



CÂNCER DE PELE: ESTRATÉGIAS DE FOTOPROTEÇÃO E FOTOEXPOSIÇÃO SOLAR EM AGENTES COMUNITÁRIOS DE SAÚDE

Skin Cancer: Photoprotection Strategies and Solar Photoexposition in Community Health Agents

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Abstract: Community Health Agents are professionals who carry out external activities, thus being exposed for a longer duration to solar radiation. Thus, this study has the objective to know the strategies of photoprotection and solar photoexposure that can be carried out in the context of the community health agents. It is a Literature Review. The scientific articles available in the PubMed and SciELO, Lilacs and Virtual Library of the Ministry of Health were analyzed in the time period from 2010 to 2018. The key words used were: "Community Health Agent", "solar radiation" and "occupational hazards". Cancer is the most prevalent neoplasm in Brazil. The association between occupational exposure to UV rays and malignant skin diseases has been well demonstrated in recent studies that have shown consistent epidemiological associations between sun exposure and increased risk for skin cancer. Despite the skin health damage that they are prone, ACS report use of the photoprotection strategies, however, in an incorrect or insufficient way. For effective prevention against the undesirable impacts caused by the sun on the skin, there are three ways: avoid the sun (photo education), wear photoprotective clothing (mechanical photoprotection), chemical sunscreens, physical and oral antioxidants. The results of this study point to the creation of actions of photo education and public policies directed to community health agents.

Keywords: Community Health Agent; Solar radiation; Occupational risks.

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Resumo: Os Agentes Comunitários de Saúde são profissionais que exercem atividades externas, sendo assim expostos por uma duração maior a radiação solar. Nesse sentido, este estudo tem por objetivo conhecer as estratégias de fotoproteção e fotoexposição solar que podem ser efetivadas no contexto laboral dos agentes comunitários de saúde. Trata-se de uma revisão de literatura. Foram analisados os artigos científicos disponíveis nas bases de dados PubMed, SciELO, Lilacs e Biblioteca Virtual do Ministério da Saúde, no período temporal de 2010 a 2018. As palavras-chave utilizadas foram: “agente comunitário de saúde”, “Radiação solar” e “riscos ocupacionais”. O câncer de pele é a neoplasia de maior incidência no Brasil. A associação entre exposição ocupacional a raios UV com doenças malignas da pele têm sido bem demonstrada em estudos recentes, que evidenciaram associações epidemiológicas consistentes entre exposição solar e aumento do risco para câncer de pele. Apesar dos prejuízos a saúde da pele que estão propensos, os ACS relatam uso das estratégias de fotoproteção, entretanto, de modo incorreto ou insuficiente. Para que haja a prevenção eficaz contra os impactos indesejáveis causados pelo sol sobre a pele, existem três caminhos: evitar o sol (foto educação), usar roupas fotoprotetoras (fotoproteção mecânica), protetores solares químicos, físicos e antioxidantes orais. Os resultados deste estudo apontam para a criação de ações de fotoeducação e políticas públicas dirigidas aos agentes comunitários de saúde.

Palavras-chave: Agente Comunitário de Saúde; Radiação solar; Riscos ocupacionais.

INTRODUCTION

The Community Health Agents (ACS) constitute the link between the population, the FHP and other professionals in the team, and have an important role in the implementation of health promotion and prevention. The ACS are professionals who exercise activities external to the health unit, as visits, thus being exposed for a longer solar radiation. Due to this, these professionals are subjected to various problems caused by exposure to sunlight, for example skin cancer¹.

Cancer is the most prevalent neoplasm in Brazil. Due to the skin being a heterogeneous body, skin cancer can present different strains, the most common being the types called non-melanoma skin cancer and melanoma type². Non-melanoma skin cancer is more common, responsible for 95% of the diagnoses; it is a tumor with good prognosis if treated properly and early, however, late diagnosis can lead to ulcers and severe physical deformities. The type melanoma is the rarest and most severe, found in 4% of patients; in the initial stages is curable, however, without treatment, can lead to the

emergence of metastases that cause high mortality³.

The use of photoprotection strategies has been widely discussed in the literature, being recommended for the prevention of all the neoplasms. Thus, this study has the objective to know the strategies of photoprotection and solar photoexposure that can be carried out in the context of the community health agents.

METHODOLOGY

It is a review literature. Thus, this study has the objective to know the strategies of photoprotection and solar photoexposure that can be carried out in the context of the community health agents. The key words used were: "Community Health Agent", "solar radiation" and "occupational hazards". National and international articles were included in the study which dealt with the themes: skin cancer, photoprotection and occupational risks of community health agents. Articles that had no relevance suitable for discussion of the proposed objective were excluded from the study.

