

# Characteristics of sunscreen application on the face of Brazilian skin cancer patients

*Características da aplicação de filtro solar na face por brasileiros previamente diagnosticados com câncer da pele*

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## ABSTRACT

**Introduction:** Photoprotection is indicated to reduce the exposure to cutaneous actinic damage and it is important to prevent skin cancer. The face is the most irradiated area of the body and is also where skin cancers most commonly occur.

**Objective:** To evaluate the amount of sunscreen applied and its facial coverage in patients previously diagnosed with skin cancer, treated at a Brazilian public institution.

**Methods:** Quasi-experimental study involving 40 patients undergoing skin cancer follow-up. Participants were asked to apply sunscreen on their face, as usual, and the mass used was measured. After, participants were photographed under Wood's light to evaluate the homogeneity of the sunscreen's coverage, and facial sunscreen coverage failure.

**Results:** Fourteen (35%) participants applied an estimated amount lower than recommended (2mg/cm<sup>2</sup>). The regions with smallest coverage were the ears and the "H" area of the face.

**Conclusions:** The insufficient or heterogeneous sunscreen application on face, neck and ears may promote a false perception of protection, leading to irresponsible exposure. As the population ages and the incidence of skin cancers increases, it is essential to stimulate photoprotection, with appropriate information, especially among high-risk individuals.

**Keywords:** Sunscreening Agents; Skin Neoplasms; Sunburn; Sunlight

## RESUMO

**Introdução:** Fotoproteção é indicada para reduzir a exposição ao dano actínico cutâneo, sendo relevante para a prevenção ao câncer da pele. A face é a área mais irradiada do corpo e é o local mais comum de ocorrência de tumores.

**Objetivo:** Avaliar a quantidade aplicada de fotoprotetor tópico e a cobertura facial obtida por pacientes em seguimento por câncer da pele em uma instituição pública brasileira.

**Métodos:** Estudo quasi-experimental envolvendo 40 pacientes oncológicos cutâneos. Foi solicitado que aplicassem filtro solar em suas faces (da forma como faziam habitualmente), e a quantidade (massa) utilizada foi aferida. Após, os participantes foram fotografados sob a luz de Wood para avaliar a homogeneidade da cobertura e as áreas faciais nas quais a cobertura falhou.

**Resultados:** Quatorze participantes (35%) aplicaram uma quantidade menor do que a recomendada (2mg/cm<sup>2</sup>). As regiões com as menores coberturas foram as orelhas e a zona "H" da face.

**Conclusões:** A aplicação insuficiente ou heterogênea de filtro solar em face, pescoço e orelhas promove falsa percepção de proteção, podendo acarretar uma exposição irresponsável. Conforme a idade da população e a incidência do câncer da pele aumentam, é essencial estimular a fotoproteção, por meio de informações apropriadas, especialmente entre indivíduos de alto risco.

**Palavras-Chave:** Protetores solares; Neoplasias cutâneas; Queimadura solar; Luz solar

## Communication

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## INTRODUCTION

Photoprotection is indicated for reducing exposure to actinic damage to the skin and is highly relevant for the prevention of skin cancer.<sup>1</sup> Despite the lack of strong evidence on the effectiveness of sunscreen use in the prevention of melanoma and basal cell carcinoma, sunscreens are prescribed for all skin cancer patients.<sup>2,3</sup>

The face is the area of the body that receives the most sunlight and is also the most common site for the occurrence of skin cancer.<sup>4</sup> No study to date has assessed the quantity and quality of sunscreen use on the face by Brazilians previously diagnosed and treated for skin cancer.

This study aimed to assess the amount of topical sunscreen applied and the facial coverage obtained by patients previously diagnosed with skin cancer and treated in a Brazilian public institution.

## METHODS

This was a quasi-experimental study with 40 patients in follow-up at the Dermatology Outpatient Clinic of the University Hospital, Botucatu School of Medicine, in São Paulo State, Brazil, and who had been treated previously for skin cancer. Participants were included consecutively by convenience, following their dermatology appointments. The research project was approved by the hospital's Institutional Review Board.

Participants were asked to apply sunscreen (Anthelios Airlicium SPF 60, La Roche Posay) on their faces as they normally did at home. Without the patient's knowledge, the tube containing the product had been weighed in advance.

