

PREVALENCE AND CLINICOPATHOLOGICAL FEATURES OF ACTINIC CHEILITIS IN LIFEGUARDS IN A NORTHEASTERN BRAZIL

PREVALÊNCIA E CARACTERÍSTICAS CLÍNICO-PATOLÓGICAS DA QUEILITE ACTÍNICA EM SALVA-VIDAS DE UMA CIDADE DO NORDESTE BRASILEIRO

Christian Simões Ferreira¹, Amanda Hala Pereira², Ana Júlia Latrila Lima³, Ingrid Alencar de Almeida², Pedro Leonardo Santos Franco², Yuri de Lima Medeiros⁴, Rebeca Carolina Moraes Dantas^{5*}

¹Department of Postgraduate Studies, Federal University of Pampa, Venâncio Aires (RS) Brazil; ²Department of Dentistry, Faculty of Ilhéus; ³Dental surgeon in Itabuna (BA), Brazil; ⁴Department of Stomatology, School of Dentistry, São Paulo University, São Paulo, SP, Brazil; ⁵Dental Surgeon at the Federal Institute of Bahia.

***Corresponding author:**
Rebeca Carolina Moraes Dantas
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Email:
drarebecadantas@gmail.com

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ABSTRACT: The objective of this study was to evaluate the prevalence of actinic cheilitis among lifeguards in a city on the northeastern coast of Brazil. This was a cross-sectional study conducted in March 2023 with 32 lifeguards from Ilhéus, Bahia, Brazil, in which sociodemographic data, occupational information, health-related data, and the presence and severity of actinic cheilitis were collected, and descriptive statistics, including mean, standard deviation, and frequency distributions, were calculated using SPSS version 21.0 (Chicago, IL, USA). A total of 11 cases (34.3%) of actinic cheilitis were diagnosed among the lifeguards, all of whom were male, with a mean age of 20 years, predominantly white or mixed race skin color (91%), alcohol consumption (63.6%), and lack of use of lip sunscreen (63.6%). Most cases of actinic cheilitis were classified as grade I or II (81.8%), while lifeguards with more than 15 years of service were diagnosed with grades III and IV. The prevalence of actinic cheilitis among lifeguards was 34.4%, with most individuals presenting mild lesions, and the severity of the condition appears to increase with years of occupational exposure.

KEYWORDS: Actinic cheilitis. Lifeguards. Epidemiology. Lip neoplasms.

RESUMO: O objetivo foi avaliar a prevalência de queilite actínica entre salva-vidas em uma cidade no litoral nordeste do Brasil. Estudo transversal com 32 salva-vidas de Ilhéus (Bahia, Brasil) em março de 2023. Foram coletados dados sociodemográficos, informações ocupacionais, dados relacionados à saúde, presença de queilite actínica e sua gravidade. Foram calculadas estatísticas descritivas, incluindo média, desvio padrão e distribuições de frequência, utilizando o SPSS versão 21.0 (Chicago, IL, EUA). Um total de 11 casos (34,3%) de queilite actínica foram diagnosticados entre os salva-vidas. Todos participantes eram do sexo masculino, idade média de 20 anos, pele branca ou parda (91%), consumo de álcool (63,6%) e falta de uso de protetor labial (63,6%). A maioria dos casos de queilite actínica foi classificada como grau I e II (81,8%). Salva-vidas que trabalhavam há mais de 15 anos foram diagnosticados com queilite actínica nos graus III e IV. A prevalência de queilite actínica entre os salva-vidas foi de 34,4%, com a maioria apresentando lesões de grau I. Além disso, a gravidade da condição parece aumentar com os anos de serviço.

PALAVRAS-CHAVE: Queilite actínica. Salva-vidas. Epidemiologia. Neoplasias labiais.

