

Patient Expectations and Perceived Treatment Benefit in Dermatology: A Sex-specific Analysis in Routine Dermatological Care

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Patient treatment expectations and perceived treatment benefit are increasingly recognized as key components of patient-centred care in dermatology (1, 2). Treatment success in chronic skin diseases is often not defined by clinical improvement alone but by the degree to which therapy addresses patient priorities (1, 2). The Patient Benefit Index (PBI) offers a validated framework to assess this relationship by linking pretreatment needs with post-treatment benefit (1). While sex differences in treatment goals have been described for selected inflammatory skin diseases, little is known about sex-specific differences in perceived treatment benefit and the expectation–benefit gap across broader dermatological populations (3–5). Treatment expectations are shaped by multiple factors including disease severity, previous treatment experiences and sociodemographic characteristics (6). Based on the Expectation Disconfirmation framework, satisfaction is not determined by the absolute level of perceived benefit but by the degree to which outcomes meet prior expectations (7).

The present study therefore aimed to investigate sex differences in treatment expectations, perceived treatment benefit and the discrepancy between both across a heterogeneous, routine dermatological cohort.

MATERIALS AND METHODS

This monocentric, hypothesis-generating cross-sectional study was conducted at the Department of Dermatology and Allergy, Technical University of Munich, between February 2024 and February 2026. All patients aged ≥ 18 years were eligible to participate; given the exploratory nature of the study, no *a-priori* sample size calculation was performed and all eligible patients presenting during the study period were included, resulting in a convenience sample of 460 patients. The study was approved by the local Ethics Committee (reference number: 2023–433 S-SB). The PBI was used with permission of the developers. Sex was recorded as a binary variable (male/female) based on self-report and refers to biological sex throughout this manuscript. Perceived disease severity was assessed using a numerical rating scale from the Lübecker Medication Satisfaction Questionnaire, ranging from 1 (not severe) to 7 (very severe) (8).

Treatment expectations and perceived treatment benefit were assessed using the Patient Needs Questionnaire (PNQ) and Patient Benefit Questionnaire (PBQ) of the PBI, a validated instrument comprising 25 items covering physical symptoms, psychological well-being, daily functioning, social participation and treatment-related aspects, each rated on a 5-point Likert scale (1, 2). A gap score was calculated per item as the difference between PNQ and PBQ scores (positive gap=expectations exceeded benefit). Analyses of perceived treatment benefit and of the expectation–benefit gap were restricted to the subset of patients who had already received treatment ($n=331$; 175 male, 156 female), whereas treatment expectations (PNQ) were analysed for the full cohort ($n=460$). Sex differences were assessed item-by-item using the Mann–Whitney *U* test; the expectation–benefit gap was tested using the Wilcoxon signed-rank test for paired samples. All

Table 1. Sociodemographic and clinical characteristics of the study population

	Overall	Male	Female
Age, mean $\pm$ SD	52.1 $\pm$ 19.1 ($n=340$)	54.1 $\pm$ 18.8 ($n=169$)	50.2 $\pm$ 19.2 ($n=171$)
Disease, n (%)			
Skin cancer	37 (9.6)	20 (10.5)	17 (8.8)
Allergic diseases	21 (5.5)	6 (3.2)	15 (7.7)
Acne/ Rosacea	12 (3.1)	6 (3.2)	6 (3.1)
Infectious diseases	20 (5.2)	12 (6.3)	8 (4.1)
Inflammatory diseases	250 (65.1)	122 (64.2)	128 (66)
Hidradenitis suppurativa	7 (1.8)	4 (2.1)	3 (1.5)
Autoimmune diseases	27 (7)	16 (8.4)	11 (5.7)
Wounds	4 (1)	-	4 (2.1)
Genodermatoses	1 (0.3)	1 (0.5)	-
Mycosis fungoides	4 (1)	3 (1.6)	1 (0.5)
Hyperhidrosis	1 (0.3)	-	1 (0.5)
Missing	76	42	34
Course of disease, n (%)			
Acute	142 (31.6)	79 (34.6)	63 (28.5)
Chronic	307 (68.4)	149 (65.4)	158 (71.5)
Missing	11	4	7
Comorbidities, n (%)			
Yes	197 (43.7)	111 (48.9)	86 (38.4)
No	254 (56.3)	116 (51.1)	138 (61.6)
Missing	9	5	4
Disease severity in general (mean $\pm$ SD)	4.23 $\pm$ 1.62 ($n=445$)	4.11 $\pm$ 1.63 ($n=223$)	4.35 $\pm$ 1.60 ($n=222$)
Disease severity currently (mean $\pm$ SD)	3.44 $\pm$ 1.78 ($n=443$)	3.28 $\pm$ 1.74 ($n=223$)	3.62 $\pm$ 1.77 ($n=220$)

Education was categorized as low (no school qualification or lower secondary school), medium (vocational training/apprenticeship, intermediate secondary school or technical/advanced vocational qualification), and high (upper secondary school qualification or university degree). Percentages were calculated excluding missing values.

