%)	13 (31.71 %)		
Sever	5 (4.59 %)	16 (39.01 %)		
Total	109 (72.7%)	41 (27.3%)		

A significant relation between occupation and type of psoriasis severity was observed $\chi^2=80.28$ as shown in table 3. It appeared that severe type of psoriasis was more common (73.33%) among psoriatic patient with professional occupation versus 6.67% and 20% for mild & moderate types of severity, respectively. While Among psoriatic patient with skilled occupation, severe type of psoriasis was less common (4.90%) versus 33.33% and 61.76% for mild & moderate types of

severity, respectively Moreover, severe types of psoriasis was not encountered between unemployed person, while the majority of psoriatic unemployed persons had moderate severity type (74.07%) versus mild type (25.93%). On the other hand, most of students with psoriasis had severe type (83.33%) while moderate type was less encountered (16.67%).

Table (3): Co-relation between Psoriasis Area Severity Index (PASI) and Occupation.

Occupation	Psoriasis Severity						Total		χ^2	P
	Mild		Moderate		Sever		N	%		
	N	%	N	%	N	%				
Professional	1	6.67	3	20	11	73.33	15	10	80.28	<0.01
Skilled	34	33.33	63	61.76	5	4.90	102	68		
Unemployed	7	25.93	20	74.07	0	0	27	18		
Student	0		1	16.67	5	83.33	6	4		
Total	42		87		21		150	100		

A significant relation between educational levels and type of psoriasis severity was noticed where $\chi^2=45.33$ as shown in table 4. It appears that severe type of psoriasis was more common among psoriatic patient with primary and college levels of education recorded as 41.67% & 60%, respectively, versus 33.3% and 25% (in primary education level) and 13.3 and 26.6 (in college education level) for mild & moderate types of severity, respectively. On the other hand, moderate type of severity was more encountered among illiterate and high school education level recorded as 56.41% & 69%, respectively versus 30.7%

and 12.8% (in illiterate education level) and 28.57 and 2.38 (in high school education level) for mild & severe types of severity.

Table (4): Co-relation between Psoriasis Area Severity Index (PASI) and education level.

Education Level	Psoriasis Severity						Total		χ^2	P
	Mild		Moderate		Sever		N	%		
	N	%	N	%	N	%				
Illiterate	12	30.77	22	56.41	5	12.82	39	26	45.33	<0.01
Primary	4	33.33	3	25	5	41.67	12	8		
High School/ Diploma	24	28.57	58	69.05	2	2.38	84	56		
College Level	2	13.33	4	26.67	9	60	15	10		
Total	42		87		21		150	100		

Table 5 shows a significant relation between weather condition and type of psoriasis severity was noticed where $\chi^2 = 34.29$. It appears that 69.3% of psoriatic patients were improved in summer ($p < 0.05$) and 64% of patients worsened in winter. During autumn and springs nearly 70% of patients didn't notice changes in psoriasis signs.

Table (5): Co-relation between Psoriasis Area Severity Index (PASI) and climate.

Psoriatic Patients	Weather								χ^2	P
	Summer		Winter		Autumn		Springs			
	N	%	N	%	N	%	N	%		
Stable	26	17.3	42	28	108	72	106	70.6	34.29	<0.05
Worsening	20	13.4	96	64	28	18.6	26	17.3		
Improvements	104	69.3	12	8	14	9.3	18	13		

Tables 6 & 7 show a significant relation between presence of stress and degree of psoriasis severity ($\chi^2 = 30.52$, $P < 0.001$). It appears that

moderate degree of psoriasis was the most common among psoriatic patient with stress (45.5%). Nearly one third (32.6%) of patients with mild psoriasis without stress where only one fifth (20%) of mild cases had stress. As regards severe cases of psoriasis only 2-11% without stress and nearly one third (34.5%) had stress (table 6).

Table (6): Co-Relation between degree of Psoriasis Area Severity Index (PASI) and presence of stress.

