

Recruitment strategies for a hand dermatitis prevention programme in the food industry

MARTIN KAATZ¹, REGINA LADERMANN¹, MARTINA STADELER², JOACHIM WILHELM FLUHR¹,
PETER ELSNER¹ AND ANDREA BAUER¹

¹Department of Dermatology and Allergology, Friedrich-Schiller-University Jena, 07747 Jena and

²Research Centre for Applied System Safety and Industrial Medicine, Social Insurance for the Food Industry and Related Professions, 99084 Erfurt, Germany

Background: An interdisciplinary 'Skin Disease Prevention Programme (SDPP) in the baking, hotel, and catering industries' was established. However, only 30% of the eligible employees suffering from occupational hand dermatitis (OHD) participated in the programme.

Objectives: The aim of the present study was to increase the participation rate in the SDPP from 30% to 50% by specific recruitment strategies.

Patients/Methods: Two hundred and twenty five baker and catering trade employees suffering from OHD were included in a prospective controlled intervention study. The employees were invited to take part in the SDPP using (i) a standard invitation letter ($n = 40$), (ii) a newly developed, personalized, and targeted invitation letter ($n = 52$), (iii) the new invitation letter and a case report ($n = 75$), and (iv) the new invitation letter, the case report, and the additional information ($n = 58$).

Results: The commitment of the employees to join the SDPP increased significantly from 30% to 54% ($P < 0.02$) in the group receiving the new personalized targeted invitation letter. Neither the additional case report nor the supplementation with additional information concerning the SDPP did further increase the recruitment.

Conclusions: The strategy to personalize and target the new invitation letter was successful to influence the employees' commitment to participate in the SDPP.

Key words: communication; health promotion; occupational hand dermatitis; recruitment strategy; secondary prevention programme; transtheoretical model. © Blackwell Munksgaard, 2008.

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In January 1999, an interdisciplinary 'Skin Disease Prevention Programme (SDPP) in the baking, hotel and catering industries' was implemented by the Department of Dermatology and Allergology, Friedrich Schiller University Jena, the Research Centre for Applied System Safety and Industrial Medicine, Erfurt, and the Social Insurance for the Food Industry (Berufsgenossenschaft für Nahrungsmittel und Gaststätten – (BGN), Erfurt. After the notification of the skin disease by a dermatologist or occupational physician (skin disease notification 'Hautarztbericht'), the employees were invited to join the programme using a standard invitation letter. Within the programme, an exposure analysis by a technical expert of the BGN at the individuals' work place

was performed, followed by an initial consultation of the employee at the occupational hand dermatitis (OHD) clinic and an interdisciplinary skin care and protection seminar. Finally, follow-up consultations every 3–6 months for up to 2 years took place. Skin conditions were cleared, improved, or stabilized in more than 80% of the participants showing a high efficacy rate for this specific prevention programme (1, 2). However, only one-third of the eligible employees followed the invitation to join the programme.

Recently, several recruitment strategies have been developed to increase the commitment to prevention programmes with a focus on ethnical minorities (3), women, and people with low socioeconomic status or different age groups (4).

Important topics dealt with were the prevention of cancer (5) and cardiovascular disease (6) as well as the prevention of human immunodeficiency virus (HIV) infection (7, 8).

However, there are no studies regarding recruitment strategies for occupational skin disease. The aim of the present study was to increase the participation rate (PR) in the SDPP from 30% to 50% by designing a personalized and targeted invitation letter based on principles of communication and models of behaviour change (9–11).

Patients and Methods

Study design and participants

From February 2003 to March 2004, a prospective controlled intervention study was performed in 225 employees from the baking and catering industry in Thuringia and Saxony, Germany. The study was set up to test the hypothesis that the commitment to participate in a secondary prevention programme for OHD, the SDPP can be increased by using an improved invitation strategy.

All employees suffering from occupationally induced skin changes insured within the social liability insurance of the food industry were eligible. The formal inclusion criterion was a skin disease notification (Hautarztbericht) by a dermatologist or an occupational physician. During the above mentioned recruitment period all consecutively notified employees were included in the study.

The employees were assigned to the study groups state wise (Thuringia and Saxony) to prevent contamination. The interventions (new invitation letter, + case report, and + additional information about the SDPP) were performed in both states consecutively to control for the influence of possible differences in the attitudes (response or PRs) in the different regions (Table 1). The standard invitation letter was only sent to employees in Saxony.

