



Quality of Life in Patients with Hand Eczema: A Cross-sectional Study in Thais

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Abstract

Hand eczema is a common skin condition with a significant impact on quality of life. The overall pooled lifetime prevalence of hand eczema from the general population was 14.5%. Dermatology Life Quality Index (DLQI) is a validated tool for assessing the impact of skin conditions on quality of life. The objective of this cross-sectional study is to assess quality of life among patients with hand eczema using the DLQI and to determine the possible correlation between the quality of life and disease severity.

A total of 50 Thai hand eczema patients enrolled in the study were requested to complete the questionnaire as a data collection tool. Additionally, clinical severity by physician global assessment (PGA) with photographic guide and Hand Eczema Severity Index (HECSI) score were evaluated. Demographic, clinical data demographic data, DLQI, and PGA were collected and analyzed.

The results showed that the DLQI median was around 6. This might indicate the moderate effect of hand eczema on patients' lives. Additionally, the HECSI median was 18, indicating moderate disease severity. No significant correlation between DLQI and HECSI was found.

The DLQI scores revealed its significantly negative relationship with age ($p=0.01$); however, DLQI was not associated with duration, frequency of hand eczema and HECSI and PGA scores.

Overall, this study provides important information on the impact of hand eczema on quality of life in Thai population. The DLQI is a valuable tool for measuring the impact of hand eczema on quality of life and can help guide treatment decisions and evaluate the effectiveness of treatments.

Keywords: *Hand eczema, Quality of life, DLQI, HECSI, PGA*

1. Introduction

In dermatology, hand eczema (HE) is one of the most common chronic conditions. Furthermore, it is a widespread occupational-related dermatological condition, and it is characterized by inflammation of the hand's skin (Thyssen, Johansen, Linneberg, & Menné, 2022). Women are more likely to develop hand eczema than men, with young women having the highest prevalence rate (Thyssen et al., 2022; Veien, Hattel, & Laurberg, 2008). There is a 4% point prevalence, and a 10% 1-year prevalence (reaching 15%) (Thyssen et al., 2010). According to previous reports, the prevalence of hand eczema varies significantly according to occupation, ranging from 2.9% to 32%. This information was cited in the studies conducted by Susitaival et al. (2003) and Thyssen et al. (2010).

The symptoms of hand eczema are frequently intermittent and are characterized by chronicity. The condition is typically marked by the presence of erythema, vesicles, oedema, fissures, scaling, hyperkeratosis, as well as pruritus and discomfort (Diepgen et al., 2007).

Considering the chronic nature of this disease and its frequent relapses, lesions on the hand have undesirable consequences on daily life, as well as psychological, social, and occupational aspects (Diepgen et al., 2007; Thyssen et al., 2022). Hand eczema may lead to various psychological issues such as mood disorders, sleep disturbances, anxiety, low self-esteem, and social phobia (Fowler, 2008; Thyssen et al., 2022). Therefore, effective management of hand eczema is crucial in improving the overall quality of life for individuals suffering from this condition. In addition to imposing substantial treatment and health care costs upon the patient, this disease causes prolonged sickness leaves, changes in work conditions, and even



job loss on occasion. This results in a great deal of economic loss for both patients and society as a whole (Halioua, 2014).

Due to its high prevalence and unfavorable prognosis, hand eczema is considered a significant public health concern that negatively impacts quality of life (Bingefors, Lindberg, & Isacson, 2011; Hald, Agner, Blands, & Johansen, 2011).

In spite of the fact that several studies have already been conducted to examine the quality of life of people with hand eczema, most of them have been conducted in European countries, and there are only a few studies that have been conducted outside of Europe. Additionally, no reports focus on the evaluation of the quality of life of Thai hand eczema patients. The objective of this study was to examine the impact of hand eczema on the quality of life of Thai patients.

