Prevalence of Mood and Sleep Problems in Chronic Skin Diseases: A Pilot Study

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The relationship between chronic skin problems and mood and sleep disorders merits more attention. Mood and sleep problems add to comorbidity of chronic skin diseases and affect patient compliance with dermatologic treatment.

A pilot study was conducted to determine the prevalence of mood and sleep problems in participants with chronic skin diseases in outpatient dermatology clinics at the University of Wisconsin, Madison, using 4 self-assessment questionnaires. Study participants included willing adults with any skin problem of at least 6 months' duration. The participants were asked to complete the questionnaires, which included Current Life Functioning, Pittsburgh Sleep Quality Index (PSQI), Beck Depression Inventory (BDI-II), and Beck Anxiety Inventory. In summary, 15 of 16 participants had poor sleep quality. Six participants had poor sleep quality without any mood problems (depression or anxiety). Mood problems worsened the quality of sleep and functioning. Nine of 16 participants (56.25%) reported mood problems (depression or anxiety). The results show a high prevalence of depression and anxiety and a very high prevalence of poor sleep quality. Considering the negative effect of comorbid psychiatric and sleep problems on treatment and prognosis of chronic skin diseases, this study demonstrates the need for further evaluation and eventual screening of all patients with chronic skin diseases for mood and sleep problems.

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The relationship between chronic skin problems and mood and sleep disorders merits more attention. Mood and sleep problems add to comorbidity of chronic skin diseases and affect patient compliance with dermatologic treatment. Most studies show the prevalence of psychiatric and psychological comorbidity is approximately 30% in dermatologic disorders.[1]

Picardi and colleagues[2] found an overall prevalence of psychiatric morbidity in 25.2% of 2579 outpatients at dermatology clinics in Italy using the Skindex-29 and General Health Questionnaire. The prevalence was higher in women and in widows/widowers.[2]

Sleep is another interesting topic of research that has not been well-studied in dermatologic conditions. The relationship between atopic dermatitis and sleep disturbances has been studied and the current theory is that sleep problems are related to nighttime itching and scratching behavior.[3-6]

A pilot study was conducted to determine the prevalence of mood and sleep problems in outpatient dermatology clinics at the University of Wisconsin, Madison, using self-assessment questionnaires. The results are interesting, with a high prevalence of depression and anxiety and a very high prevalence of poor sleep quality.

Methods

Study participants included willing adults with any skin problem of at least 6 months' duration from the University of Wisconsin, Madison, outpatient dermatology clinics. The participants were asked to complete the following 4 questionnaires: Current Life Functioning, Pittsburgh Sleep Quality Index (PSQI), Beck Depression Inventory (BDI-II), and Beck Anxiety Inventory.

Study protocol was approved by the Health Sciences Institutional Review Board of the University of Wisconsin. Participants were recruited using flyers placed in waiting areas of dermatology clinics. Participants were self-selected and volunteered to complete the questionnaires after reading the flyers.

A staff member helped explain the questionnaires to participants and obtained their consent.

Questionnaires—The Current Life Functioning questionnaire consisted of 24 items measuring issues related to the following 6 domains: (1) self (ie, ability to function independently, manage finances, plan and enjoy leisure time, be the person one would like to be, be creative, exhibit self-control); (2) work (ie, performance, interactions, concentration and completion of tasks, attendance, development and management of work); (3) intimacy (ie, interactions with spouse/romantic partner, formation and maintenance of relationships, enjoyment of sexual activities); (4) family (ie, interactions with parents and/or siblings, ability to carry out responsibilities); (5) social (ie, interactions with friends, participation in social activities, ability to be comfortable with people); and (6) health (ie, ability to manage finances, participation in physical activities, maintenance of good health habits).

The PSQI is designed to measure sleep quality in clinical populations. It is a self-rated questionnaire assessing quality of sleep over a 1-month period. It has 19 questions that generate 7 component scores: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medications, and daytime dysfunction. Each component is rated on a scale of 0 (no problem) to 3 (a big problem). The sum of the 7 components generates a global score. A global PSQI score greater than 5 provides a sensitive and specific measure of poor sleep quality.

