

The prevention of occupational hand dermatitis in bakers, confectioners and employees in the catering trades

Preliminary results of a skin prevention program

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Occupational skin diseases (OSD) are among the most frequent occupational diseases (OD). Compared to other occupations, bakers, confectioners and employees in the catering trades are at a high risk of developing OSD. In January 1999, the interdisciplinary Skin Disease Prevention Program in the Baking, Hotel and Catering Industries (SDPP) conducted by the Department of Dermatology and Allergology at the Friedrich Schiller University, Jena, in cooperation with the Research Center for Applied System Safety and Industrial Medicine, Erfurt, and the technical experts at the Social Insurance for the Food Industry and Related Professions (*Berufsgenossenschaft für Nahrungsmittel und Gaststätten* – (BGN)), Erfurt, was initiated. Following detailed analysis of the occupational exposure of the employees and their personal occupational disease history, the patients' diagnosis and therapy was re-evaluated and supplemented if necessary. Individual skin care and protection regimes were demonstrated and practically trained. Skin care and protection products were supplied. Skin-care and protection seminars were offered to volunteering participants. From January to December 1999, 29 affected employees were examined in the OSD clinic. 22 employees (76%) suffered from irritant contact dermatitis. The follow-up data of 11 employees are available. In 8 employees (73%), the skin disease improved or disappeared. Moreover, in 1 employee (9%), the skin condition was stabilized even though he continued working. In only 2 employees (18%) did the skin condition worsen. These preliminary results showed that most of the OSD were due to lack of or unsuitable skin care and protection. The program will be extended to cover a larger number of food industry employees with OSD.

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Occupational skin diseases (OSD) continue to be an important health burden in employees in the industrial food production and processing trades. In 1997, the Social Insurance for the Food Industry and Related Professions in Germany (BGN) registered 1020 suspected cases of occupational disease # 5101 of the German list of occupational diseases (*Berufskrankheitenverordnung*) (1). In 1998, a further 944 cases were reported and occupational skin disease # 5101 ranked 2nd in the BGN list of occupational diseases (2). Most of the cases showed eczematous hand dermatitis. The majority suffered from irritant contact dermatitis of the hands, which may lead to contact allergy. Possible consequences are the inability to work or

unemployment. In many cases, patients are forced to seek work in other areas. The high costs of re-training and the poor employment prospects once the workers lose their job highlight the need for effective primary and secondary preventive measures.

This situation stimulated the Department of Dermatology and Allergology, Friedrich-Schiller University, Jena, and the Occupational Medicine Prevention Center of the Social Insurance for the Food Industry and Related Professions (BGN), Erfurt, to initiate a Skin Disease Prevention Program in the Baking, Hotel and Catering Industries (SDPP) as a pilot project in 1999. The aim of the study presented is to evaluate the effectiveness of

the SDPP, whether this interdisciplinary program is a suitable measure to improve the standards of care of employees with occupational skin diseases, to cure such skin diseases, and to ensure that the insured can continue to work in his or her chosen occupation.

Methods

An open prospective intervention study was performed in employees from the food processing industries in Thuringia suffering from occupational hand dermatitis (every employee in Germany is under the surveillance of the occupational health insurance). The BGN identified the diseased employees by consecutive OSD reports made by dermatologists, company physicians, other prevention programs or by the employees themselves. After giving their informed consent, the employees were included in the SDPP.

The care of the affected employee in the SDPP included a detailed standardized exposure analysis by a technical expert of the BGN, a detailed standardized occupational dermatological history and a standardized examination and documentation of the clinical findings on the hands (Fig. 1). The examination and documentation was done in an identical fashion at the 1st, follow-up and final examination. The qualitative and quantitative occupational exposure to irritants and allergens was recorded on site by the technical expert of the BGN during 1 representative working day. Exposure profiles and work profile were created.

