REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

QUEILITE ACTÍNICA: CONHECIMENTO E PREVALÊNCIA DA LESÃO EM AGRICULTORES DA CHAPADA DO APODI/RN

ACTINIC CHEILITIS: KNOWLEDGE AND PREVALENCE OF THE LESION AMONG FARMERS IN CHAPADA DO APODI/RN

QUEILITIS ACTÍNICA: CONOCIMIENTO Y PREVALENCIA DE LA LESIÓN EN AGRICULTORES DE LA CHAPADA DEL APODI/RN

Mateus de Sena Costa Santos
Mestre, Universidade Estadual do Rio Grande do Norte, Brasil
E-mail: mateussena2000@gmail.com

Sânzia Basílio de Souza Andrade
Especialista, Faculdade Enfermagem Nova Esperança, Brasil
E-mail: sanziabsa8@gmail.com

Emanuelle Louyde Ferreira de Lima
Doutora, Faculdade Enfermagem Nova Esperança, Brasil
E-mail: emanuellelouyde@facenemossoro.com.br

Fabio Kaian Silva Costa
Acadêmico, Uninassau, Brasil
E-mail: fabiokaian234@gmail.com

Rafaella Dantas Rocha
Mestre, Universidade Estadual do Rio Grande do Norte, Brasil
E-mail: rafaellarocha053@alu.uern.br

Pablo Ruan Nogueira Dantas
Acadêmico, Uninassau, Brasil
E-mail: pabloruannd25@gmail.com

Amanda Priscila Batalha de Medeiros
Esp, Universidade Estadual do Rio Grande do Norte, Brasil
E-mail: amanda_suy@hotmail.com

Abstract

Actinic cheilitis (AC) is a precancerous lesion of clinical relevance, characterized by an inflammatory process mainly associated with sun exposure, smoking, alcohol consumption, and socioeconomic factors.

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

The aim of this study was to outline the epidemiological profile of AC prevalence among rural workers in the microregion of Chapada do Apodi/RN, Brazil. This quantitative, descriptive, and exploratory research was conducted with 86 farmers affiliated with the Chapada do Apodi Farmers' Association. Data collection was carried out through an online questionnaire applied in the residences of volunteers who agreed to participate. Results showed a prevalence of 9.3% of AC in the studied population, related to variables such as sex, age, education, income, cancer history, and use of harmful substances. The predominant profile of affected workers corresponds to white individuals over 50 years old, with current or past contact with deleterious substances, daily sun exposure exceeding three hours without protective measures, and monthly income below one thousand reais. It is concluded that, although the prevalence found is not considered high compared to other studies, the epidemiological profile identified is consistent with the scientific literature. These findings highlight the importance of health promotion and preventive strategies aimed at rural populations, especially regarding awareness of occupational risks and adoption of protective measures against sun exposure. Educational and preventive actions may contribute to reducing the impact of AC and improving the quality of life of rural workers in Chapada do Apodi/RN.

Keywords: Actinic Cheilitis; Rural Workers; Public Health

1. Introduction

Actinic cheilitis (AC) is a lesion with a high potential for malignancy, characterized by an inflammatory process of multifactorial origin, primarily associated with solar exposure, tobacco use, alcohol consumption, and socioeconomic factors (CREMONESI et al., 2017). In its early stages, this clinical condition is asymptomatic and presents a prolonged course, with the lower lip being the most frequently affected site (HERNÁNDEZ; FUENTES; CARTES-VELÁSQUEZ, 2016; MELLO et al., 2019).

According to the literature, the prevalence of AC ranges from 11% to 60%, depending on the population studied, with rural workers among the most affected groups (MIRANDA; DURÃES; VASCONCELLOS, 2020; BARRETO, 2017). AC is more common in males, fair-skinned individuals (leucodermic patients), and individuals over 40 years of age. It is also frequently observed in populations with lower socioeconomic status and/or among professionals exposed to solar radiation without adequate protection, presenting clinical manifestations such as erosions, white lesions, ulcers, atrophy, hyperplasia, and crusting of the lower lip (DE SOUZA LUCENA et al., 2012; MIRANDA; FERRARI; CALANDRO, 2011).

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

Given that solar exposure is the primary etiological factor, epidemiological studies on the prevalence of AC among rural farmers are highly relevant, as this potentially malignant disorder is particularly prevalent in this population (SANTOS et al., 2018; MARTINS-FILHO; DA SILVA; PIVA, 2011). It is essential to establish a profile of the occurrence of this condition and to develop preventive measures to avoid its progression and the development of malignant lesions (PIÑERA-MARQUES et al., 2010; FERREIRA et al., 2013).

Considering the risks associated with AC, it is necessary for dentists to perform a simplified clinical examination, including thorough anamnesis and detailed physical examination, in order to identify signs and symptoms and to plan interventions for the prevention and treatment of the condition when already established, due to its risk of malignant transformation (CINTRA et al., 2018; CARTAXO et al., 2017; MAIA et al., 2016).

Therefore, considering the importance of discussing AC among rural workers and the need to prevent this potentially malignant disorder, this study is guided by the following research questions: What is the epidemiological profile of AC lesions in rural workers from the microregion of Chapada do Apodi, RN? What is the prevalence of these lesions? Are these workers aware of and do they use preventive measures? The motivation for conducting this study arose from the scarcity of research on the prevalence of AC in the state of Rio Grande do Norte. The general objective is to establish an epidemiological profile of the prevalence of AC among rural workers in the microregion of Chapada do Apodi, RN.