LITERATURE REVIEW

Skin Cancer: Etiology, pathophysiology and clinical types:

Skin cancer is the most incident neoplasm in Brazil with more than 32% of all new cancer cases diagnosed annually in the country². The cutaneous neoplasias, particularly the melanoma, are defined as polygenic and multifactorial diseases, involving both genetic factors, family history of skin cancer and ultraviolet radiation (UV).⁴ The sun is the greatest natural source of ultraviolet radiation, to which the skin is in constant exposure, either during recreational activities or at work. The association between occupational exposure to UV rays and malignant skin diseases has been well demonstrated in recent studies that have shown consistent epidemiological associations between sun exposure and increased risk for skin cancer.⁵⁻⁷

The spectrum of ultraviolet radiation is traditionally subdivided into three bands: UVA, UVB and UVC. UVA rays are the longest wavelength (315-400nm), which can still be subclassified in UVA1 (340-400nm) and UVA2 (320-340nm). They are characterized by inducing the occurrence of oxidative processes in skin cells. The band UVB (290-320 nm) is responsible for direct damages to

DNA, solar erythema, immunosuppression, melanogenesis and thickening of the stratum spinosum. Whereas the UVC rays (100-280nm) constitutes the band of UV radiation with the greatest carcinogenic potential, containing the peak of absorption by pure DNA^{8,9}.

Skin cancer can be divided in melanoma and non-melanoma. The non-melanoma skin cancer is the most frequent in human being, being responsible for about 1/5 of the new cases of cancer². The term non-melanoma skin cancer covers carcinoma, more frequent among non-melanoma and squamous cell carcinoma, which differ regarding the clinical and histological aspects but have a similar prognosis. Despite having low lethality and rarely lead to death or metastasis, the impact of non-melanoma skin cancer is high for public health and may cause significant aesthetic damages to patients¹⁰. The highest incidence of this type of cancer occurs in the head and neck region which are precisely the places of direct exposure to UV rays². The main risk factor for the occurrence of non-melanoma cancer is given by the cumulative effect of solar radiation UV. Professionals who expose themselves to the sun continuously, as the ACS, are

particularly subject to this type of neoplasm^{6,11}.

The melanoma is the cutaneous neoplasia with the worst prognosis, possessing low incidence and high mortality rates. Studies have shown that the presence of sunburn in the first years of life presupposes a duplicate risk for development of the tumor, being that the presence of only a burn, or more, takes twice the chance of developing the tumor^{12,13}. The suspicion of melanoma is in general, in the presence of any skin lesion presenting changes in color, size, shape and edges. In this context the rule of ABCD is employed to help in suspicion and early detection of a possible cutaneous melanoma, being that the letter A corresponds to the asymmetry of the lesion, B the jagged edges, C the color D the diameter greater than 6mm¹⁴.

Healthy Community Agents Performance and risk of exposure to sunlight:

From the decade of 90, with the implementation of the program of Community Health Agents (PACS), a work closer to the communities was started. Integrating the Family Health Strategy and function as a link between

the unit and the population is the Community Health Agent^{15,16}. The ACS must reside in the Community in which they operate and develop actions of promotion and surveillance in health and contribute to the improvement of the quality of life of people belonging to the communities¹⁷⁻¹⁹. Among their specific functions guidance stand out as to the use of health services and the registration and monitoring through visits to families of their microarea^{20,21}.

With performance of ACS being represented in part by interventions and activities external to the health unit, such as the practice of visits, these professionals are exposed for long periods of time to solar radiation^{1,6}. The prolonged exposure to sun can lead to several health problems ranging from skin lesions to neoplasms, representing conditions of morbidity relevant to the labor practice^{6,22}.

It was observed in a study with this population that 69.24% of ACS are more than five hours/day exposed to the sun and 100% has exposure in the critical hours, between 10 and 15 hours, in the period of great incidence of solar rays, mainly UVB rays¹. The understanding about the relationship

between chronic and prolonged exposure to sunlight and the onset of skin cancer provides that workers who are exposed to solar radiation activities constitute a risk group for the development of skin cancer, which includes the community health agents^{23,24}.

