

Quality of Life in Patients with Hand Eczema as Health Promotion: A Case Control Study

Reza Ghaderi, Alireza Saadatjoo

Birjand University of Medical Sciences, Birjand, Iran

Corresponding author:

Professor Reza Ghaderi, MD
Department of Dermatology
Birjand University of Medical Sciences
Ghaffari St
Birjand
Iran
rezaghaderi@yahoo.com

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SUMMARY Health promotion has been defined by the World Health Organization's (WHO) 2005 Bangkok Charter for Health Promotion as "the process of enabling people to increase control over their health and its determinants, and thereby improve their health". One of the most important determinants of health is quality of life. Hand eczema is a common skin disease that can adversely affect the quality of life of patients. The aim of this study was to determine the quality of life in patients with hand eczema. This case-control study was performed on 70 patients with hand eczema and 70 healthy controls. All the patients filled out two questionnaires: Short Form 36 (SF-36) and Dermatology Life Quality index (DLQI). The data were analyzed using the statistical software package for social sciences (SPSS).

The mean score score of quality of life in dimensions of physical functioning, vitality, and general health in the SF-36 was lower compared to the control group. The mean score in DLQI in patients with hand eczema was 8.68. There was a significant negative correlation between the scores of different dimensions of QOL obtained in the two questionnaires (SF36 and DLQI).

The study demonstrated that the quality of life in patients with hand eczema was lower than that of controls. It seems advisable that psychiatric consultations or psychotherapy be included in the treatment of chronic hand eczema

KEY WORDS: quality of life, hand eczema, questionnaire

INTRODUCTION

Health promotion has been defined by the World Health Organization's (WHO) 2005 Bangkok Charter for Health Promotion as "the process of enabling people to increase control over their health and its determinants, and thereby improve their health". One of the most important determinants of health is quality of life, and skin diseases are one of the most important factors that influence it. Dermatoses can cause changes in the self body image or cutaneous body image of patients (1-3). Cutaneous body image dissatisfaction has been associated with increased suicidality in patients with skin diseases (2).

Assessing the method of treatment and determining quality of life can improve our knowledge regarding mental stress associated with skin diseases (4).

According to the studies performed in Italy (5), USA (6), Australia (7), Denmark (8), Iran (9), England (10) Tunisia (11), Sweden (12), Brazil (13), and other countries (14-19) chronic dermatoses have a major impact on the quality of life in patients.

Hand eczema is a common, chronic skin disease that can negatively affect the quality of life, sex life, and occupational options of patients (8,16,18,20) and occupational contact dermatitis, one of the most

common occupational diseases, often results in impaired quality of life and loss of work ability (21).

This study was performed to compare quality of life in Iranian patients with hand eczema with quality of life in healthy individuals.

METHODS

This case-control study was conducted on 70 patients with hand eczema and 70 controls. Inclusion criteria included: having hand eczema and being above 16 years of age. Exclusion criteria included: having dermatoses other than the hand eczema, having a chronic disease which would have an impact on quality of life or having an obvious disability. The survey was performed in the skin diseases clinic of the Valiyy-e-asr hospital in Birjand, Iran between May 2011 and May 2012. All patients who came to the clinic and fulfilled the inclusion criteria were told the objectives of the study. The respondents gave their informed consent to take part in the survey. The institutional ethical and research committee approved the survey proposal.

Two Persian version of questionnaires DLQI (which is a specific questionnaire) and SF-36 (which is a generic one) were given to all those diagnosed with hand eczema by a dermatologist, but the controls only received the latter questionnaire. The controls were selected from the general population and matched with respect to age, gender, and occupation. They had no skin diseases or any other chronic diseases which would affect their quality of life (such as diabetes, asthma, cancers, etc.).

The DLQI questionnaire was created by Finlay and Khan in 1992, and it has been widely used in many countries since then (7,9-14,16,17).