Psoriasis Severity	Stress		Statistics	
	presence	Absence	χ^2	P
Mild	11 (20%)	31 (32.6 %)	30.52	<0.01
Moderate	25 (45.5%)	62 (65.3 %)		
Sever	19 (34.5 %)	2 (2.11 %)		
Total	55 (36.7%)	95 (63.3%)	150	100%

On the other hand, there was no significant relation between psoriasis severity degrees and chance of developing psychiatric illness according to The Holmes & Rahe Scale assessment as the means of stress in mild, moderate and severe types of psoriasis are 110.18 ± 30.1 ; 110.64 ± 26.8 and 97.26 ± 26.1 i.e. less than 150 which means a slight risk of psychiatric illness (Table 7).

Table (7): Co-Relation between degree of Psoriasis Area Severity Index (PASI) and chances of developing psychiatric illness among psoriatic patient with stress according to the Holmes & Rahe Scale.

Psoriasis Severity	Number of psoriatic patient with stress	Mean of Stress According to the Holmes & Rahe Scale	Chance of developing psychiatric illness
		Mean \pm SD (No)	<150
Mild	11 (20%)	110.18 \pm 30.1	A slight risk
Moderate	25 (45.5%)	110.64 \pm 26.8	A slight risk
Sever	19 (34.5 %)	97.26 \pm 26.1	A slight risk
Total	55 (36.7%)	107.85 \pm 4	A slight risk

DISCUSSION

In this study it was aimed to explore disease characteristics and to assess the relationship between disease characteristics and psoriasis-related stress and severity a sample of Egyptian people with psoriasis.

The results indicated that the mean age of patients with psoriasis was 40.91 years, this results are consistent with the Egyptian study carried out by El-Moselhy *et al.* (2012) who recorded that 37.0%, 44.0% and 19.0% of the psoriatic patients with age of onset of <25, 25-45 and \geq 46 years, respectively. In addition, the finding are in accordance with several studies worldwide where the mean age of Greece psoriatic patients was 43.2 years (Rigopoulos *et al.*, 2010), 25 \pm 16 years in females, and 28 \pm 15 years in males (Kundakci, *et al.*, 2002) and most of the Indian psoriatic patients were in their third or fourth decade at the time of presentation (Dogra and Yadav, 2010).

The present study recorded also that, among the psoriatic patients, 72.6% were male and 24.6% were female and the men: women ratio was 2.66:1. The preponderance of male psoriasis patients recorded in the present study was in agreement with that reported by Bedi (1995) (2.5:1) and Kaur *et al.* (1997) who reported that of total psoriatic patients, 67% were men and 33% were women with male to female ratio being (2.03:1). Similar finding have been reported in other studies as in Taiwanese study carried out by Chang *et al.* (2009) who recorded the prevalence of psoriasis is higher in men than in women and Indian study by Dogra and Yadav (2010) who revealed that prevalence of psoriasis is twice more common in males compared to females. In addition, Greece study carried out by Rigopoulos *et al.* (2010) recorded that the men to women ratio is 1.8:1(63.6% males to 36% females). However the results are inconsistent with Kavli *et al.* (1985); Kōnōnen *et al.* (1986); and Kundakci *et al.* (2002) who found that 61% of the patients were female, and 39% were male with the female/male ratio was 1.5.

Besides, results reported by Raychaudhuri & Farber (2001); El-Moselhy *et al.* (2012); Griffiths *et al.* (2010); Brandrup & Green (1981); Falk & Vandbakk, (1993); Gelfand *et al.* (2005) and Sheffield *et al.* (2000) found that males and females were equally affected with psoriasis. Also, Mousa *et al.* (2011), there were no statistically significant differences regarding age, sex, marital status, education, and occupation in Egypt study. This discrepancy could be attributed to the

observation that the male population under study was suffering from more extensive disease, seeking their treatment in a hospital setting as it was observed that patients with a Body Surface Area (BSA) score 10% and over have increased frequency of consultations while the frequency of consultations was lower with patients with a lower BSA score (Kundakci *et al.*, 2002).