INTRODUCTION

Actinic cheilitis is an oral potentially malignant disorder that affects the vermilion border of the lips, primarily the lower lip due to its thin epithelium and anatomical location, making it susceptible to solar radiation.¹⁻⁴ The initial signs of the disease, considered the acute phase, include rough and dry lips, followed by fissures or lines, which may progress to ulcers. These lesions occur when there is intense sun exposure for a short period. With continuous, long-term sun exposure, the chronic phase is reached, which is typically asymptomatic. This phase is characterized by the formation of an elevation of the lower lip and the loss of the vermilion border, which separates the skin from the lip.^{5,6}

Clinical features are essential for diagnosis, and in some cases, biopsy may be required.⁶ Histologically, actinic cheilitis is characterized by a stratified squamous epithelium with keratin production.⁵ Degrees of epithelial dysplasia, inflammatory cell infiltration, and solar elastosis, which is characterized by aging or degradation of the skin due to cumulative exposure to ultraviolet rays, can also be found.^{1,3,4} For treatment, in addition to preventive measures (use of lip sunscreen and wide-brimmed hats), it is ideally necessary to reduce sun exposure to prevent disease progression.^{1,6,7} Treatment may also include the removal of altered epithelium through high-intensity laser surgery, topical tretinoin combined with trichloroacetic acid, and vermilionectomy.⁴

The prevalence of actinic cheilitis is higher in various occupations associated with prolonged sun exposure, such as farmers, fishermen, and street vendors.^{1,3,4,8} However, to the best of our knowledge, no studies have investigated the association between this condition and lifeguards, who perform their duties under daily sun exposure at beaches and swimming pools. Therefore, this study aims to assess the prevalence of actinic cheilitis among lifeguards in a city on the northeastern coast of Brazil, contributing to a better understanding of the occupational risks associated with this profession.

METHODOLOGY

ETHICS AND PERMISSION

This study was approved by the Research Ethics Committee of the State University of Santa Cruz (UESC), under protocol number 63439922.5.0000.5526, and was performed in compliance with the Declaration of Helsinki of the World Medical Association.

STUDY DESIGN, SETTING AND PARTICIPANTS

This research constitutes an observational, descriptive, cross-sectional study. The study was carried out with lifeguards from Ilhéus, a Brazilian city on the southern coast of the state of Bahia (Brazil).

The municipality's lifeguards (n = 45) were invited to attend educational lectures held at the Faculty of Ilhéus (Ilhéus, Bahia, Brazil) in March 2023. These lectures covered topics related to the effects of unprotected sun exposure, oral hygiene and health, and lip cancer. At the end of the sessions, individuals were invited to participate in the study. Lifeguards who were absent from their duties due to health problems, on leave for training, or retired were excluded from the sample.

All of them had a similar level of sun exposure due to their work schedule. The professionals worked 6 to 8 hours a day for 4 days a week for most of the year. During the summer months of January and February, lifeguards worked a 7-day-a-week schedule.

DATA COLLECTION

Sociodemographic data (sex, age, skin color), occupational information, and health-related data (sun exposure in years of service, use of photoprotective measures, and habits such as smoking and alcohol consumption) were collected. Individuals who used tobacco daily in any form were classified as smokers, while those who consumed alcoholic beverages at least once per day were considered alcohol consumers.

The presence of actinic cheilitis and its severity were assessed. The criteria for determining the presence or absence of actinic cheilitis and its respective degree were characterized following the classification proposed by Poitevin et al.⁷ as follows: Grade I - Dryness and peeling on the vermilion border of the lips, which may be accompanied by erythema; Grade II - Atrophy of the vermilion border, pale areas, and thin surface. Presence of blurring of the boundary between the vermilion border of the lip and the skin (mucocutaneous junction). Lip edema may be observed; Grade III - Rough and scaly areas on the drier parts of the vermilion border of the lip, areas of hyperkeratosis at the junction between the lip mucosa and semimucosa; Grade IV - Presence of erosion and/or ulceration in one or more areas of the vermilion border of the lip, the presence of leukoplakia, and areas that are firm to the touch. The diagnosis, as well as the degree of the lesion, was determined by an experienced stomatologist.

Participants in the research who presented actinic cheilitis or any dental needs were referred to the dental clinic at the Faculty of Ilhéus for lesion monitoring and treatment. Additionally, lifeguards classified as grades III and IV were referred for biopsy to investigate the presence of dysplasia.