At the 1st consultation in the occupational clinic, the personal and occupational history of the

employees is documented, focusing on pre-occupational skin diseases, especially on pre-occupational hand dermatitis, endogenous (skin atopy) and exogenous risk factors (contact with allergens and irritants) (3). The leisure-time habits were documented as well. The physical findings were documented in a standardized form. Morphological changes and the extent of the skin involvement were recorded. Morphological categories were defined as "normal", "dryness", "erythema", "infiltration", and "vesicles". Each category could be rated as "mild", "moderate" or "severe", depending on the clinical intensity of the lesions. Site categories were defined as "interdigital (i)", "knuckle area (ii)", "back of the hand (iii)", "back of the fingers (iv)", "palms (v)", "volar aspect of the fingers (vi)", "wrist (vii)", "forearm (viii)". Severity categories were defined "mild (i or/and ii)", "moderate (iii or iv or v or vi)" and "severe (any combination of at least 2 sites of iii, iv, v, vi, vii and viii)", depending on the extent of the lesions. Photodocumentation was done at every consultation. The outcome variables of the SDPP were 1) the course of the skin disease and 2) the number of employees able to remain in their occupations.

For data management, the software package EPI 6 was used. For data analysis, a descriptive statistic was performed using SPSS 8.0 for Windows.

Results

From January to December 1999, 29 insured employees working in the baking, hotel and catering trades were included in the prevention project. So

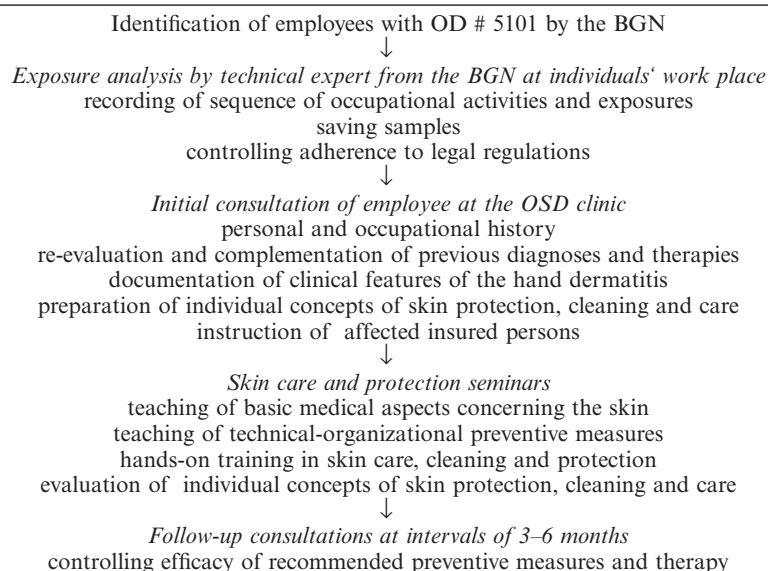


Fig. 1. Skin Disease Prevention Program in the Baking, Hotel and Catering Industries (SDPP).

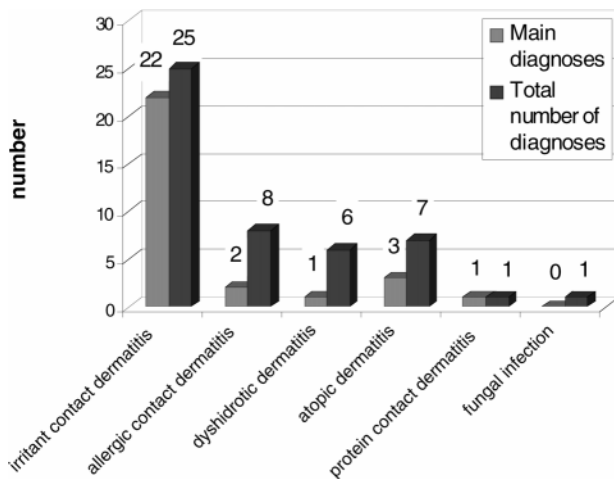


Fig. 2. Hand disease in 29 employees. Main diagnoses and total numbers of diagnoses (main diagnoses and 2nd diagnoses) of hand disease in 29 food-industry workers.

far all of them have participated in the OSD consultation. We had 6 drop-outs because of work reasons ($n=1$), temporary work contracts ($n=3$), lack of motivation due to complete healing ($n=1$) and personal reasons ($n=1$). 22 (76%) of those who have been examined so far were in the baking trade, while 7 (24%) were in the hotel and catering business. The average age of the patients was 29.3 years (range: 18–56). 17 (59%) employees were female. The majority of the insured persons that we examined were employees (90%); the rest were self-employed. The majority of the patients suffered from irritant contact dermatitis ($n=22$). The minority showed atopic dermatitis ($n=3$), allergic contact dermatitis ($n=2$), dyshidrotic dermatitis ($n=1$) and protein contact dermatitis ($n=1$). There were also mixed etiologies (Fig. 2).

