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Patient-reported impact of chronic urticaria compared with psoriasis in the United States

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Abstract

Purpose: Data are lacking on the burden of chronic idiopathic urticaria (CIU) versus other dermatologic conditions. This analysis compared the burden of chronic urticaria (CU, proxy for CIU) with psoriasis.

Methods: Data from CU (N=747) and psoriasis patients (N=5,107) came from 2010-2012 US National Health and Wellness Surveys. Outcomes included SF-12v2/SF-36v2 mental and physical component summary scores (MCS and PCS, respectively) and other health/activity-related measures.

Results: MCS score was 44.7 for CU, and 48.2, 44.7, and 44.3 for mild/moderate/severe psoriasis, respectively (US norm=50). PCS score was 43.8 for CU, and 46.5, 44.1, and 40.3 for mild/moderate/severe psoriasis. Health utility score was 0.67 for CU, and 0.72, 0.67, and 0.65 for mild/moderate/severe psoriasis. More CU patients reported depression (39%), anxiety (42%), and sleep difficulties (50%) than psoriasis patients (any severity). Overall work impairment was 29% for CU, and 19%, 26%, and 31% for mild/moderate/severe psoriasis. Activities impairment was 39% for CU, and 28%, 37%, and 43% for mild/moderate/severe psoriasis. CU and psoriasis patients had frequent healthcare visits.

Conclusions: Patients with CU had impaired mental/physical health and work/non-work activities, similar to moderate-to-severe psoriasis patients. Results suggest better disease management of CU is needed. This analysis should also reflect the significant burden of CIU.

Keywords: chronic hives, skin disorders, burden, health-related quality of life

Introduction

Chronic urticaria (CU) is characterized by itchy red hives/wheals that persist for more than 6 weeks.[1] Chronic idiopathic urticaria (CIU; also known as chronic spontaneous urticaria) excludes all underlying causes of CU and represents the vast majority of CU cases (66%–93%).[2] Based on the few available studies, the estimated prevalence of CIU is approximately 0.5% to 1.0% in the general population.[2] First-line recommended treatment for CIU is continuous H1 antihistamine.[1,3] However, up to 60% of patients remain uncontrolled with H1 antihistamines, even at higher than approved doses.[4] For these patients, recommended add-on therapies differ between US and international guidelines but could include first generation H1 antihistamines, H2 antihistamines, montelukast, omalizumab, immunosuppressants like cyclosporine A, or other anti-inflammatory agents including hydroxychloroquine, sulfasalazine, and dapsone.[1,3]

Chronic idiopathic urticaria is not life-threatening, but has been demonstrated to have a substantial impact on the physical and psychological health of patients.[5,6] Furthermore, symptoms last more than 5 years in up to 14% of patients, which suggests a long-term impact of this disorder.[7] In the National Health and Wellness Survey (NHWS), US and European patients with CU (survey did not evaluate CIU) treated with prescription medications were found to have substantially lower health-related quality of life (HRQL), greater work impairment, and a greater prevalence of depression, anxiety, and sleep problems when compared with matched controls who never experienced CU.[8,9] Data quantifying the mental, physical, and healthcare resource burden of CU, or its most common form, CIU, compared with other dermatological conditions known to impact HRQL are lacking. To this end, psoriasis was chosen as the benchmark dermatological condition in the current analysis. Psoriasis is a chronic skin disorder

characterized by scaly, itchy, and painful skin lesions. Studies have demonstrated that patients with psoriasis have a reduced HRQL, and display psychological issues such as depression.[10-12]

Compared with well-characterized dermatological disorders, such as psoriasis, the burden of illness and need for treatment in CIU may not be as acknowledged by physicians and payers. The objective of this analysis was to evaluate the burden of illness associated with CIU (using CU as a proxy) according to patient-reported outcomes in US adults compared with psoriasis of varying severity levels.

