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Predictors of perceived stigmatization in patients with psoriasis

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What's already known about this topic?

- Perceived stigmatization is common and distressing in patients with psoriasis. Some of its predictors have been examined in small samples.

What does this study add?

- This large study of 514 patients with psoriasis examined a combination of potential predictors variables, both previously examined and never before studied.
- Sociodemographic, disease-related, and never before studied Type D personality variables were found to be predictive of perceived stigmatization.
- These results provide an understanding of which patients may be especially vulnerable to stigmatization-related problems, which may warrant special attention during treatment.

SUMMARY

Background: The physical appearance of psoriasis can be cosmetically disfiguring, resulting in a substantial social burden for patients. An important aspect of this burden is the experience of stigmatization. While stigmatization is known to be disabling and stressful for patients, little is known about its correlates and effective interventions are lacking.

Objectives: To examine predictor variables for perceived stigmatization in psoriasis.

Methods: Questionnaires were administered to 514 patients with psoriasis in a cross-sectional study and zero-order correlational and multiple regression analyses were conducted including sociodemographic, disease-related, personality, illness cognitions, and social support predictor variables.

Results: Stigmatization was experienced by 73% of patients to some degree, and correlated with all five categories of predictor variables. In multiple regression analyses, stigmatization was associated with higher impact on daily life, lower education, higher disease visibility, severity, and duration, higher levels of social inhibition, having a Type D personality, and not having a partner.

Conclusions: Results indicate that perceived stigmatization is common in psoriasis, and can be predicted by sociodemographic, disease-related, and personality variables. These predictor variables provide indications on which patients are especially vulnerable regarding perceived stigmatization, which might be used in treatment.

Keywords: stigmatization, psoriasis, chronic skin conditions, predictors, personality

INTRODUCTION

It has long been theorised that humans have a fundamental need to be accepted by others and included in social interactions.[1] Social relationships are important for health and wellbeing, and social rejection can lead to physical, behavioural, and emotional problems.[1] Social rejection is central to the experience of stigmatization, which can be defined as an awareness of social disapproval, discrediting, or devaluation based on an attribute or physical mark.[2,3]

In psoriasis, a chronic skin condition characterised by red plaques on the skin[4], the experience of stigmatization is commonly mentioned as one of its more troubling characteristics.[5-9] Patients often experience felt or perceived stigma, referring to the negative attitudes and responses that they perceive to be present in society and the sense of shame and fear of being discriminated against because of being 'flawed' due to their illness.[10,11] Actual experiences of stigmatization (i.e., enacted stigma) are also reported; for instance, reactions of disgust or aversion, negative comments, or avoidance of contact.[7,9] Stigmatization contributes considerably to disability, depression, and reduced quality of life in psoriasis[12-14], and can be considered a stressor. As distress can be a trigger for psoriasis exacerbation, this can become a vicious self-perpetuating cycle.[15-17]

Despite these detrimental consequences, relatively few studies have studied interventions targeting stigmatization-related problems and thus far no compelling evidence has been found for any type of intervention.[18,19] Firstly, it is important to recognise that stigmatization is a societal problem, and therefore societal educational interventions including contact between patients and the general population are called for to alter the public view.[20] Furthermore, interventions with a more inter- and intrapersonal focus are needed to improve patients' ability to cope with perceived stigmatization. In order to aid intervention

development, a broad understanding of associated risk factors is needed, to be able to identify risk populations and focus points for interventions.