STATISTICAL ANALYSIS

Descriptive statistical analyses were performed to obtain the mean, standard deviation, absolute, and relative frequencies. The Statistical Package for the Social Sciences (SPSS) software, version 21.0 for Windows (Chicago, IL, USA), was used for data analysis.

RESULTS

Among the 45 participants, 32 were included in the study (32 men, mean age of 42 ± 4.55 years). Eleven patients (34.3%) were diagnosed with actinic cheilitis. Among those diagnosed with the lesion, 5 (45.5%) were white, 5 (45.5%) were mixed and 1 (10%) was black. Regarding smoking and alcohol consumption, 2 (18.2%) had smoking habits, while 7 (63.6%) were alcohol consumers, mainly beer. Four (36.4%) were using lip protectors, and 8 (72.7%) were wearing hats. The sociodemographic data of the professionals are shown in Table 1.

Table 1. Sociodemographic data, occupational information and health-related data of lifeguards.

	Lifeguard with actinic cheilitis No. of patients (%)	Lifeguard without actinic cheilitis No. of patients (%)
Number of patients	11 (100)	21 (100)
Age: Mean [range]	40.91 [35-47]	42.57 [33-51]
Skin color		
White	5 (45.5)	4 (19)
Mixed	5 (45.5)	8 (38.1)
Black	1 (10)	9 (42.9)
Service time		
< 15 years	7 (63.6%)	14 (66.7)
≥ 15 years	4 (36.4%)	7 (33.3)

	Lifeguard with actinic cheilitis No. of patients (%)	Lifeguard without actinic cheilitis No. of patients (%)
Habits		
Smokers	2 (18.1%)	16 (76.2)
Alcohol consumers	7 (63.6%)	14 (66.6)
Use of photoprotective measures		
Lip protector	4 (36.4%)	4 (19)
Hat or cap	8 (72.7%)	16 (76.2)

Source: author (2023).

Out of the 11 patients with actinic cheilitis, 7 (63.6%) were diagnosed with grade I, 2 (18.1%) with grade II, 1 (9%) with grade III and 1 (9%) with grade IV (Figure 1). Lifeguards who had worked for more than 15 years were diagnosed with grade III and IV actinic cheilitis. On the other hand, those who had worked for less than 15 years showed the lesion in grade 1 and 2.

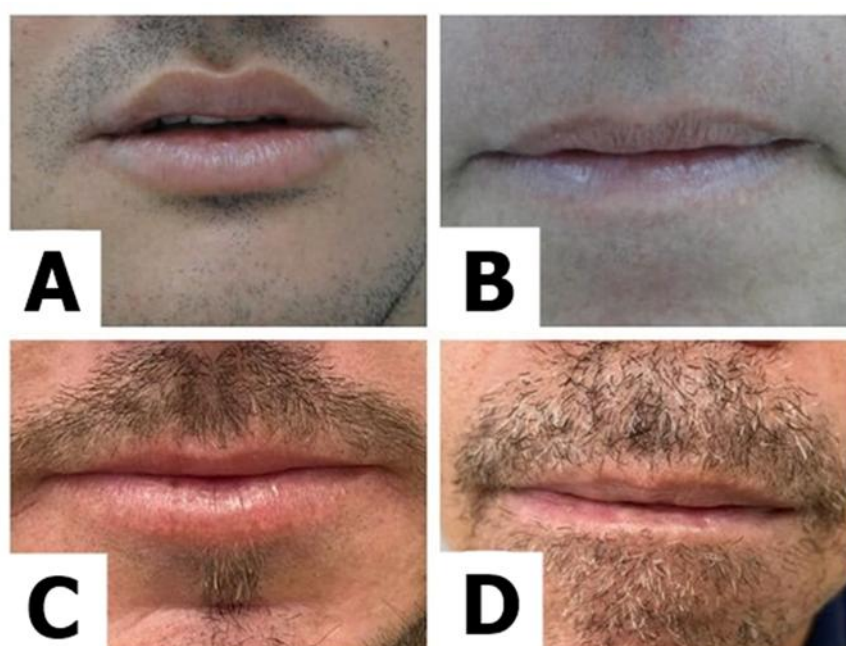


Figure 1. Grades of actinic cheilitis according to the classification of Poitevin et al. (2017): (A) Grade I: Mild dryness and peeling. (B) Grade II: Beginning of the process of losing the demarcation line between the vermilion border of the lip and the skin, along with lip peeling. (C) Grade III: Ulcerations and loss of the demarcation line. (D) Grade IV: Erosive areas and loss of the lip grooves, indicating a chronic state of the lesion.