Methods

Study design and data source

This was a retrospective, cross-sectional analysis of self-reported data collected from the NHWS in the US in 2010, 2011, and 2012. The NHWS is a self-administered internet-based questionnaire from a sample of adults in various countries designed to reflect health in the general population.[13] The protocol and questionnaire for the NHWS was approved by Essex Institutional Review Board (Lebanon, NJ). Comparisons of patients with CU treated with prescription medications and matched non-CU controls within the NHWS in the US and Europe have been previously presented.[8,9]

Patient selection and characterization

Potential NHWS respondents were identified through participation in opt-in survey panels, with stratified random sampling within the survey panel to ensure a representative sample in terms of age, sex, and white vs non-white race. For respondents who completed the survey more than once, the most recent response was used. Respondents were required to be ≥ 18 years of age, be able to read and write English, and provide informed consent. The current study included respondents who reported ever having had physician-diagnosed CU or psoriasis; respondents

who reported both conditions were excluded. The survey asked the respondent to indicate which conditions he/she had ever experienced from a provided list; respondents who indicated experiencing a condition were then asked if that condition had been diagnosed by a healthcare provider. “Psoriasis” was listed as “psoriasis” whereas CU was listed as “chronic hives (experiencing 6 weeks or more)”. Those respondents who indicated diagnosed CU served as the proxy cases for CIU, since this latter diagnosis was not specifically assessed in the NHWS. Information was also collected on demographics, general health characteristics, and comorbidities. The Charlson comorbidity index (CCI) was calculated from self-reported diagnosed conditions.

Respondents with psoriasis were also asked about severity (mild vs moderate vs severe), which was assessed using a question that asks respondents to consider the proportion of their body surface area (BSA) affected by psoriasis, using the palm of their hand as 1% to assist them in estimation. The 2010 and 2011 items indicated categories as mild (<2% BSA), moderate (2%–10% BSA), and severe (>10% BSA). The 2012 survey had a 1% higher threshold for moderate psoriasis consistent with National Psoriasis Foundation categories:[14] mild (<3% BSA), moderate (3%–10% BSA), and severe (>10% BSA). Differences in the distributions using the different cutoffs were minor across years, so the categories were combined for analysis. Severity was not assessed for CU patients in the surveys.

Assessments and variables

The 2010 and 2011 NHWS surveys included the standard recall form (4-week recall period) of the revised Medical Outcomes Study 12-Item Short Form Survey Instrument (SF-12v2), which is a multipurpose, general (not disease-specific) health status instrument comprised of 12

questions.[15] Two summary scores are calculated from the responses, the physical component summary (PCS) and the mental component summary (MCS) scores. The 2012 survey included the Short Form 36 version 2 (SF-36v2),[16] which contains the same metrics as the SF-12v2, allowing data from all three years to be pooled for analysis. PCS and MCS summary scores have a mean of 50 and a standard deviation of 10 for the US population.

Health state utilities were generated through application of the SF-6D, which utilizes 6 items from the SF-12v2.[17] The SF-6D is a preference-based single index measure for health using UK general population values. The SF-6D index has interval scoring properties and yields summary scores on a theoretical 0–1 scale. Higher scores indicate better quality of life.

Survey respondents were asked to indicate whether they had experienced depression, sleep problems (ie, insomnia and/or sleep difficulties), and different types of anxiety (ie, anxiety, general anxiety disorder, panic disorder, phobia, post-traumatic stress, and obsessive compulsive disorder) in the past 12 months.

The impact of CU or psoriasis on labor force participation was measured by coding employment status as currently in the labor force (full-time employed, part-time employed, self-employed, or unemployed but looking for work) versus not currently in the labor force (retired, disabled, unemployed and not looking for work, etc.).

Work productivity and activity impairment was assessed using the Work Productivity and Activity Impairment – General Health (WPAI-GH) questionnaire, a 6-item validated instrument which consists of four metrics: absenteeism (the percentage of work time missed because of one's health in the past 7 days), presenteeism (the percentage of impairment experienced while at work in the past 7 days because of one's health), overall work productivity loss (an overall work

impairment estimate that is a combination of absenteeism and presenteeism), and activity impairment (the percentage of impairment in daily activities because of one's health in the past 7 days).[18] Only respondents who reported being full-time, part-time, or self-employed provided data for absenteeism, presenteeism, and overall work impairment. All respondents provided data for activity impairment.

Healthcare resource use was measured by the number of office visits and the proportion of patients with office visits to traditional medical providers during the previous 6 months. Traditional providers were defined as primary care providers, allergists, dermatologists, psychiatrists, psychologist/psychotherapists, and “other” traditional providers. The proportion of patients who visited non-traditional providers was also assessed, although the number of visits was not captured in the survey. Non-traditional providers included herbalists, acupuncturists, chiropractors, nutritionists, and massage therapists. In addition, the number of all-cause emergency room (ER) visits and hospitalizations, and the proportion of respondents with ER visits and hospitalizations, in the previous 6 months was assessed.