2. Objectives

- 1) To evaluate the influence of hand eczema severity on the quality of life of Thai patients.
- 2) To identify important correlation between DLQI and HECSI and photographic guide (PGA)

3. Materials and Methods

A cross-sectional study was conducted to analyze the quality of life of Thai patients suffering from hand eczema. Participants were recruited from the Dermatology Outpatient Department of Thammasat Dermatology Clinic, as well as through online consultations. Data collection involved administering interviews, self-administered paper questionnaires, or online questionnaires via Google Form. The study was carried out between November and December, 2022.

Inclusion criteria:

- Individuals aged 18 years or older.
- Diagnosis of hand eczema by a dermatologist for a duration of at least one week.
- Proficient comprehension of the Thai language

Exclusion criteria:

- Individuals with other dermatological hand disorders
- Participants who were unable to independently complete the questionnaires
- Participants who exhibited poor compliance and unreliability

Demographic profile including age, sex, duration and frequency of eruption, and hand eczema severity (DLQI, PGA by patient and physician and HECSI scores) were recorded.

This study used a self-administered questionnaire called the Dermatology Life Quality Index (DLQI) to evaluate the quality of life of individuals with hand eczema. The questionnaire consisted of 10 questions that asked about the impact of their skin condition on daily life over the past week. The questions covered topics such as symptoms, feelings, daily activities, leisure activities, work/school, personal relationships, and treatment. Each question had four response options on a Likert scale, ranging from "not at all" to "very much," and each response was assigned a score. The DLQI score was calculated by adding up the scores of all 10 questions, with a maximum score of 30 and a minimum score of 0. A higher DLQI score indicated a greater impairment in the individual's quality of life (Finlay, & Khan, 1994). The questions asked about how the individual's skin influenced their experiences of irritation, frustration, embarrassment, choice of clothes, sport or exercise, social or leisure activities, work or household duties, performance at work or school, problems with partner or family, sexual difficulties, time spent on treatment, and sleep loss.

Hongbo, et al. (2005) investigated the relationship between the DLQI scores and patients' perceptions of skin-related impairment. The DLQI scores were classified into five categories based on the level of effect on their life: no effect (0-1), small effect (2-5), moderate effect (6-10), very large effect (11-



20), and extremely large effect (21-30). By using the DLQI score classification system, clinicians can identify the level of impairment experienced by patients with hand eczema, ranging from no effect on their life to an extremely large effect. This information can help clinicians to determine appropriate interventions for patients based on their DLQI scores (Finlay, & Khan, 1994) © Dermatology Life Quality Index. A Y Finlay, G K Khan, April 1992.

Photographic guides are a reliable method for assessing the severity of hand dermatitis in clinical trials. A standard photographic guide developed by Coenraads, Diepgen, van der Walle, and Svensson (1999) is used to illustrate the different degrees of severity, which can be used for self-rated assessment of hand eczema severity. These guides help to ensure consistency in the evaluation by capturing and incorporating the various features that contribute to disease severity in a single image. The severity of hand eczema is rated based on clinical findings and classified into five levels from clear to very severe. Severity is graded from 0 (clear) to 4 (very severe), and an examinee selects the level that best matches his or her own condition from a set of 43 pictures. The Photoguide is an efficient instrument for use in cases where no translated or validated tools are available, as it is easy to understand and does not require language proficiency.

The Hand Eczema Severity Index (HECSI) is a tool for determining the severity of hand eczema. It assesses the morphology of the condition by scoring factors such as erythema, infiltration, vesicles, fissures, scaling, and edema. Additionally, the area of the hands affected is taken into account, with the hand being divided into five main areas: fingertips, fingers (excluding tips), palms, back of the hands, and wrists. Each of these areas is graded based on the intensity of symptoms, with scores ranging from 0 (no changes) to 3 (severe) for factors such as erythema, induration, papulation, vesicles, fissuring, scaling, and edema. The extent of clinical symptoms is also scored for each location (both hands), with scores ranging from 0-4 (0: 0%; 1: 1-25%; 2: 26-50%; 3: 51-75%; and 4: 76-100%). To calculate the HECSI score, each clinical feature's score at each location is multiplied by the intensity of each clinical feature, ranging from 0 to 360 points (Dimitrova, Hiller, Dohil, Eichenfield, & Cohen, 2009).