The lifeguards classified as grade 3 and 4 of actinic cheilitis were referred for biopsy. Histopathological results revealed epidermis with hyperkeratosis, irregular acanthosis or atrophy, mononuclear inflammatory infiltrate, and basophilic degeneration of collagen, confirming the diagnosis of actinic cheilitis in these professionals. No epithelial dysplasia was found. All individuals diagnosed with the lesion were referred for assessment and follow-up of the disease progression.

DISCUSSION

Actinic cheilitis is a degeneration of the lip lining epithelium caused by chronic sun exposure and has several predisposing factors such as age, gender, skin color, amount of sun exposure, and a history

of smoking and alcohol consumption.^{1,3-7} Moreover, it has malignant potential, emphasizing the importance of prevention and early diagnosis.^{2,8-10}

Ilhéus is a city located on the southern coast of Bahia, one of the twenty-six states in Brazil, with high temperatures throughout the year. The city has a public order and safety department that includes lifeguards. These professionals work under constant sun exposure, providing services on intensive work schedules throughout the year.¹¹ The data collected for this research were exclusively obtained from a sample composed of men, due to the predominance of males in the occupation of lifeguards in the study city. Previous studies have also observed that the particular condition mainly occurs in a predominantly male population. The absence of women in this profession prevented the collection of more specific comparative data that could corroborate the prevalence of the disease in relation to gender.^{3,4,10}

In this research, the age group most affected by the condition was between 41 and 50 years. However, among the 11 lifeguards diagnosed positively with actinic cheilitis, 5 (45.4%) were between 30 and 40 years old. Although studies have shown the highest prevalence in the 5th decade of life,^{1,3,4} recent findings suggest that increasingly younger populations are also affected.³ This can be attributed to cumulative sun exposure, which, although typically leading to late diagnoses due to the slow progression of the disease, may also result in earlier onset when exposure begins at a younger age.^{1,3,4}

Individuals with white skin have a higher prevalence of this disease.^{3,4} In this research, 45.4% of the lifeguards diagnosed with the disease had white skin. Lifeguards with mixed or black skin accounted for 54.6% of the sample. The higher prevalence of the disease in individuals with mixed or black skin in this study can be explained because Ilhéus is located in the state of Bahia, which, according to a survey conducted by Brazilian Institute of Geography And Statistics,¹² is the second state with the highest proportion of people with mixed or black skin in Brazil. Carneiro et al.¹ mention that the lower occurrence in people with black skin is due to melanin being a natural protective factor.

Studies like those by Medeiros et al.⁵ and Rodriguez-Archilla et al.⁴ indicate a strong association between actinic cheilitis and tobacco use, mainly due to the potential for destruction of the lip epithelium caused by the temperature of the cigarette. Additionally, these same authors describe alcohol consumption as an exacerbating factor in the development of the lesion. The present research found that 18.1% of positive cases of the lesion who use tobacco. Regarding alcohol consumption, 63.6% of lifeguards who presented the lesion use some type of alcoholic beverage. Although the frequency is lower than the numbers from previous research, it is still evident that there is a relationship between actinic cheilitis and these harmful habits.^{6,8}

Regarding protective factors, only 36.4% used lip protectors daily, while 72.7% wore hats daily. However, hats with small brims are not as effective as those with wide brims. This occurs because short-brimmed hats do not provide complete shading for the lower lip.^{9,10} This may explain the fact that although most lifeguards wear hats, they still develop the lesion, especially when lip balms are not used. Lucena et al. (2022) demonstrated that combined use of physical and chemical sun protection significantly reduced the occurrence of actinic cheilitis in individuals exposed to sunlight for more than four hours a day. These findings reinforce the importance of integrated photoprotection strategies as a key element of health promotion, particularly for high-risk occupational groups such as lifeguards.¹³