Statistical analyses

Descriptive statistics were provided for all assessments for patients with CU, and for patients with varying severity of psoriasis, respectively. Means and standard deviations were calculated for continuous and count variables, and percentages and frequencies were calculated for categorical variables. All analyses were conducted using SAS version 9.3 (SAS Institute, Cary, NC).

Results

Approximately 75,000 NHWS respondents answered the survey in the US each year, giving a total of 221,157 respondents (**Fig. 1**) in 3 years (2010, 2011, and 2012). Of these, 747 unique respondents reported CU and 5,107 reported psoriasis (n=3,468 mild, n=1,336 moderate, and n=303 severe). Overall, a higher proportion of patients with CU were women compared to patients with psoriasis (74% vs 49%, respectively). Patients with CU were slightly younger than patients with psoriasis (mean 50.5 y vs 52.6 y, respectively), were less likely to be obese, were more likely to have never smoked, and were more likely to have exercised in the past month (**Table 1**). Concomitant nasal allergies, dermatologic conditions other than CU or psoriasis, severe allergic asthma, and dyspepsia were more common in patients with CU compared to patients with psoriasis. The overall CCI was higher in patients with CU compared to patients with psoriasis (mean 1.1 vs 0.8, respectively). Several factors appeared to correspond to the severity of psoriasis, including obesity, current smoking status, lack of exercise, and the presence of autoimmune conditions and severe allergic asthma (**Table 1**).

<<**Figure 1 and Table 1 near here**>>

Health-related quality of life

The MCS score (mean±SD) among CU (44.7±12.3), moderate psoriasis (44.7±12.0), and severe psoriasis (44.3±12.0) indicated markedly lower mental health scores than the US norm of 50 (**Fig. 2**). The mental health status of patients with mild psoriasis was slightly lower than the US norm, with a mean MCS score of 48.2±10.9. The PCS score (mean±SD) indicated physical status among patients with CU and psoriasis were also lower than the US norm, at 43.8±12.4 for CU patients, and 46.5±11.1, 44.1±11.5, and 40.3±13.1 for mild, moderate, and severe psoriasis, respectively (**Fig. 2**). The SF-6D utility score (mean±SD) of CU patients (0.67±0.15) was similar

to moderate psoriasis patients (0.67 ± 0.14 ; **Fig. 3**). The SF-6D utility score of CU patients was lower than that of patients with mild psoriasis (0.72 ± 0.14), indicating a lower HRQL, and higher than that of patients with severe psoriasis (0.65 ± 0.16).

<<**Figure 2 and Figure 3 near here**>>

Self-reported anxiety, depression, and sleep problems

The proportions of patients with CU who reported mental health or sleep problems were higher compared to patients with psoriasis (**Fig. 4**). Anxiety in the previous 12 months was reported by 42% of CU patients, and 29%, 36%, and 30% of mild, moderate, and severe psoriasis patients, respectively. Depression was reported by 39% of CU patients, and 26%, 32%, and 33% of mild, moderate, and severe psoriasis patients. Sleep problems were reported by half (50%) of CU patients, and 38%, 44%, and 47% of mild, moderate, and severe psoriasis patients, respectively.

<<**Figure 4 near here**>>

Labor force participation

The proportions of patients who were employed was similar among patients with CU (56%) and patients with mild, moderate, and severe psoriasis (57%, 58%, and 54%, respectively).

Work and non-work activity impairment

The impact of CU on work productivity was substantial and fell between moderate and severe psoriasis (**Fig. 5**). Absenteeism for the previous 7 days was 9% in patients with CU, and 4%, 5%, and 9% in patients with mild, moderate, and severe psoriasis, respectively; presenteeism was 26% in patients with CU, and 16%, 24%, and 28% in patients with mild, moderate, and severe psoriasis. Mean overall work impairment of 29% was observed for patients with CU, and 19%, 26%, and 31% of patients with mild, moderate, and severe psoriasis. Mean impairment of

activities was also substantial, with 39% for CU, and 28%, 37%, and 43% for mild, moderate, and severe psoriasis (**Fig. 5**).