Furthermore, the reliability and validity of the Persian version of the DLQI questionnaire had been confirmed through a survey of a group of Iranian patients with vitiligo in Shiraz, Iran (9). This questionnaire contains ten multiple-choice questions; points for each

question range between "zero" and "three". Total score of every individual's quality of life are the sum total scores of all the questions, i.e. between 0 and 30; the more an individual's score, the worse his quality of life. The questionnaire is separated into the following features: symptoms and emotions (questions 1 and 2), diurnal actions (questions 3 and 4), leisure time (questions 5 and 6), work and school (question 7), private communications (questions 8 and 9), and therapy (question 10) (10).

SF-36 is a generic questionnaire which has been applied in many countries (12,14,15,19,22-26). Reliability and validity of the Persian version of SF-36 questionnaire has been confirmed through a survey of a random sample of 4163 healthy individuals aged >15 in Tehran, Iran (24), and another survey of a group of Iranian patients with thalassemia major in Shiraz, Iran (25). It contains thirty-six components evaluating 8 dimensions of quality of life: Physical Functioning (PF) and Role Physical (RP) that refer to role limitations due to physical problems, Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), and Role Emotional (RE) that refer to role limitations due to emotional problems, and Mental Health (MH) (26).

The scores obtained in each of the domains are summed up separately and range from 0 to 100; the higher an individual's score, the better his quality of life.

Data were collected and analyzed by SPSS software (version 19, SPSS Inc., Chicago, USA). Data analysis was done using Descriptive Statistics, T test, Analysis of Variance (ANOVA), Tukey ranged test, and Pearson's correlation coefficient test. The conclusions were deduced based on a 5% significance level.

RESULTS

Out of total 140 patients in the study, 52.9% of the cases were men and 47.1% women (Table 1).

The age of the patients and controls ranged from

Table 1. Comparison of case and control groups with respect to gender

			Sex		Total	P value
			Male	Female		
Group	Case	Count	37	33	70	0.735
		% within group	52.9%	47.1%	100.0%	
	Control	Count	35	35	70	
		% within group	50.0%	50.0%	100.0%	
Total		Count	72	68	140	
		% within group	51.4%	48.6%	100.0%	

16 to 49 years (mean \pm standard deviation (SD), 26.5 \pm 6.74, and 25.7 \pm 6.34, respectively) ($P > 0.05$). Most of the patients were employed (47.1%), some were housewives (18.6%), and the rest were students (27.1%) or unemployed (7.2%). The case and control groups did not have significant differences in age and were homogenous in occupation and gender ($P > 0.05$).

SF-36

Comparison of the mean scores of QOL of the patients and controls in different dimensions using the SF-36 questionnaire, demonstrated that the scores were different in all the dimensions. However, statistically significant difference was found in the dimensions of physical functioning, vitality, and general health, with the patients having a lower mean score compared to the controls (Table 2).

The QOL score in physical functioning in the control group (mean \pm SD, 85.93 \pm 14.40) was higher than the score of the patients with hand eczema (mean \pm

SD, 72.64 \pm 25.73). The difference between the two groups was statistically significant ($P < 0.001$, t-test).

In the dimension of vitality the QOL score of the control group (mean \pm SD, 65.93 \pm 18.97) was higher than the score of the patients (mean \pm SD, 58.64 \pm 20.30), what is statistically significant difference ($P < 0.03$)

The general health score of the control group (mean \pm SD, 66.86 \pm 20.96) was higher than the score of the patients (mean \pm SD, 53.71 \pm 20.13). The difference between the two groups was statistically significant ($P < 0.001$, t-test).

There was statistically significant gender-related differences in the QOL scores only in the dimension of mental health, which was higher in men ($P < 0.05$). There was no statistically significant gender-related difference in other dimensions.

Comparison of mean scores of QOL in the control group based on age using analysis of variance (ANOVA) showed that the differences were not significant ($P = 0.243$).

