Comparing the Quality of Life Effect of Primary Focal Hyperhidrosis to Other Dermatological Conditions as Assessed by the Dermatology Life Quality Index (DLQI)

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INTRODUCTION

Primary focal hyperhidrosis (HH) is a chronic, idiopathic disease of excessive sweating. Affected focal locations typically include the underarms (axillary HH), palms of the hands (palmar HH), soles of the feet (plantar HH), and/or the face (craniofacial HH). Family pedigree research suggests a hereditary/genetic component.[1,2] Hyperhidrosis can lead to other skin conditions, such as tinea pedis or pitted keratolysis. However, the greatest impact of HH for patients, and ultimately society, is the resulting impairment of daily activities and diminished health-related quality of life (HRQOL).[3,4] This research was conducted to benchmark the diminished HRQOL observed for primary focal HH to that of other commonly diagnosed and treated dermatological diseases.

STUDY OBJECTIVES

1) To assess and statistically compare, by main focal location of HH and relative to a comparative non-HH sample, the effect of HH on HRQOL as measured by the Dermatology Life Quality Index (DLQI).

2) To compare, using the DLQI total score, the effect of HH on HRQOL relative to the effect on HRQOL for other dermatological diseases with published DLQI scores.

METHODS

The DLQI is a valid and reliable 10-item dermatology-specific quality of life questionnaire developed by Finlay and Khan.[5] Item responses are summed and reported as a total score ranging from 0 to 30 (0 being the best HRQOL and 30 being the worst). The DLQI can also be scored using the following six sub-domains: symptoms/feelings, daily activities, leisure, work/school, personal relationships, and treatment.

Individuals with primary HH seeking care or contacting the Dermatology Clinic of the University of Würzburg (Würzburg, Germany) from March 1999 to February 2000 were provided the opportunity to complete the DLQI at a single time-point upon presentation to the clinic. Based on patient report, the main focal site of HH involvement was categorized for each patient as either axillary or palmar to identify any focal location-dependent differences in HRQOL effect. In addition, a comparative, convenience sample of non-HH individuals completed the DLQI at a single-time point during the study period. Statistical analyses for differences among groups by main focal location of sweating (i.e., by axillary or palmar) were performed using ANOVA procedures (global) followed by Scheffe's test for paired group comparisons.

A literature search was then performed using PubMed to find all studies that had used the DLQI or studies involved in the development of the DLQI. Search terms included combinations of the following: DLQI, hyperhidrosis, and quality of life. However, most articles chosen for this study came from the search with DLQI as the search term.

Using the data collected at the Dermatology Clinic of the University of Würzburg and the DLQI data identified in the published literature, an evidence table was constructed by ranking (from highest to lowest) the mean DLQI total scores for each condition. In the event of multiple, unique patient samples with the same disease, the range (highest to lowest) of mean DLQI total scores was ranked within the evidence table based on the highest published score.

RESULTS

345 persons with primary HH participated in completing the DLQI at the Dermatology Clinic of the University of Würzburg, along with 154 persons in the comparative, non-HH group. Statistically, all groups were similar with regard to age, height, weight, and gender distribution (Table 1).

Table 1. Demographics: Comparative Non-HH Individuals versus Individuals with Primary HH Seeking Care or Contacting the Dermatology Clinic of the University of Würzburg

	Comparative	Hyperhidrosis Patients		
Characteristic	Non-HH n = 154	Overall n = 345	Axillary* n = 165	Palmar* n = 116
Gender†				
Male (%)	42.9	46.7	42.4	42.2
Female (%)	55.8	53.3	57.6	57.8
Age (yrs)				
Mean (SD)	31.6 (7.0)	33.3 (13.0)	32.2 (11.7)	29.8 (9.4)
Height (cm)				
Mean (SD)	174.3 (9.6)	172.5 (12.5)	172.3 (9.0)	171.6 (17.5)
Weight (kg)				
Mean (SD)	69.1 (13.4)	71.1 (14.4)	69.5 (13.7)	68.3 (11.9)

Note: No statistically significant differences between groups
* Main, not necessarily exclusive, site of involvement
† Gender information was missing from 2 patients in the comparative group

Table 2 presents the DLQI total and sub-domain scores by focal location for persons with HH versus the comparative non-HH group.