SD: standard deviation.

p-values were adjusted using Bonferroni correction. Statistical analyses were performed in RStudio (Version 4.2.2).

RESULTS

A total of 460 patients were included (232 male, 228 females; mean age 52.1±19.1 years). The most common diagnosis was inflammatory skin disease (65.1%), and the majority had a chronic disease course (68.4%). Sociodemographic and clinical characteristics are summarized in **Table I**.

Female patients reported higher treatment expectations than male patients across all 25 PNQ items (**Fig. 1A**). After Bonferroni correction, 13 of 25 items showed statistically significant sex

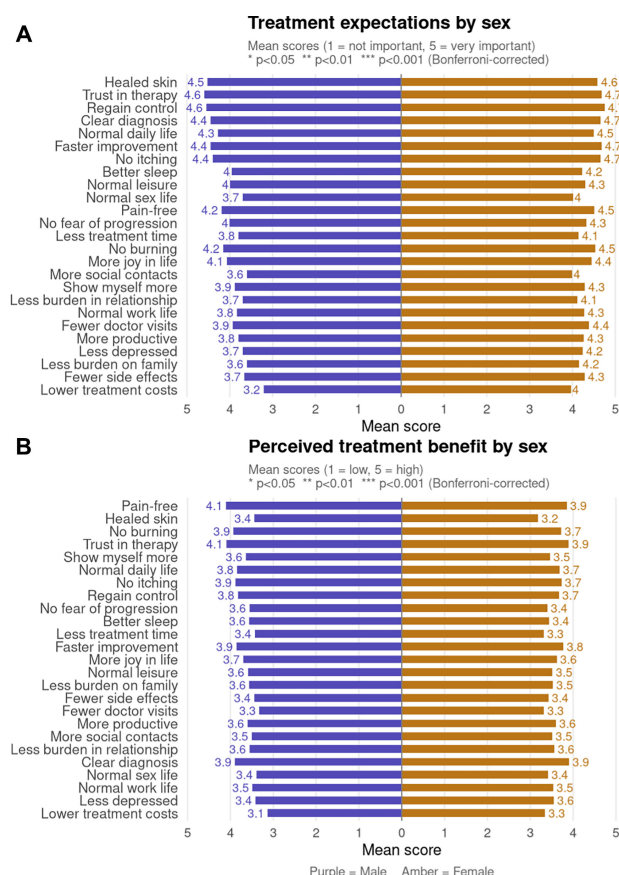


Fig. 1. A. Treatment expectations of patients by sex. Treatment expectations assessed by the PNQ of the PBI in male and female patients. Items are sorted by the magnitude of sex difference (largest difference at bottom). Mean scores are displayed on a 5-point Likert scale (1 = not important at all, 5 = very important). Statistical significance of sex differences was assessed using the Mann-Whitney U test with Bonferroni correction (**p*<0.05; ***p*<0.01; ****p*<0.001; ns = not significant). B. Perceived treatment benefit of patients by sex. Treatment expectations assessed by the PBQ of the PBI in male and female patients. Items are sorted by the magnitude of sex difference (largest difference at bottom). Mean scores are displayed on a 5-point Likert scale (1=not important at all, 5=very important). Statistical significance of sex differences was assessed using the Mann-Whitney U test with Bonferroni correction (**p*<0.05; ***p*<0.01; ****p*<0.001; ns = not significant).

differences. The most pronounced differences were observed for lower treatment costs (male 3.21±1.47 vs female 3.96±1.17, *p*<0.001), fewer side-effects (3.66±1.42 vs 4.28±1.06, *p*<0.001), fewer doctor visits (3.93±1.22 vs 4.39±0.94, *p*<0.001), less burden on family (3.60±1.41 vs 4.16±1.20, *p*=0.005), and feeling less depressed (3.70±1.31 vs 4.24±1.06, *p*=0.002).

Among the 331 treated patients (175 male, 156 female), perceived treatment benefit was comparable between sexes across all 25 PBQ items, with no significant sex differences after Bonferroni correction (**Fig. 1B**).