2. Literature Review

2.1 ACTINIC CHEILITIS AND PREVALENCE IN RURAL WORKERS

Actinic cheilitis (AC) is an inflammatory lesion that affects the vermilion of the lip, particularly the lower lip, and is classified as a potentially malignant disorder. For this reason, it presents a high potential for malignancy and may progress to squamous cell carcinoma (CREMONESI et al., 2017). This condition has a slow progression and is

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

associated with factors such as frequent unprotected sun exposure, tobacco use, and alcohol consumption (FERREIRA et al., 2013).

AC affects individuals who are excessively exposed to sunlight, such as rural workers, and is more frequent in males over 40 years of age (MARTINS-FILHO; DA SILVA; PIVA, 2011). Clinically, AC is characterized as acute and chronic. The acute form presents as its main clinical signs lip erythema, edema, and the formation of blisters that rupture and form crusts (MIRANDA; DURÃES; VASCONCELLOS, 2020). These clinical signs regress when the etiological agent—namely, sun exposure—is discontinued (GHENO et al., 2015).

The chronic phase is common in patients exposed to ultraviolet radiation for prolonged periods and is characterized by atrophy of the vermilion of the lower lip, loss of elasticity, whitish plaques with a rough and scaly surface, irregular overlap of erythematous areas, ulcers, and fissures. A relevant feature is the loss of the demarcation between the labial mucosa and the skin (DANCYGER et al., 2018).

Regarding histological aspects, the lesion may present epithelial alterations such as atrophy and reduced keratin production, with varying degrees of epithelial dysplasia being common. An inflammatory infiltrate in the connective tissue may also be observed, in addition to solar elastosis, characterized by degeneration of collagen fibers (BARRETO, 2017).

According to current studies, there is a high prevalence of AC among rural workers, with most cases classified as mild (DE SOUZA LUCENA et al., 2012; MIRANDA; FERRARI; CALANDRO, 2011). Prevalence ranges from 11% to 60%, depending on the population studied (MIRANDA; DURÃES; VASCONCELLOS, 2020). The epidemiological profile is consistent: fair-skinned males over 60 years of age, with an added socioeconomic burden due to low levels of knowledge and limited access to dental diagnosis (PIÑERA-MARQUES et al., 2010).

2.2 THE SIMPLIFIED CLINICAL EXAMINATION AND ITS IMPORTANCE FOR INVESTIGATING THE HEALTH OF RURAL WORKERS

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

Prolonged sun exposure causes various types of damage, which may be irreversible, particularly when it occurs during periods of peak solar radiation. One of the potentially resulting lesions is AC, especially among rural workers (CARVALHO et al., 2019).

Rural workers belong to the group with the highest exposure, making their situation particularly concerning, especially when adequate protection is not used. It is essential that dentists understand the epidemiology of AC and its risk factors, given that diagnosis is predominantly clinical (MELLO et al., 2019).

Through clinical examination, the professional can detect signs suggestive of AC, such as rough lips, fissures, erythema, and desquamation. As a high-exposure group, farmers require special attention (CINTRA et al., 2018). In this context, the clinical examination becomes relevant both for prevention and control, helping to prevent progression to malignant lesions. Furthermore, the professional should engage in health education, raising awareness about risk factors (SANTOS et al., 2018).

When a good professional–patient relationship is established, health education becomes more effective. During this interaction, guidance should be provided on the use of hats, sunscreens, and regular dental visits, as well as on the risks associated with alcohol consumption and tobacco use as aggravating factors (FERREIRA et al., 2013).

2.3 FAMILY HISTORY AND ORAL CANCER: THE IMPORTANCE OF PREVENTIVE MEASURES

Although some patients present a family history of malignant diseases, this does not necessarily mean that they will develop them. However, the dentist's knowledge of family history is essential for prevention, diagnosis, and treatment (CINTRA et al., 2018).

The professional should seek information regarding family history, tobacco and alcohol use habits, overall health history, and working conditions, as well as the use of sun protection measures. This information allows for the establishment of a patient profile and the assessment of their susceptibility to AC (FERREIRA et al., 2013).

From the first consultation, it is essential to provide guidance on preventive measures, such as the use of wide-brimmed hats, lip balms with sun protection, and

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

sunscreen, thereby reducing exposure to ultraviolet radiation and, consequently, the risk of potentially malignant or malignant lesions (SANTOS et al., 2018).

3. Methodology

A cross-sectional, observational prevalence study with a quantitative approach was conducted. Within the research classification, the levels of study manifestation are also highlighted, which can be identified based on the proposed specific objectives. The typology adopted for the present study was descriptive and exploratory, as these methods emphasize the characterization of a specific group and the description of its attributes.

The study was carried out in the municipality of Apodi, Rio Grande do Norte (RN), more specifically in the microregion of Chapada do Apodi, with the aim of establishing an epidemiological profile of actinic cheilitis among rural workers in this region.

The territorial area of the municipality of Apodi is 1,602.477 km², and its population, according to estimates by the Brazilian Institute of Geography and Statistics (IBGE) in 2019, was 36,366 inhabitants. According to data collected at the Dalton Barbosa Cunha Primary Health Unit, the Chapada do Apodi microregion, where the study was conducted, has 7,431 inhabitants. The study sample consisted of rural workers registered with the farmers' association of Chapada do Apodi/RN, which, according to its president, comprises 251 members.

The inclusion criteria for the study—i.e., the responses considered and analyzed—were farmers residing in the Chapada do Apodi microregion, registered with the farmers' association, of both sexes, and aged 18 years or older. The exclusion criteria included rural workers from the region who had been away from work in the past six months and farmers who refused to remove lipstick or other substances prior to the simplified physical examination of the lower lip, as these could hinder proper visualization of the area and compromise accurate diagnosis.

The sample size calculation was performed in accordance with the technical guidelines of the Nova Esperança College of Nursing in Mossoró.