The Beck Depression Inventory (BDI-II) is a 21-item questionnaire measuring the severity of depression using a 4-point scale ranging from 0 (absent or mild) to 3 (severe). Total scores indicate the following: 0–13=minimal depression; 14–19=mild depression; 20–28=moderate depression; 29–63=severe depression. The Beck Anxiety Inventory is a 21-item questionnaire measuring the severity of self-reported anxiety using a 4-point scale ranging from 0 (not at all) to 3 (severe). Total scores indicate the following: 0–7=minimal anxiety; 8–15=mild anxiety; 16–25=moderate anxiety; 26–63=severe anxiety.

Results

Sixteen participants completed the questionnaires, including 12 women and 4 men (age range, 30–77 years)(Table).

Chronic skin problems showed negative effects on the lives of all participants. One participant with bipolar disorder as well as skin problems showed the most negative effect in all domains of life.

Of 16 participants, 15 (93.75%) had poor sleep quality (Figure 1). Six participants had poor sleep quality without any mood problems (depression or anxiety). Mood problems worsened the quality of sleep and functioning.

Nine of 16 participants (56.25%) reported mood problems (depression or anxiety) (Figure 2). Two participants had severe depression and 2 participants had moderate depression (25% [4/16] of the study population). Anxiety often accompanies depression; 1 participant had mild anxiety and 1 participant had moderate anxiety without depression (Figure 3).

The prevalence of mood problems was high in 56.25% of our participants (9/16) compared with one-third of participants as generally reported in dermatology literature.[1] This difference may be attributed to the small number of participants and the self-selection method for participants to complete the questionnaires, suggesting the need for more active methods of recruitment by specific staff members assigned to the project for future studies. On the other hand, mild levels of depression and anxiety may not be detected with other questionnaires or in general clinical settings, thereby causing a difference in results obtained.

Another important finding is the frequency of poor sleep quality that is present in 15 participants. The presence of mood problems worsens the quality of sleep even further.

Comment

Based on prior research, we know that the presence of mood problems increases the morbidity of chronic skin disorders.[7,8] It is important to have simple screening tools to identify and eventually treat patients with mood problems.

Sleep problems are frequent and may affect the course of chronic skin diseases and their treatment. The small population size of this study limits the number of conclusions; additional studies with more participants are needed in the future.

Sleep problems often are attributed to the itching and scratching caused by skin diseases such as atopic dermatitis.[3-6] In this study, participants with skin diseases that did not cause itching, such as alopecia areata, reported poor sleep quality. Further studies of quality of sleep, sleep disorders, and the effect of treatment on the course of skin disease are needed.

The following questions remain to be answered: Do we need to systematically screen patients with chronic skin diseases for mood problems? Will treatment of mood problems affect the course of the skin disease? An important step toward early identification of mood problems would be to use simple self-rating questionnaires that could be scored by office staff while the patient is in the waiting area prior to meeting with the physician.

In terms of the findings from this study demonstrating poor sleep quality in the majority of participants, larger studies are needed with control groups to confirm high frequency of sleep problems in chronic skin diseases. We also need to answer the following

Demographic Data of Participants

Age, y	Sex	Race	Marital Status	Cigarettes	Alcohol	Education
54	F	White	Mar	No	Rare	College
34	F	White	S	No	2 drinks/wk	Some college
30	F	Nonwhite	S	Occasionally	No	HS
71	F	White	W	No	Sometimes	College
77	F	White	Mar	N/A	N/A	HS
64	F	White	D	No	Minimal	College
53	F	White	Mar	No	Rare	College
>60[a]	F	White	W	No	No	College
66	F	White	Mar	No	1 drink/wk	College
44	M	White	Mar	No	1 drink/d	College
55	F	White	Mar	No	4 glasses of wine/mo	College
38	M	White	D	No	Yes	College
41–60[a]	M	White	W	N/A	N/A	College
36	F	White	Mar	No	No	College
59	F	White	Mar	No	Rare	College
50	M	White	Mar	No	Rare	HS

Abbreviations: F, female; Mar, married; S, single; HS, high school; W, widowed; N/A, not available; D, divorced; M, male.
[a]Participant did not specify age.