- Both the axillary and palmar HH groups were statistically significantly different from the comparative, non-HH group in mean DLQI total score and for the sub-domains of: symptoms/feelings, daily activities, leisure, work/school, and personal relationships.
- Among the focal HH groups, a statistically significant greater mean score (indicating poorer quality of life) was observed for the axillary group compared to the palmar group for the sub-domain of daily activities. The opposite was observed for the treatment sub-domain.

Table 2. DLQI Total and Sub-domain Scores by Focal HH Location and Comparative Non-HH Persons: Dermatology Clinic of the University of Würzburg

	Comparative	Hyperhidrosis		
Domain Scores	(Non-HH) Mean (SD) n = 134	Overall Mean (SD) n = 319	Axillary* Mean (SD) n = 152	Palmar* Mean (SD) n = 109
Total[AP]	0.7 (2.0)	9.2 (5.8)	10.0 (5.6)	8.8 (5.9)
Symptoms/feelings[AP]	0.4 (0.9)	2.1 (1.3)	2.2 (1.3)	2.1 (1.2)
Daily activities[APB]	0.1 (0.5)	2.6 (1.8)	3.2 (1.5)	2.1 (1.8)
Leisure[AP]	0.0 (0.3)	1.8 (1.7)	1.9 (1.7)	1.6 (1.7)
Work/school[AP]	0.1 (0.4)	1.0 (0.9)	1.0 (0.9)	1.0 (0.8)
Personal relationships[AP]	0.0 (0.3)	1.5 (1.6)	1.5 (1.6)	1.7 (1.6)
Treatment[PB]	0.0 (0.3)	0.2 (0.6)	0.2 (0.4)	0.4 (0.7)

* Main, not necessarily exclusive, focal site of involvement
[A] Statistically significant difference between comparative and axillary groups
[P] Statistically significant difference between comparative and palmar groups
[B] Statistically significant difference between axillary and palmar groups

The literature search identified 40 publications that included mention or use of the DLQI. Two scientific posters presenting DLQI scores at recent American Academy of Dermatology meetings were also included. Of these journal publications and posters, 20 reported usable mean DLQI total scores for 44 different dermatological diseases or disease subsets. For example, DLQI scores for psoriasis were dichotomized as inpatient or outpatient as distinguished in the literature and also to separate disease severity subgroups with anticipated differences in HRQOL. 32% (14/44) of the identified diseases, including primary HH, had 2 or more unique patient samples with mean DLQI total scores. The remaining dermatological diseases had mean DLQI total scores reported for only a single patient sample. Psoriasis, eczema, and acne had the greatest number of reported DLQI scores.

Table 3 and Figure 1 present from the identified literature/posters, as well as from the Dermatology Clinic at the University of Würzburg, mean DLQI total scores ranked from highest (greatest HRQOL impact) to lowest (least HRQOL impact). HH (overall or by various focal locations) represented four of the six highest reported DLQI total scores for the identified studies. The dermatological diseases with the greatest range of DLQI scores were hyperhidrosis, eczema, psoriasis, urticaria, and acne.

