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Dermatologists across Europe underestimate depression and anxiety: results from 3635 dermatological consultations*

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Summary

Background It was recently demonstrated that a significant number of patients with common skin diseases across Europe are clinically depressed and anxious. Studies have shown that physicians not trained as psychiatrists underdiagnose depression. This has not been explored among dermatologists.

Objectives To estimate the concordance between clinical assessment of depression and anxiety by a dermatologist and assessment with the Hospital Anxiety and Depression Scale (HADS).

Methods The study was an observational cross-sectional multicentre study of prevalent cases of skin diseases in 13 countries in Europe. Consecutive patients were recruited in outpatient clinics and filled in questionnaires prior to clinical examination by a dermatologist who reported any diagnosis of skin disease and signs of mood disorders.

Results Analysis of the 3635 consultations showed that the agreement between dermatologist and HADS was poor to fair (lower than 0·4) for all diagnosis categories. The true-positive rate (represented by the percentage of dermatologists recognizing signs of depression or anxiety in patients with depression or anxiety as defined by a HADS value ≥ 11) was 44·0% for depression and 35·6% for anxiety. The true negative rate (represented by the percentage of dermatologists not detecting signs of depression or anxiety in non-depressed or non-anxious patients defined by HADS-value < 11) was 88.8% for depression and 85.7% for anxiety.

Conclusions Dermatologists in Europe tend to underestimate mood disorders. The results suggest that further training for dermatologists to improve their skills in diagnosing depression and anxiety might be appropriate. When present, the psychological suffering of patients with dermatological conditions needs to be addressed.

What's already known about this topic?

- It has recently been demonstrated that patients with common skin diseases have more depression and anxiety than controls.
- Research has shown that physicians who are not trained as psychiatrists miss depression in their patients.

What does this study add?

- A large proportion of cases of depression in patients with skin disease are not diagnosed by dermatologists.
- These results indicate that further training for dermatologists to assess depression and anxiety might be appropriate.

The Global Burden of Disease study shows that mood disorders contribute substantially to global morbidity and are often associated with physical conditions.[1] The bilateral contribution of depression to many chronic medical conditions is recognized[2] and has mostly been demonstrated in cross-sectional studies.[3] A recent mental health survey from the World Health Organization carried out in 21 countries demonstrated that major depression is widely undertreated worldwide.[4] Many people with mood disorders have no contact with mental health services and are only managed by general practitioners or other nonpsychiatric physicians.[5] Depression management can be challenging for physicians who are not trained as psychiatrists and the symptomatology of depression is not always obvious: a study in the U.S.A. showed that two-thirds of individuals with depression are undiagnosed in primary care.[6] Many patients go 'doctor-shopping' because of their suffering, which may lead to patients contributing a disproportionate burden on the health system as a whole.

Furthermore, the recognition and the treatment of mood disorders often influences the course of diseases, adherence to treatment and the health behaviour of the patient.[7] The evidence of a strong association between physical conditions and depression and anxiety is demonstrated in several meta-analyses pointing out the need for an integrated care programme including a more holistic approach to the patients' suffering.[8–11]

Dermatologists regularly encounter mood disorders in their clinical work. It was recently estimated that clinical depression is seen in 10% of dermatological consultations and clinical anxiety in 17% of consultations across European dermatological outpatient clinics.[12] The British Association of Dermatologists' Psychodermatology Working Party estimated that 17% of dermatological patients have psychological issues co-occurring with their skin disease.[13] This means that a substantial proportion of patients attending dermatology clinics have underlying psychological conditions and addressing the psychopathology affecting dermatological patients should not be neglected as they are part of the patients' needs for care and, thus, recovery. However, dermatologists are trained to diagnose skin diseases and are not necessarily trained in diagnosing and treating psychiatric comorbidity that might be present in their patients.

This study therefore aimed to estimate the concordance between depression and anxiety assessed with the Hospital Anxiety and Depression Scale (HADS) and clinical assessment by a dermatologist using a brief questionnaire to record signs of depression and anxiety.