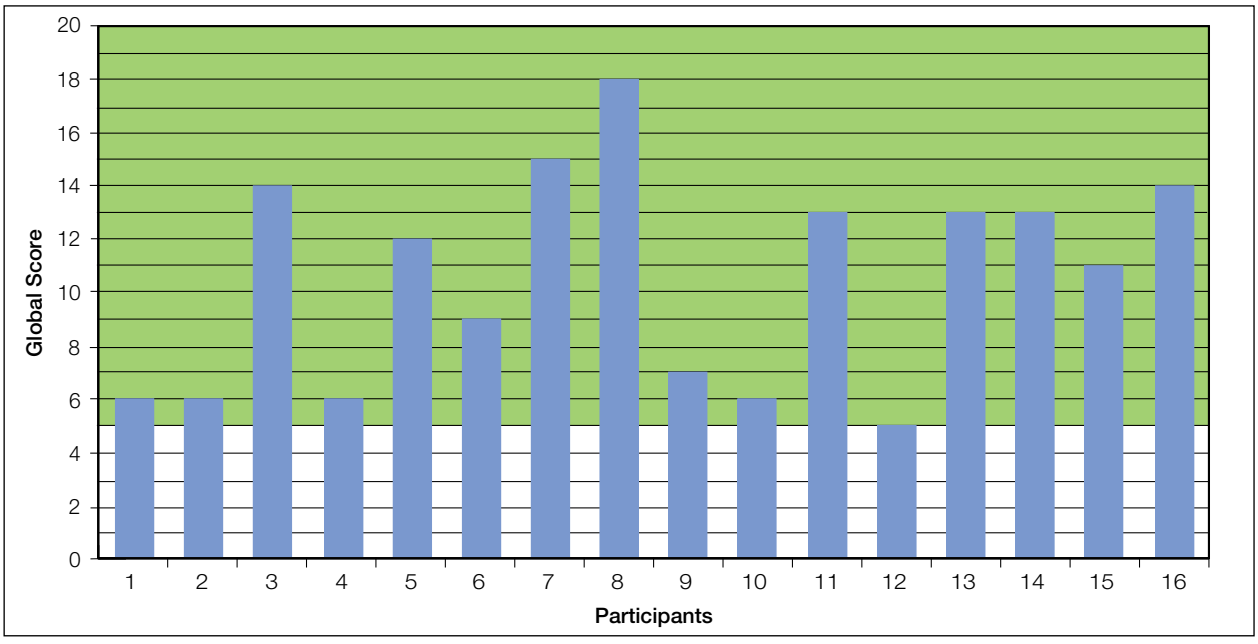

Figure 1. Results of Pittsburgh Sleep Quality Index. White area indicates normal sleep quality; green area, poor sleep quality.

