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

Journal:	*British Journal of Dermatology*
Manuscript ID	BJD-2017-1172.R2
Manuscript Type:	Original Article
Date Submitted by the Author:	n/a
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Keywords:	depression, anxiety, out patients, agreement, concordance

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Article type: Original article

Title

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

Running head

Dermatologists underestimate depression

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Funding sources: no funding sources

Conflict of interest: the corresponding author has no conflict of interest

Manuscript word: 1981 words

Bulleted statements

What's already known about this topic?

-It has recently been demonstrated that patients with common skin diseases have more depression and anxiety compared to controls

-Research has shown that physicians who are not trained as psychiatrists miss depression in their patients

What does this study add?

-There is a large proportion of cases of depression among patients with skin disease that are not diagnosed by the dermatologist

-These results indicate that further training for dermatologist to assess depression and anxiety might be appropriate

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 psychiatrist 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.

Methods

The study was an observational cross-sectional multi-centre study of prevalent cases of skin diseases in 13 countries in Europe. Consecutive patients were recruited in out-patient 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 diagnose categories. The true positive rate (represented by the percentage of dermatologists recognizing signs of depression or anxiety in depressed or anxious patients defined by 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 56.0% for depression and 64.4% for anxiety.

Conclusions

Dermatologists in Europe tend to underestimate mood disorders. The results point out that further training for dermatologists to improve their skills in diagnosing depression and anxiety

might be appropriate. The psychological suffering of dermatological patients needs to be addressed when present.

Introduction

The Global Burden of Disease study shows that mood disorders contribute substantially to the global morbidity and are often associated with physical conditions[1]. The bilateral contribution of depression to many chronic medical conditions is recognized[2] and 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 the mental health services and are only managed by general practitioners or other non-psychiatric 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 USA 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 the disease, the 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 needs of an integrated care program 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 the dermatological consultations and clinical anxiety in 17% of the consultations across European dermatological out-patient clinics[12]. The British Association of Dermatologists Working Party for Psychodermatology 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 questionnaire recording signs of depression and anxiety.

Participants and methods

This was an observational cross-sectional multi-centre 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 out-patient clinic of each...At the dermatological out-patient clinic of each center, 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 suffering from 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 socio-demographic variables [12].

Depression and anxiety were assessed with the Hospital Anxiety and Depression Scale (HADS). A review of the validity of the HADS was examined in 747 studies. It demonstrated 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 0-7 is considered normal, from 8-10 borderline case, and from 11-21 indicating clinical case in need for further examination or treatment. The HADS was available in the different languages relevant to the study[14]. For the present study the HADS values were divided into two groups: ≤10 = no or subclinical signs of mental health distress and ≥11 = clinical case in need for 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 co-morbidities: cardio-vascular disease, chronic respiratory disease, diabetes, rheumatologic disease, and other medical conditions (like 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 analyzed at the statistical centre at the Institute of Medical Psychology, University of Giessen, Germany. SPSS version 24 software was used to analyze the data.

Cross-tabulations were performed between clinically depression and anxiety assessed by the dermatologist, and the corresponding HADS for the most common dermatological diagnostic categories. Cohen´s kappa 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 two methods adjusted for what would be expected by chance. To evaluate the strength of concordance we used the recommendation of Fleiss[16]: kappa <.40 = poor to fair agreement; kappa between 0.41 and 0.80 = moderate to good; kappa 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); the 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%). But 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 respectively 10.0% and 11.8% of the consultations.

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 cases of 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 dermatologist and 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 cases of 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 dermatologist 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 recognize and address when treating patients with skin disease 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 so far in 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-third of the depressed patients 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 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 cancer patients by Gouveia et al however indicates an oncologist's sensitivity of only 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 reached by 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 out the importance to focus on patients with longstanding conditions who 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 dermatological patients. Physicians underestimated morbidity in patients with more benign disease and overestimated morbidity in patients with more aggressive disease, compared with the patients' assessment[26]. A systematic review to determine whether there is any correlation between DLQI scores and psychiatric measures 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 as well as 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 due to differences in training and a difference in interest in mental health conditions.

Other limitations to our study are 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 recognising depression and anxiety might be appropriate. The study supports the necessity of available psychodermatology services for some dermatological patients and future research should assess the benefits of multidisciplinary approach of dermatological patients with psychological comorbidity."