In this study it was observed that psoriasis is more common between married peoples (66%) compared with un-married. This finding was in agreement with that reported by Kundakci *et al.* (2002) who recorded that psoriasis is common between married (65%), followed by single (30%) and less common between divorced or widowed people (5%). On the reverse, our results is inconsistent with that reported by El-Moselhy *et al.* (2012), Yosipovitch & Tang (2002) and Zachariae *et al.* (2002) who found that single state was significant risk factor of psoriasis and that patients living alone reported more affection than married patients.

Results of this study, as regards marital status, Zachariae *et al.* (2002) found significant beneficial effects for psoriatic patients to be married (or living with a partner) on both self-reported severity and QOL. In a population-based study of 505 patients with psoriasis, Koo (1996) found that patients with psoriasis reporting more severe symptoms were less likely to be married.

Other demographic variables such as educational background and employment status were found to have a modest influence since 68% of

psoriatic patient were occupationally skilled person versus 18% were un-employed. More than half (56%) of psoriatic patients had educational level of high school while 26% of psoriatic Person was illiterate and 10% college graduated.

The present study used Psoriasis Area Severity Index (PASI) as a marker of psoriasis severity where 58%, 28% and 14% of psoriatic patients found with moderate, mild and severe cases. These finding appears to some extent consistent with that reported by Psoriasis Community Canada (2011), where about 65% of psoriasis patients have mild psoriasis, about 25% have moderate psoriasis, and about 10% have severe psoriasis. The difference of the marker used to measure the extent of psoriasis severity may explain the disagreement of our findings with that reported by El-Moselhy *et al.* (2012) who used Body Surface Area (BSA) as marker for severity and found that 36.0%, 38.0% and 26.0% of the cases had mild, moderate and severe forms of disease, respectively. Also, McKenna *et al.* (2005) found that 30.6% of cases were severe.

Stress represented the major cause of various self-reported factors leading to exacerbation of psoriasis. Patients with high stress levels report an increased frequency of psoriasis when compared with people with lower stress levels Devrimci-Ozguven *et al.* (2000). The results recorded a significant relation between presence of stress and degree of psoriasis severity was recorded where moderate degree of psoriasis was the most common among psoriatic patient with stress (45.5%) or

without stress (65.3 %) while severe type of psoriasis was more common among psoriatic patient with stress (34.5%) versus mild type (20%). The results is consistent with that reported by El-Moselhy *et al.* (2012) who demonstrated that stress as a suspected risk factor was found in 67.0% of the patients and Rigopoulos *et al.* (2010) and Fortune *et al.* (1998) who reported that more than 60.0% of their psoriasis patients believed that stress was a principle factor in causation and exacerbation of psoriasis.

In the current study nearly one third (36.7%) of cases had stress and the remaining two thirds (63.3%) had no stress. It is known that in psoriatic patients, psychological stress, by itself, can play a role in exacerbation of psoriasis, and that higher stress reactivity has been associated with the onset of psoriasis at an earlier age (Naldi, *et al.*, 2005). Indeed, 31% of the patients reported the onset of psoriasis in periods of increased everyday life stress, and in 71% of patients, psoriasis symptomatology worsened during stressful life episodes (Griffiths and Richards, 2001; and Zachariae, *et al.*, 2004). The importance of stress in psoriasis has been further highlighted, since psychological distress affects treatment outcome in psoriatic patients. For instance, the level of stress may prolong the time taken for psoralen plus UVA (PUVA) to clear the symptoms of psoriasis (Fortune, *et al.*, 2003). Accordingly, stress reduction by stress management, relaxation or cognitive techniques shortened the time to clear psoriasis symptoms by PUVA, and, moreover, improved the clinical severity of psoriasis

Kabat-Zinn and Wheeler *et al.* (1998); and Fortune, *et al.* (2002). An interesting finding is the increase in the catecholamine levels after stress exposure in psoriatic patients (Buske-Kirschbaum, *et al.*, 2006), pointing to a hyper responsive sympathoadrenomedullary system in psoriasis.

