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Table SI. Questions used in the current study, including used definitions to categorize variables, and relevant references.^a

| Topic | Question and response options English translation | Categorization | References |
|---|---|--|---|
| Lifetime prevalence of hand eczema | Hand eczema is a skin disease of the hands. Symptoms are redness, desquamation/dry skin and sometimes vesicles and/or fissures. Hand eczema can cause itch and/or pain. Have you ever (now or in the past) had hand eczema? <ul style="list-style-type: none"> • Yes • No | <ul style="list-style-type: none"> • Yes (1) • No (0) | Nordic Occupational Skin Questionnaire (NOSQ)-2002; question D1, adjusted. ¹ |
| 1-year prevalence of hand eczema | Have you had hand eczema in the past 12 months? <ul style="list-style-type: none"> • Yes • No | <ul style="list-style-type: none"> • Yes (1) • No (0) | NOSQ-2002; question D1, adjusted. ¹ |
| Age | What is your year of birth? | <ul style="list-style-type: none"> • 25-34 years (1) • 35-44 years (2) • 45-54 years (3) • 55-64 years (4) • ≥ 65 (5) | None. |
| Sex | What is your sex? <ul style="list-style-type: none"> • Male • Female | <ul style="list-style-type: none"> • Male (1) • Female (2) | None. |
| Atopic dermatitis | Have you ever been diagnosed with atopic dermatitis or atopic eczema by a doctor? <ul style="list-style-type: none"> • Yes • No | <ul style="list-style-type: none"> • Yes (2) • No (1) | Barbarot et al. 2018; question P1. ² |
| Exposure to wet activities | Three questions about exposure to wet activities were included, they were separately asked for activities at work and at home, resulting in six variables regarding exposure to wet activities. | Exposure to wet activities was defined as minimally two or more from answer category 3, at least one from answer category 4. | Questions based on the German Technische Regeln für Gefahrstoffe (TRGS) 401 criteria and an article by Behroozy et al. ^{3,4} |

| Topic | Question and response options English translation | Categorization | References |
|------------------|--|---|------------------------------|
| | <p>1. On an average day, how many hours do your hands come into direct contact with water, fluids and/or moist products? (for example during washing your hands)</p> <ul style="list-style-type: none"> • Never (0) • Less than ½ hour (1) • ½-1 hour (2) • 1-2 hours (3) • More than 2 hours (4) <p>2. On an average day, how many hours do you wear gloves that are impermeable to fluids?</p> <ul style="list-style-type: none"> • Never (0) • Less than ½ hour (1) • ½-1 hour (2) • 1-2 hours (3) • More than 2 hours (4) <p>3. On an average day, how often do you wash your hands?</p> <ul style="list-style-type: none"> • Never (0) • Less than 5 times (1) • 5-10 times (2) • 10-20 times (3) • More than 20 times (4) | | |
| Education | <p>What is the highest level of education you have finished?</p> <ul style="list-style-type: none"> • No education • Primary education • Lower or preparatory secondary vocational education • Junior general secondary education • Secondary vocational education or work-based learning pathway • Senior general secondary education, pre-university secondary education • Higher vocational education • University education | <p>The eight potential response categories were recoded into years of education, using the minimum numbers of years required to complete each category:</p> <ul style="list-style-type: none"> • No education = 5 years • Primary education = 6 years • Lower or preparatory secondary vocational education = 9 years • Junior general secondary education = 10 years • Secondary vocational education or work-based learning pathway = 12 years | De Graaf et al. ⁵ |