Intervention

The employees received either the formerly used standard invitation letter ($n = 40$, intervention 1) or a newly developed targeted and personalized invitation letter ($n = 52$, intervention 2), the new

invitation letter and a case report of an affected employee successfully finishing the SDPP ($n = 75$, intervention 3), and the new invitation letter, the case report and additional information concerning the SDPP ($n = 58$, intervention 4). A reminder was sent after 4 weeks.

Intervention 1. The standard letter comprised a formal invitation to join the programme and a short description of the legal background. The necessity to contact and inform the employer and the voluntary participation was emphasized.

Intervention 2. The new invitation letter was targeted and personalized (Appendix). Set-up priorities were detailed explanations of the aims and the high success rates of the SDPP as well as an explicit outline of possible medical and socio-economic consequences of an occupational skin disease. Furthermore, the employees were informed that participation in the SDPP would lead to the provision of free skin protection and care products for up to 2 years as well as the reimbursement of wage losses and travel expenses. Participation on trial bases was offered.

Intervention 3. In the additional case report, the course of a typical case of a food industry employee suffering from OHD and the marked improvement of the condition during the participation of the SDPP were described and underpinned by photographs.

Intervention 4. In the additional information leaflet about the SDPP, the course of the programme was described in detail.

Sample size calculation and statistical analysis

Comparing two independent samples using a two-sided test for a value of $P_1 = 0.3$ and a value of $P_2 = 0.6$ with a value for alpha 0.05 and a power of 0.8 sample size for each sample is 40.

Descriptive statistics were performed. Differences in demographic profile and commitment to participate between the groups were analysed using *t*-test and chi-squared test. Statistical analyses were performed using SPSS version 12.0.

Results

Two hundred and twenty five employees (152 female/73 male) of the baking and catering industry

Table 1. Numbers of participants in the different intervention per state

County	Intervention 1	Intervention 2	Intervention 3	Intervention 4
Thuringia, no. of participants	0	22	34	20
Saxony, no. of participants	40	30	41	38
Total no. of participants	40	52	75	58

Intervention 1, standard letter; intervention 2, new targeted invitation letter; intervention 3, 2+ case report; intervention 4, 3+ additional information about the Skin Disease Prevention Programme.

suffering from OHD were included in this prospective controlled intervention study (intervention 1, $n = 40$; intervention 2, $n = 52$, intervention 3, $n = 75$; and intervention 4, $n = 58$). The mean age of the participants was 30 years with a standard deviation of 11.4 years (age range 16–61 years). Seventy-six employees were bakers and confectioners and 111 were caterers or related occupations. The remaining 32 employees were butchers, production assistants, dairy workers, juice bottlers, and cleaners.

The different intervention groups were comparable at baseline. There were no significant differences in the distribution of sex, age, and occupation between the four groups. The demographic profile of the groups is shown in (Table 2). Moreover, the same portion of participants came from rural areas and cities in both groups ($P = 0.23$).

The introduction of the new targeted personalized invitation letter (intervention 2) led to a significant increase in the commitment to participate in the SDPP compared with the standard invitation letter (intervention 1). The PR significantly increased from 30% to 54% ($P = 0.02$). The addition of the case report (intervention 3) to the new invitation letter did not further increase the PR (intervention 2, PR = 54% versus intervention 3, PR = 52%; $P = 0.84$). However, compared with the standard invitation letter (intervention 1), the PR was still significantly increased by 22% ($P = 0.03$). Adding comprehensive information material about the SDPP to the new invitation letter and the case report, PRs only reached the level gained by the standard invitation letter (intervention 1, PR = 30%, intervention 4, PR = 35%; $P = 0.69$) (Fig. 1). The reminder had no effect on the decision-making process of the employees ($P = 0.73$).

Discussion

Comparability of the groups

Initially, randomization of the participants was aimed at. However, as contamination of the

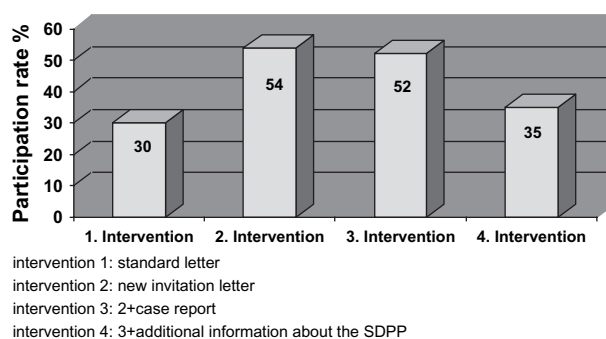


Fig. 1. Participation rate in the different interventions in %.

groups would have been likely (often more than one employee from a single company eligible to be included), we decided to perform the interventions state wise (Saxony and Thuringia). To control for bias due to potential differences in habits, attitudes, or life circumstances in the respective regions, which could have possibly influenced the results, interventions (2, 3, and 4) were performed consecutively in each state (Table 1). Due to logistic reasons, this was not possible for intervention 1, carrying the risk of introducing selection bias. However, the basic demographic variables of the four intervention groups did not differ significantly between the groups. No statistically significant difference was seen for sex, age, occupation, or residency (interventions 1–4), rendering confounding unlikely to be the explanation for the significant differences in the commitment to join the SDPP, despite no formal randomization was performed (Table 2).