A consistent expectation–benefit gap was observed in both sexes, with expectations systematically exceeding perceived benefit across all items (**Fig. 2**). However, the pattern differed markedly between groups. In male patients, the gap reached significance for 10 of 25 items, with the largest gaps for healed skin (Δ =1.19, *p*<0.001) and regaining control (Δ =0.70, *p*<0.001). In female patients, the gap was substantially larger and significant for 24 of 25 items, including healed skin (Δ =1.43), no itching (Δ =1.04), regaining control (Δ =1.08), and fewer doctor visits (Δ =1.10; all *p*<0.001). Effect sizes were large across all items in female patients (Wilcoxon *r*=0.69–0.82).

DISCUSSION

Women reported higher treatment expectations than men across nearly all domains, consistent with prior PBI-based studies (4, 9). Differences were most pronounced for emotional burden, treatment-related burden and financial concerns. The greater importance women

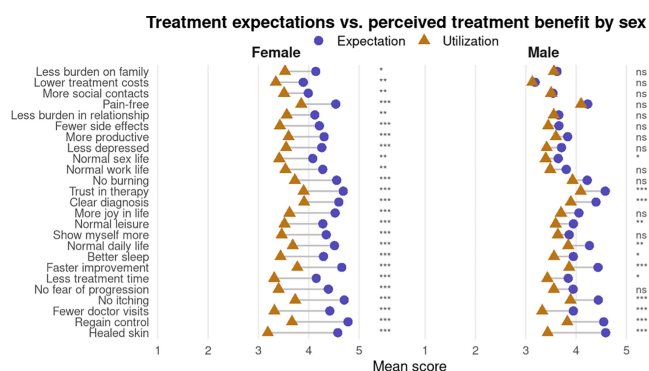


Fig. 2. Treatment expectations versus perceived treatment benefit by sex. Mean scores of treatment expectations (Patient Needs Questionnaire, PNQ, circles) and perceived treatment benefit (Patient Benefit Questionnaire, PBQ, triangles) in male and female patients who had already received treatment (*n*=331; 175 male, 156 female). Items are displayed on a 5-point Likert scale (1=not at all, 5=very much) and sorted by the magnitude of the mean gap across both sexes (largest gap at bottom). The gap score was calculated as the difference between expectation and perceived treatment benefit scores (Gap = W - N). Statistical significance of the gap was assessed using the Wilcoxon signed-rank test for paired samples with Bonferroni correction. **p*<0.05; ***p*<0.01; ****p*<0.001; ns = not significant.

placed on fewer side-effects aligns with evidence that adverse drug reactions are reported more frequently by women and that female patients discontinue systemic dermatological therapy more often (3, 10, 11), while the higher relevance of treatment costs matches documented sex differences in out-of-pocket expenses (12).

Comparable benefit ratings do not imply equally well-met expectations. The gap showed large effect sizes across all 25 items in women, indicating a pervasive rather than marginal pattern of unmet expectations.

Longitudinal PBI data showing male sex to be independently associated with higher perceived benefit after adjustment for disease severity and quality of life support this interpretation (13) and fulfilled expectations are in turn linked to greater treatment satisfaction and adherence (14, 15).

Clinically, perceived treatment failure in women may therefore partly reflect a mismatch between expected and delivered outcomes rather than insufficient efficacy alone: similar results judged against higher expectations leave women at greater risk of residual unmet needs. Clinicians should address treatment goals and realistic outcomes explicitly at the outset of care, with implications for patient–physician communication, shared decision-making and the assessment of treatment success.

As the Patient Needs and Patient Benefit Questionnaires were administered cross-sectionally at a single time point, the expectation–benefit gap was derived from a retrospective assessment of perceived benefit rather than from a prospective expectation–disconfirmation design in which expectations and subsequent outcomes are measured sequentially. The gap should therefore be interpreted as a cross-sectional discrepancy score rather than a validated disconfirmation measure. Sex comparisons were based on univariable tests and were not adjusted for potential confounders such as age, disease severity or diagnosis; given the observed mean age difference between groups and the clinical heterogeneity of the cohort, the reported differences should be interpreted with caution and regarded as hypothesis-generating, and confirmatory multivariable analyses are warranted. The cohort was clinically heterogeneous but dominated by inflammatory skin diseases (65.1%), which may limit generalizability to more homogeneous or predominantly non-inflammatory dermatological populations.

In conclusion, higher treatment expectations in women, combined with comparable perceived benefit, produced a pervasive expectation–benefit gap. This highlights proactive expectation management as a routine component of dermatological care, particularly for female patients.

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Data Availability: The data that support the findings of this study are available from the corresponding author upon reasonable request.

IRB approval status: Ethical approval for this study was obtained from the Ethics Committee of the Technical University of Munich (reference number: 2023-433-S-SB). All participants provided informed consent prior to participation. The study was conducted in accordance with the principles of the Declaration of Helsinki.

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