| Topic | Question and response options English translation | Categorization | References |
|--|---|--|---|
| | | <ul style="list-style-type: none"> • Senior general secondary education, pre-university secondary education = 12 years • Higher vocational education = 15 years • University education = 16 years <p>The categories ‘no education’ and ‘primary education’ were combined due to the low numbers in both categories.</p> | |
| Health literacy – 1 Functional health literacy | How often does someone help you with reading information materials from the hospital or another healthcare provider? <ul style="list-style-type: none"> • Never • Occasionally • Sometimes • Often • Always | <ul style="list-style-type: none"> • Never (5) • Occasionally (4) • Sometimes (3) • Often (2) • Always (1) | Chew et al. 2008; question 1. ^{6,7} |
| Health literacy – 2 Functional health literacy | How sure are you of yourself when you fill out medical forms? <ul style="list-style-type: none"> • Not at all • A little • Somewhat • Reasonably • Very | <ul style="list-style-type: none"> • Not at all (1) • A little (2) • Somewhat (3) • Reasonably (4) • Very (5) | Chew et al. 2008; question 2. ^{6,7} |
| Health literacy – 3 Functional health literacy | How often do you have trouble understanding your medical situation because you have difficulty with the written information? <ul style="list-style-type: none"> • Never • Occasionally • Sometimes • Often • Always | <ul style="list-style-type: none"> • Never (5) • Occasionally (4) • Sometimes (3) • Often (2) • Always (1) | Chew et al. 2008; question 3. ^{6,7} |
| Total functional health literacy score | Scores on the first and third health literacy questions were reversed and the scores of the first three questions were added up to calculate the total functional health literacy score in which higher scores indicate a higher level of functional health literacy. | Total score ranging from 3 to 15 points. | The total functional health literacy score based on a previous publication using this instrument in the same cohort. ⁸ |

| Topic | Question and response options English translation | Categorization | References |
|---|---|---|--|
| Low and high functional health literacy | The cut-off point of the total functional health literacy score. | Total functional health literacy score: • < 13 points • ≥ 13 points | The cut-off point between low and high functional health literacy was selected based on previous publications using this instrument in the same cohort ⁸ and leads to comparable percentages of low health literacy found in large-scale health literacy surveys in the Netherlands. ⁹ |
| Health literacy – 4 Communicative health literacy | I talk to other people about the problems/complaints for which I receive help or treatment • Never • Occasionally • Sometimes • Often • Always | • Never (1) • Occasionally (2) • Sometimes (3) • Often (4) • Always (5) | Dutch Functional Communicative and Critical Health Literacy (FCCHL) questionnaire; question==. ¹⁰ |
| Health literacy – 5 Communicative health literacy | I collect information about the problems/complaints for which I receive help • Never • Occasionally • Sometimes • Often • Always | • Never (1) • Occasionally (2) • Sometimes (3) • Often (4) • Always (5) | Dutch Functional Communicative and Critical Health Literacy (FCCHL) questionnaire. ¹⁰ |
| Health literacy – 6 Critical health literacy | I collect information to be able to make decisions related to my health • Never • Occasionally • Sometimes • Often • Always | • Never (1) • Occasionally (2) • Sometimes (3) • Often (4) • Always (5) | Dutch Functional Communicative and Critical Health Literacy (FCCHL) questionnaire. ¹⁰ |

Abbreviations: NOSQ, Nordic Occupational Skin Questionnaire; TRGS, Technische Regeln für Gefahrstoffe; FCCHL, Functional Communicative and Critical Health Literacy.

^aSupplementary Table S1 was previously published in adapted form.^{11,12}

Table III. Nonresponder analysis.