Table 2. Comparison of mean scores of quality of life (QOL) in different dimensions in SF-36 in case and control groups (n=70)

Dimension	Group	Mean	Std. deviation	P value
PF	Case	72.64	25.73	<0.001
	Control	85.93	14.43	
RP	Case	57.14	34.62	0.822
	Control	58.57	40.13	
RE	Case	52.38	37.46	0.252
	Control	60.00	40.77	
VT	Case	58.64	20.30	0.030
	Control	65.93	18.96	
MH	Case	58.34	19.24	0.353
	Control	61.43	19.94	
SF	Case	73.93	22.60	0.410
	Control	76.96	20.81	
BP	Case	74.14	20.86	0.880
	Control	74.68	21.04	
GH	Case	53.71	20.14	<0.001
	Control	66.86	20.96	

*Physical Functioning (PF), Role Physical (RP) refer to role limitations due to physical problems, Bodily Pain (BP), General Health(GH), Vitality (VT), Social Functioning (SF), Role Emotional (RE) refer to role limitations due to emotional problems; and Mental Health (MH)

Table 3. Comparison of mean scores of DLQI in patients with hand eczema with respect to gender

Sex	No.	Mean	Std. deviation	P value
Male	37	8.51	5.29	0.778
Female	33	8.88	5.51	

However, comparison of QOL scores in patients with respect to age (using ANOVA) showed that in the dimensions of physical functioning, role physical, and bodily pain the differences were significant ($P<0.011$, $P<0.012$, $P<0.014$, respectively). Tukey's range test showed that the difference between two age groups in patients (<20 and >30 years) in the dimension of physical functioning was significant ($P<0.017$). In the dimension of role physical, the difference between two age groups, 21-30 year olds and over 30 year olds, was significant ($P<0.024$). In the dimension of

bodily pain the difference between patients <20 and >30 age groups was significant ($P<0.019$); those >30 had a lower QOL.

DLQI

DLQI scores in patients with hand eczema ranged from 0 to 24 (mean \pm SD, 8.68 ± 5.38). After comparing mean DLQI scores with respect to gender, a difference between the men's and women's scores was found (mean \pm SD, 8.51 ± 5.29 and 8.88 ± 5.51 , respectively), but this difference was not statistically significant ($P=0.778$) (Table 3).

There was not statistically significant difference between mean DLQI scores with respect to age ($P=0.232$, ANOVA).

Pearson's correlation coefficient test revealed that there was a significant negative correlation between all the dimensions of QOL in the SF-36 questionnaire and the scores obtained from the DLQI questionnaire.

Table 4. Pearson correlation between the scores of different dimensions of QOL obtained from the two questionnaires (SF36 and DLQI) in patients with hand eczema

Dimension		DLQI								
PF	Pearson Correlation	-0.278	PF	PF	PF	PF	PF	PF	PF	PF
	P value	0.020								
RP	Pearson Correlation	-0.218	RP	RP	RP	RP	RP	RP	RP	RP
	P value	0.070								
RE	Pearson Correlation	-0.293	RE	RE	RE	RE	RE	RE	RE	RE
	P value	0.014								
VT	Pearson Correlation	-0.386	VT	VT	VT	VT	VT	VT	VT	VT
	P value	0.001								
MH	Pearson Correlation	-0.442	MH	MH	MH	MH	MH	MH	MH	MH
	P value	<0.001								
SF	Pearson Correlation	-0.264	SF	SF	SF	SF	SF	SF	SF	SF
	P value	0.027								
BP	Pearson Correlation	-0.400	BP	BP	BP	BP	BP	BP	BP	BP
	P value	0.001								
GH	Pearson Correlation	-0.226	GH	GH	GH	GH	GH	GH	GH	GH
	P value	0.060								
total	Pearson Correlation	-0.429	total	total	total	total	total	total	total	total
	P value	<0.001								

* Physical Functioning (PF), Role Physical (RP) refer to role limitations due to physical problems; Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role Emotional (RE) refer to role limitations due to emotional problems; and Mental Health (MH)

In other words, the higher the QOL score in any of the dimensions in SF-36, the lower DLQI score and vice versa (Table 4).