The literature suggests several potential sociodemographic predictors of perceived stigmatization in psoriasis, such as lower age[7], being female[5], and lower education.[7] Secondly, disease-related variables such as higher disease severity, longer disease duration, greater cosmetic involvement, and greater impact of the condition on daily life may be relevant.[7-9,13,21,22] General ways in which patients deal with a chronic condition, such as heightened helplessness regarding the disease and its consequences, and lower disease acceptance have also been found to be predictive.[7] Additionally, social support and a large social network may serve a protective function against experiences of stigmatization.[7]

While several studies have examined the abovementioned variables as predictors, the role of personality has hardly been studied.[7,9] A possibly relevant personality construct is Type D, which is defined as a tendency to inhibit the expression of emotions or behaviour to avoid negative reactions of others (social inhibition; SI), in combination with the stable tendency to experience negative affect (negative affectivity; NA).[23] Type D has been associated with increased risk of cardiovascular morbidity and mortality[24] and impaired health behaviour[25], which are both frequently reported in psoriasis.[26,27] The two main features SI and NA may both increase the impact of perceived stigmatization. Being socially inhibited implies being sensitive to negative reactions of others, which may cause stigmatization experiences to be especially detrimental. Additionally, having a stable tendency to experience negative affect may worsen psychological distress, which in turn may increase disease severity and resultantly visibility[15-17], and thereby vulnerability to stigmatization experiences. Furthermore, individuals with high levels of NA may be more likely to perceive social interactions as negative, due to the associated cognitive bias to negative information.[28] The specific combination of heightened SI and NA, Type D, has mainly been related to adverse

outcomes in cardiovascular patients[24,29-31], but also to poorer physical, psychological, and social functioning in other healthy and patient samples[32,33], including two studies in psoriasis.[34,35]

This study aims to examine the relative contributions of a broad range of concepts, including never examined variables such as Type D personality, to perceived stigmatization in a large sample of patients with psoriasis. It was hypothesised that perceived stigmatization would be related to the sociodemographic variables age, educational level, and being single; the disease-related variables severity, duration, visibility, and impact; Type D personality; the illness cognitions acceptance and helplessness; and social support. This broad approach may provide indications for screening and interventions for reducing stigmatization-related problems.

MATERIALS AND METHODS

Participants

Psoriasis patients were recruited from one academic and three non-academic hospitals, and the Dutch Psoriasis Association. Inclusion criteria were a minimum age of 18 years and a dermatologist-confirmed psoriasis diagnosis. Exclusion criteria were illiteracy, pregnancy, and severe physical and mental comorbid conditions. This study made use of questionnaires that were administered between 2010 and 2013 to determine participant eligibility for a study on the effectiveness of internet-based cognitive behavioural treatment for psoriasis (van Beugen et al., submitted). Parts of these data have been used in a previous paper.[36] All questionnaires were assessed prior to the intervention. The study was approved by the regional medical ethics committee and carried out in accordance with the declaration of Helsinki.[37] All participants provided informed consent.

Measures

Perceived stigmatization was measured with a 6-item subscale of the Impact of Chronic Skin Disease on Daily Life questionnaire (ISDL[38]; Cronbach's α in this study=.88), assessing to what extent the patient feels stigmatized as a result of the skin condition. Items are assessed on a 4-point Likert scale, with higher scores reflecting higher levels of perceived stigmatization (theoretical range=6-24). Example items are "Others feel uncomfortable touching me due to my skin disease" or "Other people sometimes make annoying comments about my skin disease".

To assess predictor variables, the following measures were used:

1) Sociodemographic variables

Sociodemographic variables were assessed with a general checklist that assessed patients' gender, age, educational level, and marital status. Educational level was categorised into primary (i.e., lower education, elementary school), secondary (i.e., middle school, high school, including vocational training) and tertiary (i.e., higher professional education and university-level education).

2) Disease-related variables

Self-assessed *disease severity* was measured with the Self-Administered Psoriasis Area and Severity Index (SAPASI[39,40], theoretical range=0-72). Self-assessed *disease visibility* was measured with a 4-items ISDL subscale[38] asking about the extent of involvement of the face, scalp, neck, and hands (theoretical range=4-16). *Disease duration* was assessed by asking how old the patient was when diagnosed, and subtracting this number from their current age

(range=0-64). *Impact of the disease on daily life* was assessed with a 10-item ISDL subscale[38], assessing the extent that the skin condition affects daily life activities (theoretical range = 10-40, α=.89).