| | Total, n (%) (n=134.037) | Responders, n (%) (n=57.046) | Non-responders, n (%) (n=76.991) | P-values |
|---|------------------------------------|--|--|-----------------|
| Age (mean +/- SD) | 52.8 +/- 12.5 | 55.8 +/- 12.2 | 50.5 +/- 12.3 | <.001 |
| Missing | 0 | 0 | 0 | |
| Sex | | | | <.001 |
| Male | 55.585(41.5) | 22.650 (39.7) | 32.935 (42.8) | |
| Female | 78.452 (58.5) | 34.396 (60.3) | 44.056 (57.2) | |
| Missing | 0 | 0 | 0 | |
| Education (years) | | | | <.001 |
| 5-6 | 531 (0.4) | 853 (1.5) | 1.799 (2.4) | |
| 9 | 2.121 (1.7) | 6.212 (11.1) | 9.808 (13.1) | |
| 10 | 16.020 (13.1) | 7.740 (13.9) | 9.973 (13.3) | |
| 12 | 59.036 (48.2) | 2.1881 (39.2) | 31.494 (41.9) | |
| 15 | 12052 (9.8) | 15.222 (27.2) | 17.558 (23.4) | |
| 16 | 32780 (26.8) | 3.954 (7.1) | 4.513 (6.0) | |
| Missing | 11.497 | 1.184 | 1.846 | |
| Functional health literacy | | | | <.001 |
| Total score | 14.0 [2.0] | 14.0 [1.0] | 14.0 [2.0] | |
| Low score (<13 points) | 22.795 (26.3) | 11.418 (24.7) | 11.377 (28.2) | <.001 |
| High score (≥ 13 points) | 63.874 (73.7) | 34.895 (75.3) | 28.979 (71.8) | |
| Missing | 47.368 | 10.733 | 36.635 | |
| Help with reading information | | | | 0.21 |
| Never (5) | 71.304 (82.2) | 37.963 (81.9) | 33.341 (82.5) | |
| Occasionally (4) | 11.474 (13.2) | 6.220 (13.4) | 5.254 (13.0) | |
| Sometimes (3) | 2.786 (3.2) | 1.524 (3.3) | 1.262 (3.1) | |
| Often (2) | 10.47 (1.2) | 559 (1.2) | 488 (1.2) | |
| Always (1) | 151 (0.2) | 78 (0.2) | 73 (0.2) | |
| Missing | 47.275 | 10.702 | 36.573 | |
| Confident in filling out medical forms | | | | <.001 |
| Not at all (1) | 1.788 (2.1) | 858 (1.9) | 930 (2.3) | |
| A little (2) | 3.018 (3.5) | 1.331 (2.9) | 1.687 (4.2) | |
| Somewhat (3) | 9.910 (11.4) | 4.702 (10.1) | 5.208 (12.9) | |
| Reasonably (4) | 48.906 (56.4) | 26.421 (57.0) | 22.485 (55.7) | |
| Very (5) | 23.093 (26.6) | 13.017 (28.1) | 10.076 (24.9) | |
| Missing | 47.322 | 10.717 | 36.605 | |

| | Total, n (%) (n=134.037) | Responders, n (%) (n=57.046) | Non-responders, n (%) (n=76.991) | P-values |
|---|------------------------------------|--|--|-----------------|
| Difficulties with written information | | | | |
| Never (5) | 57.465 (66.3) | 31.396 (67.8) | 26.069 (64.5) | <.001 |
| Occasionally (4) | 18.764 (21.6) | 9.693 (20.9) | 9.071 (22.5) | |
| Sometimes (3) | 9.478 (10.9) | 4.783 (10.3) | 4.695 (11.6) | |
| Often (2) | 805 (0.9) | 356 (0.8) | 449 (1.1) | |
| Always (1) | 211 (0.2) | 97 (0.2) | 114 (0.3) | |
| Missing | 47.314 | 10.721 | 36.593 | |
| Talk about complaints | | | | |
| Never (1) | 19.912 (23.0) | 10.113 (21.8) | 9.799 (24.3) | <.001 |
| Occasionally (2) | 28.383 (32.7) | 15.309 (33.0) | 13.074 (32.4) | |
| Sometimes (3) | 23.174 (26.7) | 12.652 (27.3) | 10.522 (26.1) | |
| Often (4) | 11.882 (13.7) | 6.388 (13.8) | 5.494 (13.6) | |
| Always (5) | 3.343 (3.9) | 1.859 (4.0) | 1.484 (3.7) | |
| Missing | 47.343 | 10.725 | 36.618 | |
| Collecting information | | | | |
| Never (1) | 21.283 (24.6) | 10.701 (23.1) | 10.582 (26.2) | <.001 |
| Occasionally (2) | 18.934 (21.8) | 10.029 (21.7) | 8.905 (22.1) | |
| Sometimes (3) | 16.924 (19.5) | 9.006 (19.4) | 7.918 (19.6) | |
| Often (4) | 19.729 (22.8) | 10.959 (23.7) | 8.770 (21.7) | |
| Always (5) | 9.795 (11.3) | 5.615 (12.1) | 4.180 (10.4) | |
| Missing | 47.372 | 10.736 | 36.636 | |
| Collecting information regarding decision making | | | | |
| Never (1) | 15.120 (17.4) | 7.381 (15.9) | 7.739 (19.2) | <.001 |
| Occasionally (2) | 19.771 (22.8) | 10.493 (22.7) | 9.278 (23.0) | |
| Sometimes (3) | 18.651 (21.5) | 9.934 (21.4) | 8.717 (21.6) | |
| Often (4) | 20.884 (24.1) | 11.486 (24.8) | 9.398 (23.3) | |
| Always (5) | 12.265 (14.1) | 7.030 (15.2) | 5.235 (13.0) | |
| Missing | 47.346 | 10.722 | 36.624 | |

