Changes in patients’ habits regarding exposure to the sun and photoprotection after basal cell carcinoma diagnosis
Alterações nos hábitos de fotoexposição e fotoproteção de pacientes após diagnóstico de carcinoma basocelular

ABSTRACT

Introduction: Skin cancer is the most common type of neoplasia in humans, with ultraviolet radiation being considered the main cause. Basal cell carcinoma is the most frequent cutaneous neoplasia, and photoprotection is seen as the most effective measure in its prevention. Nonetheless, there is still some resistance to the use of sunscreens among the general population. There is also a lack of reports in the literature on whether such resistance differs in patients with basal cell carcinoma.

Objectives: To evaluate whether there is change in habits regarding exposure to the sun and use of sunscreen after diagnosis of basal cell carcinoma in patients treated at the Dermatology Outpatient Clinic of Universidade Federal de Ciências da Saúde de Porto Alegre (RS), Brazil.

Methods: A cross-sectional study was carried out with 120 patients diagnosed and treated for basal cell carcinoma, who responded to a questionnaire regarding their sun exposure habits and use of photoprotection methods before and after diagnosis.

Results: Of the 120 patients interviewed, 73.3% reported changes in their habits regarding exposure to the sun and use of sunscreen after receiving a diagnosis of basal cell carcinoma. The main reasons alleged by those who denied having changed their behavior towards sun exposure (26.7%), were the lack of fear of new tumors, as well as the high cost of sunscreens.

Conclusions: A diagnosis of basal cell carcinoma motivates most patients to improve their use of preventive measures regarding protection from the sun. Nonetheless, about a third of the studied population still resisted such measures, the main reason cited being the high cost of sunscreens. Therefore, awareness campaigns about the importance of using photoprotection methods to prevent skin cancer must be implemented, and the development of programs aimed at making sunscreens available to the general population – especially to high-risk patients – must be sought.

Keywords: skin neoplasms; carcinoma, basal cell; health education.

RESUMO

Introdução: o câncer da pele é o tipo mais comum de neoplasia nos seres humanos, e a radiação ultravioleta é considerada sua principal causa. O carcinoma basocelular é a mais frequente das neoplasias cutâneas, e a fotoproteção é sua medida preventiva mais importante. Ainda existe, todavia, certa resistência ao uso dos fotoprotetores pela população em geral, e a literatura não relata se essa resistência nos pacientes com diagnóstico de carcinoma basocelular é diferente da que se observa na população em geral.

Objetivos: avaliar se há mudanças nos hábitos de fotoproteção e fotoexposição após o diagnóstico de carcinoma basocelular nos pacientes atendidos no Ambulatório de Dermatologia da Universidade Federal de Ciências da Saúde de Porto Alegre.

Métodos: estudo transversal com 120 pacientes diagnosticados e tratados de carcinoma basocelular que responderam a questionário referente aos hábitos de fotoproteção e fotoexposição antes e depois do diagnóstico da doença.

Resultados: dos 120 pacientes entrevistados, 73,3% referiram mudanças de fotoexposição e fotoproteção após o diagnóstico de carcinoma basocelular. Entre os que negaram mudanças de comportamento frente ao sol (26,7%), os principais motivos alegados foram o fato de não temer novos tumores e o alto custo do protetor solar.

Conclusões: o diagnóstico de CBC motivou a maioria dos pacientes a melhorar as medidas preventivas de proteção solar. Cerca de um terço da população estudada, porém, ainda resistiu a executá-las, alegando como causa principal o custo dos fotoprotetores. Assim, devem ser programadas campanhas de conscientização sobre a importância das medidas fotoprotectoras na prevenção do câncer de pele e visando à distribuição gratuita de protetores solares na rede pública para a população em geral e, principalmente, os pacientes de alto risco.

Palavras-chave: neoplasias cutâneas; carcinoma, basal cell; educação em saúde.
INTRODUCTION

Skin cancer is the most common type of malignant tumor in humans. Its incidence has increased in recent years and it has become a major public health problem.1 Ultraviolet radiation (UV) is considered the main cause of malignant skin tumors, and photoprotection its most effective prevention method.1,2,3

Basal cell carcinoma (BCC) is the most frequent neoplasia, corresponding to around 80% of skin cancers.4 BCC occurs mainly in areas of the body exposed to the sun, especially the upper two thirds of the face. It is a slow-growing cancer, and rarely metastasizes. It has a significant local destructive capacity and can invade cartilage and bone. Diagnosis is usually clinical and must be histologically confirmed when there is the presence of peripheral basaloid cells in a palisade arrangement. Prognosis is excellent, with cure rates above 92%.5

Sunscreens, which can be chemical and/or physical, are considered BCC’s primary prophylaxis, and must provide adequate protection against UV radiation types A and B. Sunscreens must be applied daily at least 30 minutes before exposure to the sun and reapplied every two hours during continuous exposure, or after excessive sweating, prolonged swimming, and physical activity. Sun protection factor (SPF) is defined as the UVB energy amount required to produce a minimal erythema dose (MED) on protected skin after the application of 2mg/cm2 of the product, divided by the UV energy. In this manner, a product with SPF 15 should allow 15 times greater exposure to the sun—without burning—than that available to an individual without protection (SPF 15 is the minimum protection factor recommended by the Brazilian Health Surveillance Agency—ANVISA). In a June 2012 directive, this entity re-defined some rules to ensure greater protection for sunscreens users: the minimum SPF value increased from two to six, with protection against UVA being at least one-third of the stated SPF value.6

