JA, ICH HABE MEINE VITILIGO AKZEPTIERT. SCHLIESSLICH HABE ICH KEINE WAHL.

65 % aller Menschen mit Vitiligo wird gesagt, ihre Erkrankung sei nicht behandelbar.[1] Noch gravierender ist, dass nahezu die Hälfte aller Betroffenen eine Behandlung überhaupt nicht mehr in Betracht zieht.[1] Wie Sie wissen, tritt Vitiligo meist im Teenageralter auf – und ohne zugelassene Therapie fühlen sich viele Betroffene in einem Zustand der Ungewissheit gefangen. Deshalb forschen wir an neuen wissenschaftlichen Ansätzen. Denn wenn wir uns alle mehr mit der Erkrankung Vitiligo befassen, haben Ihre Patientinnen und Patienten eines Tages vielleicht wieder eine Wahl.

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ORIGINAL ARTICLE

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Frequency of hand eczema in the elderly: Cross-sectional findings from the German AugUR study

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Abstract

Background: Hand eczema (HE) is a chronic inflammatory skin disease caused by a genetic predisposition and environmental exposures. There is a lack of population-based studies on skin diseases in the elderly.

Objectives: Our aim was to estimate the frequency of HE in the elderly to determine its burden of disease in this particular population.

Methods: We analyzed data from the research platform AugUR, a study on chronic diseases in the elderly (n = 1133, ages 70-95 years, mean age 77.6, 45.1% women). Raw frequencies were estimated using self-reports on physician-diagnosed HE from a standardized personal interview. Frequencies were standardized to the Bavarian population weighted by gender and 5-year age-groups.

Results: In our sample 2.7% (95% confidence interval [CI] 1.6-4.3) of the paticipants reported to ever have been diagnosed with HE. Among those 57% were male. After standardization, the frequency was estimated at 2.8% (95% CI 1.9-3.9). There were no differences between male and female participants.

Conclusions: Compared to other studies on lifetime frequency of HE, our estimates seem to be remarkably lower. More in-depth studies with validated diagnoses are warranted to precisely estimate the burden of HE in the elderly.

KEYWORDS
dermato-epidemiology, frequency, hand eczema, skin condition

1 | INTRODUCTION

Hand eczema (HE) is an inflammatory skin disease caused[1,2] by genetic predisposition (40%) and environmental factors (60%). It is estimated that ~10% to 15% people are affected by HE worldwide.[2-5] A currently published systematic review[5] on population-based studies (1964 to 2019) on HE prevalence showed a lifetime prevalence of 14.5%. A population-based study[6] on the prevalence of HE, not included in this systematic review, was performed from August 2008 to October 2011 across five European countries (Germany, Italy, The Netherlands, Portugal, and Sweden) and revealed a lifetime prevalence of 15%. Ofenloch and Weisshaar published a review[7] on HE studies in Germany from 2009 to 2019 and reported prevalences for HE varying from 2.6% to 16.0%. The included 39 studies were conducted mainly in clinical settings, not population-based.

Because our hands are essential, for example, for physical functioning and communication, HE might not only affect daily life but also lead to psychological conditions, for example anxiety, low self-esteem, or social phobias.[8] In the elderly, in particular, this might influence participation and cause further loneliness. There is a general lack of population-based studies on skin diseases in the elderly (people older than 65 years) and especially on HE. One reason might be that this disease is not very present in the public health debate[9,10] and commonly not so well known to the public.[11] Prevalence and incidence studies on skin diseases in the elderly (65+) are rare and have only been performed in hospital settings so far.[12] Estimating the frequency of HE, particularly in the elderly, is essential for planning adequate health care and for allocating resources. Hence, our aim was to determine the frequency of HE in an elderly population in Germany.

2 | MATERIALS AND METHODS

2.1 | Study design and data collection

The study presented here used data from the baseline survey of the first part of AugUR study (**A**ge-related diseases: **u**nderstanding **g**enetic and non-genetic influences - a study at the **U**niversity of **R**egensburg, AugUR1-BL). This is a study platform for research on chronic diseases in the elderly.[13] Study design and methods of AugUR and the baseline survey have been published previously.[13,14] Briefly, participants 70 years of age and older were recruited between March 2013 and November 2015 in Regensburg and the surrounding county for thorough medical examination and a standardized in-person interview.

2.2 | Ethics statement

The Ethics Committee of the University of Regensburg approved the study protocol and all necessary procedures (12-101-0258). We obtained written informed consent according to the Declaration of Helsinki by all participants prior to the examination and interview.

2.3 | Data management and analyses

We included all participants (n = 1133) of the baseline survey of the first part of the AugUR study (AugUR1-BL) for our analysis.