All characteristics were included in the baseline assessment. Age was calculated at the moment of sending out the hand eczema questionnaire (2020). All questions regarding health literacy could be answered on a scale of 1-5, after reversing the answers of question one and three, higher scores indicated higher health literacy. *P*-values <0.05 are shown in bold. Abbreviations: n, number; SD, standard deviation.

Table SIII. Binary logistic regression analysis between sociodemographic variables and low vs high health literacy among subjects with hand eczema in lifetime.

| | Low health literacy, n (%) (n=1.680) | High health literacy, n (%) (n=5.321) | Crude OR (95%CI) | P-value | Adjusted OR (95%CI) ^a | P-value |
|--------------------------|---|--|--------------------------|-----------------|----------------------------------|-----------------|
| Sex, Female | 1.209 (72.0) | 3.776 (72.2) | 1.01 (0.90-1.14) | 0.86 | 1.02 (0.90-1.16) | 0.77 |
| Missing | 0 | 0 | - | - | - | - |
| Age (years) | | | | | | |
| 25-34 | 101 (6.0) | 286 (5.5) | 1.15 (0.88-1.49) | 0.31 | 1.20 (0.91-1.60) | 0.20 |
| 35-44 | 210 (12.5) | 856 (16.4) | 1.65 (1.35-2.01) | <.001 | 1.20 (0.92-1.54) | 0.19 |
| 45-54 | 454 (27.0) | 1.500 (28.7) | 1.34 (1.13-1.58) | 0.001 | 1.19 (0.92-1.53) | 0.19 |
| 55-64 | 584 (34.8) | 1.771 (33.9) | 1.23 (1.05-1.44) | 0.01 | 1.07 (0.81-1.41) | 0.62 |
| ≥65 | 331 (19.7) | 818 (15.6) | 1 | - | 1 | - |
| Missing | 0 | 0 | - | - | - | - |
| Education (years) | | | | | | |
| 5 - 6 | 41 (2.5) | 38 (0.7) | 1 | | 1 | |
| 9 | 275 (16.7) | 290 (5.6) | 1.14 (0.71-1.82) | 0.59 | 1.11 (0.69-1.79) | 0.66 |
| 10 | 272 (16.5) | 619 (12.1) | 2.46 (1.54-3.90) | <.001 | 2.41 (1.52-3.84) | <.001 |
| 12 | 750 (45.5) | 2.160 (42.1) | 3.11 (1.98-4.87) | <.001 | 3.01 (1.92-4.72) | <.001 |
| 15 | 272 (16.5) | 1.598 (31.3) | 6.34 (4.00-10.04) | <.001 | 6.14 (3.87-9.74) | <.001 |
| 16 | 39 (2.4) | 431 (8.4) | 11.92 (6.88-20.66) | 0.74 | 11.52 (6.63-20.01) | <.001 |
| Missing | 31 | 95 | - | | | - |

^aAdjusted for age, sex and education.