DISCUSSION

Hand eczema is a common skin disease of long duration that can negatively influence the life quality, sex life and occupational options of patients (8,16,18,20,21,27). The present study was performed to measure how hand eczema affects health-related quality of life (HRQL) in patients suffering from this disease. After comparing mean QOL scores in different dimensions between the cases and the controls using the SF-36 questionnaire, it was found that the scores were different in all the dimensions. But only in the dimensions of physical functioning, vitality, and general health was the difference statistically significant, with the patients having a lower mean score compared to the controls. Wallenhammar *et al.* reported that patients with dermatitis had lower scores in all the domains of SF-36 compared to a control group (12). Hutchings *et al.* found a relationship between physical problems and psychological conditions influencing work using SF-36 scores in patients with occupational dermatitis. They suggested that occupational dermatitis has a considerable impact on quality of life (27). Nienhaus *et al.* showed that allergic contact dermatitis caused by natural rubber latex negatively influences the quality of life and work capability of health care workers (28). Kiebert *et al.* showed that patients with atopic dermatitis had lower scores in domains of social functioning, mental health and vitality than the general population (29). Rajagopalan *et al.* found that patients with dermatitis had a lesser score on mental health and vitality domains of SF-36 than US population norms (30). These results are consistent with our results.

Generally, in some of previous studies there was no clear-cut correlation between QOL scores and gender (27), but there were statistically significant gender-related differences in QOL scores in SF-36 in the dimension of mental health in our study. Women reported more impaired HRQL in the dimension of mental health. There was no statistically significant gender-related difference in other dimensions.

Wallenhammar *et al.* also found HRQL to be more impaired in women than in men in the mental health domain using SF-36 in patients with contact dermatitis (12), which correlates with our finding. They suggested that contact dermatitis in females has a greater effect on their mental health, which can be because females and males are subjected to different conditions at home and at work (12, 31-34).

Comparing mean DLQI scores with respect to age, there were no statistically significant differences. However, comparison of mean QOL scores with SF-36 in our patients regarding age showed that in the dimensions of physical functioning, role physical, and bodily pain, the differences were significant, unlike in the other study. Tukey's range test showed that the difference between the two age groups in patients (i.e. those <20 and >30 years) in the dimension of physical functioning was significant. In the dimension of role physical, the difference between the two age groups, 21-30 and >30, was significant. In the dimension of bodily pain the difference between patients in < 20 year and > 30 age groups was significant; the > 30 age group had a lower QOL. These results may be due to fear of loss of work ability in our patients.

The present study findings showed that the DLQI scores in patients with hand eczema ranged from 0 to 24 (mean \pm SD, 8.68 ± 5.38).

The mean DLQI score (8.68) in our patients was higher than in the studies by Hutchings *et al.* (mean DLQI=6.6) in the UK (Sheffield) (27), Ludwig *et al.* (mean DLQI=5.33) in Brazil (Porto Alegre) (14), and Nienhaus *et al.* (mean DLQI=4.1) in Germany (Hamburg) (28). This difference between the studies can be due to cultural or socioeconomic differences.

No statistically significant difference in DLQI scores was found between men and women (mean \pm SD, 8.51 ± 5.29 and 8.88 ± 5.51 respectively). Wallenhammar *et al.* also found no gender-related differences with DLQI (12), which corresponds to our result. However, Ayala *et al.* found a correlation between DLQI score and sex: women had lower QOL scores than men (5). These results disagree with our result.

Recently, Berg *et al.* investigated the association between life gratification and medical diagnoses in a sample of 392 participants aged 80 and older, with no dementia (35). They found that men with angina pectoris and eczema were less gratified with life compared with men without these diagnoses, whereas women with peptic ulcers were less gratified with life compared with women without this diagnosis (35). Other studies found that age and gender did not seem to have a major impact on QOL, although contradictory findings exist (36,37,38).

