INVESTIGATIVE REPORT

Subjective Disease Perception and Symptoms of Depression in Relation to Healthcare-seeking Behaviour in Patients with Rosacea

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Many patients with rosacea do not seek medical care. The aim of this study was to find predictors for healthcare-seeking behaviour among patients with rosacea. The study subjects were 70 consecutive patients attending a dermatologist (seekers) and 56 subjects with rosacea symptoms selected randomly from among the working population (non-seekers). All subjects completed an Estonian Mood Scale questionnaire, a screening instrument for depressive symptoms, and evaluated their subjective disease perception on a visual analogue scale (VAS). Multivariate analysis showed that the independent predictors for healthcare-seeking behaviour were VAS scores >5 and the presence of advanced forms of rosacea. Higher mean VAS scores were not related to severity of rosacea, but were associated with the presence of depressive symptoms among seekers. In conclusion, healthcare-seeking behaviour is associated with higher subjective disease perception. The presence of depressive symptoms is not related to severity of the disease, but to the subjective disease perception of rosacea patients. *Key words: rosacea; healthcare-seeking behaviour; perception; depressive symptoms.*

Rosacea is a common chronic facial dermatosis characterized by transient or persistent central facial erythema, visible blood vessels, and often papules and pustules (1). Population-based studies have found the prevalence rate of rosacea to be in the range 2–10% (2, 3). Studies with patients of dermatology clinics have established the prevalence rate of rosacea to be 0.5–3% on the basis of referrals to various dermatology centres (4–6). This suggests that many patients with rosacea never seek medical care for their rosacea.

It has been shown previously that patients with rosacea have higher odds for co-morbidity with depression (6). In fact, the theory that rosacea has a psychosocial impact has evolved mainly from observations of clinic-based patients, while relevant data for rosacea patients who have not sought medical care are scarce.

The aim of the current study was to find predictors for healthcare-seeking behaviour among rosacea patients and to compare the presence of the symptoms of depression and subjective disease perception in relation to the subjects' healthcare-seeking behaviour.

MATERIALS AND METHODS

Consecutive patients with rosacea ($n = 70$) attending the same dermatologist from the Clinic of Dermatovenereology of the University of Tartu during the study period (November 2005 to December 2007) due to rosacea were classified according to their healthcare-seeking behaviour as seekers. Non-seekers were obtained from among employees from randomly selected institutions (e.g. companies dealing with manufacturing, sales, service, education, transportation or medicine) of Tartu within a cross-sectional field study addressing prevalence of rosacea. During the prevalence study at least one of the primary features of rosacea was found in 78 subjects out of 348 (22%) (unpublished data). From November 2005 to December 2007 56 consecutive subjects who had never sought medical care due to their rosacea were included in the current study as non-seekers. All study subjects were examined by the same dermatologist according to the National Rosacea Society Expert Committee (NRSEC) classification (7) and their rosacea was classified as erythemato-telangiectatic, papulopustular or phymatous (if skin thickening and irregular surface nodularities were present). Rosacea was also graded according to the NRSEC classification as follows: mild erythema, telangiectasia and/or few papules/pustules on the face were defined as mild rosacea; moderate erythema, telangiectasia and/or several papules/pustules were defined as moderate rosacea; severe erythema, telangiectasia and/or many papules/pustules were defined as severe rosacea (8). Prior to the study all study subjects gave their informed written consent to participate.

Subjects completed a questionnaire including such data as age, gender, education, personal detrimental habits, occupational characteristics and previous general medical history. For screening for presence of depressive symptoms, all subjects completed an Estonian Mood Scale (EMS) questionnaire (also known as EST-Qnew2) (9, 10). The EMS has proved to be an applicable screening instrument for identifying depressive symptoms in primary care attendees, with a sensitivity of 0.81 and specificity of 0.81 (9). The subjects evaluated, on a 5-point scale (0 = not at all; 1 = seldom; 2 = sometimes, 3 = frequently, 4 = continuously), such symptoms as feelings of sadness, lack of interest, worthlessness, no enjoyment, excessive worrying and rest does not restore strength during the past 4 weeks. Subjects with an EMS score > 11 were defined as EMS-positive and those with a score of 0–11 were defined as EMS-negative.