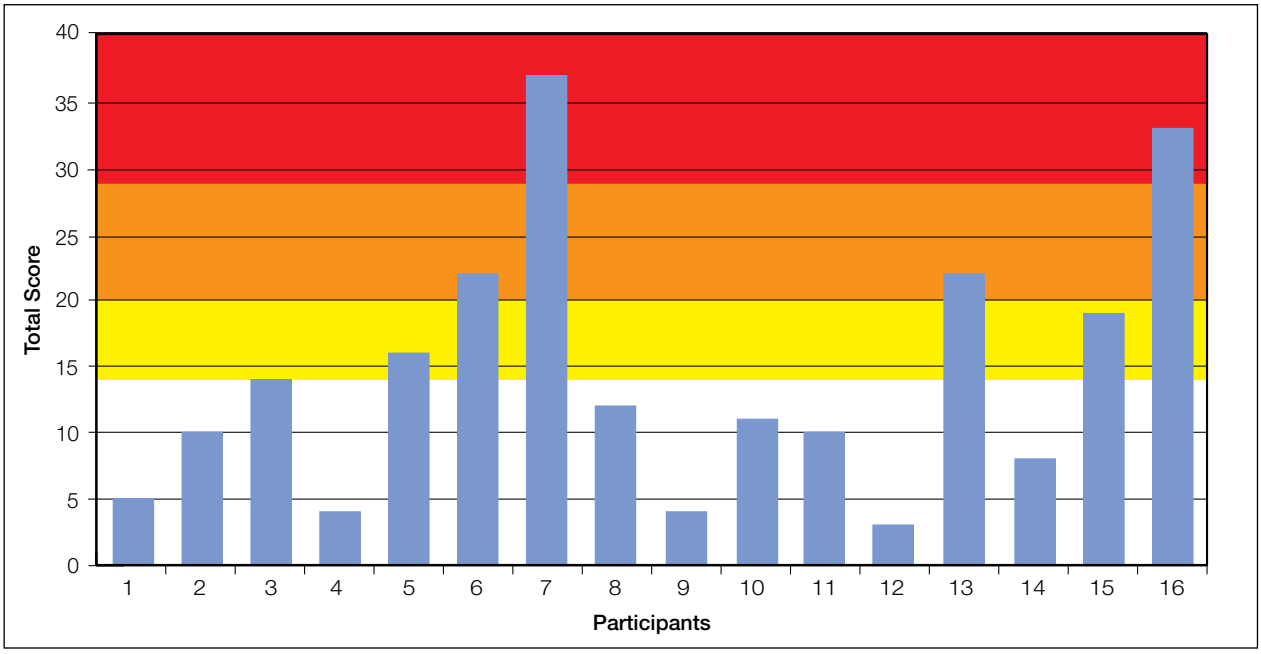

Figure 2. Results of Beck Depression Inventory (BDI-II). Red area indicates severe depression; orange area, moderate depression; yellow area, mild depression; white area, minimal depression. Participant 15 completed 13 of 21 questions of the BDI-II.

questions: Are sleep problems independent of mood problems and related to skin disease? Could sleep problems be triggering factors for future mood problems in our patients? Would abnormal levels of neuropeptides explain the problems with skin, mood, and sleep? Substance P is a good candidate to study in this regard. It is a neuropeptide that is widely distributed in the peripheral and central nervous systems.

In the central nervous system, substance P is colocalized with other neurotransmitters, such as serotonin and dopamine, and acts as a neuromodulator. Substance P has been proposed to play a role in the aetiopathology of diseases, such as asthma, inflammatory bowel disease, emesis, and psoriasis; neuropsychiatric disorders, such as pain syndromes, migraine headaches, and fibromyalgia; and psychiatric disorders, such as anxiety, schizophrenia, and Alzheimer disease.[9] A study in mice showed that substance P reduced sleep efficiency and increased sleep latency and the number of awakenings.[10]