<<**Figure 5 near here**>>

Healthcare resource utilization

Patients with CU and psoriasis were frequent users of traditional healthcare resources, with 7.1 mean healthcare visits in the past 6 months for CU, and 5.2, 5.6, and 6.6 mean healthcare visits for patients with mild, moderate, and severe psoriasis (**Table 2**). The proportions of patients with visits to traditional healthcare providers were 92% of patients with CU, and 88% for each of the subgroups of patients with psoriasis. Patients with CU averaged 0.3 visits to allergists, 0.4 visits to psychiatrists, and 0.6 visits to psychologist/psychotherapists in the previous 6 months, whereas patients with psoriasis had 0.1, 0.2–0.3, and 0.3–0.5 visits to allergists, psychiatrists, and psychologist/psychotherapists, respectively (**Table 2**). The proportion of patients with CU who sought non-traditional healthcare was 22%, and was 17%, 16%, and 15% in patients with mild, moderate, and severe psoriasis (**Table 2**).

The mean number of ER visits per patient in the previous 6 months was 0.4 for patients with CU, and 0.2, 0.3, and 0.2 in patients with mild, moderate, and severe psoriasis, respectively. The mean number of hospitalizations per patient in the previous 6 months was 0.3 for patients with CU, whereas patients with mild, moderate, and severe psoriasis had 0.1, 0.2, and 0.1 hospitalizations.

<<**Table 2 near here**>>

Discussion

This analysis demonstrated that CU had a negative impact on mental and physical HRQL using patient-reported responses to a general nationwide health survey in the US. The level of impairment in mental status scores was similar between CU and moderate and severe psoriasis patients. The physical impairment reflected by PCS scores was similar between CU and moderate psoriasis, but was greatest for severe psoriasis patients. More patients with CU reported depression, anxiety, and sleep difficulties compared with psoriasis of any severity. CU was associated with reduced work and non-work activities, with levels observed between those with moderate and severe psoriasis. Healthcare resource use was common in CU and psoriasis patients. Considering the chronic nature of CU, with symptoms that can persist or recur for years,[7] the data indicate that the burden of illness with CU is substantial and may be comparable to moderate or severe psoriasis.

The characteristics of patients with CU in the current analysis were consistent with those previously described in the literature. For example, in the current analysis, 74% of patients with CU were women. This finding is consistent with retrospective database analyses and other surveys where up to 70% of patients with CU and CIU were women.[19,20] In addition, in the current analysis, 46% of patients with CU reported a history of nasal allergies, which was greater than the overall 28% of patients with psoriasis, and is comparable to the 43% of patients in the US with CIU who reported a history of allergic rhinitis in a retrospective database analysis.[19]

Health-related quality of life in patients with CU was found to be similar to moderate psoriasis, and below the US norm. The results in the current study support the findings in the study by Grob et al. that compared the HRQL of 1,161 patients with CU, psoriasis, and atopic dermatitis using a validated HRQL instrument (VQ-Dermato) and adjusting for sex, age, and

severity of the disorder.[21] Compared with psoriasis, CU patients reported a significantly greater impact on daily living activities and physical discomfort domains, whereas psoriasis patients were more impacted on self-perception, leisure activities, social functioning, and treatment-induced restrictions domains. The domain of “mood state” was not significantly different between patients with CU and psoriasis. The authors concluded that CU severely impairs HRQL. The HRQL of CU has also been compared against a serious non-skin disease. O’Donnell and colleagues collected CU-specific questionnaires and Nottingham health profiles from patients with CU, and compared them to responses from patients with ischemic coronary artery disease awaiting coronary bypass surgery.[22] Between these 2 groups of patients, lack of energy, social isolation, and emotional upset were nearly identical, whereas sleep disturbance was greater in patients with CU, and physical mobility and pain were less in patients with CU.

Despite their low CCI indicating a lack of mortality-related medical conditions, patients with CU had frequent healthcare visits, and an average of 0.4 ER visits and 0.3 hospitalizations in the previous 6 months. It is likely that some of these visits were for concomitant conditions. For example, the frequency of ER visits in patients with CU may be reflective of visits for angioedema episodes that occur in approximately one-third to two-thirds of patients with certain types of CU, including CIU.[2] Furthermore, visits to psychiatrists and psychologists/psychotherapists were numerically higher in patients with CU compared to patients with psoriasis, which is consistent with the increased anxiety, depression, and sleep problems reported in patients with CU. In a survey of 100 patients with CIU (defined as chronic spontaneous urticaria), nearly half were found to have at least 1 mental disorder, such as anxiety disorders, depressive disorders, hypochondria, and obsessive compulsive disorder.[23] The presence of such mental disorders may also have played a role in the frequent healthcare visits

observed in the current analysis in patients with CU compared to patients with psoriasis.