The difference between the results of different studies could be due to methods and design of the studies (QOL questionnaires), type and site of dermatitis, age, cultural, or socioeconomic differences.

Quality of life evaluation in skin diseases (especially eczema) is an important issue, but how should it be assessed? Skoet *et al.* based on a structured review of the literature, supported a combination of

generic questionnaires (e.g. the SF-36) and dermatology-specific (e.g. DLQI) to measure QoL in contact dermatitis (36). However, DLQI has only 2 questions that indirectly refer to occupational outcomes (39). Coenraads *et al.* (39) suggested a life quality questionnaire on work-related dermatoses (mostly contact dermatitis) should include questions on occupational disability of both physical functioning and interplay with co-workers. Kadyk *et al.* (37) used a QoL questionnaire reformed from Skindex-16 to measure QoL in allergic contact dermatitis. Recently, a study was performed by Ayala *et al.* to create a novel tool specifically designed to evaluate QOL in contact dermatitis. Patients with contact dermatitis were given a 20-item questionnaire, which included some added questions (5). They suggested a contact dermatitis-specific questionnaire can be used to investigate the effect on emotional functioning of the patient a priori, and can lead to specific options, such as choosing the proper medical treatment to be used, the assessment of therapeutics effectiveness, the selection of protective instruments, and the comparison with QOL in other skin diseases (5).

Finally, it seems that the latest questionnaire or a combination of generic questionnaires (e.g. the SF-36) and dermatology-specific ones (e.g. DLQI) are the best choices.

Yu *et al.* (40) studied the relationship between the quality of life and depression in hand eczema patients in South Korea. The patients' quality of life was evaluated by a self-administered questionnaire using the Dermatology Life Quality Index (DLQI). Data on patients with depression was analyzed using the Beck's Depression Inventory (BDI-II). The findings of this study showed hand eczema adversely affected the life quality and mood of patients. Thus, they recommended that life quality alteration and psychological support should be a part of the treatment for hand eczema (40).

Recently, Dodington *et al.* reviewed all data related to clinical and psychometric characteristics of the Dermatitis Family Impact Questionnaire from its inception in 1998-2012 (41). This questionnaire is a disease-specific scale used to evaluate the effect of atopic dermatitis on the quality of life in the parents and family members of children with this disease. They found the usage of the Dermatitis Family Impact questionnaire demonstrated the great effect of atopic dermatitis on the quality of life in families with children suffering from this disease (41).

Basra *et al.* also reviewed the published literature and all data related to clinical and psychometric characteristics of the Infants' Dermatitis Quality of Life

Index questionnaire (IDQoL) from its development in 2001 until November 2012 (42). It is a questionnaire filled out parents to evaluate the effect of atopic eczema on the life quality of infants aged 0-3 years. They found that when planning to usage the IDQoL, researchers and practitioners must attention the validity of the data, related comparative clinical data, and the potential bar on the responders (42).

CONCLUSION

The study demonstrated that quality of life in patients with hand eczema was lower than that of healthy controls. There was a significant gender-related difference in QOL in the mental health dimension according to SF-36. In other words, women with hand eczema reported more impaired HRQL in the dimension of mental health than their male counterparts.

It seems advisable that psychiatric consultations or psychotherapy be included in the treatment of chronic hand eczema (especially occupational dermatitis).

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References

1. Ennis H, Herrick AL, Cassidy C, Griffiths CE, Richards HL. A pilot study of body image dissatisfaction and the psychological impact of systemic sclerosis-related telangiectases. *Clin Exp Rheumatol* 2013;31(Suppl 76):12-7.
2. Gupta MA, Gupta AK. Cutaneous body image dissatisfaction and suicidal ideation: mediation by interpersonal sensitivity. *J Psychosom Res* 2013;75:55-9.
3. Gupta MA, Gupta AK. Evaluation of cutaneous body image dissatisfaction in the dermatology patient. *Clin Dermatol* 2013;31: 72-9.
4. Wahl Ak, Mork C, Lillehol BM. Changes in quality of life in persons with eczema and psoriasis after treatment in department of dermatology. *Acta Derm Venereol* 2006;186:198-201.
5. Ayala F, Nino M, Fabbrocini G, Panariello L, Balato N, Foti C, *et al.* Quality of life and contact dermatitis: a disease-specific questionnaire. *Dermatitis* 2010;21:84-90
6. Taylor A, Pawaskar M, Taylor SL. prevalence of pigmentary disorders and their impact on quality