Studies have already shown that BCC has an emotional impact on the lives and social relationships of patients.7,8 It is also known that there is still some resistance to adhering to the use of sunscreens and to healthy sun exposure habits in the general population, especially among adolescents, 9 who are markedly influenced by the attitude and knowledge of their parents.10

In spite of the existence of studies evaluating the crucial care that patients with cutaneous malignant or pre-malignant lesions must take towards exposure to the sun,11 the literature does not describe patients’ behavior after receiving a positive diagnosis for BCC. Thus, the objective of the present study was to evaluate whether there are changes in patients’ habits regarding exposure to the sun and use of sunscreen after the diagnosis of BCC.

METHODS

A cross-sectional study was conducted from July 2009 to December 2010, with a sample of 120 patients diagnosed with BCC, confirmed through histology, and treated at the Dermatology Service of the Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA), (RS) Brazil.

Patients included in the study answered a multiple-choice questionnaire with questions regarding habits of photoprotection and sun exposure before and after the BCC diagnosis. The questionnaire was developed and applied by the authors of the present article.

The analysis of the data was initially carried out through descriptive statistics of the patients’ ages (simple and relative frequency distributions, mean, standard deviation and range). The McNemar’s test was used to compare attributes (categories) between two time points (paired data), while the McNemar-Bowker’s test was used to analyze the polytomous variables.

The data were treated statistically using the software SPSS 19.0 Statistical Package for Social Sciences for Windows (SPSS Inc., Chicago, IL, USA, 2011). A significance level of 5% was adopted as the criteria for a decision.

The study was approved by the Ethics Committee of the UFCSPA under the number 314/07.

RESULTS

The study population was composed of 61 women (50.8%) and 59 men (49.2%). The mean age was 60.2 (± 14.2) years, ranging from 25 to 93. The age groups with the highest concentrations were those between 50-59 years (30.0%) and 60-69 years (23.3%). Regarding the anatomical site, the most commonly affected body part was the face (67 patients, 55.8%), followed by the trunk (46 patients, 38.3%).

The daily use of sunscreen before diagnosis was reported by 10% (n = 12) of the studied patients, and after diagnosis, that proportion increased to 64.2% (n = 77), demonstrating a statistically significant increase (p <0.001). In the comparison of the number of times per day that the sunscreen was used, there was a difference before and after diagnosis, but without statistical significance (p = 0.009). When asked about the use of sunscreen during recreational exposure to the sun (e.g. beach, parks, and pools), roughly 35.8% (n = 43) of patients reported that they already used sunscreen before the BCC diagnosis, and of those, 25.6% (n = 11) reported re-applying the sunscreen every four hours. After the diagnosis, a significant increase was verified (p <0.001) in the number of patients who use sunscreen during recreational exposure to the sun (81.7%, n = 98) and also of the number of times that the product was re-applied during the day (62.2%, n = 61) (Table 1).

Considering the information regarding the habits of exposure to the sun before and after the diagnosis, there was a significant improvement (p <0.001) regarding the awareness towards the time of the day of the exposure to the sun (before 10a.m. and after 4p.m.). Before being diagnosed with BCC, 13.3% of the patients observed these limitations, as compared to 49.2%, after the diagnosis. As for the casual use of sunscreens (not in a systematic and normal manner), 39.2% (n = 47) of the patients reported having already used them before the BCC diagnosis, whereas that proportion increased significantly (p <0.001) to 86.7% (n = 104) after the diagnosis. Among those who reported systematic use, the rate of use also increased significantly.
from 46.8% (n = 22) to 87.5% (n = 91) (p < 0.001) (Table 2).

Patients were also asked as to whether the diagnosis had made them change their stance regarding the care they take with exposure to the sun, with 73.3% (n = 88) answering yes. The most frequently mentioned reasons were the fear of new tumors (81.8%, n = 72) and the fear of recurrence (14.7%, n = 13). The group that stated that it had not changed its attitude towards taking care with exposure to the sun after the diagnosis (26.7%), justified this behavior on the basis of high sunscreen prices (28.1%), their dislike for using an oily product on the skin (15.6%), and laziness towards applying it (6.3%).

**DISCUSSION**

The diagnosis of a malignant tumor is an event that may have an impact on patients’ lives. In most cases, the presence of a BCC lesion does not increase a patient’s mortality rate. However, the however the condition is among the most prevalent types of malignant tumors in the world, and carries with it the risk of new and recurring tumors. The most frequently mentioned reasons were the fear of new tumors (81.8%, n = 72) and the fear of recurrence (14.7%, n = 13). The group that stated that it had not changed its attitude towards taking care with exposure to the sun after the diagnosis (26.7%), justified this behavior on the basis of high sunscreen prices (28.1%), their dislike for using an oily product on the skin (15.6%), and laziness towards applying it (6.3%).

