

## THE IMPORTANCE OF THE GEOGRAPHIC AREA OF RESIDENCE IN THE OCCURRENCE OF SKIN CANCER IN COLOMBIA

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- The authors declare that they have no conflict of interest -

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## Introduction and objectives

One of the most important associations with skin cancer is radiation exposition, which is directly proportional to the altitude.<sup>1</sup> Colombia has favorable conditions that may influence the occurrence of skin cancer, such as being an equatorial country and having some of its population living at heights of 2.400m above sea level.<sup>2,3</sup> We aimed to describe the altitude and UV index of patients' residences with skin cancer in a dermatological center in Bogotá, Colombia.

## Methods and materials

An observational descriptive study was done. We reviewed the clinical records of 2016-2019 patients. We analyzed the provenance, height, and UV radiation index according to information obtained from the Colombian environmental center (IDEAM). Data were analyzed using Microsoft Excel. We hypothesized that there would be a linear relationship between altitude and cancer frequency.

## References

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## Results

We analyzed 395 patients. Most patients residences had an altitude above 2600 m (51%), and a UV index greater than 10 (74%). Bogotá had the most cases (184- 46%). Although the results showed a higher frequency of cancer in places of higher altitude, there was no linear relationship between both variables. We found that the places of height < 2400 m had more cancer cases (27.7%) than those of 2400-2600 m (20.6%). This could be influenced by some confounding factors such as patient occupation since it was evidenced that people living at lower altitudes work more in outdoor jobs (9.6%) compared to the other categories

| <b>Altitude range<br/>(MASL)</b> | <b>Occupation (%)</b> |                             |                    |                   |              |
|----------------------------------|-----------------------|-----------------------------|--------------------|-------------------|--------------|
|                                  | <b>Inside job</b>     | <b>Inside / outside job</b> | <b>Outside job</b> | <b>Unemployed</b> | <b>Total</b> |
| <2400                            | 6.1%                  | 9.9%                        | 9.6%               | 2.0%              | 27.7%        |
| 2400-2600                        | 3.3%                  | 9.1%                        | 5.1%               | 3.0%              | 20.6%        |
| >2600                            | 16.8%                 | 19.3%                       | 8.4%               | 7.4%              | 51.8%        |
| <b>Total</b>                     | <b>26.1%</b>          | <b>38.3%</b>                | <b>23.1%</b>       | <b>12.4%</b>      | <b>100%</b>  |

**Table 2.** Influence of the presence of skin cancer by altitude range and occupations patients. MASL: meters above sea level.



| Type of cancer          | The UV index (%) |            |             |      |             | Altitude range (%) |                  |              |
|-------------------------|------------------|------------|-------------|------|-------------|--------------------|------------------|--------------|
|                         | 6-7              | 7-8        | 8-9         | 9-10 | 10-11       | <2400 (MASL)       | 2400-2600 (MASL) | >2600 (MASL) |
| Basal Cell Carcinoma    | 0.3              | 3.6        | 10.4        | 5.3  | 54.6        | 21.6               | 15.7             | 36.8         |
| Squamous Cell Carcinoma | 0                | 0.5        | 3.3         | 1.0  | 16.0        | 5.1                | 4.1              | 11.7         |
| Melanoma                | 0                | 0.3        | 0           | 0.8  | 3.8         | 1.0                | 0.8              | 3.0          |
| <b>Total general</b>    | <b>0.3</b>       | <b>4.3</b> | <b>13.7</b> |      | <b>74.6</b> | <b>27.7</b>        | <b>20.6</b>      | <b>51.8</b>  |

**Table 1.** Type of skin cancer according to UV index and the altitude range depending of patients residence. MASL: meters above sea level

### Conclusions

Skin cancer incidence in Colombia, as well as in other countries, is a developing phenomenon with a huge impact on public health. Being aware of the risk factors and epidemiology can lead to prevent disease, especially in people who live at higher altitudes and are exposed to higher radiation index like Bogotá.