This study assessed the relationship between years of sun exposure and the degree of actinic cheilitis. The lifeguards who presented grade 3 and 4 actinic cheilitis had more than 15 years of service. In contrast, those with grades 1 and 2 of the lesion had less than 15 years of service. This relationship exists because actinic cheilitis has an accumulative effect, where it progresses through various grades over the years. This data supports the findings of Mello et al.³ and Medeiros et al.⁵, which identify the duration of sun exposure as a determining factor for the severity of the lesion.

Histologically, actinic cheilitis is characterized by epithelial atrophy, inflammatory infiltrate, hyperkeratosis, and acanthosis.¹⁴ The histological findings in this study align with these definitions. In this study, no epithelial dysplasia was found in the lips of the biopsied professionals, unlike the studies by Mello et al.³, Abrantes et al.¹⁴, and Azevedo et al.¹⁵, which report the presence of dysplasia in some cases of cheilitis.

The treatment of actinic cheilitis can be carried out through various methods such as photodynamic therapy (CO₂ laser ablation), topical application of fluorouracil, and vermilionectomy (surgical removal of the lower lip vermilion).¹⁶⁻¹⁸ The latter is more indicated when there is evidence of epithelial dysplasia in order to prevent the progression of the disease to squamous cell carcinoma (SCC). In addition, preventive measures are recommended, such as reducing sun exposure, using lip sunscreen, and wearing a wide-brimmed hat.¹³ In this study, due to the absence of dysplasia, there was no need for vermilionectomy or other invasive treatments. The lifeguards were educated about preventive measures, and they are under follow-up care. This approach underscores the importance of health promotion strategies that extend beyond clinical management, emphasizing behavioral change and continuous education. By empowering professionals to adopt photoprotective habits and reduce risk behaviors, such measures play a crucial role in preventing disease progression.¹⁹

One limitation of this study is the small sample size, which may restrict the generalizability of the findings to larger populations of lifeguards or other outdoor workers. Additionally, the cross-sectional design prevents the establishment of causal relationships between sun exposure and the development of actinic cheilitis. Furthermore, self-reported data on sun protection measures and habits such as smoking and alcohol consumption may be subject to recall bias. Future studies with larger sample sizes, longitudinal designs are recommended to further elucidate the occupational risks and preventive strategies for actinic cheilitis.

Despite these limitations, this study provides valuable insights and serves as the first to investigate actinic cheilitis among lifeguards. Its findings contribute to understanding the occupational risks faced by this specific group, offering a reliable foundation for future research in this area. From a practical perspective, the findings of this study emphasize the urgent need for implementing structured oral health surveillance programs targeting outdoor workers, especially lifeguards. Regular screening for actinic cheilitis, coupled with education on proper photoprotection and early lesion recognition, can significantly reduce the risk of disease progression. These results may also inform occupational health policies by encouraging institutions and public health agencies to provide access to sun-protective resources such as lip sunscreens and wide-brimmed hats, and to integrate oral health education into routine occupational training.

CONCLUSION

The prevalence of actinic cheilitis among lifeguards included in the study was 34.4%, with most presenting with grade I lesions. Additionally, the severity of the condition appears to increase with years of service, with those working for more than 15 years being more likely to have grade III and IV lesions. The study also highlights the importance of protective measures, such as lip protectors and hats, which were used by a significant portion of participants but were not universally adopted. The findings highlight the need for regular monitoring and preventive strategies, reinforcing the role of health promotion in occupational settings. Ongoing education for lifeguards should be prioritized, encompassing the correct use of photoprotective measures, the adoption of healthy lifestyle habits, and increased awareness of

early signs of lip lesions. These initiatives not only help prevent the progression of actinic cheilitis but also promote the overall well-being of individuals exposed to occupational sun-related risks.

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