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Table 1 Concordance (Cohen´s kappa) between depression based on self-report (HADS) and dermatologist's assessment of depression in dermatological consultations with the most common skin diseases (n=3295)

	concordance		disconcordance						
Diagnose	depression assessed by dermatol.; HADS-D ≥11 n (%)	no depression assessed by dermatol.; HADS-D <11 n (%)	no depression assessed by dermatol.: HADS-D ≥11 n (%)	depression assessed by dermatol.: HADS-D <11 n (%)	True positive rate %	True negative rate %	False positive rate %	False negative rate %	Kappa (95%CI)
Psoriasis	32 (5.5)	434 (74.6)	51 (8.7)	65 (11.2)	38.6 (32/83)	87.0 (434/499)	13.0 (65/499)	61.4 (51/83)	.239 (.136; .339)
NMSC	6 (1.8)	307 (90.6)	9 (2.6)	17 (5.0)	40.0 (6/15)	94.8 (307/324)	5.2 (17/324)	60.0 (9/15)	.277 (.100; .474)
Infections of the skin	11 (4.9)	189 (81.6)	7 (3.2)	23 (10.3)	61.1 (11/18)	89.2 (189/212)	10.8 (23/212)	38.9 (7/18)	.355 (.165; .530)
Eczema	6 (2.8)	180 (84.9)	12 (5.7)	14 (6.6)	33.3 (6/18)	92.8 (180/194)	7.2 (14/194)	66.7 (12/18)	.249 (.106; .449)
Acne	3 (1.5)	167 (81.4)	9 (4.4)	26 (12.7)	25.0 (3/12)	86.5 (167/193)	13.5 (26/193)	75.0 (9/12)	.069 (-.072; .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)	-.044 (-.071; -.012)
Atopic Dermatitis	7 (4.6)	117 (77.0)	9 (5.9)	19 (12.5)	43.8 (7/16)	86.0 (117/136)	14.0 (19/136)	56.2 (9/16)	.233 (.045; .428)
Benign skin tumors	1 (0.7)	121 (87.1)	6 (4.3)	11 (7.9)	14.3 (1/7)	91.7 (121/132)	8.3 (11/132)	85.7 (6/7)	.044 (-.081; .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)	52.6 (10/19)	.365 (.131; .590)
Leg ulcers	18 (17.1)	57 (54.3)	9 (8.6)	21 (20.0)	66.7 (18/27)	73.1 (57/78)	26.9 (21/78)	33.3 (9/27)	.347 (.153; .526)
All derm. 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)*	*.277 (.229; .321)*

True positive rate: depression assessed by dermatologist/ all HADS-depression >=11; True negative rate: no depression assessed by dermatologist / all HADS-depression <11
False positive rate: depression assessed by dermatologist / all HADS-depression <11; False negative rate: no depression assessed by dermatologist / all HADS-depression >=11

