Failure of a Print Media Sun Safety Campaign to Reach High-risk Occupational Groups

Alexander G. S. ZINK[1,2], Melvin RÜTH[1], Reinhold WATZELE[3], Claudio R. NIGG[4] and Eva A. REHFUESS[2]
[1]Department of Dermatology and Allergy, Technical University of Munich, Biedersteiner Str. 29, DE-80802 Munich, [2]Institute for Medical Information Processing, Biometry and Epidemiology, Pettenkofer School of Public Health, LMU Munich, Munich, [3]Sozialversicherung für Landwirtschaft, Forsten und Gartenbau, Kassel, Germany, and [4]Office of Public Health Studies, University of Hawai'i at Mānoa, Maui, USA. E-mail: alexander.zink@tum.de
Accepted Apr 26, 2018; Epub ahead of print Apr 27, 2018

Non-melanoma skin cancer (NMSC) is the most common cancer worldwide (1). With a large proportion of the adult German population currently at risk, it is estimated, that the prevalence of NMSC will double by 2030 (2). Main risk factor for NMSC is solar ultraviolet (UV) radiation (3), which has led to the classification of NMSC as an occupational disease for outdoor workers in some countries (4). Naturally, sun protection during outdoor work and leisure is the main target of many interventions conducted at individual, organizational and community levels (5). Typically, these campaigns place messages via television, radio, billboards and print media with the aim of promoting sun-protective behaviour (6). They usually target general or recreational sun behaviours among the general population, or among children and adolescents, which means they are difficult to implement in adult high-risk occupational groups with their specific tasks (6–8). Previous studies in occupational professions have focused mainly on seasonal or permanent, predominantly male, workers, who are often employed by the recreation industry (9, 10).

In Germany, farmers and agricultural workers are at very high risk of NMSC (11), but, to date, effective prevention measures for this occupational group have received limited attention. The aim of this study was therefore to explore to what extent the placement of sun protection messages in different profession-specific special interest magazines could effectively reach male and female farmers and other agricultural workers in Germany.

METHODS

The study consisted of a national and regional approach placing general information on NMSC and associated sun-protective behaviour in print media. This placement of information was combined with an invitation to visit a study website for further information, as well as to participate in a brief online survey. Eleven questions based on previous studies (11) addressed risk and protective behaviour during work.

At the national level, the information was placed in the free member magazine of the German farmers' compulsory health and accident insurance. The magazine is published 4 times a year, contains up-to-date information on a range of topics, including healthcare, and has a circulation of 1.35 million across Germany. Publication was on 2 June 2017 (Table SI[1]).

At the regional level, analogous to the national level, the same information was published in the Bavarian Agricultural Journal on 15 September 2017. This special-interest journal is Germany's highest-circulation subscription agricultural journal, with a circulation of approximately 100,000 copies reaching 85% of all Bavarian farms (12). The weekly magazine provides agricultural professions with the latest news on all aspects of agricultural life, including finance, health and agricultural market prices, thereby ensuring a large and continued readership.

In both cases, the responses and engagement of the target audiences were assessed based on the number of website visits during the 1-month period following publication of the printed campaigns. In addition, the total time spent on the website and completion of the online questionnaires were assessed. Usage statistics and audience characteristics (age, sex, location) were tracked through Google Analytics dashboards. The same descriptive analysis was performed for comparison over a 1-month control period, 2 months after the Bavarian approach.

RESULTS

During the month after national publication, a total of 128 individuals (46.1% women) of all age groups (> 18 years) visited the website for mean 1 min 2 s. Interestingly, website visitors were located in 10 of 16 German Federal States, with no visitors from Eastern Germany (Fig. S1[1]).

[1]https://www.medicaljournals.se/acta/content/abstract/10.2340/00015555-2958

Table I. Characteristics of the website visitors during the 1-month period after the national launch, the Bavarian launch and a 1-month control period

	National	Bavaria	Control period
Publication date	2 Jun 2017	15 Sep 2017	n.a.
Website analysis	2 Jun–2 Jul 2017	15 Sep–15 Oct 2017	15 Dec 2017–15 Jan 2018
Agricultural households receiving the information	1,350,000	100,008	0
Visitors on website, *n*	128	12	1
Sex, *n* (%)			
Women	59 (46.1)	5 (41.7)	0
Men	69 (53.9)	7 (58.3)	1 (100)
Age groups, *n* (%)			
18–24 years	35 (27.3)	2 (16.6)	0
25–34 years	43 (33.6)	4 (33.3)	1 (100)
35–44 years	20 (15.6)	2 (16.6)	0
45–54 years	16 (12.5)	2 (16.6)	0
55–64 years	7 (5.5)	1 (8.3)	0
> 65 years	7 (5.5)	1 (8.3)	0
Time spent on website, mean (range)	1 min 2 s (9 s–5 min 2 s)	1 min 49 s (16 s–4 min 57 s)	3 s
Geographical region, *n*	10 of 16[a]	7 of 96[b]	Russia
Completed questionnaires, *n*	0	3	0
Devices used, %			
Desktop	59.4	58.3	100
Tablet	33.6	41.7	0
Mobile	7.0	0	0

[a]German federal states, [b]Bavarian districts.

doi: 10.2340/00015555-2958
Acta Derm Venereol 2018; 98: 811–812

The majority of visitors used desktop computers (59.4%), none completed the online questionnaire (**Table I**).

Following the Bavarian publication, there were 12 website visitors (41.7% women) from 7 out of 96 districts in Bavaria (Fig. S2[1]). Mean time spent on the website was 1 min 49 s using desktop computers (58.3%) or tablets (41.7%) (Table I). Three visitors completed the questionnaire.