A total of 50 patients were included in the study, and the sample size was determined based on a correlation coefficient of +0.4, power of 80%, and a significance level of 5%. Data analysis was carried out using Stata 14.0 and involved the use of Spearman's rank correlation, Mann-Whitney U test, Chi-square test, and independent samples t-test. A statistically significant level of $p < 0.05$ was considered for all analyses.

4. Results and Discussion

4.1 Result

This study included 50 patients with hand eczema, with the majority being female (78%). The patients' average age was 43.58 ± 14.05 years, ranging from 18 to 73 years old. Most cases (86%) were reported to have the disease for at least 3 months (chronicity), and the most common disease frequency was 1 to 5 times per year (64%). The median (IQR) of the HECSI scores of participants was 18 (12,47) ranging from 3 to 167 (Table 1).

Table1 Demographic, disease duration and frequency, severity score (HECSI and PGA) ,and DLQI of the patients

Variable	n =50
Age(year), mean \pm SD (Min-Max)	43.58 \pm 14.05 (18-73)
Sex, number (%)	
Male	11 (22)
Disease duration, number (%)	
< 3 months	27 (54)
\geq 3 months	23 (46)
Disease frequency, number (%)	

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Variable	n =50
1-5 times/yr	32 (64)
6-10 times/yr	4 (8)
11-15 times/yr	5 (10)
>15 times/yr	9 (18)
HECSI Score	
Median (IQR)	18 (12,47)
Mean± SD (Min-Max)	33.3±33.50 (3-167)
Photographic guide, Median (IQR)	
By physician	2 (2,3)
By patient	2 (2,3)
DLQI, Median (IQR)	6 (2,12)

According to Table 1, the median of the DLQI scores in this study was 6 (2, 12), with a range from 0 to 26 (Table 1). Based on this score, the impact of hand eczema on quality of life was deemed to be very high in 4 patients (8%), high in 12 patients (24%), moderate in 11 patients (22%), small in 15 patients (30%), and non-existent in 8 patients (16%). The symptoms and feelings aspect had the greatest impact on the DLQI score, followed by daily activities and leisure activities (as presented in Table 3).

Table 2 Impact of hand eczema on quality of life according DLQI scores

DLQI	Frequency (%)
0-1 (no effect)	8(16)
2-5 (small effect)	15(30)
6-10 (moderate effect)	11(22)
11-20 (large effect)	12(24)
21-30 (very large effect)	4(8)

Table 3 DLQI score in each domain

DLQI domains	Median (IQR)
Symptoms and feelings (q1,2)	3(1,4)
Daily activities(q3,4)	1(0,3)
Leisure(q5,6)	1(0,3)
Work or study (q7)	0(0,1)
Personal relationships(q8,9)	0(0,1)
Treatment(q10)	0(0,1)

The median scores of DLQI and HECSI were observed to be higher in females as compared to males (8 vs 4, and 18 vs 17, respectively). However, the results of statistical analysis revealed that these differences were not significant. Additionally, no significant differences in DLQI scores were observed among participants based on sex, occupation, allergy history, frequency of glove usage, and disease frequency.

However, the DLQI in patients who had had the disease for at least 3 months was significantly higher compared with patients having had the disease for less than 3 months (Median DLQI 4 vs 10, p value <0.05). Therefore, those who had been affected longer by the hand eczema seemed to have a better quality of life. Interestingly, there was no significant correlation between DLQI and HECSI scores. Nonetheless, the results indicated a significantly negative correlation between the DLQI and age of patients ($r=-0.363$, $p<0.05$), which suggested that their coping strategies might help mitigate the impact of the disease (Table 4).