Participants and methods

This was an observational cross-sectional multicentre study of prevalent cases of skin diseases conducted by members of the European Society for Dermatology and Psychiatry (ESDaP), previously described in detail including population characteristics.[12] In summary, patients were recruited from dermatological outpatient clinics in 13 European countries from November 2011 to February 2013. The study protocol was approved by the Regional Committee for Medical Research Ethics in Norway and local ethical approval was also obtained where necessary. The study was conducted in accordance with the Declaration of Helsinki.

Settings

At the dermatological outpatient clinic of each centre, 250 consecutive patients were invited to participate in the study on one or more random days until the desired number was reached. All patients were fully informed about the study by a

research assistant and signed a written consent form. The inclusion criteria were: age over 18 years, being able to read and write the local language and not having severe psychosis. Each participant completed a questionnaire and returned it to the consultant at the consultation.

Measures

The first part of the questionnaire recorded self-reported sociodemographic variables.[12]

Depression and anxiety were assessed with the HADS. A review of the validity of the HADS has been examined in 747 studies. These have demonstrated the solid psychometric properties of the instrument in assessing symptom severity and 'caseness' of anxiety disorders and depression in both somatic, psychiatric, primary care patients and in the general population.[14,15] The questionnaire includes seven items assessing anxiety, and seven for depression, each with four possible answers (scored 0–3). For each dimension of anxiety and depression a total score from 0 to 7 is considered normal, from 8 to 10 a borderline case and from 11 to 21 indicating a person with a clinical case in need of further examination or treatment.

The HADS is available in the different languages relevant to the study.[14] For the present study the HADS values were divided into two categories: ≤ 10, no or subclinical signs of mental health distress and ≥ 11, individuals with a clinical case in need of further examination or treatment. Each patient was examined by a dermatologist who recorded the dermatological diagnosis and the objective severity of the condition as 'mild', 'moderate' or 'severe'. The presence of the following treated comorbidities: cardiovascular disease, chronic respiratory disease, diabetes, rheumatological disease and other medical conditions (such as cancer) were specified. In addition, the dermatologists answered the following two questions: 'Do you see depressive signs in the patient?' and 'Do you see anxiety signs in the patient?'. The possible answers were 'yes' or 'no'.

Statistical analysis

The data were entered in a SPSS or an Excel database at each site and analysed at the statistical centre at the Institute of Medical Psychology, University of Giessen, Germany. SPSS version 24 (IBM, Armonk, NY, U.S.A.) software was used to analyse the data.

There were missing data for 250 patients in the case of anxiety and depression assessments by dermatologists, 102 patients for HADS-depression scores and 107 patients for HADS-anxiety scores. Valid cases for measurement of concordance were 3295 for depression and 3293 for anxiety.

Cross-tabulations were performed between clinical depression and anxiety assessed by the dermatologist, and the corresponding HADS for the most common dermatological diagnostic categories. Cohen's kappa (κ) is mostly used to calculate agreement between two raters[16], but kappa also can be used to assess the concordance between alternative methods of

categorical assessment such as in our study. Kappa is a measure of the agreement between the two methods adjusted for what would be expected by chance. To evaluate the strength of concordance we used the recommendation of Fleiss:[16] $\kappa < 0.40$, poor to fair agreement; κ between 0.41 and 0.80, moderate to good; and κ between 0.81 and 1.00, very good agreement.

In addition we calculated the true-positive rate (or sensitivity; depression and anxiety assessed by dermatologist/all patients with HADS-depression and HADS-anxiety values ≥ 11); true-negative rate (or specificity; no depression or anxiety assessed by dermatologist/all patients with HADS-depression and HADS-anxiety values < 11); false-positive rate (depression and anxiety assessed by dermatologist/all patients with HADS-depression and HADS-anxiety values < 11); and false-negative rate (no depression and no anxiety assessed by dermatologist/all patients with HADS-depression and HADS-anxiety values ≥ 11).

Results

Overall the results showed that there was a high concordance between the dermatologists and the HADS questionnaire when there was no depression (79·7%) and no anxiety (70·8%) (Tables 1 and 2). However, overall the true-positive value was 44·0% for depression and 35·6% for anxiety and the false-negative value was 56% for depression and 64·4% for anxiety in the whole sample.

