

Brief communication

Kite-surfers' sun risk in the tropics

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Abstract

A preliminary inquiry, conducted on Martinique Island, sought to determine kite-surfers' sun-protection knowledge and behaviours. Results revealed good levels of knowledge and behaviours, but very frequent sunburns (74% had at least one sunburn during the last 6 months), with particularly severe sunburns exclusively among vacationers. These results argue for the double need to focus sunburn-prevention programs on vacationers and technically adapt sun-protection means to a tropical maritime environment.

Key words: Kite-surfing, sunburns, French West Indies, sun protection

Protective behaviours of people exposed to extreme levels of ultraviolet (UV) radiation (tropical seas, high mountain altitudes, etc.) have been poorly studied,^{1–8} although intense sun burns, particularly among adolescents and young adults, are a strong risk factor of melanoma.⁹ Advices have been published for travellers in tropical areas,¹⁰ but no specific sun-protection recommendations exist for extreme UV levels. In particular, no study has yet been published on kite-surfers. This study was undertaken to estimate kite-surfers' sun-protection knowledge, behaviours and sun risk on Martinique Island.

Methods

From 20 January 2016 to 23 February 2016, 92 kite-surfers in Martinique were interviewed with an anonymous, self-administered, paper questionnaire. The questionnaire was proposed in two well-known kite sites, one on the Atlantic Ocean coast and the other on the Caribbean Sea. It was distributed from kite-surf schools, kite-equipment rental shops or directly on the beach (M.V.). The questionnaire, comprising 30 items, collected sociodemographic data, skin characteristics (Fitzpatrick classification six groups,¹¹ dermatological history), information relative to kite-surfing, and sun-protection knowledge and behaviours. Five participants completed the questionnaire with a qualitative interview.

Behaviour was assessed by estimating photoprotection attitudes and sunburn occurrence. Simple sunburn was defined as

erythema and severe sunburn as 'blisters' or the need for analgesics or medical care. Our questions addressed the numbers of sunburns over the last 6 months and on the last kite-surf day, and we attempted to estimate the duration of sun exposure with appropriate clothing photoprotection.

Results

Ninety-two kite-surfers (66 men and 26 women; mean age: 37 years) completed the questionnaire: half vacationers, and 98% had a pale or intermediate skin phototype (Fitzpatrick Groups I–IV). Main reported sun-protection behaviours were 74% of kite-surfers knew the optimal frequency of sunscreen application (at least every 2 h). One-third used sunscreen during almost all their kite-surf sessions; main characteristics of sunscreen use are reported in Table 1. Seventy-seven (84%) kite-surfers declared achieving sun protection by wearing clothes during >90% of the time the sun was shining and 13 (14%) did so for 50% of that time; clothing consisted of long-sleeved shirts for 9%, short-sleeved shirts for 40%, shorts or Bermudas for 47% and long pants for 5%, with 27% declaring having a head-covering; 55% wore sunglasses. More than half (56%) had never undergone medical screening for skin cancer or nevus monitoring; only one had had a previous skin cancer.

Reported sunburns (Table 1) showed that 74% had been sunburned over the last 6 months, mainly on the face, with no

Table 1. Sun-protection behaviour of 92 kite-surfers over the last 6 months and on the last kite-surfing day

| Question | n (%) |
|---|---------|
| Frequency of sunscreen use | |
| 90–100% of kite-surfing sessions | 62 (67) |
| 50% of kite surfing sessions | 17 (18) |
| Seldom | 11 (12) |
| Never | 2 (2) |
| Sunscreen tubes used over the last 6 months, <i>n</i> | |
| 0 | 3 (3) |
| 1–4 | 73 (79) |
| 5–9 | 13 (14) |
| 10–15 | 2 (2) |
| >15 | 1 (1) |
| Sun-protection factor used | |
| 10–20 | 1 (1) |
| 20–40 | 26 (28) |
| 50–50+ | 65 (71) |
| Sunscreen applications on the last kite-surfing day, <i>n</i> | |
| 0 | 8 (9) |
| 1 | 53 (58) |
| 2–4 | 29 (32) |
| >4 | 2 (2) |
| Sunburns over the last 6 months | |
| Simple sunburns | |
| Yes | 68 (74) |
| No | 24 (26) |
| Severe sunburns | |
| Yes | 5 (5) |
| No | 87 (95) |
| Severe sunburn location | |
| Face | 3 (3) |
| Scalp | 1 (1) |
| Trunk | 1 (1) |
| Limbs | 0 |
| Sunburns on the last kite-surfing day | |
| Simple sunburns | |
| Yes | 21 (23) |
| No | 70 (76) |
| Severe sunburns | |
| Yes | 1 (1) |
| No | 90 (98) |

predominance according to sex, or resident or vacationer status; 5% of kite-surfers, all vacationers, suffered severe sunburn.

The five qualitative interviews revealed a recent history of solar keratitis for two kite-surfers; the increased sunscreen fluidity due to the heat mixed with perspiration running into their eyes led three to complain of frequently burning eyes; and three preferred stick photoprotection over cream for the face.

Discussion

This is the first study concerning kite-surfers' sun-protection knowledge and behaviours, especially in an area with extreme UV exposure. A large majority of kite-surfers had good sun-protection knowledge and behaviours, and accorded importance to wearing protective clothing, unlike vacationers in the tropics and subtropics.^{7,8} Nonetheless, a majority of kite-surfers had

been sunburned in the last 6 months and 5%, exclusively vacationers, suffered severe sunburns.

Our study has some limitations, especially its small sample size. However, because we investigated two well-known kite-surfing sites and the diversity of responding kite-surfers' characteristics (men and women, vacationers and Martinique residents), we think this sample is sufficiently representative of adult kite-surfers in the French West Indies. The number of declared sunburns is probably close to the real number, because of the good validity of beachgoer's self-reporting of their sun habits.¹²

The 74% simple sunburn rate over the last 6 months in this environment is quite similar to the 87% sunburn rate during the last year among continental French adults, who had visited a high UV-index country for >1 month.^{4,5}

The frequency of severe sunburns (5%) reflected the intense, natural UV irradiation, in a context where the absence of protective care for as little as 15–30 min may be sufficient to cause severe sunburn. That exclusively vacationers suffered these severe sunburns makes us think that knowing how to behave in this extreme environment, for several months or years, enabled Martinique residents to adapt their behaviour more effectively than merely applying simple sun-protection recommendations to avoid severe sunburns. In addition, the frequency of sunscreen application, recommended every 2 h, is probably not suited to the sea in the tropics. That aspect remains to be evaluated, as do situations involving the impact of ocean bathing or sweating on decreasing efficacy.¹³

Moreover, sun-protection factor (SPF) 50 is perhaps insufficient in this environment, as shown by the results of a study comparing SPF50 and SPF85 at high mountain elevations.¹⁴

Protection against sun-overexposure among kite-surfers in the tropics appears crucial. We are currently elaborating strategies in order to increase awareness of the sun risk among kite-surfers and beachgoers in Martinique Island. These results show the dual necessity of particularly targeting vacationers and sun-protection strategies technically adapted to a tropical maritime environment, such as stick screen, head-covering and anti-UV glasses.

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