This study demonstrated that the median score for the photographic guide evaluated by the physician and patient global assessment (PGA) for Thai patients was 2(2,3), indicating that approximately half of the patients included in this study had a severity level of “almost clear.” This study further revealed

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that there was no statistically significant association between the Dermatology Life Quality Index (DLQI) score and the PGA score, with corresponding p-values of 0.05 and 0.175, respectively (Table 4).

Table 4 Correlation Between DLQI and Age, Disease duration, HECSI, PGA

DLQI domains	Correlation Coefficient	P value
Age**	-0.363**	0.010*
Disease duration	1(0,3)	0.142
HECSI Score	1(0,3)	0.071
PGA Physician	-0.279	0.05
PGA Patient	-0.195	0.175

* Correlation is significant at p value less than 0.05 level (2-tailed).

4.2 Discussion

This study found that hand eczema had a notable impact on the well-being of individuals. The results of the DLQI questionnaire indicated that 94% of the patients experienced a significant reduction in their quality of life due to hand eczema. This outcome is consistent with previous studies conducted in Denmark and Sweden, which reported mean DLQI scores ranging from 5.5 to 7.4 in individuals with hand eczema (Cvetkovski et al., 2006; Hald et al., 2011; Wallenhammar, Nyfjäll, Lindberg, & Meding, 2004).

The results of this study are consistent with those of a multicenter study conducted by Agner et al. (2008), which investigated hand eczema in patients across ten European clinics and found that in 50% of individuals with hand eczema, their DLQI score was less than or equal to 8. In comparison, this study found that approximately 56% of the participants had a DLQI score in this range. These findings suggested that hand eczema could have a considerable impact on individuals' quality of life, as reflected in their DLQI scores. Moreover, this is consistent across different geographic locations.

Van Coevorden, van Sonderen, Bouma, and Coenraads (2006) conducted a study in Poland that examined the quality of life of patients with hand eczema before medical interventions were implemented. Their average score on the DLQI questionnaire was approximately 9.7 ± 6.6 notably higher than the findings of this study. Specifically, the DLQI mean score of the Thai patients in this study was 8.18 (SD 6.83), with a range from 0 to 26. These results suggested that the impact of hand eczema on quality of life might vary across different populations, depending on various factors, including access to medical interventions and cultural differences.

The findings of a study by Boehm et al. (2012) in Germany reported a mean DLQI score of 11.1 ± 6.5 and its moderate to very high effect on the quality of life of 75.5% of their patients higher DLQI scores than those found in this study. In contrast, the study of Thai patients found that 54% of patients were reported to experience moderate to very severe effect of hand eczema on their quality of life, lower than the proportion reported in the study by Boehm et al. (2012). One potential explanation for this difference is the variability in the severity of hand eczema among the subjects in this study since it included both general people and hospital patients seeking care from dermatologists. Other possibilities might be influenced by various factors, such as differences in patient demographics, access to healthcare, and cultural and social factors, climatic conditions, and participant recruitment methods. For instance, the German healthcare system may have different resources and interventions available for the treatment of hand eczema compared to the healthcare system in this study's population. Additionally, social and cultural factors may affect how individuals perceive the impact of hand eczema on their quality of life. Therefore, it is important for future research to consider these factors and conduct cross-cultural and cross-regional comparisons to gain a more comprehensive understanding of the impact of hand eczema on the quality of life.



This study found that half of the participants had HECSI scores of 18 or below, which is consistent with the study by Agner et al. (2008), in which half of the participants had HECSI scores of less than 17. This indicates that a substantial proportion of hand eczema patients may have relatively mild to moderate symptoms. However, it should be noted that the HECSI score alone may not fully reflect the impact of hand eczema on the quality of life, and additional measures may be needed to comprehensively assess the effects of this condition.