Strategies for solar sunscreen:

The skin is an organ of coating that has protective function against physical and chemical mechanisms. However, upon being subjected to ultraviolet radiation may suffer various types of damage. For effective prevention against the undesirable impacts caused by the sun on the skin, there are three ways: avoid the sun (photo education), wear photoprotective clothing (mechanical photoprotection), chemical sunscreens, physical and oral antioxidants.

Photo Education is a strategy based on educational actions with the purpose of educating the population in relation to the risks of exposure to the sun and advise on ways of photoprotection. Photo education is quite relevant, since there are still many questions present in the community, such as: the proper amount of sunscreen to be used, the convenient time to expose oneself to the sun and if the people of dark skin should or should not use some form of photoprotection.

Thus, information about this type of prevention should be propagated to the population. Measures such as use sunscreen, avoid the sun in the critical period (10 am to 4 pm), using measures of photoprotection mechanics such as the use of hats and clothes that will protect damage caused by the sun are necessary for an effective protection^{22,25}.

Clothes are taken as excellent photo protectors, especially for the UVB radiation, with a view to its security, consistency and continuity of the protection offered and low cost. Currently, the use of clothing and hats with protective factors is considered first-line choice for protection. Among the factors that increase the protection offered by clothes are its chemical composition (polyester and *nylon*), the density of the weft of manufacture as well as the use of clothing of darker colors, which have a high concentration of dyes absorb more R-UV than light colors, even having the same composition of weft tissue. Open and thin weft present in natural fibers like cotton, silk and wool, as well as wet and stretched tissues (clothes very washed and worn), are factors that may reduce the ability of protection against UV radiation. There are advances, in many countries, in the standardisation of

uniforms suitable for workers in high-risk situations, such as those who exercise their activities in open environments (For example: Health Agents)²².

Despite the skin health damage that they are prone, ACS report use of the photoprotection strategies, however, in an incorrect or insufficient way. The methods of chemical photoprotection in association with the method of physical barrier showed efficiency for the decrease of occurrences of skin damages²⁹.

The chemical photoprotection consists of the use of sunscreens and is an efficient resource to reduce the injuries caused by ultraviolet radiation. However, to ensure that the chemical sunscreen is effective, factors such as the quantity of product applied, the reapplication of the product and also issues such as the sweating or the entry of the individual in water should be taken into consideration²⁸.

Sunscreen is a photoprotector agent that reduces the harmful effects of UV rays through the absorption, reflection or diffusion of incident rays. According to their chemical nature, these substances are called organic

(chemical filters) or inorganic (physical filters). The first operates on absorption route (absorber) and the latest in reflection of the UV rays (reflectors). The absorbers absorb the photons of R-UV causing a change in their molecular structure. Whereas the reflectors have mineral origin and realize the reflection of R-UV out of the fabric. In addition, upon making a comparison between the filters, it is identified that the inorganic filter has a minimum potential for allergic sensitization and high photo stability. However, its reflective property can cause excessive brightness and whitish, restricting its exclusive use in preparations due to low cosmetic acceptance²⁸.

In relation to the amount of sunscreen that should be applied, one of the techniques applied is the "rule of teaspoon" which consists in the use of 1 teaspoon of the cephalic segment and in each one of the upper limbs and 2 teaspoons for trunk/torso and for each one of the limbs. Another technique used is the application of the filter in two subsequent layers, so that might be closer to the recommended value of 2mg/cm². The FPS (sun protection factor) measures the ability of the

sunscreen to protect the skin from burns caused by UV radiation. The FPS is, then, the relationship between causing erythema with protection and without protection³⁰.

The oral photoprotection consists of the use of oral antioxidants, which will act in the fight against oxidative damage caused by free radicals formed in the body in an exogenous way. Oral antioxidants are part of a complementary strategy, in view of the inadequacy of endogenous oxidative methods, as for examples substances such as *polypodium leucotomos*, *Maritime Pine extract*, pomegranate extract, linseed oil, lycopene, beta carotene, zinc, selenium, lutein, vitamins C and E²⁶.

FINAL CONSIDERATIONS

The results of this study point to the creation of actions of photo education and public policies directed to community health agents. Healthy habits of solar exposure must be encouraged (Avoid period from 10 am-4 pm), as well as the use of appropriate clothing, hats and sun glasses. Regarding the solar filters, it should be instructed on the proper amount, uniformity of application and need of

reapplication of photo protector every two hours or after heavy sweating. Along with governmental authorities, efforts are also necessary toward the creation of a specific legislation on the inclusion of photoprotective measures as individual protection equipment (IPE) for workers who exercise functions in external environment²³.

CLARIFICATIONS

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