Table 3. DLQI Total Scores and Ranges by Dermatological Disease/Condition

Diseases with DLQI Scores 10 or Greater	
Disease	**DLQI Score Range (baseline)**
Hyperhidrosis palms[4,6,7,WCD]	18–8.8
Hyperhidrosis axillae[4,6,7,WCD]	17–10
Eczema (inpatient)[8]	16.2
Focal hyperhidrosis (general)[6,9,WCD]	15.5–9.2
Psoriasis (inpatient)[8]	13.9
Hyperhidrosis forehead[4]	12.5
Atopic eczema[5,10,11]	12.5–5.8
Psoriasis (outpatient)[4,10–17]	11.9–4.51
Contact dermatitis[16]	10.8
Pruritus[5,14]	10.5–10
Diseases with DLQI Scores Between 5 and 10	
Disease	**DLQI Score Range (baseline)**
Urticaria[14,16,18]	9.5–3.9
Acne[4,11,14,16,19]	9.3–4.3
Birthmarks[14]	9
Dermatitis[16]	8.7
Nodular prurigo[16]	8.7
Eczema (outpatient)[4,11,14,17,20]	8.6–4.14
Scabies[14]	8.6
Atopic dermatitis[15,16,21]	8.2–7.0
Rosacea[14]	7.8
Bacterial infections[14]	7.4
Leg ulcers[14,16]	7.1–5.5
Viral warts[4,11,14,16]	6.7–2.9
Pityriasis[14]	6.6
Alopecia[16]	6.2
Hailey-Hailey[22]	6.06
Viral infections[14]	6.0
Seborrheic dermatitis[14]	5.9
Darier[22]	5.89
Lichen planus[14]	5.8
Tinea[16]	5.5
Drug eruption[14]	5.5
Pigmentary disorders[14]	5.5
Discoid lupus[16]	5.0
Diseases with DLQI Scores Less than 5	
Disease	**DLQI Score Range (baseline)**
Vitiligo[23]	4.82
Fungal infections[14]	4.8
Bullous disease[14]	4.0
Lichen simplex[14]	3.7
Seborrheic warts[5,11,14]	3.6–1.8
Melasma[16]	3.5
Solar keratosis[5,11]	3.4–2.9
Moles[5,11,14]	2.7–1
Non-melanoma skin cancer[14]	2.3
Basal cell carcinoma[5,14]	2–1.8
Pemphigus[16]	1.3