Upon analysis of the participants' responses to the Dermatology Life Quality Index (DLQI) questionnaire, it was determined that hand eczema had a significant impact on various aspects of their daily lives, with the most prominent effects observed in the category of "symptoms and feelings," as outlined in Table 3. This finding aligns with previous research studies, including those conducted by Cvetkovski et al. (2006), Hutchings, Shum, and Gawkrödger (2001), and Wallenhammar et al. (2004), which similarly identified the highest rates of impact on "work/school" and/or "symptoms and feelings (Cvetkovski et al., 2006; Hutchings et al., 2001; Wallenhammar et al., 2004)." Notably, one study observed the lowest rate of the impact on "personal relationships" in the study conducted in Sweden (Wallenhammar et al., 2004).

This study revealed that there were no statistically significant differences between males and females in terms of quality of life in relation to hand eczema, which aligns with the findings of previous investigations conducted by Agner et al. (2008), Cvetkovski (2006), Hutchings et al. (2001), and Wallenhammar (2004). However, the results contrasted with those reported by Bingefors et al. (2011) who found that the quality of life of female patients with hand eczema was more adversely impacted than that of their male counterparts. Moberg, Alderling, and Meding (2009) also reported that women with hand eczema experienced a lower quality of life compared to men. It is noteworthy that the SF-36 and EQ-5D questionnaires were employed in these two studies, respectively. These instruments were considered more effective than the DLQI questionnaire in identifying gender differences in quality of life related to hand eczema, a conclusion also drawn by Wallenhammar et al. (2004) with respect to SF-36. Although no statistically significant differences were detected between males and females in terms of quality of life in the present study, the higher prevalence rate of hand eczema among women (one-year prevalence rate of 5.4-14.6% in women vs. 2.5-8.8% in men) (Susitaival et al., 2003) implied that women might be more prone to complications resulted from this condition.

One of the key findings of the study was the absence of a significant positive relationship between the severity of hand eczema symptoms (as measured by the HECSI) and impaired quality of life (as measured by the DLQI). This result is in agreement with a study by Charan, Peter, and Pulimood (2013), but contrasts with the results of the studies by Cvetkovski et al. (2006) and Agner et al. (2008), which reported a significant negative impact of symptom severity on the quality of life.

The lack of significant correlation between the DLQI and HECSI scores in the Thai patients with hand eczema might be caused by several factors. One possible factor was the relatively small sample size of the study. A larger sample size may provide a more representative and diverse patient population, leading to different results. Additionally, the specific demographic characteristics of the patients, such as age, occupation, and gender probably influenced the results.

Furthermore, it is possible that factors beyond symptom severity, such as the psychosocial and emotional impacts of hand eczema, had a greater influence on the patients' quality of life. The DLQI questionnaire mainly focused on the physical aspects of the disease, while the HECSI evaluated symptom severity. Thus, it is plausible that other aspects of the disease, such as its impact on daily activities, self-esteem, and social interactions, were not adequately captured by these instruments.

It is important to note that the lack of significant correlation does not imply the absence of clinically meaningful differences between groups. Therefore, further research is needed to better understand



the relationship between the symptom severity and the quality of life in patients with hand eczema. This can involve using alternative assessment tools, exploring other factors that may affect the quality of life, or examining different patient groups.

Although the severity of hand eczema symptoms was found not to be significantly associated with the Dermatology Life Quality Index (DLQI) in this study, it is noteworthy that the lack of a significant relationship between disease duration and quality of life is consistent with prior investigations by Cvetkovski et al. (2006) and Hutchings et al. (2001), which suggested that disease duration might not be a principal determinant of the impact of hand eczema on quality of life. Instead, other factors such as an individual's coping mechanisms, social support, and general health status might exert a greater influence. Accordingly, such factors should be carefully observed/investigated when treatment plans and interventions are designed for patients with hand eczema.