The outcome variable is self-reported HE based on the answer to "Have you ever been diagnosed by a doctor with any one of the following diseases? (…) hand eczema (…) [yes/no]". Further, we considered the following variables:

- Age at the time of the first interview [years], categorized in four age groups: 70-74, 75-79, 80-84, and ≥85 years,
- Gender [male/female],
- The zip code of the current place of residence

We obtained a selected data set from the AugUR database and verified that our variables of interest were complete and did not contain any entirely implausible values.

Median and range were computed for age, as evidence for non-normality was considered. For categorical variables we computed counts and relative frequency estimates with 95% confidence intervals (CIs). We did no formal hypothesis testing for this particular study. Statistical analyses were performed using SAS (SAS Institute, Cary NC, USA).

2.4 | Calculating standardized frequency estimates

The overall aim of the AugUR study[13] was to explore diseases in the elderly and their genetic and non-genetic risk factors. Because there is always a considerable issue of representativity in population-based surveys, it is not always possible to determine generalizable estimates. Admitting those challenges, this study achieved a response of ~20% which is similar to that of other cohort studies.[15,16]

In a non-response evaluation, we contacted eligible individuals by phone who did not answer the invitation letter or a reminder notice. Contactable persons who did not participate in the study (n = 1324) gave the following reasons for non-participation: too ill (n = 227), no time (n = 25), no interest (n = 81), any other unspecified reason (n = 991).

We assume that selection bias occurred due to relevant differences between our study sample and source population (elderly people in the city and county of Regensburg). This bias arose randomly and independent of the disease status, as HE usually does not affect the ability to visit a study center/hospital.

We thus decided to standardize the self-reported frequencies of hand eczema to the Bavarian population dated from May 9, 2011[17] in order to provide more accurate estimates. We derived those standardized estimates by weighting[18] raw frequencies of self-reports by gender and 5- or 10-year-age groups for the respective proportion of the Bavarian population.

3 | RESULTS

3.1 | Raw frequencies of hand eczema

All 1133 participants including 45.1% women, age 70-95, mean age 77.6 ± 5.0 years (median 76.7) were analyzed from the AugUR Baseline study (AugUR1-BL). A portion of study participants (2.7%, 95% CI 1.6-4.3) reported a previous diagnosis of HE. Frequency of HE was highest in the 85-95 year age group (3.4%, 95% CI 0.9-8.6) and lowest in the 80-84 year age group (0.5%, 95% CI 0.0-2.7). Among the participants who reported a HE diagnosis, 43% were female. Frequency of HE hardly differed between men (2.7%, 95% CI 1.6-4.3) and women (2.5%, 95% CI 1.4-4.3). (Further details can be seen in Table 1.)

TABLE 1 Raw frequencies for hand eczema stratified by gender and age groups

Age groups (years)	n	Male (%)	Female (%)	All (%)
70-74	400	3.4 (1.4-6.8)	2.6 (0.9-6.0)	3.0 (1.6-5.2)
75-79	411	3.5 (1.5-6.9)	2.7 (0.9-6.2)	3.2 (1.7-5.3)
80-84	206	0.9 (0.0-4.7)	0.0 (0.0-4.1)	0.5 (0.0-2.7)
85-95	116	1.4 (0.0-7.6)	6.7 (1.4-18.3)	3.5 (0.9-8.6)
Entire sample	1133	2.7 (1.6-4.3)	2.5 (1.4-4.3)	2.7 (1.8-3.8)

Note: Size of each age group and 95% confidence interval [CI] for frequencies in brackets.

TABLE 2 Standardized frequencies for hand eczema stratified by gender and age groups and standardized to the Bavarian population (95% CI in brackets)

Age groups (years)	Male (%)	Female (%)	All (%)
70-74	4.5 (2.1-8.3)	2.5 (0.8-5.8)	3.4 (1.8-5.6)
75-79	2.7 (1.0-5.7)	1.9 (0.5-5.0)	2.3 (1.7-4.2)
80-84	0.8 (0.0-4.6)	0.0 (0.0-4.1)	0.5 (0.0-2.7)
85-95	1.2 (0.0-7.3)	14.3 (5.7-28.0)	5.1 (2.0-10.9)
Entire sample	2.8 (1.6-4.4)	2.9 (1.6-4.7)	2.8 (1.9-3.9)

3.2 | Standardized frequencies of hand eczema

After standardization to the Bavarian population, the estimated frequency for HE in our sample was 2.8% (95% CI: 1.9-3.9), almost similar to the raw estimate (see Table 2). We did not observe a tendency for HE to become more frequent with increasing age. Furthermore, we did not see any relationship between gender and HE.