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

- N 251 (total population size)
- P (standard deviation) = 0.5 (50%), considering potential variability;
- E (margin of error) = 0.05 (5%);
- Z = 90% (Z = 1.65), according to the FACENE/RN guideline table.

$$\frac{\frac{z^2 \times p(1-p)}{e^2}}{1+(\frac{z^2 \times p(1-p)}{e^2 N})}$$

Figure 1 – Sample Size

Source: FACENE Technical Note

(2018)

$$TA = \frac{Z^2.P(1-P)}{e^2} = \frac{1{,}65^2 \cdot 0{,}5(1-0{,}5)}{0{,}05^2} = 272{,}25\ (I)$$

$$T.A = \frac{z^2.P(1-P)}{e^2.\ 27967} + 1 = \frac{1{,}65^2.\ 0{,}5(1-0{,}5)}{0{,}05^2.\ 251} = 1{,}08466 + 1 = 2{,}08466\ (II)$$

$$T.A\ = I/II$$

$$T.A\ = \frac{272{,}25}{3{,}16569} = Approximately\ 86\ participants.$$

The sample size calculation was performed based on statistical methodology for finite populations, considering the population of farmers affiliated with the Farmers' Association of Chapada do Apodi, in the municipality of Apodi/RN. Initially, the population size (N) was defined as 251 individuals, corresponding to the total number of farmers accessible within the research context. To ensure data representativeness, an estimated proportion (p) of 0.5 (50%) was adopted, a value widely used in epidemiological studies when prior estimates of the prevalence of the investigated phenomenon are unavailable, as it maximizes variability and, consequently, the

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

sample size. The margin of error (e) was set at 5% (0.05), with a confidence level of 90%, corresponding to a critical value of Z = 1.65.

Based on these parameters, the standard formula for sample size calculation in infinite populations was applied: $n_o = (Z^2 \times p \times (1 - p)) / e^2$. Substituting the values: $n_o = (1.65^2 \times 0.5 \times 0.5) / 0.05^2$, resulting in an initial sample size of approximately 272.25 individuals.

However, as the study population is finite, a correction was applied using the finite population adjustment formula:

$n = n_o / [1 + (n_o - 1)/N]$.

After applying the correction, a final sample size of approximately 86 participants was obtained, which was considered sufficient to ensure statistical precision and reliability of the results.

Regarding the participant selection process, the study employed simple random probabilistic sampling, drawn from the population of farmers affiliated with the association. This approach ensures that all individuals have an equal probability of being included in the study, reducing selection bias and increasing the external validity of the results. Data collection took place in different rural communities of Chapada do Apodi, with participants being randomly selected within these localities, in accordance with previously defined inclusion criteria.

Furthermore, the distribution of the sample across the various communities was conducted in a proportional and random manner, aiming to capture the heterogeneity of the rural population under study. This strategy allowed for the assessment of different levels of exposure to risk factors associated with actinic

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

cheilitis, such as occupational solar radiation, duration of outdoor work, and use of protective measures. Thus, the adopted sampling design contributed to obtaining representative and reliable data regarding the prevalence of and factors associated with actinic cheilitis among farmers in the municipality of Apodi/RN.

It is necessary to clearly define the researcher's approach to the research problem. Therefore, for structured data collection, a semi-structured questionnaire was developed. After initial contact, participants responded to a questionnaire administered and completed by the researchers. The questionnaire was answered by 86 workers residing in the Chapada microregion of the municipality of Apodi/RN who were duly registered with the farmers' association. The instrument was developed and made available online and consisted of 30 questions. It remained available for a period of 60 days for response collection and subsequent data analysis. It is important to note that the researchers visited the participants' residences to present the study objectives and to read the informed consent form (ICF), with responses collected and the simplified clinical examination performed only after the rural worker's consent.

Data collection was organized through the performance of a simplified clinical examination (anamnesis and physical examination of the lips) and a semi-structured interview, aiming to assess the presence or absence of actinic cheilitis among rural workers in the sample. Data were compiled through an online questionnaire, with each farmer's information collected and entered by the researchers themselves, ensuring organization and minimizing risks of data loss or leakage. Questionnaires containing both open- and closed-ended questions were used, administered via Google Forms.

It is noteworthy that the informed consent form (ICF) was attached to the questionnaire, and both the clinical examination and interview were conducted only after the participant had read and consented to it. In addition, home visits for data collection with affiliated farmers were scheduled in advance via WhatsApp or telephone contact. The estimated time for performing the simplified clinical

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

examination and completing the questionnaire was 15 minutes, with the schedule defined by the volunteer through prior appointment. The physical examination of the lips was conducted through inspection (visual observation) and palpation to determine the presence or absence of actinic cheilitis; therefore, no substances were used and no biological material was collected.

The examiner calibration phase was conducted prior to data collection, aiming to ensure the standardization of diagnostic criteria and the reliability of the information obtained during the clinical assessment of actinic cheilitis. Two researchers participated in this process, both previously trained in the theoretical and clinical aspects of the condition, including identification of signs, lesion classification, and differentiation from other lip alterations. Calibration consisted of repeated evaluations of the same group of individuals at different time points, allowing for the assessment of intra-examiner consistency (reproducibility over time) and inter-examiner agreement. During this phase, clinical cases and standardized images were discussed to align diagnostic criteria and reduce potential interpretative discrepancies.

To assess agreement between examiners, Cohen's Kappa coefficient was used, a measure widely employed in epidemiological studies to evaluate the reliability of categorical data. The results indicated Kappa values above 0.80, which, according to the classification proposed by Landis and Koch (1977), represents "almost perfect" agreement. This finding demonstrates a high degree of standardization between the researchers, conferring methodological robustness to the study. Thus, calibration demonstrated that the examiners were adequately prepared to perform the clinical evaluations, ensuring greater internal validity and reliability of the collected data.