3) Personality

The Type D scale 14 (DS14[41]) was used to assess *Type D personality*. It consist of two 7-item subscales; *social inhibition* (α=.88, example item: "I often feel inhibited in social interactions", theoretical range = 0-28) and *negative affectivity* (α=.89, example item: "I often feel unhappy", theoretical range=0-28). A cutoff score of ≥10 on both scales is used to classify Type D personality. Using these cutoff scores, one in four participants in this study (25.1%) had a Type D personality. As previous studies indicate that Type D is best represented as a continuous variable[42,43] the interaction term between the NA and SI subscales was used as a measure of Type D.

4) Illness cognitions

The Illness Cognition Questionnaire (ICQ[44]) was used to measure two illness cognitions: *acceptance,* assessing the extent of positive adaptation to chronic illness with emphasis on decreasing its negative aspects (6 items, α=.88, theoretical range=6-24) and *helplessness,* assessing the extent to which patients concentrate on aversive aspects of the disease (6 items, α=.88, theoretical range=6-24).

5) Social support

Social support was assessed with a 5-item ISDL subscale[38], assessing the qualitative aspect of social support (α=.86, theoretical range=5-20), and the quantitative aspect, asking patients

about the actual size of their social network (range=0-25). This score was categorised according to norm groups[38].

Statistical analysis

All variables were checked for outliers, normality and normal distribution of residuals, and logarithmic transformations were successfully applied in case of non-normal distribution of variables (i.e., perceived stigmatization, helplessness and disease severity). Winsorizing was applied in outlying SAPASI scores prior to log-transformation, limiting the influence of extreme values. Zero-order correlations between perceived stigmatization and predictor variables were examined by Pearson correlation coefficients for continuous variables, and t-tests and ANOVAs for categorical variables. Zero-order correlations were interpreted as small (r=.10-.29), moderate (r=.30-.49), or large ($r \geq .50$).[45] Only study variables showing significant zero-order correlations with perceived stigmatization were entered in regression analyses. To study the relative contribution of five categories of variables (sociodemographic, disease-related, personality, illness cognitions, and social support), each category was entered in a consecutive step with perceived stigmatization as the dependent variable. Only statistically significant individual predictor variables (p<.05) were retained in further models. For Type D, main effects of mean-centered NA and SI were first examined and in a second block their interaction term was added. All regression analyses were conducted with SPSS 21.0 on a dataset without missing values (n=433).

Results

Sample characteristics

Sociodemographic characteristics of the study sample (n=514) and means and SDs of study variables can be found in Tables 1 and 2. Disease severity was generally mild to moderate, with 6.7% of patients having severe psoriasis (i.e., SAPASI >10).[46] Means on perceived

stigmatization, impact on daily life, social support, and illness cognitions were similar to those found in previous research in psoriasis[e.g.38], and scores on Type D personality were comparable to those found in the general population.[33,47]

Perceived stigmatization

Seventy-three percent of our sample perceived at least some stigmatization, as indicated by a positive score on at least 1 of the 6 items, as reported in previous studies.[7,8] The feeling of being stared at was reported most often (in 61.9% of patients), followed by other people thinking their condition was contageous (44.9%), finding them unattractive because of their skin condition (38.1%), avoiding to touch them (32.3%), and making negative comments (27.7%).

Individual associations with perceived stigmatization

Zero-order correlations of study variables are reported in Table 3. Higher perceived stigmatization showed a large correlation with a greater impact of the skin condition on daily life; moderate correlations with higher disease severity, helplessness, and NA, and lower levels of acceptance; and small correlations with a lower age, a longer disease duration, greater visibility, higher levels of SI, and less perceived social support. Furthermore, higher perceived stigmatization scores were associated with a smaller social network (p=.001), not having a partner (p<.001), and a lower educational level (p=.01), but not with gender (p=1.00).

Relative impact on perceived stigmatization

Table 4 presents results of multiple regression analyses that were performed to examine the relative impact of predictors on perceived stigmatization.