The dermatologists underestimated depression in 5·8% of the consultations and anxiety in 11·2% of the consultations. On the other hand, dermatologists overestimated depression and anxiety in 10·0% and 11·8% of the consultations, respectively.

Clinical assessment of depression was poorer for patients with hand eczema (7·8%), psoriasis (8·8%) and leg ulcers (8·6%); and the overestimation was higher for patients with leg ulcers (20·0%), acne (12·7%) and atopic dermatitis (12·5%).

Clinical underestimation of anxiety was seen especially for individuals with psoriasis (15·7%) and hand eczema (15·6%). Overestimation of anxiety by the dermatologist was highest for patients with leg ulcers (38·7%), infections of the skin (16·1%) and acne (14·1%).

The agreement between the dermatologist and the patient-assessed questionnaire (HADS) was poor to fair (lower than 0·4) for all diagnose categories, which is the lowest category meaning that the concordance is far from satisfactory. The agreement (kappa coefficient) between doctor and patient was a bit higher but still low for depression in patients with hand eczema (0·365), infections of the skin (0·355) and leg ulcers (0·347).

Discussion

Overall the agreement between clinician and patient assessment of mood symptoms was poor, suggesting that mood symptoms are under-recognized by dermatologists in a routine care setting. The presence of mood disorders not only adds to the suffering of patients, but is also relevant for clinicians to

Table 1 Concordance (Cohen's kappa) between depression based on self-report Hospital Anxiety and Depression Scale-Depression (HADS-D) and dermatologist's assessment of depression in dermatological consultations with the most common skin diseases (n = 3295)[a]

Diagnosis	Concordance, n (%)		Discordance, n (%)		True-positive rate, %	True-negative rate, %	False-positive rate, %	False-negative rate, %	Kappa (95% CI)
	Depression assessed by dermatologist; HADS-D ≥ 11	No depression assessed by dermatologist; HADS-D < 11	No depression assessed by dermatologist; HADS-D ≥ 11	Depression assessed by dermatologist; HADS-D < 11					
Psoriasis	32 (5·5)	434 (74·6)	51 (8·8)	65 (11·2)	39 (32/83)	87·0 (434/499)	13·0 (65/499)	61·4 (51/83)	0·239 (0·136 to 0·339)
NMSC	6 (1·8)	307 (90·6)	9 (2·6)	17 (5·0)	40 (6/15)	94·8 (307/324)	5·2 (17/324)	60·0 (9/15)	0·277 (0·082 to 0·474)
Infections of the skin	11 (4·9)	182 (81·6)	7 (3·1)	23 (10·3)	61 (11/18)	88·8 (182/205)	11·2 (23/205)	39 (7/18)	0·355 (0·165 to 0·530)
Eczema	6 (2·8)	180 (84·9)	12 (5·7)	14 (6·6)	33 (6/18)	92·8 (180/194)	7·2 (14/194)	67 (12/18)	0·249 (0·026 to 0·449)
Acne	3 (1·5)	167 (81·4)	9 (4·4)	26 (12·7)	25 (3/12)	86·5 (167/193)	13·5 (26/193)	75 (9/12)	0·069 (−0·072 to 0·231)
Nevi	0 (0·0)	143 (90·5)	10 (6·3)	5 (3·2)	0 (0/10)	96·6 (143/148)	3·4 (5/148)	100 (10/10)	−0·044 (−0·071 to −0·012)
Atopic dermatitis	7 (4·6)	117 (77·0)	9 (5·9)	19 (12·5)	44 (7/16)	86·0 (117/136)	14·0 (19/136)	56 (9/16)	0·233 (0·045 to 0·428)
Benign skin tumours	1 (0·7)	121 (87·1)	6 (4·3)	11 (7·9)	14·3 (1/7)	91·7 (121/132)	8·3 (11/132)	86 (6/7)	0·044 (−0·081 to 0·267)
Hand eczema	9 (7·0)	98 (76·6)	10 (7·8)	11 (8·6)	47·4 (9/19)	89·9 (98/109)	10·1 (11/109)	53 (10/19)	0·365 (0·131 to 0·590)
Leg ulcers	18 (17·1)	57 (54·3)	9 (8·6)	21 (20·0)	67 (18/27)	73 (57/78)	27 (21/78)	33 (9/27)	0·347 (0·153 to 0·526)
All dermatology patients	149 (4·5)	2625 (79·7)	190 (5·8)	331 (10·0)	44·0 (149/339)	88·8 (2625/2956)	11·2 (331/2956)	56·0 (190/339)	0·277 (0·229 to 0·321)