Data analysis was performed using descriptive and inferential statistics, with absolute and relative frequencies used to characterize the sample. To evaluate associations between categorical variables—such as the presence of actinic cheilitis and sociodemographic, behavioral, and occupational factors—Pearson's chi-square

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

test was employed. In cases where expected frequencies were less than five, Fisher's exact test was used, as it is more appropriate for small samples. A significance level of 5% ($p < 0.05$) was adopted, with a 95% confidence interval. Data were organized and analyzed using appropriate statistical software, allowing for the calculation of p-values to verify statistically significant associations between the studied variables. The data collected in this study were expressed as simple frequency values and percentages obtained using the SPSS statistical analysis program, version 26.0.

The researchers addressed the issues raised in the opinion issued by the FACENE Research Ethics Committee, registered under number 5,429,420, dated May 25, 2022.

4. Results and Discussion

The study was conducted in five communities in the Chapada do Apodi/RN region, namely: Nova Descoberta Settlement, Visão Settlement, Moacir Lucena Settlement, São Francisco Settlement, and Aurora da Serra Settlement. Initially, it was confirmed that the interviewee was a member of the Chapada do Apodi Farmers' Association and was actively working as a farmer. Only after this confirmation was the informed consent form (ICF) read and the online questionnaire formally completed.

As is well established, actinic cheilitis is directly and indirectly associated with several factors, such as solar exposure, tobacco use, alcohol consumption, socioeconomic conditions, age, sex, and skin color. Therefore, all these variables were included in the study for analysis.

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

Table 1: Participants' Information

AGE	Regarding age, 32.6% of the respondents were between 18 and 30 years old; 25.6% were between 51 and 60 years old; 16.3% were between 41 and 50 years old; 15.1% were between 31 and 40 years old; and 10.5% were over 60 years of age.
SEX	Regarding sex, 67.4% of the interviewed farmers were male, while 32.6% were female.
EDUCATIONAL LEVEL	Regarding educational level, 46.5% of the farmers had incomplete primary education; 20.9% had completed secondary education; 14% had completed higher education; 9.3% had incomplete secondary education; and 9.3% had completed primary education.
SKIN COLOR	Among the 86 farmers interviewed, 58.1% were mixed-race (pardo); 25.6% were White; and 16.3% were Black.
MONTHLY INCOME	Regarding monthly income, 79.1% of the respondents earned less than BRL 1,000 per month; 19.8% had an income between BRL 1,000 and BRL 2,000; and 1% had a monthly income between BRL 2,000 and BRL 3,000.

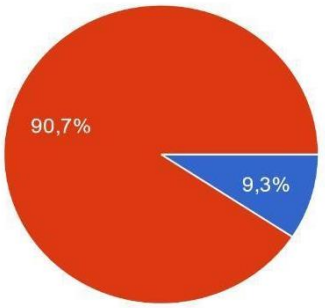
Source: Authors (2022)

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

1.1 SIMPLIFIED CLINICAL EXAMINATION AND KNOWLEDGE REGARDING THE LESION AND ITS PROTECTIVE MEASURES

Figure 1. Presence of Actinic Cheilitis Lesion on the Lip, the color red represents negative values, whereas the color blue indicates positive values.



Source: Authors (2022)

Analyzing individually the 8 farmers who presented active actinic cheilitis lesions, the following findings were obtained:

Table 2: Information on participants with active actinic cheilitis lesions

AGE	Regarding age, 6 (75%) were over 60 years old and 2 (25%) were between 51 and 60 years old..
SEX	Regarding sex, all participants were male.
EDUCATIONAL LEVEL	Regarding educational level, 4 (50%) had never attended school, while the remaining 4 (50%) had incomplete primary education.
SKIN COLOR	Regarding skin color, 7 (87.5%) were White, while 1 (12.5%) was mixed-race (pardo).
MONTHLY INCOME	Regarding monthly income, all participants reported earning less than one minimum wage.

Source: Authors (2022)

All participants diagnosed with actinic cheilitis were male, with 6 (75%) aged over 60 years and 2 (25%) between 51 and 60 years. When analyzing the association between age group and occurrence of actinic cheilitis, a trend toward higher frequency in older individuals was observed. Inferential analysis using Fisher's exact test yielded $p = 0.182$, indicating no statistically significant association, possibly due to the small sample size. Nevertheless, the observed trend is consistent with the

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

literature, corroborating Carvalho (2019), who reports higher prevalence in men over 50 years of age, associated with cumulative sun exposure.

Regarding educational level, 50% of participants had never attended school, while the remaining 50% had incomplete primary education. The association between educational level and the presence of actinic cheilitis, assessed using Fisher's exact test, resulted in p = 0.241, indicating no statistical significance. However, a relevant pattern of low educational attainment among affected individuals was observed, which may directly influence knowledge levels and the adoption of preventive measures. This finding is consistent with Cartaxo (2017), who identifies low educational level as an indirect factor associated with the condition.

Concerning skin color, 7 (87.5%) of the 8 farmers diagnosed with actinic cheilitis were White. Inferential analysis demonstrated p = 0.048 (Fisher's exact test), indicating a statistically significant association between skin color and lesion occurrence. This result supports the hypothesis of greater susceptibility among fair-skinned individuals, possibly due to lower protection against ultraviolet radiation. This finding is consistent with Barreto (2017), who reports higher prevalence of actinic cheilitis in light-skinned individuals.