Strategies of recruitment

The interventions under study aimed at a substantial increase of recruitment of employees suffering from OHD in the SDPP. The prerequisites were a cost and human resource neutral improvement of the actual proceedings of mailing invitation letters.

In the first step, the communication strategy of the standard invitation letter, which only led to a PR of 30% of the eligible employees, was

Table 2. Demographic profile of the employees

		Intervention 1 ($n = 40$)	Intervention 2 ($n = 52$)	Intervention 3 ($n = 75$)	Intervention 4 ($n = 58$)
Female, $P = 0.56$	n	27	38	46	41
Bakers/confectioners, $P = 0.49$	n	15	19	23	19
Catering trades, $P = 0.49$	n	19	29	37	26
Age, $P = 0.97$	n	40	49	75	54
	Mean $\pm$ SD	28.9 $\pm$ 11.2	29.0 $\pm$ 11.5	30.7 $\pm$ 11.7	31.4 $\pm$ 11.2

Intervention 1: standard letter; intervention 2: new targeted invitation letter; intervention 3: 2+ case report; intervention 4: 3+ additional information about the Skin Disease Prevention Programme.

analysed. Possible barriers identified leading to non-participation were (i) the impersonal, formal, partly imperious language used, (ii) the strong focus on the description of the legal grounds, (iii) the lack of tailored information on the course, the SDPP (time and costs involved), (iv) the lack of information on the high success rates and individual benefits from the SDPP, (v) the announcement to involve the employer, and (vi) the lack of incentives. The new invitation letter was meant to be targeted and personalized to overcome the other shortcomings identified in the standard letter. The design incorporated the principles of communication described by McGuire's communication model (9, 10) and features of the transtheoretical model of behaviour change (TTM) (11, 12) as well as the results of current studies concerning recruitment strategies for other prevention projects for cancer, cardiovascular disease, eating disorders, osteoporosis, or HIV prevention in the general population, but also in ethnic minorities, women, low social classes, and different age groups (13–16). The invitation letter was personally addressed and focused on the employee's individual situation, e.g. the possible socio-economic and medical consequences for the individual employee were explained and a solution was offered by outlining the effectiveness and advantages of the SDPP. The letter was designed to attract attention and to stimulate the employees to reflect their situation. Moreover, participation on trial bases was offered. Finally, financial incentives were included in the strategy (Appendix). It is known that the provision of financial incentives (the reimbursement of wage losses and travel expenses) as well as free skin care and protection products could raise the attention of the eligible employees and could influence the decision making positively to take up the programme (15, 17, 18).

To describe the key determinants of the food industry employees, the TTM was chosen. The TTM describes behaviour change as a multistage process (pre-contemplation, contemplation, preparation, action, and maintenance stage) (19, 20).

In analogy to the stages of behaviour change defined in a cohort of bakers' apprentices (21), we developed the following characterization of our study population. A minority of the employees, suffering from OHD, is not aware of occupational skin hazards and the necessity of preventive measures and therefore does not see the necessity to engage in preventive measures, e.g. to participate in the SDPP (pre-contemplation). According to the literature, about 50% to 60% of members of a population at risk, comparable to the food industry employees, are in the stages of contemplation and preparation (11, 22), which means that

they think about changing habits and they want to do something to prevent dermatitis in the future (contemplation). Some of them might even think about applying skin protection measures regularly and would intend to take the opportunity to join the SDPP in order to learn more about it (preparation). And finally, some of the employees are in the stage of action. They have decided that a consequent and efficient skin care and protection regime is essential. They therefore might take up the possibility to join the SDPP to learn more about skin protection and subsequently maintain a healthy behaviour. Ideally, the invitation letter should pick up all employees from the different stages of readiness for change and guide them to join in the programme by means of which they might reach the maintenance stage, in which the desired behaviour is a stable part of the daily occupational routine (Table 2) (11, 20, 23–25).