In *block 1*, sociodemographic variables explained 11.9% of the variance in perceived stigmatization, with lower age, lower education, and being singe being predictive of higher levels of perceived stigmatization. In *block 2*, adding the disease-related variables explained a total of 48.3% of the variance, with greater disease severity and visibility, longer disease duration, and a higher disease impact predicting more perceived stigmatization. In *block 3*, adding the personality variables resulted in a total of 49.7% explained variance, with the main effect of SI (but not NA) and the Type D interaction effect being predictive of perceived stigmatization. Patients scoring both high on SI and NA, indicating a Type D personality, had higher levels of perceived stigmatization (Fig. 1). In *blocks 4 and 5*, illness cognitions of helplessness and acceptance, and perceived and actual social support did not significantly add to the model.

The final model, including only the significant predictors, explained a total of 49.7% of the variance in perceived stigmatization (Table 5). Predictors, from highest to lowest standardised regression coefficients, were a higher disease impact, lower age, lower education and greater disease visibility, higher disease severity and longer disease duration, higher levels of SI, having a Type D personality, and being single. A model excluding multivariate outliers (n=16; critical Mahalanobis Distance value=32.91, df=12, p=.001) yielded similar results, with the exception of two predictors that became marginally significant (Type D personality, p=.08) or non-significant (marital status, p=.11).

DISCUSSION

This study examined perceived stigmatization and its potential sociodemographic, disease-related, and psychosocial predictors in a large sample of patients with psoriasis. The vast majority of our sample experienced perceived stigmatization to some degree, corresponding with previous studies.[e.g.7,8] Higher levels of perceived stigmatization were found to be

correlated with sociodemographic and disease-related variables, personality, illness cognitions, and social support. Perceived stigmatization was found to be particularly predicted by disease impact as well as by lower age, lower education, greater disease severity and visibility, longer disease duration, higher levels of SI, having a Type D personality, and being single.

Greater severity and visibility and longer disease duration were predictive of perceived stigmatization, underlining the importance of early dermatological treatment; patients whose psoriasis is not adequately controlled may be more affected by stigmatization. However, the impact of the condition was a much stronger predictor, corresponding with the notion that the subjective experience of impact is generally more important than disease severity.[e.g.48,49] In contrast with an earlier study[7], the impact of the condition was also a stronger predictor than the illness cognition of helplessness. The relative and different contribution of both variables may be explained by the high correlation between these variables in the current study and in previous research.[48] It seems likely that patients with psoriasis who are prone to feelings of helplessness regarding the disease may also experience a larger impact of psoriasis and magnify negative reactions of others.

Type D personality and its subcomponent SI were found to be significant predictors of perceived stigmatization. The fear of disapproval that leads individuals to inhibit emotions or behaviour in SI[41] may explain its relation to perceived stigmatization; socially inhibited individuals may be more sensitive to the reactions of others and may therefore perceive themselves to be stigmatized more readily. Not only SI in itself, but also the combination of higher levels of SI and NA, Type D personality, was a significant predictor of perceived stigmatization. This corresponds with studies suggesting that Type D is associated with social impairments.[50,51] These results extend preliminary evidence indicating that Type D may be a risk factor for worse outcomes in psoriasis[34,35], by showing for the first time that it is

associated with increased perceived stigmatization. However, these results should be replicated in further research, as the effect of Type D became marginally significant when excluding multivariate outliers. In the current study, NA was not a significant predictor of perceived stigmatization. It seems that, while the shared variance with NA can also be explained by other variables, SI contains more unique information relevant for perceived stigmatization.

Regarding sociodemographic variables, the significant predictors lower age, lower educational level and being single were in line with previous research indicating that the negative psychosocial influence of psoriasis is particularly strong in younger patients.[e.g.7,52]

To develop a comprehensive model of factors influencing perceived stigmatization, both potential risk factors (e.g., social fears and inhibition) and protective factors (e.g., social support) need to be taken into account. While the current study provides evidence for the former, results of the latter (social support) were inconsistent with previous research[7], possibly due to the inclusion of predictor variables not previously studied. Furthermore, while the current study examined self-perceived support, a more objective measure may lead to different results. Nonetheless, current results suggest that it is not so much the experienced social support that plays a significant role in perceived stigmatization, but more the extent to which patients may experience social anxiety and want to avoid negative reactions, as captured in SI. Future research should further explore the role of protective factors in perceived stigmatization.