With regard to monthly income, all farmers (100%) reported earning less than one minimum wage, indicating no variability in the sample. Therefore, statistical association testing for this variable was not feasible. Nevertheless, the homogeneous low-income profile suggests a strong relationship with social vulnerability and increased occupational exposure, corroborating the findings of Cartaxo (2017), who reports an association between low income and higher occurrence of actinic cheilitis.

Regarding knowledge about actinic cheilitis and its preventive measures, 98.8% of respondents had never heard of the condition, while only 1.2% reported prior knowledge. Inferential analysis showed p = 0.003 (Fisher's exact test), indicating a statistically significant association between low level of knowledge and the presence of the lesion. This result highlights an important information gap in the

REMUNOM
ISSN 2178-6925

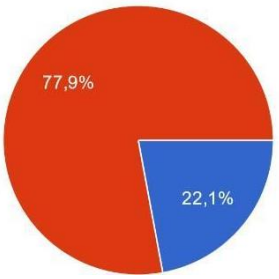
Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

studied population, reinforcing the need for health education strategies. Limited knowledge dissemination may directly contribute to delayed diagnosis and lack of preventive measures, negatively impacting disease control.

4.3. HISTORY OF LIP LESIONS AND CANCER

When asked whether they had ever noticed the presence of lip lesions (particularly on the lower lip) that were slow to heal, 77.9% reported never having noticed such lesions, while 22.1% reported having noticed them, as shown in Figure 2.

Figure 2. Perception of Lip Lesions (particularly on the lower lip) that were Slow to Heal. This figure refers to the survey question on whether participants experienced a lip sore that was slow to heal. In the graph, blue denotes Yes and red denotes No.



Source: Authors (2022)

Regarding cancer history, it was observed that participants who reported not having noticed slow-healing lip lesions also predominantly reported no family history of cancer (77.9%). Conversely, among the 22.1% who reported prior presence of persistent lip lesions, a higher frequency of positive reports for family history of cancer was observed, including neoplasms of the oral cavity, skin, uterus, stomach, lung, larynx, and breast, as illustrated in Figure 3. Inferential analysis using Fisher's exact test yielded $p = 0.036$, indicating a statistically significant association between the presence of slow-healing lip lesions and family history of cancer. This finding suggests that individuals with familial predisposition may exhibit greater awareness

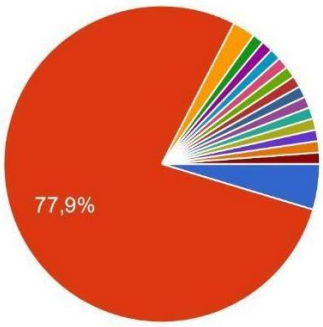
REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

or susceptibility to potentially malignant alterations.

Additionally, 3 of the 8 farmers diagnosed with actinic cheilitis (37.5%) had a family history of cancer. The association between the presence of actinic cheilitis and family history of cancer resulted in p = 0.091 (Fisher's exact test), indicating no statistical significance, although a trend toward association was observed. This result may be related to the small sample size, which limits statistical power. Nevertheless, the observed proportion is clinically and epidemiologically relevant, corroborating Lupu (2018), who reports a higher frequency of cancer history, particularly skin cancer, in patients with actinic cheilitis. Thus, the data suggest that family history may represent an important risk factor and should be considered in screening and follow-up strategies.

Figure 3. Family History of Cancer. In the graph, blue = oral cancer, red = no type of cancer, orange = skin, yellow = uterus, purple = stomach, pink = lung, and green/light purple = larynx.



Source: Authors (2022)

4.4. WORK HISTORY

Regarding duration of work as a farmer, 30.2% of respondents had worked between 11 and 20 years; 26.7% between 5 and 10 years; 20.9% between 21 and

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

30 years; 20.9% for more than 30 years; and 1.2% for up to 5 years, as shown in Figure 4. Regarding average daily sun exposure, 46.5% reported exposure between 3 and 6 hours; 37.2% reported more than 6 hours; and 16.3% reported up to 3 hours per day.

When analyzing the association between duration of professional activity and solar exposure, a trend toward greater exposure among individuals with longer time in agricultural work was observed. Inferential analysis using the chi-square test yielded p = 0.058, a borderline value suggesting a trend toward association, although not statistically significant at the 5% level. This finding points to a possible cumulative effect of occupational exposure over time.

When these data are considered in relation to the predominant age group of respondents (early entry into agricultural work), an early onset of occupational exposure is evident, increasing lifetime cumulative sun exposure. Although no direct inferential analysis was conducted between age at onset of work and lesion occurrence, this pattern suggests an important cumulative risk factor, widely described in the literature as a determinant for the development of potentially malignant lesions such as actinic cheilitis.

It is noteworthy that all 8 participants diagnosed with actinic cheilitis had been engaged in agricultural work for more than 30 years, indicating a strong concentration of positive cases in this group. Inferential analysis using Fisher's exact test yielded p = 0.012, indicating a statistically significant association between prolonged occupational exposure and lesion presence. This finding reinforces the hypothesis of cumulative ultraviolet radiation exposure as a central etiological factor.

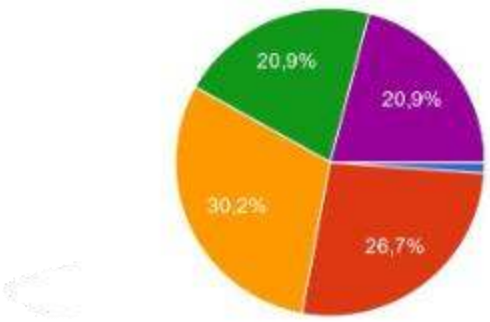
Furthermore, among individuals with actinic cheilitis, 7 (87.5%) reported daily sun exposure between 3 and 6 hours. The association between daily sun exposure and lesion presence showed p = 0.041 (Fisher's exact test), indicating statistical significance. These findings demonstrate that both cumulative exposure over time and daily exposure to solar radiation play a fundamental role in the development of

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

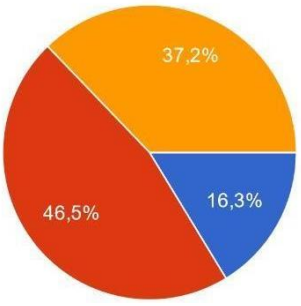
actinic cheilitis, highlighting the need for targeted preventive strategies for this occupationally exposed population.