A relevant and statistically significant finding of the present study was a change in behavior regarding the time of day of exposure to the sun, given that the percentage of patients who were indifferent to the time of exposure before the diagnosis was 79.2%, this figure decreased to 35% after a positive diagnosis. In line with this finding, the percentage of patients who already exhibited a more conscious behavior by exposing themselves to the sun at times of lower incidence of UVB radiation increased from 13.3% to 49.2%, also a statistical significance. Although more patients began to get exposure to the sun at the appropriate times, this is still a low proportion, given that less than half of patients show such conduct regarding the sun. These findings are consistent with the data collected by Victor et al., who randomly interviewed 600 people visiting two coastal beaches in the southern Brazilian State of Rio Grande do Sul: 82.5% visited the beach during inadvisable times, between 9a.m. and 4p.m. It is worth noting that even patients who reported habitually limiting their sun exposure to appropriate times of day and had used sunscreen, presented BCC cases. This occurrence may be secondary to the misuse of sunscreens or products of questionable quality, thus leading to a misguided sense of protection. In addition, BCC is also linked to genetic and environmental factors.

Asked whether there were changes in their habits related to exposure to the sun and photoprotection, most patients (73.8%) answered affirmatively. Curiously enough, however, almost a third (26.2%) were reluctant to adhere to this preventive measure, citing as the main reason the high cost of sunscreens (28.1%). It is known that the proper use of sunscreen with the recommended reapplication requires a significant amount of the product, resulting in a considerable cost. Moreover, sunscreens are classified by the Brazilian Health Surveillance Agency (ANVISA) under the same class as toiletries, cosmetics, and perfumes, thus receiving a higher rate of taxation and rendering them not available for mandatory, free distribution in public health centers. As a result, the continued use of sunscreens becomes inaccessible for much of the Brazilian population. About 15% of patients reported not using sunscreens due to their greasy nature, calling attention to the importance of cosmetic factors in the adherence to this preventive measure.

A fact that has attracted the particular concern of the authors, was that approximately 18 patients have justified their non-adherence to photoprotection to not “fearing having new
skin tumors”—which perhaps demonstrates the ignorance about the degree of influence that the exposure to the sun has in the genesis of BCCs, and the process of denial before such diagnosis.

Aligned with other current papers on photoexposure, the present study has verified that habits of exposure to the sun and use of sunscreen do change after BCC diagnosis. In a study conducted between 1994 and 1995, Bakos et al. showed that 36.9% of the interviewed university students used sunscreen. In 2001, Costa et al. showed an increase in that ratio to 85.2%. In addition, a Canadian study also found significant increase in photoprotection in 50 patients with pre-malignant or malignant cutaneous lesions.

### CONCLUSIONS

The present study’s results demonstrate that a personal BCC diagnosis brings awareness to affected patients, leading to an increased use of sunscreen by most of them. Nonetheless, awareness campaigns about skin cancer and prevention methods for this disease should be increasingly encouraged, given that a positive association between continuing education and photoprotection habits has already been demonstrated. Furthermore, access to sunscreens should be facilitated through lower taxation and free distribution at public health centers, due to its importance in the prevention of skin cancer.

### REFERENCES


### TABLE 2: Absolute and relative distribution of sun exposure habits and use of sunscreen, according to evaluations before and after diagnosis

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Evaluation—Diagnosis</th>
<th>Before</th>
<th>After</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of day of the exposure to the sun</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>a. before 10a.m. and after 4p.m.</td>
<td>16</td>
<td>13.3</td>
<td>59</td>
<td>49.2</td>
</tr>
<tr>
<td>b. between 10a.m. and 4p.m.</td>
<td>7</td>
<td>5.8</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>c. indifference to the time of exposure</td>
<td>95</td>
<td>79.2</td>
<td>42</td>
<td>35</td>
</tr>
<tr>
<td>d. did not have exposure to the sun</td>
<td>2</td>
<td>1.7</td>
<td>18</td>
<td>15</td>
</tr>
<tr>
<td>Use of photoprotection</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>a. no</td>
<td>73</td>
<td>60.8</td>
<td>16</td>
<td>13.3</td>
</tr>
<tr>
<td>b. yes</td>
<td>4</td>
<td>39.2</td>
<td>104</td>
<td>86.7</td>
</tr>
<tr>
<td>Use of sunscreen</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>a. yes</td>
<td>22</td>
<td>46.8</td>
<td>91</td>
<td>87.5</td>
</tr>
<tr>
<td>b. no</td>
<td>25</td>
<td>53.2</td>
<td>13</td>
<td>12.5</td>
</tr>
<tr>
<td>Use of physical protection (e.g. hat, T-shirt)</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>a. yes</td>
<td>31</td>
<td>66</td>
<td>61</td>
<td>58.7</td>
</tr>
<tr>
<td>b. no</td>
<td>16</td>
<td>34</td>
<td>43</td>
<td>41.3</td>
</tr>
</tbody>
</table>

\( \Phi \) Fisher’s exact test; £: Pearson chi-square test with continuity correction.