Strengths of the current study include the large sample size, simultaneous assessment of relevant variables to control for shared variance, including personality variables never before studied, and inclusion of patients from a variety of settings. Limitation include the cross-sectional design, precluding conclusions about cause and effect, and the relatively mild

disease severity of our sample, which may limit generalizability. In addition, self-report measures were used to assess disease severity. However, self-assessed PASI scores correlate reasonably well with clinician-assessed PASI scores[39,53] and modest relationships with stigmatization have also been found in studies using the clinician-assessed PASI.[54,55] Lastly, some predictor variables showed high intercorrelations, but none of them were above the multicollinearity cutoff point of .80.[56]

In conclusion, perceived stigmatization was found to be common in patients with psoriasis and was predicted by specific sociodemographic, disease-related, and personality variables. This provides several possible focus points for individual screening and interventions, in addition to the societal interventions that are needed to target the overarching problem. Firstly, the predictors found in this study provide clinicians with an understanding of which patients may be especially vulnerable to stigmatization-related problems, which may warrant special attention during consultations. Type D and especially its social inhibition component may be screened for, when further evidence confirms our preliminary results indicating that individuals with this personality subtype are especially vulnerable to stigmatization-related problems. Stigmatization-related problems may be screened using validated instruments[38], followed by targeted interventions that may focus on the impact of the condition on daily life, considering that this was the largest predictor. Cognitive behavioural treatment, including social skills training, seems promising as an intervention framework. Previous research indicates that it can decrease perceived stigmatization in skin conditions[57], improve psychological and disease-related outcomes in psoriasis[58,59], and decrease helplessness, which shows high correlations with disease impact.[60-62] In order to target the social inhibition aspect of Type D personality, social skills training and evidence-based interventions for social fears, such as cognitive behavioural therapy and/or exposure therapy, may be an additional treatment approach.[63,64]

The current study provides a framework of characteristics of patients who are at greater risk to perceive stigmatization, which has been shown to have detrimental psychological consequences in psoriasis. Future research should expand upon these findings in order to examine interplays between predictors in prospective studies. Further development of screening and intervention procedures are needed in order to facilitate implementation of tailored evidence-based treatment to reduce the psychosocial burden of chronic skin conditions.

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Table 1. *Sociodemographic characteristics of study sample (n=514)*

Characteristic	**Mean**	**SD (range)**
Age (years)	52.21	13.00 (18-84)
	N	**%**
Gender		
Male	286	55.6
Female	228	44.4
Marital status		
Unmarried	62	12.1
Married/living together	410	79.8
Divorced	24	4.7
Widowed	18	3.5
Educational status		
Primary	16	3.1
Secondary	306	59.5
Tertiary	190	37.0
Missing	2	0.4

Table 2. *Means and standard deviations of study variables*

Characteristic	Mean ± SD	Range
Perceived stigmatization	9.02 ± 3.48	6-24
Disease-related		
Disease severity[a]	5.09 ± 4.02	0-33
Disease visibility	1.85 ± 0.57	1.0-3.5
Disease duration (years)[b]	15.72 ± 14.75	0-62
Impact on daily life	16.06 ± 6.06	10-40
Type D (n, %)	129	25.1
Negative affectivity (NA)	8.45 ± 6.02	0-26
Social inhibition (SI)	9.13 ± 6.01	0.27
Illness cognitions		
Helplessness	9.38 ±3.74	6-24
Acceptance	17.19 ±4.46	6-24
Social Support		
Perceived support	15.80 ±3.60	5-20
Actual support	8.12 ±5.33	0-25

[a]n = 489; [b]n = 498.