The relevance of stress in psoriasis is broadly accepted, however, the underlying mechanisms, of how psychological distress exacerbates or triggers psoriasis, are poorly understood. It is known that psychological stress has the potential to regulate the immune response, and there is emerging evidence that abnormal neuroendocrine response to stress may contribute to the pathogenesis of chronic autoimmune diseases (Jorgensen, *et al.*, 1995).

RECOMMENDATIONS

- 1- Holistic medical and psychiatric service for psoriatic patients.
- 2- Psychological care for psoriatic patients for stress management, psycho-education for prevention of depression and anxiety and dealing with suicidality.
- 3- Social services and support for the patients and families for better quality of life.

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العلاقة بين الضغوط البيئية وشدة المظاهر الإكلينيكية لمرض الصدفية في عينة مصرية

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المستخلص

تشير التقارير أن الضغوط النفسية تسبق حدوث بداية المرض في ٤٤% من مرضى الصدفية. كما أنها تؤدي إلى تكرار تهيج الجلد في ٨٨% من مرضى الصدفية. وقد تؤدي إلى سوء شدة المرض أو تؤدي إلى طول مدة التعافي منه. ومن ناحية أخرى فإن مرض الصدفية في حد ذاته يعتبر عامل من الضغوط النفسية لأنه قد يؤدي إلى تشوه الجلد مما يمثل وصمة اجتماعية. وتبعاً لذلك فإن معظم المرضى يعانون من التبعات النفسية التي تشمل قلة تقدير الذات والقلق والاكتئاب، وقد يصل الأمر إلى أفكار تتناول الانتحار. علاوة على ذلك، فإن مرضى الصدفية بزيادته للضغوط النفسية قد يؤدي إلى سوء تطور ومآل مرضى الصدفية. ويصل الأمر إلى دائرة مغلقة بين المرضى والضغوط. وهذه الدراسة قد أخذت في الاعتبار البحث في الضغوط البيئية وعلاقتها مع النمط الإكلينيكي وشدته في مرضى الصدفية في عينة مصرية. أهداف البحث: التعرف على أنواع الضغوط وعلاقتها بأشكال وشدة مرض الصدفية، البحث في العوامل النفسية الاجتماعية وعلاقتها مع شدة مرض الصدفية. في الدراسة الحالية: تم جمع عينة من ١٥٠ مريض من عيادة الأمراض الجلدية التابعة لمستشفيات وزارة الصحة والجامعات. وقد لوحظ وجود علاقة ذات دلالة بين حالة الطقس ونوع شدة الصدفية. إن المرضى الصدفية في تحسن في الصيف وتزداد سوءاً في فصل الشتاء. ارتبط التدخين مع ٣٤% من مرضى الصدفي في العينة وكان ٨,٧% لتعاطي الكحول، وهو ما يعني أن التدخين هو عامل خطر لمرض الصدفية، ولكن الكحول وتعاطي المخدرات فقط يزيد سوء حالة الصدفية. وكانت هناك علاقة ذات دلالة إحصائية بين الضغوط النفسية وشدة أنواع الصدفية، حيث أن الشكل الحاد للصدفية ليس له علاقة بالضغوط، ومن ناحية أخرى لا يوجد علاقة بين أنواع شدة الصدفية وفرصة ظهور المرض نفسياً.

وكان متوسط العمر للصدفية ٤٠ عاما. كان نوع شديد من الصدفية أقل شيوعا بين الرجال مقارنة بالنساء. ومن ناحية أخرى، النوع متوسط الشدة للصدفية كان أكثر شيوعا في مرضى الرجال، في حين لا يوجد فرق كبير بين نوع من الشدة لدى مرضى الصدفية النساء في العينة. الصدفية ذات الشكل الحاد أكثر شيوعا بين مرضى الصدفية ذوي المهارات المهنية، طلبة الابتدائي وطلبة الجامعة.