CI, confidence interval; NMSC, nonmelanoma skin cancer. [a]True-positive rate: depression assessed by dermatologist/all HADS-D ≥ 11; true-negative rate: no depression assessed by dermatologist/all HADS-D < 11; false-positive rate: depression assessed by dermatologist/all HADS-D < 11; false-negative rate: no depression assessed by dermatologist/all HADS-D ≥ 11.

Table 2 Concordance (Cohen's kappa) between anxiety based on self-report Hospital Anxiety and Depression Scale-Anxiety (HADS-A) and dermatologist's assessment of anxiety in dermatological consultations with most common skin diseases (n = 3293)

Diagnosis	Concordance, n (%)		Discordance, n (%)		True-positive rate, %	True-negative rate, %	False-positive rate, %	False-negative rate, %	Kappa (95% CI)
	Anxiety assessed by dermatologist; HADS-A ≥ 11	No anxiety assessed by dermatologist; HADS-A < 11	No anxiety assessed by dermatologist; HADS-A ≥ 11	Anxiety assessed by dermatologist; HADS-A < 11					
Psoriasis	40 (6·8)	401 (68·4)	92 (15·7)	53 (9·0)	30·3 (40/132)	88·3 (401/454)	11·7 (53/454)	69·7 (92/132)	0·208 (0·110 to 0·298)
NMSC	10 (2·9)	291 (85·8)	19 (5·6)	19 (5·6)	34 (10/29)	93·9 (291/310)	6·1 (19/310)	66 (19/29)	0·284 (0·093 to 0·450)
Infections of the skin	12 (5·4)	159 (71·3)	16 (7·2)	36 (16·1)	43 (12/28)	81·5 (159/195)	18·5 (36/195)	57 (16/28)	0·187 (0·039 to 0·331)
Eczema	12 (5·7)	150 (71·1)	23 (10·9)	26 (12·3)	34·(12/35)	85·2 (150/176)	14·8 (26/176)	66 (23/35)	0·189 (0·024 to 0·359)
Acne	9 (4·4)	144 (70·2)	23 (11·2)	29 (14·1)	28·(9/32)	83·2 (144/173)	16·8 (29/173)	72 (23/32)	0·106 (−0·041 to 0·263)
Nevi	4 (2·6)	131 (84·5)	13 (8·4)	7 (4·5)	24 (4/17)	94·9 (131/138)	5·1 (7/138)	76 (13/17)	0·218 (−0·011 to 0·453)
Atopic dermatitis	11 (7·2)	107 (70·4)	15 (9·9)	19 (12·5)	42 (11/26)	84·9 (107/126)	15·1 (19/126)	58 (15/26)	0·257 (0·081 to 0·441)
Benign skin tumours	4 (2·9)	108 (77·7)	11 (7·9)	16 (11·5)	27 (4/15)	87·1 (108/124)	12·9 (16/124)	73 (11/15)	0·120 (−0·072 to 0·328)
Hand eczema	8 (6·3)	89 (69·5)	20 (15·6)	11 (8·6)	29 (8/28)	89·0 (89/100)	11·0 (11/100)	71 (20/28)	0·199 (0·008 to 0·393)
Leg ulcers	11 (10·4)	45 (42·4)	9 (8·5)	41 (38·7)	55 (11/20)	52 (45/86)	48 (41/86)	45 (9/20)	0·045 (−0·113 to 0·204)
All dermatology patients	204 (6·2)	2330 (70·8)	369 (11·2)	390 (11·8)	35·6 (204/573)	85·7 (2330/2720)	14·3 (390/2720)	64·4 (369/573)	0·210 (0·169 to 0·250)