Initially, by using the standard invitation letter (intervention 1), we probably attracted only that one-third of employees already ready for change (preparation stage). The new mailing strategy (intervention 2, Appendix), as described above, led to a significant increase of the PR in the SDPP from 30% to 54% of the eligible employees, most likely additionally reaching those in the contemplation stage.

Intervention 3 was meant to further increase the PR by combining the new invitation letter with a typical case report of a food industry employee, getting over OHD after passing through the SDPP. The aim of this approach was to get as near as possible to a tailor-made intervention, which was shown to be more successful than personalized and general health messages to motivate patients (10, 16, 26). However, this combined strategy (intervention 3, PR = 51%) did not further increase the commitment to join the SDPP compared with intervention 2 (intervention 2, PR = 54%). Most likely, the case report used did not meet the needs of the affected employees under study. To help maximize the effectiveness of future tailored mailings, further studies are necessary to identify the social, educational, psychological, and environmental variables that are most important to be included in future strategies.

Supplementation of intervention 3 by additional comprehensive information materials to provide maximum transparency about the SDPP even decreased the recruitment almost to the starting point (intervention 4, PR = 35% versus intervention 1, PR = 30%). The most likely explanation for the failure of intervention 4 is information overflow induced by the enormous size of the mailing, which put many employees off reading it at all.

Although statistically significant differences were obtained, the relatively low statistical power in the study due to the low numbers of participants in the intervention groups must be drawn into consideration.

Conclusion

Our approach aimed to increase the motivation of employees to join the SDPP. It was based on major principles of communication and the TTM model of behaviour change (9–11). The new personalized and targeted invitation letter focused on the key determinates of the receivers and was successful in increasing the PR. Finally, 54% of the eligible employees suffering from OHD took part in the SDPP. Barriers for an effective communication built up by aspects of the former standard letter (focus on the legal grounds of the programme rather than on the description of content and effectiveness, involvement of the employer, etc.) were eliminated. However, there were still 46% of eligible employees whom we could not reach with our strategy. There is a need for further studies to improve the strategy by identifying facilitators and barriers, which influence the decision-making process.

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Appendix. Translated version of the new targeted invitation letter

Dear....,

Your skin disease was notified by your Dermatologist to be potentially occupationally induced. We, the 'Social Liability Insurance for the Food Industry', will do our best to help you to get healthy again. To do so we recently developed the so called 'Skin Disease Prevention Programme for the Food Industry' in cooperation with experts in the field of Occupational Dermatology, in which we sincerely invite you to take part.

Within the programme a panel of measures was developed, which aim at the recognition of potential hazards at your workplace and give you sensible advice for useful preventive measure to help your skin to get better and to prevent you from quitting your job because of occupational skin disease. The programme focuses on your specific job situation and your specific exposures to skin hazards (water, detergents, disinfectants, food ingredients etc). Together with you we will try to find out the cause of your skin disease. An individual skin care and protection plan for your specific workplace will be set up and all necessary materials (skin care, skin protection cream, gloves) will be provided for free for a period of 2 years. Moreover, within the programme you will get additional information about the structure and function of the skin and learn how to keep your skin healthy and prevent you from acquiring contact allergy which could lead to job loss and unemployment.

The 'Skin Disease Prevention Programme for the Food Industry' has been shown to be a very successful tool for food industry employees to get healthy and stay in their occupation.

How to join the programme?

1. The first step is to give your informed consent to join the programme by using the reply-form attached. Please be so kind to reply in writing within the next 2 weeks.

2. Next, you are invited to call Mrs. (phone.....), who will arrange an appointment for you at the Occupational Skin Disease Clinic of the Dermatology Unit of the University Hospital of the Friedrich-Schiller-University of Jena, where your skin is examined by an Occupational Dermatologist. You will be asked about your occupational exposure. Diagnosis and treatment will be re-evaluated and if necessary supplemented in cooperation with your Dermatologist to help your skin to improve faster. A tailor-made skin care and protection regime will be set up for you and you will have a hands-on training with the skin care and protection materials. Besides the free provision of the skin care and protection, we will reimburse your travel expenses and compensate your loss of earnings.

3. For further information please feel free to contact Mrs. Please call phone:.....

Your personal data will be dealt with in accordance with the data protection law.

We are looking forward to welcome you in the programme

Yours sincerely

.....

Case manager

Address:

Dr med. Martin Kaatz

Department of Dermatology and Allergology

Friedrich Schiller University Jena

Erfurterstr. 35

07743 Jena, Germany

Tel: +493641937302

Fax: +493641937457

e-mail: kaatz@derma.uni-jena.de