For evaluating subjective disease perception, the participants were also asked to mark on a 10-cm continuous visual analogue scale (VAS) how disturbing their rosacea had been during the past 4 weeks. The location of each mark on VAS was measured to 1 mm and was scored from 0 to 10 (0 = not at all disturbing; 10 = maximally disturbing).

Statistical analysis

Statistical analysis was performed using the statistical package SAS Version 9.1 (2002–2003, SAS Institute Inc., Cary, NC, USA). Continuous variables are presented as mean values ± standard deviation, and qualitative variables are presented as absolute and relative frequencies. Statistical comparisons between normally distributed continuous variables and categorical variables were performed with Student's *t*-test. The Kolmogorov-Smirnov criterion was used for assessment of normality. To compare proportions (qualitative variables) the χ^2 test and the Fisher's exact test (in case expected values were <5%) were employed. Odds ratios (OR) and 95% confidence interval (CI) were used to estimate relative risk. Multiple logistic regression analysis was used to determine significant independent predictors for healthcare-seeking behaviour among seekers. All *p*-values were two-sided and differences were considered statistically significant if *p*-values were <0.05.

The study protocol was approved by the ethics committee at the University of Tartu.

RESULTS

There were no statistically significant differences in gender, age, education level and EMS scores between seekers and non-seekers, but seekers more frequently had moderate or severe forms of rosacea, and more frequently had either papulopustular or phymatous rosacea compared with non-seekers (Table I). Seekers presented significantly higher VAS scores (6.2 ± 3.1) compared with non-seekers (3.1 ± 2.7) (*p* < 0.0001). However, mean VAS scores were not related to severity of rosacea: among seekers the mean VAS scores were >6 in all severity groups, while among the non-seekers mean VAS scores remained around 3 in all severity groups (Fig. 1).

Table I. *Comparison of subjects with rosacea in relation to healthcare-seeking behaviour*

Variable	Seekers (*n* = 70)	Non-seekers (*n* = 56)	*p*-value
Gender, *n* (%)			
Male	26 (37)	22 (39)	NS
Female	44 (63)	34 (61)	
Mean age (± SD) years	48 (± 13)	45 (± 9)	NS
Education, *n* (%)			
Elementary or high school	51 (73)	36 (64)	
University degree	19 (27)	20 (36)	NS
Severity of rosacea, *n* (%)			
Mild	24 (34)	45 (80)	
Moderate	33 (47)	10 (18)	
Severe	13 (19)	1 (2)	<0.0001
Subtypes of rosacea, *n* (%)			
Erythematotelangiectatic	16 (23)	42 (75)	
Papulopustular	46 (66)	14 (25)	
Phymatous	8 (11)	0	<0.0001
EMS score, *n* (%)			
<11	55 (79)	47 (84)	
>11	15 (21)	9 (16)	NS
VAS score, *n* (%)			
0–5	25 (36)	44 (79)	
>5	45 (64)	12 (21)	<0.0001
Mean VAS score (± SD)	6.2 (± 3.1)	3.1 (± 2.7)	<0.0001

NS: not significant; SD: standard deviation; EMS: Estonian Mood Scale; VAS: visual analogue scale.

There were no statistically significant differences, either in co-morbidities, which might add to depressive symptoms (e.g. thyroid disease or previous history of malignancies), or in the use of medication for any other medical purposes.

Multivariate analysis showed that the independent predictors for healthcare-seeking behaviour among seekers were higher subjective disease perception (VAS scores > 5), presence of papulopustular rosacea and presence of moderate or severe forms of rosacea. Healthcare-seeking behaviour was not dependent on age, gender, education or EMS-positivity (Table II).

The prevalence rate of depressive symptoms according to the EMS was relatively high, 21% (15 out of 70) for seekers and 16% (9 out of 56) for non-seekers (Table I). For reference, 11% (18 out of 167) of skin healthy controls from the same randomly selected employee population had depressive symptoms according to the EMS (the difference was statistically non-significant). EMS-positive seekers had significantly higher mean ± SD VAS scores (7.9 ± 2.1) compared with EMS-negative seekers (5.8 ± 3.1) (*p* < 0.05); this difference was non-significant for non-seekers (Fig. 2).