- of life: a prospective cohort study : J Cosmet Dermatol 2008;7:164-8
7. Curr N, Matheson MC, Dharmage S, Nixon R. Does the Occupational Contact Dermatitis Disease Severity Index correlate with quality of life in patients with occupational contact dermatitis of the hands? *Contact Dermatitis* 2010;62:251-2.
 8. Cvetkovski RS, Jensen H, Oslen J, Johansen JD, Agner T. Quality of life and depression in population of occupational hand eczema patients. *Contact Dermatitis* 2006;56:106
 9. Aghaei S, Sodaifi M, Jafari P, Finlay AY. DLQI score in vitiligo: reliability and validity of the Persian version. *BMC Dermatol* 2004;4:8.
 10. Basra MK, Fenech R, Gatt RM, Salek MS, Finlay AY. The Dermatology Life Quality Index 1994-2007: a comprehensive review of validation data and clinical results. *Br J Dermatol* 2008;159:997-1035.
 11. Jalel A, Soumaya GS, Hamdaoui MH. Dermatology life quality index scores in vitiligo: reliability and validity of the Tunisian version. *Indian J Dermatol* 2009;54:330-3.
 12. Wallenhammar LM, Nyfjäll M, Lindberg M, Meding B. Health-related quality of life and hand eczema - a comparison of two instruments, including factor analysis. *J Invest Dermatol* 2004;122:1381-9.
 13. Ludwig MW, Oliveira Mda S, Muller MC, Moraes JF. Quality of life and site of the lesion in dermatological patients. *An Bras Dermatol* 2009;84:143-50.
 14. Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI): A simple practical measure for routine clinical use. *Clin Exp Dermatol* 1994;19:210-6.
 15. Holm EA, Wulf HC, Stegmann H, Jemec GB. Life quality assessment among patients with atopic eczema. *Br J Dermatol* 2006;154:719-25.
 16. Potocka A, Turczyn-Jabłońska K, Kieć-Swierczyńska M. Self-image and quality of life of dermatology patients. *Int J Occup Med Environ Health* 2008;21:309-17.
 17. Al Robaee AA. Assessment of quality of life in Saudi patients with vitiligo in a medical school in Qassim province, Saudi Arabia. *Saudi Med J* 2007;28:1414-7.
 18. Hong J, Koo B, Koo J. The psychosocial and occupational impact of chronic skin disease. *Dermatol Ther* 2008;21:54-9
 19. Sand M, Bechara FG, Sand D, Radenhausen M, Tomi NS, Altmeyer P, *et al.* Extracorporeal photopheresis as a treatment for patients with severe, refractory atopic dermatitis. *Dermatology* 2007;215:134-8.
 20. Ale IS, Maibacht HA. Diagnostic approach in allergic and hand eczema. *Expert Rev Clin Immunol* 2010;6:291-310.
 21. Kezic S, Visser MJ, Verberk MM. Individual susceptibility to occupational contact dermatitis. *Ind Health* 2009;47:469-78.
 22. Terreehorst I, Duivenvoorden HJ, Tempels-Pavlica Z, Oosting AJ, de Monchy JG, Buijnzeel-Koomen CA, *et al.* Comparison of a generic and a rhinitis-specific quality-of-life (QOL) instrument in patients with house dust mite allergy: relationship between the SF-36 and Rhinitis QOL Questionnaire. *Clin Exp Allergy* 2004;34:1673-7.
 23. Thomson KF, Wilkinson SM, Sommer S, Pollock B. Eczema: quality of life by body site and the effect of patch testing. *Br J Dermatol* 2002;146:627-30.
 24. Montazeri A, Goshtasebi A, Vahdaninia M, Gandek B. The Short Form Health Survey (SF-36): translation and validation study of the Iranian version. *Qual Life Res* 2005;14:875-82.
 25. Jafari H, Lahsaeizadeh S, Jafari P, Karimi M. Quality of life in thalassemia major: reliability and validity of the Persian version of the SF-36 questionnaire. *J Postgrad Med* 2008;54:273-5.
 26. Al Robaee AA. Assessment of general health and quality of life in patients with acne using a validated generic questionnaire. *Acta Dermatovenerol Alp Panonica Adriat* 2009;18:157-64.
 27. Hutchings CV, Shum KW, Gawkrödger DJ. Occupational contact dermatitis has an appreciable impact on quality of life. *Contact Dermatitis* 2001;45:17-20.
 28. Nienhaus A, Kromark K, Raulf-Heimsoth M, van Kampen V, Merget R. Outcome of occupational latex allergy-work ability and quality of life. *PLoS One* 2008;3:e3459.
 29. Kiebert G, Sorensen S, Revicki D, Fagan S, Doyle J, Cohen J, *et al.* Atopic dermatitis is associated with a decrement in health-related quality of life. *Int J Dermatol* 2002;41:151-8.
 30. Rajagopalan R, Anderson RT. The profile of a patient with contact dermatitis and a suspicion of contact allergy (history, physical characteristics, and dermatology-specific quality of life). *Am J Contact Dermat* 1997;8:26-31.
 31. Meding B. Differences between the sexes with regard to work-related skin disease. *Contact Dermatitis* 2000;43: 65-71.
 32. Härenstam A, Bodin L, Karlqvist L, Nise G, Schéele P, The MOA-research group: Patterns of working and living conditions. A person-oriented, multi-