The face has an estimated surface area of 300 to 350 cm<sup>2</sup> (data not shown), which would require 600 to 700mg of sunscreen to guarantee the recommended density of 2mg/cm<sup>2</sup>.<sup>5</sup> The facial area was estimated with paper face molds of ten individuals of both sexes and median height. Following the sunscreen application, participants were photographed under Wood's light to assess the homogeneity of sunscreen coverage. Facial areas with gaps in the coverage (<10% of the anatomical area) were recorded for each participant and displayed in a heat diagram.

## RESULTS

Of the 40 participants, men represented 67% of the sample, and mean age (standard deviation) was 75 (9) years. Mean (standard deviation) amount of sunscreen applied to the face was 1 (0,6) gram, and 14 participants (35%) applied less sunscreen than recommended (2mg/cm<sup>2</sup>), with no difference between men and women ( $p=0.42$ ). There was an inverse correlation between participants' age and the amount of sunscreen applied ( $r=-0.51$ ;  $p<0.01$ ).

Table 1 and Figure 1 show information on uniformity of application. The areas with the lowest coverage were the ears and "H" zone of the face (nasolabial, nasal, periocular, and auricular regions).<sup>6</sup>

## DISCUSSION

An excessively thin layer of sunscreen fails to properly block sunrays. A reduction of 50% in the amount of SPF 30 topical sunscreen leads to a 63% reduction in its effective SPF (sun protection factor).<sup>7</sup>

TABLE 1: COVERAGE OF FACE AREAS AND EARS, ASSESSED WITH WOOD'S LIGHT (N = 40)

Topography	N (%)
Malar	35 (88)
Chin	31 (78)
Temples	30 (75)
Mid-Forehead	30 (75)
Eyebrows	27 (68)
Nasal wings	26 (65)
Hairline	25 (63)
Nasal tip	24 (60)
Lower lip	17 (43)
Glabella	15 (38)
Upper lip	15 (38)
Upper eyelids	14 (35)
Lower eyelids	14 (35)
Medial epicanthus	7 (18)
Ears	2 (5)

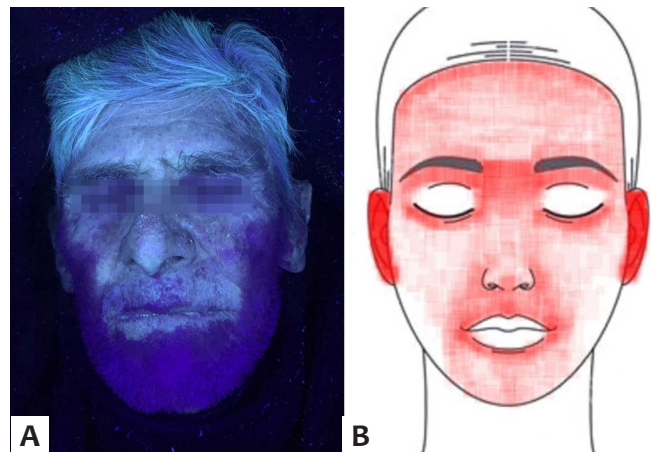


FIGURE 1: Representation of facial coverage with sunscreen under Wood's light. (A) Example of heterogeneous sunscreen application, neglecting upper lip, nasal region, and forehead. (B) Heat diagram of regions of the face with less sunscreen coverage, where dark red areas indicate less coverage (n = 40)

In the current study, besides the inadequate amount of sunscreen that they applied, patients who had already been diagnosed and treated for skin cancer showed gaps in coverage of the face, especially on regions where neoplasms behave more aggressively, such as the ears and periocular and perinasal regions. An Australian study also identified inadequate application of sunscreen as one of the causes of unintentional sunburn, a known risk factor for skin cancer.<sup>8</sup> Besides, elderly individuals may present impaired sight and motor coordination, which can affect adequate sunscreen application.

The current study's limitations include the fact that it was conducted in a single center and only evaluated elderly patients.

In addition, the study only evaluated patients in follow-up at a public dermatology service and did not systematically evaluate sunscreen application on the face.

## CONCLUSIONS

The promotion of photoprotection in skin cancer patients should include educational measures such as safe solar exposure time, mechanical protection (long clothing and hats), and adequate use of topical sunscreen (which however should not

be an excuse for increasing solar exposure time). Insufficient or uneven sunscreen application on the face, ears, and neck gives the false impression of protection and can lead to careless solar exposure, especially in patients at increased risk of developing skin cancer.

As the population ages and skin cancer incidence increases, it is essential to encourage photoprotection through appropriate information, especially in individuals at high risk. ●

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