Female subjects with rosacea had significantly higher mean ± SD VAS scores (5.9 ± 3.2) compared with male subjects (3.2 ± 2.6) (*p* < 0.0001) (Fig. 3).

DISCUSSION

The current study evaluated indicators that predict healthcare-seeking behaviour in rosacea patients.

A strong independent predictor for healthcare-seeking behaviour was severity of disease, although 20% of the non-seekers with either moderate or severe rosacea had missed the potential benefit of dermatological care. Similar results were also found in another study conducted among dermatological patients with hand eczema (11).
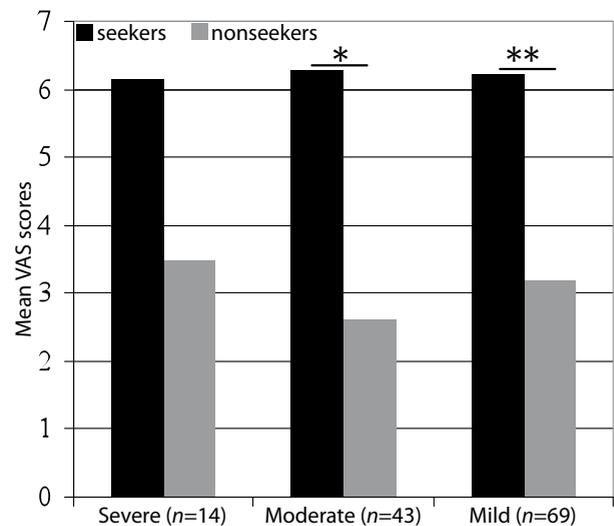

Fig. 1. Mean visual analogue scale (VAS) scores among seekers and non-seekers in relation to severity of rosacea. **p* = 0.001, **p < 0.0001.

Table II. *Predictors for healthcare-seeking behaviour among study subjects with rosacea (*n = *126)*

Variable	OR	95% CI	*p*-value
VAS scores > 5	12.0	3.51–40.74	<0.0001
Moderate/severe rosacea	6.8	2.23–20.55	0.001
Papulopustular rosacea	6.9	2.41–19.49	<0.0001

OR: odds ratio; CI: confidence interval; VAS: visual analogue scale.

Of the seekers, the majority (66%) had papulopustular rosacea and 11% had phymatous rosacea. Although, according to previous prevalence studies, the prevalence rate of erythematotelangiectatic rosacea is three times higher than that of papulopustular rosacea, and phymatous rosacea is a rare form (3, 5), the respective rates established in the study were similar for non-seekers. This suggests that many subjects with erythema and telangiectasia regard their skin changes as a skin condition rather than a true skin disease and only the presence of inflammation stimulates patients to seek medical care.

Seekers presented significantly higher subjective disease perception compared with non-seekers but this measure was not related to severity of rosacea (Fig. 1). Thus, besides the advanced forms of rosacea, subjective disease perception is a strong independent predictor for healthcare-seeking behaviour irrespective of disease severity.