In the control period without preceding publication, one visitor was registered on the website, but no connection was found with the campaign (Table I).

DISCUSSION

A printed awareness and information campaign on NMSC and its prevention was distributed among 1.45 million agricultural households across Germany. The target audience was invited to visit the campaign website for further information and to participate in a brief online survey. Only 140 individuals visited the website during the observation period. This does not exclude that other farmers did not receive any educational benefit from the print campaign. However, the website response rate (0.01%) revealed a failure to reach a meaningful proportion of the target population, making it impossible to assess the impact of the campaign on sun-protective behaviour.

Possible explanations for this failure are manifold (8) and include that printed messages might were overlooked and that the factual messages may have been inappropriate for farmers, or a combination of these features.

The postal-based approach was designed to reach all agricultural households in Germany, but combining it with a link to a website may have been a major cause of the very low response rate. Readers might have not wanted to spend extra time by visiting the study website. Previous studies have shown that postal-based campaigns are the most economical option, usually having higher response rates compared with other media campaigns (8, 13).

An important limitation of this study is its exploratory nature. We know that the print media were delivered to the target households, but we do not have any information on how many people read or even saw the message. Furthermore, limited internet access and/or experience, especially in older age groups, could have led to an underestimation of the real interest among the target group. However, visitors from all age groups visited the website. In Germany, 95% of farmers use the internet and 75% of them go online every day, which is one of the highest rates worldwide for agricultural professions (14).

In summary, the approach of placing messages in print media combined with an internet-based assessment of response does not appear to be appropriate for reaching agricultural populations in Germany. Future studies on NMSC prevention among outdoor workers should invest in exploring how these high-risk occupational groups might be reached more effectively (15). Finding the best possible access route to these groups could be the key to lowering the burden of NMSC among farmers and other outdoor workers.

Funding: This study was fully funded by the Department of Dermatology and Allergy of Technical University of Munich and SVLFG.

The authors have no conflicts of interest to declare.

REFERENCES

1. Madan V, Lear JT, Szeimies RM. Non-melanoma skin cancer. Lancet 2010; 375: 673–685.
2. Leiter U, Keim U, Eigentler T, Katalinic A, Holleczek B, Martus P, et al. Incidence, mortality, and trends of nonmelanoma skin cancer in Germany. J Invest Dermatol 2017; 137: 1860–1867.
3. Lindelöf B, Lapins J, Dal H. Shift in occupational risk for basal cell carcinoma from outdoor to indoor workers: a large population-based case-control register study from Sweden. Acta Derm Venereol 2017; 97: 830–833.
4. John SM, Trakatelli M, Gehring R, Finlay K, Fionda C, Wittlich M et al. CONSENSUS REPORT: Recognizing non-melanoma skin cancer, including actinic keratosis, as an occupational disease – a call to action. J Eur Acad Dermatol Venereol 2016; 30 Suppl 3: 38–45.
5. Reinau D, Weiss M, Meier CR, Diepgen TL, Surber C. Outdoor workers' sun-related knowledge, attitudes and protective behaviours: a systematic review of cross-sectional and interventional studies. Br J Dermatol 2013; 168: 928-940.
6. Hollier LP, Pettigrew S, Slevin T, Strickland M, Minto C. Comparing online and telephone survey results in the context of a skin cancer prevention campaign evaluation. J Public Health (Oxf) 2017; 39: 193–201.
7. Sinclair C, Foley P. Skin cancer prevention in Australia. Br J Dermatol 2009; 161 Suppl 3: 116–123.
8. Hingle MD, Snyder AL, McKenzie NE, Thomson CA, Logan RA, Ellison EA, et al. Effects of a short messaging service-based skin cancer prevention campaign in adolescents. Am J Prev Med 2014; 47: 617–623.
9. Buller DB, Andersen PA, Walkosz BJ, Scott MD, Cutter GR, Dignan MB, et al. Randomized trial testing a worksite sun protection program in an outdoor recreation industry. Health Educ Behav 2005; 32: 514–535.
10. Horsham C, Auster J, Sendall MC, Stoneham M, Youl P, Crane P, et al. Interventions to decrease skin cancer risk in outdoor workers: update to a 2007 systematic review. BMC Res Notes 2014; 7: 10.
11. Zink A, Wurstbauer D, Rotter M, Wildner M, Biedermann T. Do outdoor workers know their risk of NMSC? Perceptions, beliefs and preventive behaviour among farmers, roofers and gardeners. J Eur Acad Dermatol Venereol 2017; 31: 1649–1654.
12. Deutscher Landwirtschaftsverlag. Bayerisches Landwirtschaftliches Wochenblatt Mediadaten 2017. (accessed 15 January 2018). Available at: https://www.dlv.de/fileadmin/templates/pdf/Bayerisches_Landwirtschaftliches_Wochenblat_Mediadaten_2017.pdf.
13. Sinclair M, O'Toole J, Malawaraarachchi M, Leder K. Comparison of response rates and cost-effectiveness for a community-based survey: postal, internet and telephone modes with generic or personalised recruitment approaches. BMC Med Res Methodol 2012; 12: 132.
14. Kleffmann Group. New Media Tracker 2016. (accessed 13 January 2018). Available at: https://www.kleffmann.com/en/information-center/information-center/new-media-tracker#moduleWrapper5675.
15. Bauer A, Hault K, Püschel A, Rönsch H, Knuschke P, Beissert S. Acceptance and usability of different sunscreen formulations among outdoor workers: a randomized, single-blind, cross-over study. Acta Derm Venereol 2014; 94: 152–156.