Functional health literacy was categorized as low for scores ≤ 12 points and as high for scores > 13 points.

Education was defined as the minimal years of education needed to achieve the highest self-reported completed education level and assessed during baseline assessment (2006-2013). Health literacy was assessed during a follow-up questionnaire sent out between 2012-2015. Age was calculated at the moment of filling in the hand eczema questionnaire (2020). P-values <0.05 were shown in bold.

Abbreviations: n, number; SD, standard deviation; OR: Odds ratio.

1. Susitaival P, Flyvholm MA, Meding B, et al. Nordic Occupational Skin Questionnaire (NOSQ-2002): a new tool for surveying occupational skin diseases and exposure. *Contact Dermatitis* 2003;49:70-76. doi:10.1111/j.0105-1873.2003.00159.x
2. Barbarot S, Auziere S, Gadkari A, et al. Epidemiology of atopic dermatitis in adults: Results from an international survey. *Allergy* 2018;73:1284-1293. doi:10.1111/all.13401
3. Behroozy A, Keegel TG. Wet-work Exposure: A Main Risk Factor for Occupational Hand Dermatitis. *Saf Health Work* 2014;5:175-180. doi:10.1016/j.shaw.2014.08.001

4. Bundesanstalt für Arbeitsschutz und Arbeitsmedizin. TRGS 401: Risks resulting from skin contact - identification, assessment, measures, 2008. Available at: <https://www.baua.de/DE/Angebote/Rechtstexte-und-Technische-Regeln/Regelwerk/TRGS/TRGS-401.html> (last accessed 30 April 2021)
5. de Graaf ND, de Graaf PM, Kraaykamp G. Parental cultural capital and educational attainment in the Netherlands: a refinement of the cultural capital perspective. *Sociol Educ* 2020;73:92-111.
6. Chew LD, Griffin JM, Partin MR, et al. Validation of screening questions for limited health literacy in a large VA outpatient population. *J Gen Intern Med* 2008;23:561-566. doi:10.1007/s11606-008-0520-5
7. Fransen MP, Van Schaik TM, Twickler TB, Essink-Bot ML. Applicability of internationally available health literacy measures in the Netherlands. *J Health Commun* 2011;16:134-149. doi:10.1080/10810730.2011.604383
8. Geboers B, Reijneveld SA, Jansen CJM, de Winter AF. Health Literacy Is Associated With Health Behaviors and Social Factors Among Older Adults: Results from the LifeLines Cohort Study. *J Health Commun* 2016;21:45-53. doi:10.1080/10810730.2016.1201174
9. Sørensen K, Pelikan JM, Röthlin F, et al. Health literacy in Europe: comparative results of the European health literacy survey (HLS-EU). *Eur J Public Health* 2015;25:1053-1058. doi:10.1093/eurpub/ckv043
10. van der Vaart R, Drossaert CHC, Taal E, et al. Validation of the Dutch functional, communicative and critical health literacy scales. *Patient Educ Couns* 2012;89:82-88. doi:10.1016/j.pec.2012.07.014
11. Voorberg AN, Loman L, Schuttelaar MLA. Prevalence and Severity of Hand Eczema in the Dutch General Population: A Cross-sectional, Questionnaire Study within the Lifelines Cohort Study. *Acta Derm Venereol* 2022;102.
12. Brands MJ, Loman L, Schuttelaar MLA. Exposure and work-related factors in subjects with hand eczema: Data from a cross-sectional questionnaire within the Lifelines Cohort Study. *Contact Dermatitis* 2022;86:493-506.