The present study is considered to be an initial undertaking aimed at exploring the quality of life of Thai patients afflicted with hand eczema. Nevertheless, it is noteworthy to mention that previous research has established that the impairment in quality of life among individuals with hand eczema is comparable to that experienced by those with other dermatological conditions, such as acne, psoriasis, and dermatitis, as indicated by Wallenhammar et al. (2004).

Overall, this study provides valuable insights into the impact of hand eczema on quality of life in Thai patients and underscores the importance of further research in this area to better understand the complex factors that contribute to the impaired quality of life in patients with hand eczema.

5. Conclusion

In conclusion, this study appointed significant data concerning the consequences of hand eczema on the quality of life of Thai patients. The Dermatology Life Quality Index (DLQI) is an invaluable instrument for gauging the impact of hand eczema on quality of life, enabling informed treatment decisions and assessment of treatment efficacy. More extensive research is required to investigate the fundamental causes of quality-of-life impairment in patients with hand eczema and to devise targeted interventions that can enhance patient outcomes.

6. Acknowledgements

This study was supported by Division of Dermatology, Chulabhorn International College of Medicine, Thammasat University, and also received permission using Thai DLQI version (© Dermatology Life Quality Index. A Y Finlay, G K Khan, April 1992).

7. References

- Agner, T., Andersen, K. E., Brandao, F. M., Bruynzeel, D. P., Bruze, M., Frosch, P., ... & EECDRG. (2008). Hand eczema severity and quality of life: a cross-sectional, multicentre study of hand eczema patients. *Contact dermatitis*, 59(1), 43-47. <https://doi.org/https://doi.org/10.1111/j.1600-0536.2008.01362.x>
- Bingefors, K., Lindberg, M., & Isacson, D. (2011). Quality of life, use of topical medications and socio-economic data in hand eczema: A Swedish nationwide survey. *Acta Derm Venereol*, 91(4), 452-458. <https://doi.org/10.2340/00015555-1111>
- Boehm, D., Schmid-Ott, G., Finkeldey, F., John, S. M., Dwinger, C., Werfel, T., ... & Breuer, K. (2012). Anxiety, depression and impaired health-related quality of life in patients with occupational hand eczema. *Contact dermatitis*, 67(4), 184-192. <https://doi.org/10.1111/j.1600-0536.2012.02062.x>
- Charan, U. P., Peter, C. D., & Pulimood, S. A. (2013). Impact of hand eczema severity on quality of life. *Indian Dermatology Online Journal*, 4(2), 102. <https://doi.org/10.4103/2229-5178.110629>