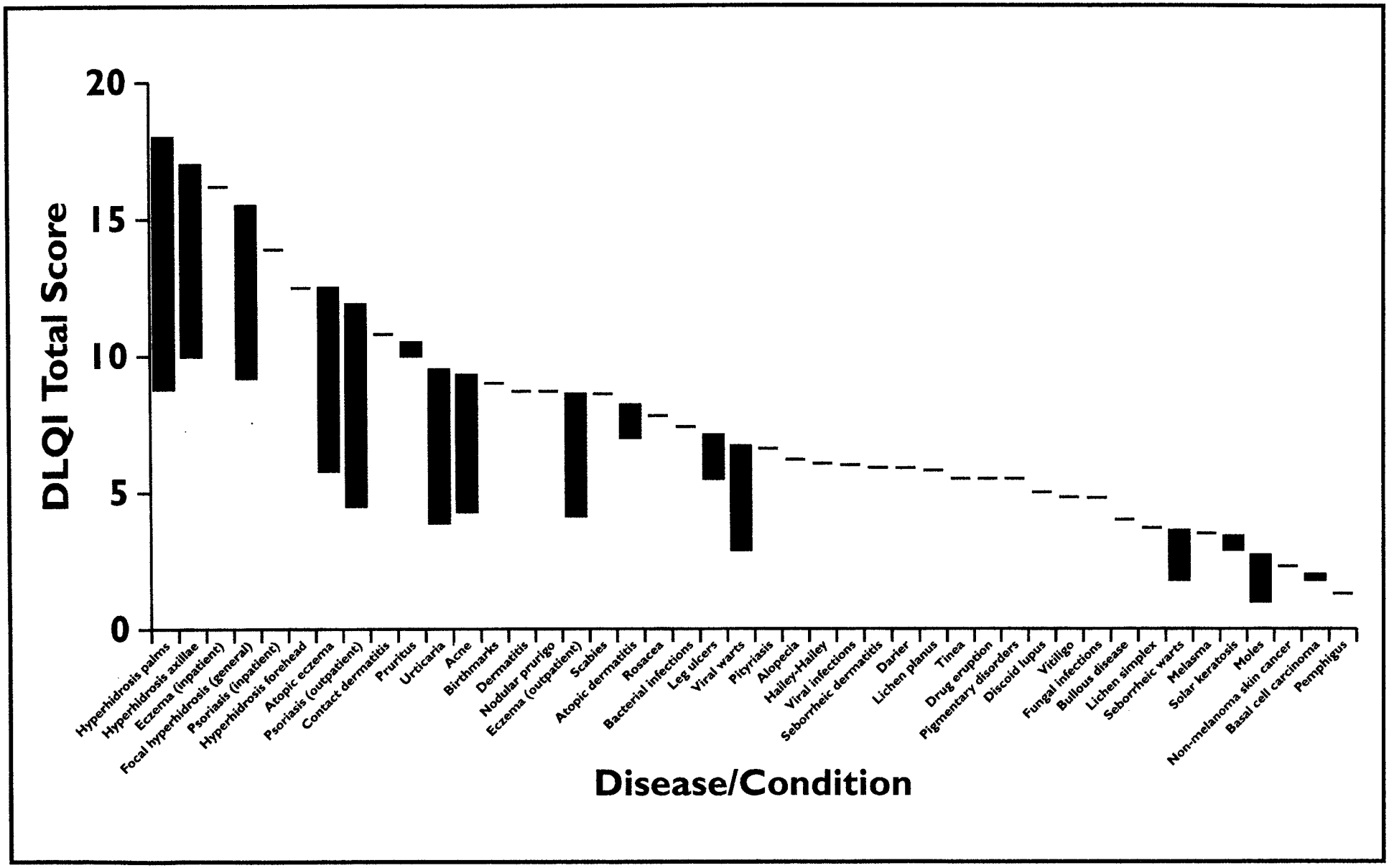

Figure 1. DLQI Total Scores and Ranges for Reported Dermatological Diseases/Conditions

DISCUSSION

The effect of HH on HRQOL was assessed and compared by focal location to that of a comparative, non-HH convenience sample, and was also compared to the HRQOL effect resulting from other dermatological diseases. The DLQI is the preferred scale to compare HRQOL in these populations because of its dermatological-specific focus, and also because of its acceptance as a standard measure in dermatology as evidenced by the numerous publications across a broad spectrum of disease. Traditional generic measures of HRQOL or health status (e.g., the SF-36) may be too general to adequately focus on relevant differences among various dermatological diseases. Similarly, use of a HH-targeted questionnaire is not anticipated to be relevant for assessing HRQOL in other dermatological disease.

Compared to the non-HH convenience sample, persons with primary HH seeking care at the Dermatology Clinic of the University of Würzburg had statistically significantly diminished HRQOL as measured by the DLQI. This was observed not only for the mean total DLQI total score, but also for the sub-domains of work and school, daily activities, symptoms and feelings, leisure, personal relationships, and treatment. Though minimal scores for the comparative non-HH group were not unexpected, they provide a quantifiable context of the substantial reduction in HRQOL for individuals suffering from primary focal HH.

Mean DLQI total scores were not statistically significantly different among the axillary and palmar groups seeking care at the clinic. However, the mean score for the daily activities sub-domain of the DLQI was statistically significantly greater (indicating greater effect on daily activities) for the axillary group compared to the palmar group. One plausible explanation for this difference may be that removal of the unpleasant and visible sequelae of axillary HH requires much more effort than in palmar HH. For example, palmar HH patients may try to symptomatically manage their disease by frequently wiping their sweating hands on their pants or a cloth. In contrast, patients with axillary HH, short of effective treatment, have far fewer options for symptomatic relief other than changing clothes and/or bathing several times per day.

Four publications reported mean DLQI total scores for primary HH, including score ranges for axillary, palmar, overall/general, and forehead (i.e., craniofacial) HH. The highest scores of each of these ranges represent 4 of the 6 highest mean DLQI total scores identified in the literature. When included into these scoring ranges, the mean DLQI total scores for the University of Würzburg clinic patients represented the lower bound of the range. Even at this lower bound, the mean DLQI score for the clinic samples are greater than a majority of mean DLQI total scores reported for the other dermatological diseases. The range of DLQI scores observed for HH, like those observed for other diseases such as psoriasis, likely represent the spectrum of disease severity and its related effect on HRQOL.

This research has several limitations. First, it compares DLQI scores from a variety of disease populations that vary in demographics, duration of disease, and sample size. Second, other data were lacking in the identified literature such as how different treatments change the baseline DLQI scores for different diseases. Third, the patient sample collected in the clinic or presented in the literature may not be representative of typical patients with a given disease, and thus these results may not necessarily be extrapolated to a broader population.

CONCLUSIONS

- Primary focal HH is a debilitating disease that impairs daily activities and results in substantially diminished HRQOL.
- Hyperhidrosis negatively affects important areas of daily life such as work, school, leisure, and personal relationships.
- The reduction in HRQOL observed for patients with axillary HH is similar (or even greater in some cases) to the reduction in HRQOL observed for persons with palmar HH.
- Compared to other dermatological diseases such as psoriasis, HH results in similar or greater reduction in HRQOL.

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WCD = Würzberg Clinic Data