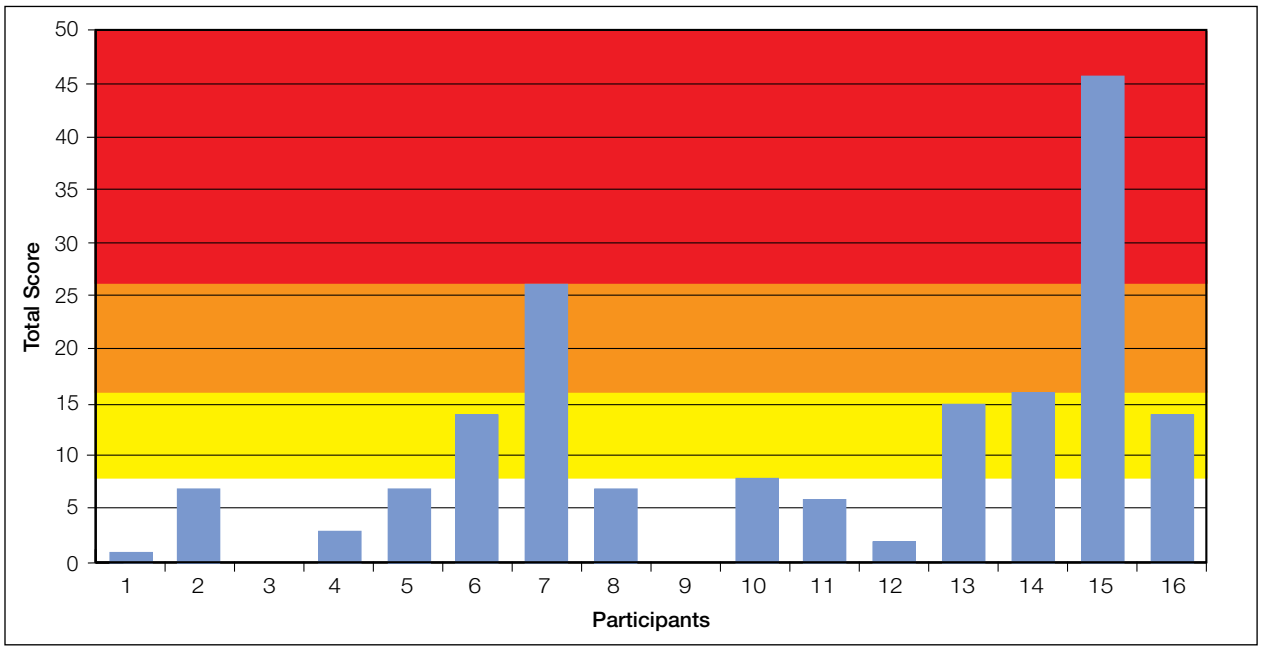

Figure 3. Results of Beck Anxiety Inventory. Red area indicates severe anxiety; orange area, moderate anxiety; yellow area, mild anxiety; white area, minimal anxiety.

In a study of 12 healthy young men, intravenous infusion of substance P caused substantial worsening of mood and an increase in rapid eye movement latency and time awake, which caused an increase in stage 1 sleep during the first part of the night. Cortisol and thyroid-stimulating hormone levels increased and growth hormone levels decreased.[11]

Overall, it appears that substance P has some central arousing effects. It is a substance that has been shown to affect sleep and mood and to cause inflammation of the skin.

Efficacy of substance P receptor antagonists, such as Spantide II (a peptide that binds to neurokinin-1 receptor and blocks proinflammatory activities associated with substance P), on mood disorders as well as on skin and sleep disorders needs further study.

Finally, psychocutaneous subspecialty could play an important role in investigating the connections between brain and skin. In this quest, it is important not to limit ourselves to artificial separation of mind and body and to stay up-to-date in research in both areas. It also is important to continue increasing our awareness about the presence and role of psychological factors in the roots and treatment of chronic skin disorders. We need to continue to investigate the effect of treatment of mood and sleep problems on skin disease.

REFERENCES

1. Fried RG, Gupta MA, Gupta AK. Depression and skin disease. *Dermatol Clin*. 2005;23:657-664.
2. Picardi A, Abeni D, Melchi CF, et al. Psychiatric morbidity in dermatological outpatients: an issue to be recognized. *Br J Dermatol*. 2000;143:983-991.
3. Feldman S, Behnam SM, Behnam SE, et al. Involving the patient: impact of inflammatory skin disease and patient-focused care. *J Am Acad Dermatol*. 2005;53(1)(suppl 1):S78-S85.
4. Absolon CM, Cottrell D, Eldridge SM, et al. Psychological disturbance in atopic eczema: the extent of the problem in school-aged children. *Br J Dermatol*. 1997;137:241-245.
5. Staughton R. Psychologic approach to atopic skin disease. *J Am Acad Dermatol*. 2001;45(suppl 1):S53-S54.
6. Dahl RE, Bernhisel-Broadbent J, Scanlon-Holdford S, et al. Sleep disturbances in children with atopic dermatitis. *Arch Pediatr Adolesc Med*. 1995;149:856-860.
7. Gupta MA, Gupta AK, Schork NJ, et al. Depression modulates pruritis perception: a study of pruritis in psoriasis, atopic dermatitis, and chronic idiopathic urticaria. *Psychosom Med*. 1994;56:36-40.
8. Gupta MA, Gupta AK, Kirkby S, et al. Pruritis in psoriasis: a prospective study of some psychiatric and dermatologic correlates. *Arch Dermatol*. 1988;124:1052-1057.
9. Herpfer I, Lieb K. Substance P and Substance P receptor antagonists in the pathogenesis and treatment of affective disorders. *World J Biol Psychiatry*. 2003;4:56-63.
10. Andersen ML, Nascimento DC, Machado RB, et al. Sleep disturbance induced by substance P in mice. *Behav Brain Res*. 2006;167:212-218.
11. Lieb K, Ahlvers K, Dancker K, et al. Effects of the neuropeptide substance P on sleep, mood, and neuroendocrine measures in healthy young men. *Neuropsychopharmacology*. 2002;27:1041-1049.