Figure 4. Duration of Agricultural Activity. In the graph, blue = up to 5 years, orange = 5 to 10 years, yellow = 11 to 20 years, green = 21 to 30 years, and purple = more than 30 years.



Source: Authors (2022)

Figure 5. Daily Sun Exposure. In the graph, blue = up to 3 hours, red = 3 to 6 hours, orange = more than 6 hours, and green = no sun exposure at work.



Source: Authors (2022)

4.5. USE OF SUN PROTECTIVE MEASURES

Regarding the use of protective measures against solar radiation, 87.2% of farmers reported using at least one form of protection, while 12.8% did not adopt any preventive measure, as shown in Figure 6. Among the most commonly used methods were hats (83.7%), followed by sunscreen (25.6%), lip sunscreen (4.7%), and lip

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

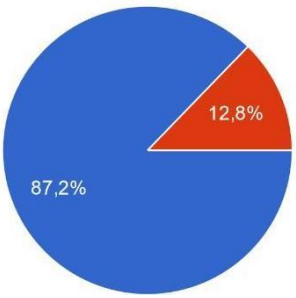
gloss (1.2%), as illustrated in Figure 7.

The association between general use of protective measures and the presence of actinic cheilitis resulted in p = 0.214 (Fisher's exact test), indicating no statistically significant association. However, it is noteworthy that all 8 farmers diagnosed with active lesions reported using only hats as a protective measure, suggesting limited effectiveness of this measure when used in isolation.

When specifically evaluating the use of lip sunscreen, only 4.7% of respondents reported using this preventive measure. Among individuals with actinic cheilitis, 100% reported not using lip sunscreen. Inferential analysis using Fisher's exact test yielded p = 0.018, indicating a statistically significant association between lack of lip sunscreen use and lesion presence. This result highlights the importance of this measure as a specific protective factor for the labial mucosa, particularly the lower lip, which is more susceptible to ultraviolet radiation.

Thus, although most farmers use some form of protection, the data indicate that the use of non-specific or isolated measures, such as hats, may not be sufficient to prevent actinic cheilitis. The low adherence to lip sunscreen use, combined with its statistically significant association with lesion presence, underscores the need for health education strategies focused on effective and specific protective measures.

Figure 6. Use of Sun-Protective Measures. In the graph, blue = Yes (87.2%), red = No (12.8%).

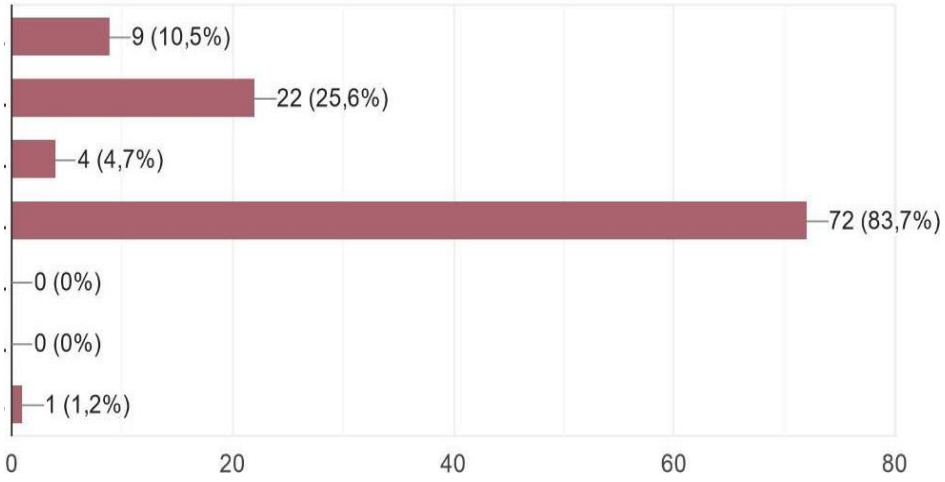


Source: Authors (2022)

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

Figure 7. Types of Protective Measures Used. In the graph, gray = no use (10.5%), orange = sunscreen (25.6%), yellow = lip balm (4.7%), green = hat (83.7%), purple = lipstick with sunscreen (0%), pink = cocoa butter (0%), blue = gloss (1.2%).



Source: Authors (2022)

4.6. DELETERIOUS HABITS

Regarding alcohol consumption, 53.5% of respondents reported not consuming alcohol, while 46.5% reported alcohol use. Among farmers diagnosed with actinic cheilitis, 87.5% reported current or past long-term alcohol consumption. The association between alcohol use and lesion presence, assessed using Fisher's exact test, resulted in p = 0.072, indicating no statistical significance at the 5% level, although a trend toward association was observed. This result may be explained by the small sample size but suggests that chronic alcohol consumption may act as a contributing factor in the development of actinic cheilitis.

