Keratinocyte carcinoma as an occupational disease

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Keratinocyte carcinoma (KC) comprises basal cell carcinoma (BCC) and cutaneous squamous cell carcinoma (SCC) and are the most common forms of non-melanoma skin cancer are the most frequently diagnosed cancers among people with fair skin in Europe.[1 2] People with light skin, hair or eyes are at greatest risk of KC due to their susceptibility to UV damage.[3 4] Although mortality rates are relatively low, KC has high rates of morbidity and can be associated with a significant negative impact on health-related quality of life and healthcare costs.[5 6] Climate change is likely to amplify this problem in the future: changes to the ozone layer will translate into higher levels of solar ultraviolet radiation (sUVR) on the earth's surface, and therefore, the incidence of these skin cancers is expected to increase.[7]

Exposure to sUVR can take place in occupational or non-occupational settings but existing evidence indicates that occupational exposure to sUVR is an important risk factor for KC.[5] sUVR is the most common occupational carcinogen in the European Union, with more than nine million workers being exposed to sUVR for at least 75% of their time at work.[8] Worryingly, many outdoor workers will develop a skin cancer at some point in their lives.[9] Despite this, KC is often not recognised as an occupational disease[9] and there are no officially recognised European standards which aim to reduce the risk of occupational sUVR-related KC among outdoor workers.[10] This has contributed to considerable heterogeneity in approaches to prevention, surveillance, diagnosis and management between and even within countries.[1]

Tthe risk of KC could potentially be reduced in the workplace through relatively simple measures. These include raising awareness of the impact of sUVR exposure and encouraging use of protective clothing and appropriate use of sunscreen.[5] Despite evidence that such preventive strategies can be cost-effective and even cost saving, they are often not prioritised.[11] While there are challenges with implementing these approaches, including their cost, some countries have proved that workplace programmes for sUVR protection are possible. In Germany, for example, the recognition of SCC as an occupational disease has contributed to a trade-union-funded programme that provides free UV protective clothing and sunscreen in addition to health promotional information and training for certain outdoor workers.[1] Even in Germany, however, perceptions of the risk that sUVR presents are variable, leading to differences in uptake of such preventive approaches.[12]

Although screening in the wider asymptomatic population is not universally recommended, screening in high-risk groups such as outdoor workers can be an important component of skin cancer surveillance.[9] However, outdoor workers are often not informed about routine self-monitoring and 'red flag' signs that should alert them to seek advice, nor do they necessarily have routine access to workplace-associated diagnostic expertise if they are concerned.[6] Germany is among the few countries that deliver screening programmes for occupational skin cancer among outdoor workers.[1]

Very few countries in Europe have established standards for prevention, management and reporting of occupational KC, and this is accompanied by significant under-reporting.[10] Diagnosing KC as occupationally related would help support worker compensation where such programmes are available, address gaps in national data on the link between occupational exposure to sUVR and development of KC, and support evidence-based recommendations on prevention and surveillance among this high-risk group. For a number of reasons, however, distinguishing occupational from non-occupational KC may be challenging. Diagnosis of occupational KC relies in part on occupational history: the often significant delay of many decades between sUVR exposure and onset of KC[5] can increase the risk of recall bias and make it more difficult to establish a definite causal link.[13] Lack of awareness that KC might be attributable to occupation on the part of both clinician and patient may also contribute to failures to recognise this diagnosis.[6]

For outdoor workers with suspected KC, inequalities are also evident in timeliness of access to a specialist assessment, and this may delay diagnosis and ultimately impact outcomes.[14] In some countries, differences in the cost and availability of certain skin cancer therapies and in the availability of follow-up care have been identified as further barriers to optimal outcomes for outdoor workers with KC.[14]

A major hurdle to developing effective policies and programmes to prevent occupational KC and ensure effective long-term care for those affected has been the significant gap in available data. There are very few registries that provide reliable information on KC or its link to occupational sUVR exposure.[5] Data collection for KC is challenging as these data may not be digitised, making it difficult to share them between institutions.[6] Registries that do exist are often incomplete, owing to high levels of under-reporting.[10] Furthermore, studies that involve KC and sun safety have largely been conducted in countries with a significant amount of ambient sUVR, such as Australia, and there are likely to be differences in the patterns of disease in European countries. Without these nationally relevant data on the burden of KC among outdoor workers, it is difficult to provide sufficiently robust evidence to drive new legislation aimed at protecting outdoor workers.

Taking into consideration all of the above, we propose that healthcare providers and researchers in Europe support coordinated policy action nationally and regionally by:

- Advocating for European standards for prevention, early detection and diagnosis of occupational sUVR-related KC.
- Educating workers on behaviours to protect them from sUVR in the workplace.
- Promoting skin health surveillance of outdoor workers and encouraging all physicians to take into account potential occupational and non-occupational exposure when assessing overall risk of KC.
- Reporting of all diagnosed cases of skin pathologies which are related to occupational sUVR exposure,

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including through post-occupational follow-up.
- Conducting research to understand nationally specific exposure risks, risk perception and occupational KC rates among workers, and to help reliably evaluate occupational vs recreational exposure.
- Conducting research that explores the impact of our changing climate on the risk of developing KC, with the aim of supporting the implementation and adaptation of appropriate protection against sUVR for people who work outdoors.

It should be the right of all outdoor workers in Europe to be protected from occupational sUVR exposure and receive appropriate care should they be diagnosed with KC. Common European standards for the definition of occupational KC could be an important route to ensuring greater consistency and equality for outdoor workers—regardless of country—in their access to prevention, surveillance and diagnosis. Coordinated action is needed to amplify and support existing efforts in sun protection. Furthermore, new approaches are also now a priority to ensure all outdoor workers are protected in the future.

Contributors JT led the drafting of the editorial with support from MR. CD, A C-G and CH provided insights and interviews in support of the development of a discussion paper which covered some of the same topics and which this editorial is loosely drawn from, although the focus and content of the two papers differs considerably. They also, along with MT and MR, provided guidance on the structure and content, commented on numerous drafts and provided sign off of the final version of this editorial.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Not applicable.

Provenance and peer review Not commissioned; internally peer reviewed.

To cite Tate J, Racoviță M, Cougnard-Gregoire A, *et al*. *Occup Environ Med* 2023;**80**:237–238.

Received 15 December 2022
Accepted 21 February 2023
Published Online First 15 March 2023

Occup Environ Med 2023;**80**:237–238.
doi:10.1136/oemed-2022-108784

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