The NHWS is a useful source of information, and has been demonstrated to provide results consistent with other sources.[24,25] Although a potential limitation of this survey is that patients could not select the type of CU (ie, idiopathic vs inducible), the results should be generalizable to CIU given it is the largest subgroup of CU, accounting for 66% to 93% of CU cases.[2]

Another potential limitation of this analysis is that concurrent angioedema was unable to be determined. Patients frequently have concomitant CU and angioedema and it is possible that angioedema could have had an impact on the burden of illness. However, in a study of patients with various types of urticarial conditions, subgroup analysis of DLQI results found that angioedema did not confer any additional disability compared to CIU alone.[26] Similarly, in a questionnaire-based study, the presence or absence of angioedema did not have a significant impact on the impaired quality of life observed with CU compared with matched healthy controls.[27]

An additional limitation of this analysis is that the outcomes measured may depend upon whether symptoms were experienced in the past or at the time of the survey. The symptoms associated with CU occur spontaneously and may not be continuous. Since the recall periods of some of the outcomes measured (work and activity impairment) for both CU and psoriasis patients were as short as the prior 7 days, whereas some of the other outcomes (eg, psychological complaints) were for the prior 12 months, not all of the outcomes may have been experienced at the time of the survey and might be underestimated. Likewise, the measure of severity in psoriasis was via self-report, which may differ from clinical measures of severity; the severity of CU was not collected.

Compared with better characterized dermatologic conditions such as psoriasis, the burden of CU may be less acknowledged by physicians and payers. However, the results of this analysis indicate that CU can have a notable detrimental impact on a patient's daily life, and better management is needed. Given that up to 60% of patients do not respond adequately to first-line treatment,[4] add-on therapies may need to be implemented in these patients. The ASSURE-CSU study assessing burden of CIU in patients with inadequate control with first-line therapy will provides additional and some deeper insights into this patient population with high, under-recognized, unmet need.[28]

Conclusions

Patients with CU indicated mental health impairment to a similar level as moderate and severe psoriasis, and physical impairment similar to moderate psoriasis. Work and non-work activity levels were between those of moderate and severe psoriasis. High levels of depression, anxiety, and overall healthcare use among CU patients suggest a need for better management of patients with this disease. Given CIU accounts for the vast majority of patients with CU, this analysis should also reflect the burden of illness seen in patients with CIU. Additional research specifically in patients with CIU should be considered.

Geolocation information

This research is specific to the United States.

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Disclosure of interest

SG, MHM, and HT are employees of Novartis Pharmaceutical Corporation. JAB is a primary investigator for Novartis and Genentech, Dyax, Shire, CSL Behring, and Biocryst, is a speaker for Novartis and Genentech, Dyax, Shire, Greer, Baxalta, and CSL Behring, and is a consultant for Dyax, Shire, and CSL Behring. MMB is an employee of Novartis Pharma AG. JV is an employee of Kantar Health, which received fees from Novartis for data access and analysis. ML is an employee of the Mount Sinai Medical Center which receives research funds from AbGenomics, Amgen, Anacor, Boehringer Ingelheim, Celgene, Ferndale, Lilly, Janssen Biotech, Kadmon, LEO Pharmaceuticals, Medimmune, Novartis, Pfizer, Sun Pharmaceuticals, and Valeant.

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Table 1. Patient demographics, characteristics, and comorbidities.