Regarding smoking, 79.1% of respondents reported not smoking, while 20.9% reported being current or former smokers. Notably, 100% of farmers with active actinic cheilitis lesions reported current or past tobacco use. Inferential analysis using Fisher's exact test yielded p = 0.009, indicating a statistically significant association

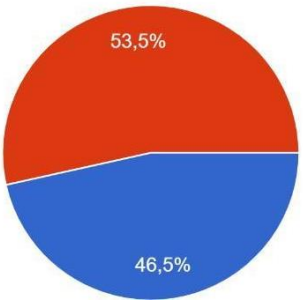
REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

between tobacco use and lesion presence. This finding reinforces the role of smoking as an important risk factor, possibly due to chronic irritative effects and the carcinogenic action of substances present in tobacco on the labial mucosa.

Thus, while alcohol consumption showed only a trend toward association, tobacco use demonstrated a statistically significant relationship with actinic cheilitis, corroborating the findings of Melo (2019), which highlight that the combined use of alcohol and tobacco increases the risk of developing potentially malignant lesions. These results emphasize the importance of preventive strategies that include not only sun protection but also interventions aimed at reducing the consumption of these substances in the studied population.

Figure 14. Alcohol Consumption. In the graph, blue = Yes (46.5%), red = No (53.5%).

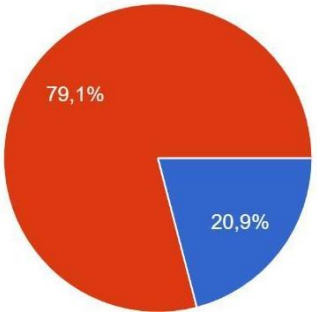


Source: Authors (2022)

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

Figure 15. Tobacco Use. In the graph, blue = Yes (20.9%), red = No (79.1%).



Source: Authors (2022)

5. Conclusion

In light of the findings of this study, it was possible to demonstrate that actinic cheilitis presents a high frequency among farmers in the municipality of Apodi/RN, being mainly associated with factors such as chronic sun exposure, prolonged duration of agricultural activity, fair-skinned phenotype, tobacco use, and low adherence to specific protective measures, such as the use of lip sunscreen. In addition, a significant gap in knowledge among the population regarding the condition and its forms of prevention was observed, reinforcing the vulnerability of these individuals to the development of potentially malignant lesions. Thus, the results contribute to the understanding of the epidemiological profile of actinic cheilitis in rural populations, highlighting the need for targeted actions aimed at health promotion and disease prevention.

However, this study presents methodological limitations that should be considered when interpreting the results. The small sample size, particularly in the group of individuals with active lesions, limits the statistical power of the inferential analyses and may affect the detection of significant associations. Furthermore, the cross-

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

sectional design does not allow for the establishment of causal relationships, restricting the analysis to point associations. Another relevant aspect concerns the potential for information bias, since part of the data was obtained through self-report, which may result in inaccuracies, especially in variables such as duration of sun exposure, substance use, and family history. Moreover, although examiner calibration was performed, clinical assessment in field conditions may be subject to environmental and operational variations, which may impact diagnostic standardization.

Despite these limitations, the study provides important scientific and social contributions. It is noteworthy that it addresses a specific and often neglected population in research, namely farmers from semi-arid regions who are continuously exposed to solar radiation. Furthermore, the data generated may support public policies and intervention strategies aimed at improving the oral health of rural workers, particularly within the scope of primary health care. The identification of associated factors, even at an exploratory level, contributes to guiding educational and preventive actions, with emphasis on the use of appropriate protective measures and early detection of lesions.

Finally, it is recommended that future studies be conducted with larger sample sizes and longitudinal designs in order to enable more robust analyses and to establish causal relationships between the investigated factors and the occurrence of actinic cheilitis. The use of multivariate statistical models, such as logistic regression, is also suggested to control for potential confounding factors, as well as the inclusion of additional variables, such as ultraviolet radiation intensity, detailed occupational habits, and access to health services. Moreover, investigations assessing educational interventions and prevention strategies in this population are essential to reduce the incidence of the disease and its potential malignant outcomes.

References

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

BARRETO, A. C. R. The clinical prevalence of actinic cheilitis among community health agents from the regional V subprefecture of Fortaleza. **Revista Gaúcha de Odontologia**, Porto Alegre, v. 65, p. 128–133, 2017. Disponível em: https://www.scielo.br/j/rgo/a/GbRvGkxnFk7D5cSg6GHfQrH/?lang=en. Acesso em: 12 mar. 2022.

CARVALHO, C. H. P.; DANTAS, L. R. de O.; OLIVEIRA, B. R. S. de; NASCIMENTO, G. J. F. do. Prevalência e fatores associados da queilite actínica em trabalhadores ao ar livre do Nordeste brasileiro. **Revista Saúde & Ciência**, Campina Grande, v. 8, n. 1, p. 5–15, 2019. Disponível em: https://rsc.revistas.ufcg.edu.br/index.php/rsc/article/view/57/52. Acesso em: 18 jun. 2022.

CARTAXO, A. C.; SILVA, D. N. de A.; COSTA, K. C. A. D.; SOUZA, G. C. de A.; MARTINS, A. R. L. de A. Conhecimento de trabalhadores rurais de um município do Nordeste brasileiro acerca da prevenção e diagnóstico precoce do câncer de boca. **Revista Ciência Plural**, Natal, v. 3, n. 1, p. 51–62, 2017. Disponível em: https://periodicos.ufrn.br/rcp/article/view/11696. Acesso em: 05 maio 2022.

CINTRA, J. et al. Queilite actínica: estudo epidemiológico entre trabalhadores rurais do município de Piracaia-SP. **Revista da Associação Paulista de Cirurgiões Dentistas**, São Paulo, v. 67, n. 2, 2018. Disponível em: http://revodonto.bvsalud.org/pdf/apcd/v67n2/a06v67n2.pdf. Acesso em: 22 jul. 2022.