CI, confidence interval; NMSC, nonmelanoma skin cancer. [a]True-positive rate: anxiety assessed by dermatologist/all HADS-A ≥ 11; true-negative rate: no anxiety assessed by dermatologist/all HADS-A < 11; false-positive rate: anxiety assessed by dermatologist/all HADS-A < 11; false-negative rate: no anxiety assessed by dermatologist/all HADS-A ≥ 11.

recognize and address when treating patients with skin diseases because it could influence the course of the skin disease and the adherence to treatment. To the best of our knowledge this aspect of clinical dermatology has not yet been described in the dermatological literature.

Discordance between clinician- and patient-assessed clinical depression was found in several settings with a similar approach. In a primary care setting among 231 participants, two-thirds of the patients with depression were undiagnosed by the practitioner. In this study they estimated the agreement between the physician documentation of depression and the self-reported Patient Health Questionnaire (PHQ-9) and the Cohen's kappa analysis showed only weak agreement.[6] In previous studies the recognition of depressive symptoms in a general practice setting has been reported in the range of 50%, although major depression has been reportedly recognized at a rate of 64%.[17–19]

Oncologists could also be more astute assessors of depressive symptoms: a study in patients with cancer by Gouveia *et al.* indicates an oncologist's sensitivity as 33% for individual symptoms of depression.[20] Taken together, these studies imply that the problem of low recognition of depressive symptoms in patients with somatic disease is not limited to dermatologists. Similar low recognition rates may be found using patients' self-assessment.[21]

It is noticeable that the underestimation of depression and anxiety was particularly poor for patients with chronic dermatological conditions such as psoriasis, hand eczema and leg ulcers. This points to the importance of focusing on patients with longstanding conditions that do not get better. Here, adherence problems might be present because of psychological suffering that is not addressed, because it is not recognized.

The importance of using patient reported outcome measures (PROMs) in clinical work was recently stressed in the *New England Journal of Medicine*.[22] In dermatology, quality of life measures are the most widely and extensively used PROMs.[23–25] A Danish study estimated the correlation between physician-assessed morbidity of the patient and the self-reported Dermatology Life Quality Index (DLQI) in 51 patients with dermatological conditions. Physicians underestimated morbidity in patients with more benign disease and overestimated morbidity in patients with more aggressive disease, compared with the patient's assessment.[26] A systematic review to determine whether there is any correlation between DLQI scores and psychiatric measure scores was performed. It concluded that the DLQI correlated well with the depression domain of the HADS score. This raises the possibility of the use of DLQI data to alert clinicians to depression.[25]

For the purpose of this study the HADS is taken as the gold standard, but the HADS is not free of errors when detecting depression and anxiety. It has false-negative and false-positive rates in addition to true-positive and true-negative rates. So probably a small number of the HADS-negative but physician-'positive' patients may have been genuinely depressed or genuinely anxious. Nevertheless,

because of the high number of consultations the results are probably clinically relevant.

A limitation of this study is that no detailed instructions were given to the dermatologists on the assessment of depression or anxiety. Therefore, there could be a difference in basic skills in assessing symptoms of depression and anxiety in the different dermatologists. This could be because of differences in training and a difference in interest in mental health conditions.

Other limitations to our study have been described previously.[12] Unfortunately, because of too small numbers of diagnostic categories within countries we were not able to describe the concordance between dermatologist and patients, country by country. We have therefore focused on the most common diagnoses, as described previously.[12]

This study shows that dermatologists across Europe tend to underestimate mood disorders in a significant group of patients. The implications of these findings could be that further training for dermatologists to improve their skills in recognizing depression and anxiety might be appropriate. The findings support the need for psychodermatology services for some patients with dermatological conditions and future research should assess the benefits of a multidisciplinary approach to treating patients with dermatological conditions with psychological comorbidity.

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