4 | DISCUSSION

To our knowledge, we present the first population-based estimates on hand eczema (or HE) in elderly individuals. So far, population-based studies have been conducted mainly in "younger" adults,[19] in the work context,[20,21] or among particular occupational groups,[22,23] not in the population 70 years of age or older. We estimated a standardized frequency of 2.8%. Men and women reported HE almost equally often in our study, which was surprising and not found previously. Studies commonly show that women are at higher risk for developing HE.[1,2,8,10,21,24]

Compared to other studies, our estimates were remarkably lower: Quaade et al. performed a systematic review[5] on studies published between 1964 and 2019 and calculated a pooled lifetime HE prevalence of 14.5%. This review contained 66 studies on HE, of which 22 (including 151 693 persons) were considered for lifetime prevalence estimation. Those studies were conducted mainly in Northern Europe (17/22) and in the period from 1964 to 2007 (13/22). If restricting the studies to those on self-reported physician-diagnosed HE (two studies, 19 880 persons), the pooled lifetime prevalence was 5.2% (95% CI 1.1-11.8). Of note, one of the two studies was a previous conference abstract containing results of the here presented study.

A Norwegian study from 2017 (4206 respondents to the HE questionnaire as a part of the HUNT3 cohort study,[25] 68% female, aged 20-95 years) reported 11.3% lifetime prevalence for HE,[26] with 8.4% in men and 13.8% in women. Reports of a Finnish birth cohort (n = 1932, aged 45-47 years, 53.7% female, clinical examination between April 2012 and May 2013, 60% response rate) revealed an HE prevalence of 8.9%.[27] The only known study on HE prevalence in the general population in Germany[28] was conducted between September 2003 and June 2004 in 2500 randomly selected people in Heidelberg (20-60 years, 72% response rate, self-reports with validated questionnaire) and found a 1-year prevalence of 6.4% (5.3-7.7), with no gender differences observed.

Our frequency estimates might be lower due to recall and recency bias, as our elderly study participants might not precisely have remembered an HE diagnosis from sometime more than 50 years ago.

Overall, self-reports often underestimate the "true" prevalence of skin diseases. A validity study on self-reported HE[29] showed that depending on the profession (car mechanics, dentists, or office workers) the estimated "true" 1-year prevalence of HE was underestimated by 37%, 62%, and 52%, respectively. The question was "Have you had hand eczema on any occasion during the past 12 months?". Svensson et al.[30] reported a sensitivity of 0.87 (95% CI 0.77-0.93) and specificity of 0.79 (95% CI 0.70-0.86) regarding the question "Do you currently have hand eczema?" among dentists and office workers in an epidemiological survey. We did not use estimates from these studies to conduct sensitivity analyses with our data because Meding et al.[29] as well as Svensson et al.[30] considered *self-reports* for *current* hand eczema and not *self-reported physician-diagnosed lifetime* hand eczema as in our study. In general, sensitivity of self-reported HE is considered to be low.[5,31] In addition, self-reports on *physician-diagnosed* HE tend to underestimate the true prevalence, as mentioned by Quaade et al.[5] Therefore, it would be speculative to apply the sensitivity and specificity from one of those validity studies mentioned above to our estimates. Unfortunately, an internal or external verification of the self-reports against a physician diagnosis was not feasible for this study.

Our population-based study on skin conditions in high-aged people living at home is unique in the field of dermato-epidemiology. All study participants were interviewed on site in person and not via telephone or paper-based questionnaire.

5 | CONCLUSION

This study presents the first frequency estimates of HE among elderly individuals in Bavaria, Germany. Self-reported physician-diagnosed lifetime hand eczema seemed to be less prevalent in this population than previously known from other populations. Nevertheless, the disease is quite common at 2.8%. Epidemiological studies on lifetime frequencies of skin diseases with validated diagnoses and long-term follow-up observation are warranted to judge the burden of those diseases more precisely. The estimation could be the basis for planning adequate care for this condition.

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CONFLICT OF INTEREST

Christian J. Apfelbacher has received institutional funding from the Dr. Wolff Group, and consultancy fees from the Dr. Wolff Group, Sanofi Genzyme, Sanofi-Aventis Deutschland, and LeoPharma. All other authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

Karl Philipp Drewitz: Analysis, methodology, software, visualization, writing of the original draft, writing – review and editing. **Klaus J. Stark:** Conceptualization, data curation, resources, validation, writing – review and editing. **Martina E. Zimmermann:** Data curation, writing – review and editing. **Iris M. Heid:** Conceptualization, funding acquisition, methodology, project administration, resources, supervision, validation, writing – review and editing. **Christian J. Apfelbacher:** Conceptualization, methodology, supervision, validation, writing – review and editing.

DATA AVAILABILITY STATEMENT

Data are available from IH/KS upon reasonable request.

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