The development of hand dermatitis could be traced back to unsuitable skin cleansing and unsuitable or absent skin protection and skin care habits in most cases. A particular problem was the high frequency of hand washing (>20 – $25\times/\text{day}$) in 20 (69%) employees, as well as the aggressive use of hot water, brushes and substitution of industrial cleaning products for hand cleaning products (Table 1). Skin protection measures, e.g., protective gloves or protective preparations were used only occasionally. 5 (17%) employees used protective gloves regularly. Protective preparations were applied by 2 (7%) employees. 17 (59%) employees claimed to apply skin care products (Table 2). Acute relapse of allergic contact dermatitis resulted mainly from insufficient instruction of the insured persons concerning the presence of allergens and, therefore, failure to avoid such allergens.

11 cases are monitored in the follow-up cur-

Table 1. Hand washing frequency in 29 food industry workers with occupational skin diseases

Hand washing frequency	5–10×/day	10–15×/day	15–20×/day	20–25×/day
	$n=4$ (13.8%)	$n=2$ (6.9%)	$n=3$ (10.3%)	$n=20$ (69%)

Table 2. Skin protection and skin care measures

Application of measures	Regularly	1×/day or seldom	Never
protective gloves	$n=5$ (17%)	$n=11$ (38%)	$n=13$ (45%)
protective preparations	$n=2$ (7%)	$n=3$ (10%)	$n=24$ (83%)
skin care preparations	$n=17$ (59%)	$n=5$ (17%)	$n=7$ (24%)

rently. The other 18 employees had passed only the 1st consultation at the time point of this evaluation. Of the cases follow-up, in 2 cases (18%) the skin disease had healed, in 6 cases (55%) improvement had been noted, 1 case (9%) showed no change despite remaining in the occupation, and 2 (18%) had worsened.

Discussion

In the last few decades, many scientific and clinical studies have been performed in the field of prevention of occupational skin diseases. The principles and measures of technical-organizational hazard control and individual protective measures are well defined (4–7). Nevertheless, the numbers of employees suffering from OSD are still extraordinarily high. The task for the next years is to integrate all this knowledge into prevention programs for the various occupations. In Germany, an elaborate interdisciplinary skin diseases prevention program has successfully been established for hairdressers, probably contributing to the impressive decrease of OSD in this profession in the last few years (8–10). A project in Finland showed a significantly better outcome for employees with occupational hand dermatitis attending an “eczema school”-like clinic, run by a specialized nurse, compared to an unschooled control group (11).

Another important issue is individual and group training in preventive measures. Wigger-Alberti et al. (12) demonstrated the efficacy of an elaborate educational approach in metalworkers. They showed a significantly improved application of a protective preparation after hands-on training in metalworker apprentices, using a fluorescence technique (Dermalux checkbox®), compared to a video-educated group. Education is most important to make the employees aware of initial skin

changes, such as slight erythema and scaling in the interdigital folds and over the knuckles on the back of the hand. These signs should sound the alarm and indicate the optimization of skin protection and care measures, to prevent exacerbation and chronicity of the condition and also the development of complications such as allergic contact dermatitis (13–19). In general, different preventive measures were proven to be effective in the improvement of actual clinical findings and the outcome of affected employees in different occupations (20–24).

For the food processing industry, there had been no effective secondary prevention project for OSD so far. In the pilot phase of the SDPP, we were able to improve the condition of the skin in 8 (74%) out of 11 followed-up cases. In 1 further case, the condition remained stable despite continuation of work. 2 of the insured showed worsening of the skin disease. The 1 drop-out because of occupational reasons was due to the development of protein contact dermatitis. As effective protection measures could not be realized, the insured was advised to seek other employment. All the insured who participated in this prevention program had already sought treatment from consultant dermatologists. In most of the cases, this had not lead to stable improvement of the skin condition. Those who implemented protective measures at the workplace usually had to finance these measures themselves. In conjunction with this, no thorough advice, explanation or training occurred.

The results show the need for, and also the 1st successes of, effective secondary preventive measures combining medical treatment of affected employees with exposure-analysis-based individual and group training in preventive measures. As a consequence, the SDPP will be continued and spread to further centers. After the end of the pilot phase a control group will be added.

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