- variate approach for occupational health studies. *Work & Stress* 2003;17:73-92.
33. Waldenström K, Härenstam A. Does the job demand-control model correspond to externally assessed demands and control for both women and men? *Scand J Public Health* 2008;36:242-9.
34. Härenstam A. Exploring gender, work and living conditions and health - suggestions for contextual and comprehensive approaches. *Scand J Work Environ Health* 2009;35:127-33.
35. Berg AI, Hassing LB, Nilsson SE, Johansson B. "As long as I'm in good health". The relationship between medical diagnoses and life satisfaction in the oldest-old. *Aging Clin Exp Res* 2009;21:307-13.
36. Skoet R, Zachariae R, Agner T. Contact dermatitis and quality of life: a structured review of the literature. *Br J Dermatol* 2003;149:452-6.
37. Kadyk DL, Hall S, Belsito DV. Quality of life of patients with allergic contact dermatitis: an exploratory analysis by gender, ethnicity, age, and occupation. *Dermatitis* 2004;15:117-24.
38. Agner T, Andersen KE, Brandao FM, Bruynzeel DP, Bruze M, Frosch P, Goncalo M, *et al.* Hand eczema severity and quality of life: a cross-sectional, multicentre study of hand eczema patients. *Contact Dermatitis* 2008;59:43-7.
39. Coenraads PJ, Bouma J, Diepgen TL. Quality of life of patients with occupationally-induced hand eczema. *Hautarzt* 2004;55:28-30.
40. Yu M, Han TY, Lee JH, Son SJ. The Quality of Life and Depressive Mood among Korean Patients with Hand Eczema. *Ann Dermatol* 2012;24:430-7.
41. Dodington SR, Basra MK, Finlay AY, Salek MS. The Dermatitis Family Impact questionnaire: a review of its measurement properties and clinical application. *Br J Dermatol* 2013;169: 31-46.
42. Basra MK, Gada V, Ungaro S, Finlay AY, Salek SM. Infants' Dermatitis Quality of Life Index: a decade of experience of validation and clinical application. *Br J Dermatol* 2013;169:760-8.