Patient information	CU (n=747)	All psoriasis (5,107)	Mild psoriasis (n=3,468)	Moderate psoriasis (n=1,336)	Severe psoriasis (n=303)
Female, %	74	49	50	49	42
Employed, %	49	50	50	51	47
Age, mean y $\pm$ SD	50.5 $\pm$ 15.7	52.6 $\pm$ 15.9	53.7 $\pm$ 16.0	49.9 $\pm$ 15.3	51.5 $\pm$ 14.8
BMI categories, %					
Underweight	2	1	1	2	1
Normal	29	24	26	21	20
Overweight	33	32	33	30	29
Obese	34	41	38	46	48
Decline to answer	2	2	2	2	3
Smoking status, %					
Current	24	23	21	28	33
Former	30	39	40	37	39
Never	46	37	39	36	28
Alcohol use, %					
Daily	6	8	9	6	8
Less than daily	60	59	60	57	55
None	34	33	31	37	37
Exercised in past month, %	65	62	63	60	52
Comorbidities, %					
Nasal allergies in past 12 months	46	28	29	28	20
Dermatologic condition other than CH or psoriasis	57	36	36	38	34
Autoimmune condition (ever)	11	15	11	19	29
Severe allergic asthma	4	1	1	2	3
Dyspepsia	60	46	45	50	46
CCI, mean score $\pm$ SD	1.1 $\pm$ 2.0	0.8 $\pm$ 1.4	0.7 $\pm$ 1.3	0.9 $\pm$ 1.5	1.0 $\pm$ 1.7

BMI=body mass index; CCI=Charlson comorbidity index; CU=chronic urticaria.

Table 2. Healthcare resource use in patients with CU and psoriasis.

Resource	CU (n=747)	Mild psoriasis (n=3,468)	Moderate psoriasis (n=1,336)	Severe psoriasis (n=303)
Traditional HCP				
Number of visits±SD	7.1±8.6	5.2±6.1	5.6±7.0	6.6±10.5
Visited, %	92	88	88	88
General practitioner				
Number of visits±SD	1.5±1.9	1.2±1.6	1.4±1.8	1.5±2.3
Visited, %	65	59	62	60
Allergist				
Number of visits±SD	0.3±0.9	0.1±1.1	0.1±0.6	0.1±0.7
Visited, %	12	3	3	2
Dermatologist				
Number of visits±SD	0.3±0.8	0.3±0.9	0.5±1.6	1.0±3.0
Visited, %	17	20	24	36
Psychiatrist				
Number of visits±SD	0.4±2.0	0.2±1.0	0.3±1.2	0.3±2.5
Visited, %	9	5	8	5
Psychologist/psychotherapist				
Number of visits±SD	0.6±3.1	0.3±2.2	0.4±2.5	0.5±3.0
Visited, %	8	5	5	6
Other traditional HCP				
Number of visits±SD	4.1±5.8	3.1±4.3	3.0±4.4	3.2±5.3
Visited, %	77	72	67	65
Non-traditional HCP, %*	22	17	16	15
Herbalist	2	1	1	2
Acupuncturist	4	2	1	2
Chiropractor	10	9	8	8
Nutritionist	5	3	3	4
Massage therapist	8	6	5	5
ER				
Number of visits±SD	0.4±1.2	0.2±1.0	0.3±1.1	0.2±0.7
Visited, %	21	13	17	15
Hospitalizations				
Number of visits±SD	0.3±1.2	0.1±0.9	0.2±0.8	0.1±0.5
Visited, %	11	8	11	10

CU=chronic urticaria; ER=emergency room; HCP=healthcare provider.

*Number of visits was not captured.

Figure Legends

Figure 1. Flow chart of respondent selection. CU=chronic urticaria; NHWS= National Health and Wellness survey.

Figure 2. MCS and PCS scores in patients with CU and psoriasis. Horizontal line indicates US norm. CU=chronic urticaria; MCS=mental component summary; PCS=physical component summary.

Figure 3. Health utility scores (SF-6D) in patients with CU and psoriasis. The SF-6D utilizes 6 items from the Medical Outcomes Study 12-Item Short Form Survey Instrument, and yields scores on a theoretical 0 to 1 scale. Higher scores indicate better quality of life. CU=chronic urticaria.

Figure 4. Self-reported anxiety, depression, and sleep problems in the previous 12 months in patients with CU and psoriasis. Sleep problems included insomnia and/or sleep difficulties); anxiety included different types of anxiety (ie, anxiety, general anxiety disorder, panic disorder, phobia, post-traumatic stress, and obsessive compulsive disorder). CU=chronic urticaria.

Figure 5. Work productivity and activity impairment in patients with CU and psoriasis. Absenteeism was defined as the percentage of work time missed because of one's health in the past 7 days), presenteeism was defined as the percentage of impairment experienced while at work in the past 7 days because of one's health, and overall work impairment is an overall impairment estimate that is a combination of absenteeism and presenteeism. Activity impairment was defined as the percentage of impairment in daily activities because of one's health in the past 7 days. CU=chronic urticaria.