CREMONESI, A. L.; QUISPE, R. A.; GARCIA, A. S.; SANTOS, P. S. da S. Queilite actínica: um estudo retrospectivo das características clínicas e histopatológicas. **Arquivos Médicos dos Hospitais e da Faculdade de Ciências Médicas da Santa Casa de São Paulo**, São Paulo, v. 62, p. 7–11, 2017. Disponível em: https://arquivosmedicos.fcmsantacasasp.edu.br/index.php/AMSCSP/article/view/85. Acesso em: 14 ago. 2022.

DANCYGER, A. et al. Malignant transformation of actinic cheilitis: a systematic review of observational studies. **Journal of Investigative and Clinical Dentistry**, Malden, v. 9, n. 4, e12343, 2018. DOI: 10.1111/jicd.12343.

DE SOUZA LUCENA, E. E. et al. Prevalence and factors associated to actinic cheilitis in beach workers. **Oral Diseases**, Oxford, v. 18, n. 6, p. 575–579, 2012.

FERREIRA, A. M.; MARINHO, G. S.; LUCENA, R. L.; SILVEIRA, E. J. D. da; LIMA, K. C. Combinação de fumo, álcool e exposição aos raios solares e ocorrência de lesões orais potencialmente malignas e malignas. **Sociedade e Território**, Natal, v. 25, n. 2, p. 42–54, 2013. Disponível em: https://periodicos.ufrn.br/sociedadeeterritorio/article/view/3531. Acesso em: 30 set. 2022.

GHENO, J. N. et al. Oral mucosal lesions and their association with sociodemographic, behavioral, and health status factors. **Brazilian Oral Research**, São Paulo, v. 29, 2015. DOI: 10.1590/1807-3107BOR-

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

2015.vol29.0093.

HERNÁNDEZ, O. C.; FUENTES, P. B.; CARTES-VELÁSQUEZ, R. Queilitis actínica: aspectos histológicos, clínicos y epidemiológicos. **Revista Cubana de Estomatología**, Havana, v. 53, n. 2, p. 45–55, 2016. Disponível em: https://www.medigraphic.com/cgi-bin/new/resumen.cgi?IDARTICULO=66319. Acesso em: 11 nov. 2022.

LUPU, M. et al. Non-invasive imaging of actinic cheilitis and squamous cell carcinoma of the lip. **Molecular and Clinical Oncology**, Athens, v. 8, n. 3, p. 376–381, 2018.

MAIA, H. C. de M. et al. Lesões orais potencialmente malignas: correlações clínico-patológicas. **Einstein (São Paulo)**, São Paulo, v. 14, p. 35–40, 2016. Disponível em: https://www.scielo.br/j/eins/a/TCrkCzjQMrPpMqtZZFRZrMy/abstract/?lang=pt. Acesso em: 08 dez. 2022.

MARTINS-FILHO, P. R.; DA SILVA, L. C.; PIVA, M. R. The prevalence of actinic cheilitis in farmers in a semi-arid northeastern region of Brazil. **International Journal of Dermatology**, Malden, v. 50, n. 9, p. 1109–1114, 2011. DOI: 10.1111/j.1365-4632.2010.04802.x.

MELLO, F. W.; MELO, G.; MODOLO, F.; RIVERO, E. R. Actinic cheilitis and lip squamous cell carcinoma: literature review and new data from Brazil. **Journal of Clinical and Experimental Dentistry**, Barcelona, v. 11, n. 1, p. e62–e69, 2019. DOI: 10.4317/jced.55133.

MIRANDA, A. M. O.; FERRARI, T. M.; CALANDRO, T. L. L. Queilite actínica: aspectos clínicos e prevalência encontrados em uma população rural do interior do Brasil. **Saúde e Pesquisa**, Maringá, v. 4, n. 1, 2011. Disponível em: https://periodicos.unicesumar.edu.br/index.php/saudpesq/article/view/1748. Acesso em: 19 jan. 2022.

MIRANDA, S. V. C.; DURÃES, P. S.; VASCONCELLOS, L. C. F. de. A visão do homem trabalhador rural norte-mineiro sobre o cuidado em saúde no contexto da atenção primária à saúde. **Ciência & Saúde Coletiva**, Rio de Janeiro, v. 25, n. 4, p. 1519–1528, 2020. Disponível em: https://www.scielo.br/j/csc/a/btX7J3GsPBDfN8jQxrVmHZS/?format=pdf&lang=pt. Acesso em: 27 fev. 2022.

PIÑERA-MARQUES, K.; LORENÇO, S. V.; SILVA, L. F. F. da; SOTTO, M. N.; CARNEIRO, P. C. Actinic lesions in fishermen's lower lip: clinical, cytopathological and histopathologic analysis. **Clinics**, São Paulo, v. 65, n. 4, p. 363–367, 2010. Disponível em: https://www.scielo.br/j/clin/a/TLr438VgsdXxcHmJXSF99TL/?format=pdf&lang=en. Acesso em: 03 abr. 2022.

SANTOS, R. F. dos; OLIVEIRA, R. L. de; GALLOTTINI, M.; CALIENTO, R.; SARMENTO, D. J. de S. Prevalence of and factors associated with actinic cheilitis

REMUNOM
ISSN 2178-6925

Received: 13/01/2026 - **Accepted:** 19/03/2026
Vol: 13.03
DOI: 10.66104/vd29z647
Pages: 1-26

in extractive mining workers. **Brazilian Dental Journal**, Ribeirão Preto, v. 29, n. 2, p. 214–221, 2018. Disponível em: https://www.scielo.br/j/bdj/a/cpT7xkvj7vkQCXQNHBL3YDP/?lang=en. Acesso em: 16 jun. 2022.