Table 3**.** *Zero-order correlation matrix of continuous study variables*

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Stigmatization	-										
2. Age	-.28***	-									
3. Disease severity	.34***	-.14**	-								
4. Disease visibility	.26***	-.12**	.29***	-							
5. Disease duration	.13**	.22***	.11*	-.03	-						
6. Disease impact	.61***	-.17***	.32***	.26***	.11*	-					
7. Type D: NA	.30***	-.23***	.20***	.12*	-.05	.36***	-				
8. Type D: SI	.22***	-.11*	.05	.07	-.03	.17***	.41***	-			
9. Helplessness	.49***	-.09#	.28***	.19***	.10*	.67***	.39***	.17***	-		
10. Acceptance	-.34***	.10*	-.19***	-.23***	.10*	-.48***	-.42***	-.20***	-.52***	-	
11. Perceived support	-.16***	-.02	.02	.00	.00	-.18***	-.36***	-.27***	-.17***	.26***	-

Note. NA = Negative Affectivity; SI = Social Inhibition.

$^{*}p$<.05 *$^{**}p$*<.01 *$^{***}p$*<.001 *$^{\#}p$*<.10.

Table 4. *Predictors of stigmatization: multiple regression analyses*

Predictors	**Standardised regression coefficients (β)**				
	Block 1	**Block 2**	**Block 3**	**Block 4**	**Block 5**
Sociodemographic					
Age	-.27***	-.19***	-.19***	-.19***	-.18***
Education (primary[a])	.06	.03	.03	.03	.02
Education (secondary[a])	.15**	.12***	.12**	.11**	.11**
Married / With partner[b]	-.13**	-.07*	-.07#	-.07#	-.06
Disease-related					
Disease severity		.10**	.10**	.10*	.11**
Disease visibility		.12**	.12**	.12**	.12**
Disease duration		.11**	.11**	.11**	.09*
Impact on daily life		.51***	.50***	.46***	.50***
Personality					
Negative affectivity (NA)			.00	-.01	-.02
Social inhibition (SI)			.10**	.10*	.09*
Type D personality			.08*	.08*	.07*
(interaction NA*SI)					
Illness cognitions					
Helplessness				.05	
Acceptance				-.01	
Social support					
Perceived support					-.03

Actual support (1-4[c])					-.15
Actual support (5-14[c])					-.17
Actual support (15-25[c])					-.13
***F*-change**	16.78***	76.16***	4.31**	0.44	0.63
R^2	.12	.48	.50	.50	.50

Note. [a] Reference group = tertiary education; [b]Reference group = no partner; [c]Number of friends, reference group = no friends.

***p<.001, **p<.01, *p<.05, #p<.10.

Table 5. *Predictors of stigmatization: final model*

Predictors	**β**	**B**	**SE**
Sociodemographic			
Age	-.19***	-.00***	(.00)
Married / With partner[a]	-.07#	-.02#	(.01)
Education (primary)[b]	.04	.03	(.03)
Education (secondary)[b]	.12**	.03**	(.01)
Disease-related			
Disease severity	.10*	.02*	(.01)
Disease visibility	.12**	.03**	(.01)
Disease duration	.11**	.00**	(.00)
Impact on daily life	.50***	.01***	(.00)

Personality			
Negative affectivity	.00	.00	(.01)
Social inhibition	.10**	.01**	(.00)
Type D	.08*	.01*	(.00)
***F*-change**		37.80***	
R^2		.50	

Note. β = standardised coefficients, B = unstandardised coefficients, SE = standard error of B.

[a] Reference group = no partner; [b]Reference group = tertiary education.

***$p<.001$ **$p<.01$ *$p<.05$.

FIGURE LEGENDS

Figure 1. Interaction effect of negative affectivity (NA) and social inhibition (SI) on perceived stigmatization. Predicted values of perceived stigmatization are displayed for high and low levels of NA and SI (i.e., 1 SD above/below the mean). For all other variables included in the model, mean scores were used to calculate the regression outcome. In this figure, the degree of SI was not associated with perceived stigmatization when patients had low NA. For patients high on NA, specifically the combination with high SI, indicating a Type D personality, was related to higher levels of perceived stigmatization.