- Coenraads, P. J., Diepgen, T. L., van der Walle, H. B., & Svensson, A. (1999). The visual analogue scale for the assessment of eczema severity: preliminary reliability and validity data. *Journal of the European Academy of Dermatology and Venereology*, 12(1), 11-14.
- Cvetkovski, R. S., Zachariae, R., Jensen, H., Olsen, J., Johansen, J. D., & Agner, T. (2006). Quality of life and depression in a population of occupational hand eczema patients. *Contact Dermatitis*, 54(2), 106-111. <https://doi.org/https://doi.org/10.1111/j.0105-1873.2006.00783.x>
- Dimitrova, D. V., Hiller, J., Dohil, M. A., Eichenfield, L. F., & Cohen, B. A. (2009). Assessment of the hands of patients with atopic dermatitis using the Hand Eczema Severity Index (HECSI). *Journal of the American Academy of Dermatology*, 60(3), 417-423. <https://doi.org/10.1016/j.jaad.2008.10.044>
- Diepgen, T. L., Agner, T., Aberer, W., Berth-Jones, J., Cambazard, F., Elsner, P., ... & Coenraads, P. J. (2007). Management of chronic hand eczema. *Contact dermatitis*, 57(4), 203-210. <https://doi.org/https://doi.org/10.1111/j.1600-0536.2007.01179.x>
- Finlay, A. Y., & Khan, G. K. (1994). Dermatology Life Quality Index (DLQI)--a simple practical measure for routine clinical use. *Clinical and experimental dermatology*, 19(3), 210-216. <https://doi.org/10.1111/j.1365-2230.1994.tb01167.x> © Dermatology Life Quality Index. A Y Finlay, G K Khan, April 1992
- Fowler, J. (2008). Chronic hand eczema: a prevalent and challenging skin condition. *Cutis*, 82(4 Suppl), 4-8.
- Hald, M., Agner, T., Blands, J., & Johansen, J. D. (2011). Quality of Life in a Population of Patients With Hand Eczema: A Six-month Follow-up Study. *Acta Dermato-Venereologica*, 91(4), 484-486. <https://doi.org/10.2340/00015555-1093>
- Halioua, B. (2014). Hand eczema: disability and impact. In *Annales de Dermatologie et de Venereologie*, 141, S111-6. [https://doi.org/10.1016/S0151-9638\(14\)70148-6](https://doi.org/10.1016/S0151-9638(14)70148-6)
- Hongbo, Y., Thomas, C. L., Harrison, M. A., Salek, M. S., & Finlay, A. Y. (2005). Translating the science of quality of life into practice: What do Dermatology Life Quality Index scores mean? *Journal of Investigative Dermatology*, 125(4), 659-664. doi: 10.1111/j.0022-202X.2005.23847.x
- Hutchings, C. V., Shum, K. W., & Gawkrödger, D. J. (2001). Occupational contact dermatitis has an appreciable impact on quality of life. *Contact Dermatitis*, 45(1), 17-20. <https://doi.org/10.1034/j.1600-0536.2001.045001017.x>
- Moberg, C., Alderling, M., & Meding, B. (2009). Hand eczema and quality of life: a population-based study. *British Journal of Dermatology*, 161(2), 397-403. <https://doi.org/10.1111/j.1365-2133.2009.09099.x>
- Susitaival, P., Flyvholm, M.-A., Meding, B., Kanerva, L., Lindberg, M., Svensson, Å., & Ólafsson, J. H. (2003). Nordic Occupational Skin Questionnaire (NOSQ-2002): a new tool for surveying occupational skin diseases and exposure. *Contact Dermatitis*, 49(2), 70-76. <https://doi.org/https://doi.org/10.1111/j.0105-1873.2003.00159.x>
- Thyssen, J. P., Johansen, J. D., Linneberg, A., & Menné, T. (2010). The epidemiology of hand eczema in the general population - prevalence and main findings. *Contact Dermatitis*, 62(2), 75-87. <https://doi.org/10.1111/j.1600-0536.2009.01669.x>
- Thyssen, J. P., Schuttelaar, M. L., Alfonso, J. H., Andersen, K. E., Angelova-Fischer, I., Arents, B. W., ... & Agner, T. (2022). Guidelines for diagnosis, prevention, and treatment of hand eczema. *Contact dermatitis*, 86(5), 357-378. <https://doi.org/10.1111/cod.14035>



- van Coevorden, A. M., van Sonderen, E., Bouma, J., & Coenraads, P. J. (2006). Assessment of severity of hand eczema: discrepancies between patient- and physician-rated scores. *British Journal of Dermatology*, *155*(6), 1217-1222. <https://doi.org/10.1111/j.1365-2133.2006.07531.x>
- Veien, N. K., Hattel, T., & Laurberg, G. (2008). Hand eczema: causes, course, and prognosis I. *Contact Dermatitis*, *58*(6), 330-334. <https://doi.org/https://doi.org/10.1111/j.1600-0536.2008.01345.x>
- Wallenhammar, L. M., Nyfjäll, M., Lindberg, M., & Meding, B. (2004). Health-related quality of life and hand eczema--a comparison of two instruments, including factor analysis. *Journal of investigative dermatology*, *122*(6), 1381-1389. <https://doi.org/10.1111/j.0022-202X.2004.22604.x>