It has also been found, in other dermatological diseases, that the clinical severity of the disease measured by the dermatologist does not correlate with the patients' subjective health measures (12, 13), especially if the skin disease affects an "emotionally charged" body region, such as the face (14, 15), particularly in female patients (13, 16), as was also found in the current study. Subjective disease perception and social factors are thought to have a greater impact on health-related quality of life than the clinical issue (17); illness perception also significantly
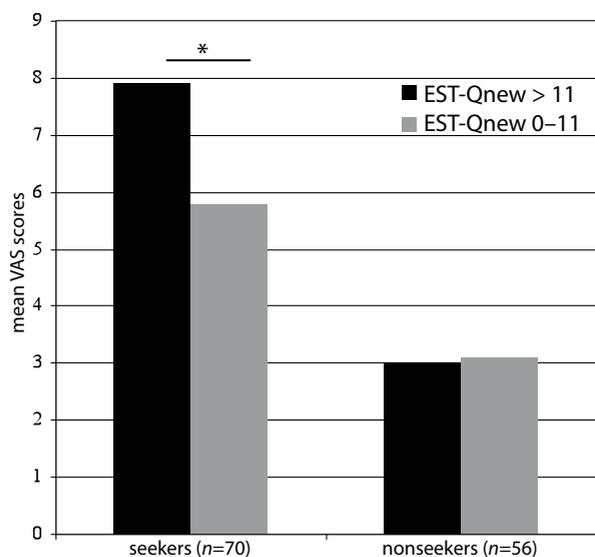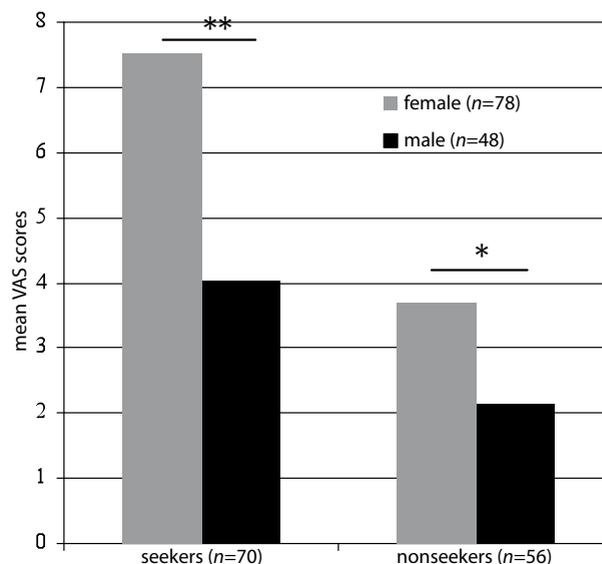

Fig. 3. Mean visual analogue scale (VAS) scores among male and female study subjects (*n* = 126). **p* = 0.012, ***p* < 0.0001.

influences treatment behaviour (18), and it is suggested that more attention should be paid to mental well-being, at least in the case of patients actively seeking medical care (19). In the current study VAS was used as a self-assessment tool for evaluating subjective disease perception. In a previous study among atopic eczema patients a simple VAS score of the patients' assessment of disease severity showed significant correlation with most health-related quality of life (HRQoL) methods (20). Although VAS described well the relevant differences between the subjects in the current study, this instrument has rarely been used for evaluation of subjective disease perception among dermatological patients.

In the current study healthcare-seeking behaviour was not related to gender, age, education or presence of depressive symptoms, although previous studies suggest that depressive symptoms are associated with higher health service consumption (21) and increase the time spent on treatment (22).

In this study an EMS questionnaire was used as the screening instrument for comparing depressive symptoms in seekers and non-seekers. The prevalence rate of depressive symptoms according to the EMS was relatively high, 21% for seekers and 16% for non-seekers, but this finding does not verify that rosacea patients are depressive due to their skin disease. The above data are comparable to those of previous studies from Estonia, which found a depressive episode in 15% of primary care attendees by CIDI (23) and depressive symptoms in 11% of the general population during the past month by EST-Q (24).

EMS-positivity was not an independent predictor for healthcare-seeking behaviour, but presence of depressive symptoms among seekers was associated with higher subjective disease perception, even in mild cases. This suggests that healthcare-seeking behaviour combined with high subjective disease perception might be a sign

Fig. 2. Mean visual analogue scale (VAS) scores among seekers and non-seekers in relation to Estonian Mood Scale (EMS) scores. **p* < 0.05.

of disguised depression. VAS appears to be a quick and simple instrument for assessment of subjective disease perception. However, the issue of whether higher disease perception affects depression, or whether higher disease perception is caused by depression is still unclear.

The strengths of the current study are that all examinations were made by the same dermatologist, and the results did not vary among different investigators. To avoid evaluation bias, the severity of skin changes was evaluated first by the dermatologist; the study subjects completed the EMS questionnaire and VAS being unaware of the dermatologist's opinion about the severity of their skin changes.

A further strength of the study is that, to the best of our knowledge, it is the first study comparing clinic-based patients and subjects with rosacea who have never sought medical care due to rosacea.

The current study also has some limitations. The majority of non-seekers could not detect the onset of their rosacea and 25 out of 78 (32%) non-seekers had not even noticed their skin changes. For this reason, it was impossible to analyse the influence of duration of rosacea on disease perception.

In conclusion, healthcare-seeking behaviour is associated with higher subjective disease perception among rosacea patients. The presence of depressive symptoms is not related to the severity of the disease recorded by the doctor, but to the patients' subjective disease perception.

ACKNOWLEDGEMENTS

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