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

	concordance		dis concordance						
Diagnose	anxiety assessed by dermatol.; HADS-A ≥11 n (%)	no anxiety assessed by dermatol.; HADS-A <11 n (%)	no anxiety assessed by dermatol.: HADS-A ≥11 n (%)	anxiety assessed by dermatol.: HADS-A <11 n (%)	True positive rate %	True negative rate %	False positive rate %	False negative rate %	Kappa (95%CI)
Psoriasis	40 (6.8)	401 (68.4)	92 (15.7)	53 (9.1)	30.3 (40/132)	88.3 (401/454)	11.7 (53/454)	69.7 (72/132)	.208 (.110; .298)
NMSC	10 (3.0)	291 (85.8)	19 (5.6)	19 (5.6)	34.4 (10/29)	93.9 (291/310)	6.1 (19/310)	65.6 (19/29)	.284 (.093; .450)
Infections of the skin	12 (5.4)	159 (71.3)	16 (7.2)	36 (16.1)	42.9 (12/28)	81.5 (159/195)	18.5 (36/195)	57.1 (16/28)	.187 (.039; .331)
Eczema	12 (5.7)	150 (71.1)	23 (10.9)	26 (12.3)	34.3 (12/35)	85.2 (150/176)	14.8 (26/176)	65.7 (23/35)	.189 (.024; .359)
Acne	9 (4.4)	144 (70.2)	23 (11.2)	29 (14.2)	28.1 (9/32)	83.2 (144/173)	16.8 (29/173)	71.9 (23/32)	.106 (-.041; .263)
Nevi	4 (2.6)	131 (84.5)	13 (8.4)	7 (4.5)	23.5 (4/17)	94.9 (131/138)	5.1 (7/138)	76.5 (13/17)	.218 (-.011; .453)
Atopic dermatitis	11 (7.2)	107 (70.4)	15 (9.9)	19 (12.5)	42.3 (11/26)	84.9 (107/126)	15.1 (19/126)	57.7 (15/26)	.257 (.081; .441)
Benign skin tumors	4 (2.9)	108 (77.7)	11 (7.9)	16 (11.5)	25.0 (4/16)	87.1 (108/124)	12.9 (16/124)	75.0 (12/16)	.120 (-.072; .328)
Hand eczema	8 (6.3)	89 (69.5)	20 (15.6)	11 (8.6)	28.6 (8/28)	89.0 (89/100)	11.0 (11/100)	71.4 (20/28)	.199 (.008; .393)
Leg ulcers	11 (10.4)	45 (42.4)	9 (8.5)	41 (38.7)	55.0 (11/20)	52.3 (45/86)	47.7 (41/86)	45.0 (9/20)	.045 (-.113; .204)
All derm. 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)*	*.210 (.169; .250)*

True positive rate: anxiety assessed by dermatologist/ all HADS-anxiety >=11; True negative rate: no anxiety assessed by dermatologist / all HADS-anxiety <11
False positive rate: anxiety assessed by dermatologist / all HADS-anxiety <11; False negative rate: no anxiety assessed by dermatologist / all HADS-anxiety >=

Professor Alex Anstey
Editor
British Journal of Dermatology

Dear Professor Alex Anstey,

We thank you for your suggestions for improving our manuscript. I have carefully made the changes and I apologise for the typo errors. I have underlined all the changes in the manuscript. Following the cover letter I have listed the details of the changes point by point. On behalf of my co-authors I hope the manuscript with the title "**Dermatologists across Europe underestimate depression and anxiety: results from 3635 dermatological consultations"** can be considered for publication in the British Journal of Dermatology.

Yours sincerely,
Florence Dalgard MD, PhD on behalf of the co-authors

Comments to minor revisions

P 4 l 33: we corrected to "diagnosis".

P5 line 14: we corrected to " substantially".

P5 line 25: we deleted space after "physician".

P5 l 48: we deleted space after "clinics".

P33 line 6 :we changed to "At the dermatological out-patient clinic of each center,".

P 7 line 9 we changed to "signs of mental health distress".

P7 line 33: we agree that a careful clarification is needed and added "clinically assessed by the dermatologist": "clinically depression and anxiety assessed by the dermatologist".

P 9 line 6: we deleted "clinical" for clarifying.

P 9 line 14: we corrected to "at a rate…".

P 9 line 22: Thank you for your suggestion. We split the sentence in order to make it more readable:

"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 out the importance to focus on patients with longstanding conditions who do not get better. Here, adherence problems might be present because of psychological suffering that is not addressed because it is not recognized."

P 9 line 42-49: Thank you for your suggestion. We split the sentence to increase readability:

"A systematic review to determine whether there is any correlation between DLQI scores and psychiatric measures 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."

P 9 lines 51-53: Thank you for your suggestion to clarify the sense of the sentence. We added:

"…but the HADS is not free of errors when detecting depression and anxiety. It has false negative and false positive rates as well as true positive and true negative rates."

P 10 lines 2-10: Thanks for the suggestion to split the sentence and adding "mental health conditions" at the end. We changed accordingly:

"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 due to differences in training and a difference in interest in mental health conditions."
We split the sentence p 6 "A review of the validity of the HADS was examined in 747 studies demonstrating 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"

"A review of the validity of the HADS was examined in 747 studies. It demonstrated 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"

We split the sentence "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 pointing out the importance to focus on these issues in patients with longstanding conditions who do not get better where adherence problems might be present because of psychological suffering that is not addressed because it is not recognized."

as described under point referring to p 9 line 22.

Yours sincerely,

Florence Dalgard