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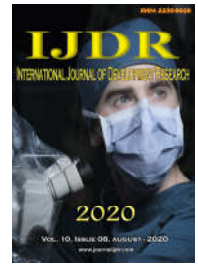
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EPIDEMIOLOGICAL AND SOCIODEMOGRAPHIC PROFILE OF NON-MELANOMA SKIN CANCER IN A STATE OF THE BRAZILIAN AMAZON

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ABSTRACT

Objective: to analyze the epidemiological and sociodemographic profile of non-melanoma skin cancer in the state of Rondônia, Brazilian Amazon. **Materials and Methods:** the methodological design followed the characteristics of a cross-sectional and descriptive study, based on the raw data produced and sectorized, according to the methodological model recommended by Paraguassu-Chaves et al [15]. We used a semi-structured instrument developed by Paraguassu-Chaves et al [16], composed of 2 blocks of factors and their equivalent variables. **Block I - Variables:** sex; age group; ethnicity / color; Education Level; work activity; Marital status; family history of cancer; alcoholism and smoking; place of birth and origin of the municipality; exposure to solar radiation. **Block II - Variables:** type of tumor; entry clinic; diagnosis time and 1st treatment; type of 1st treatment; patient's situation after the first treatment; cancer death. The research project is in line with Resolution No. 196/96 of the National Health Council of Brazil. **Results:** The patients diagnosed with non-melanoma skin cancer in this study have the following sociodemographic characteristics: the male gender with 52.9% "versus" 355 new 47.1% in women represents the highest proportion of new cases of non-melanoma skin cancer; incidence rates increased rapidly after age 30, for both women and men; non-melanoma skin cancer diagnosed in brown women 64.3% and brown men 65.9%, are the most frequent; the level of education is very low; men and women working in agriculture represent 67.7% of the cases diagnosed with non-melanoma skin cancer, followed by those occupying professions in commerce, transport and other occupations with 30.5%; prevails in married patients, with an average of 69.9%; 27.9% of women with cancer have a family history of cancer and 24.6% of men link cancer to a family history of cancer; alcoholism is not a determining factor for non-melanoma skin cancer and the relative frequency of smokers is less than 10%; 5 (five) States are responsible for 67.6% of all new cases of non-melanoma skin cancer and 58.8% of new cases are concentrated in only 5 (five) municipalities in Rondônia. The municipality of Porto Velho alone accounts for 34.3% of new cases of non-melanoma skin cancer; 83% of men and 83% of women are exposed to UVR daily. The epidemiological profile has the following characteristics: basal cell carcinoma (BCC) predominates with 84.2% relative frequency. Squamous cell carcinoma corresponds to 15.8% of the relative frequency. The oncology clinic was responsible for 90.8% of patients with non-melanoma skin cancer. Another entry clinic was the dermatology clinic, where 9.2% of patients entered for diagnosis and treatment. The shortest waiting time between diagnosis and the first treatment was 3 days, the longest waiting time was 10 years and the average elapsed time was 14 months or 1 year and two months. Surgery with 72.5% of cases was the first treatment and therapeutic procedure received by women with non-melanoma skin cancer. In men, other isolated therapeutic procedures prevailed in 38.5% of cases, surgery comes in second place with 22.9%. After the 1st treatment, patients with stable disease account for 67.2%, followed by partial remission with 24.3% and progressing disease with 5.7%. Only 1.4% had complete remission of the disease. 1.8% of women and 4.6% of men diagnosed with non-melanoma skin cancer died of the disease. **Conclusions:** The findings of this research reaffirm the public health problem represented by non-melanoma skin cancer in the State of Rondônia, pointing to the urgent need for prevention, diagnosis and early treatment of the disease.

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INTRODUCTION

Skin cancer is the most common cancer in the world. The incidence of skin cancer has been increasing worldwide in recent decades, surpassing even breast, prostate and lung cancer, becoming a serious public health problem, since it interferes with the population's quality of life. Cancer is becoming an increasing problem for humanity, that is, a public health problem, where malignant skin neoplasms are the most common tumors acquired by humans in the course of their lives [1]. INCA National Cancer Institute of Brazil corroborates this situation by stating that the incidence of skin carcinomas (basal cell or squamous cell) exceeds the incidence of lung, breast, colon, rectum, prostate, bladder and all lymphomas combined. There are three types of skin cancer that are classified according to their order of severity: basal cell carcinoma (BCC) and squamous cell carcinoma (SCC), both called non-melanoma skin cancer (NSCLC) and malignant melanoma (MM) [2]. Of all the malignancies diagnosed in the world, non-melanoma skin cancer is the most common type in both sexes [3], [4]. In 2018, worldwide, 1.04 million (5.8%) of new cases of non-melanoma skin were estimated, with 640 thousand new cases in men (16.6 / 100 thousand) and 400 thousand new cases in women (10.7 / 100 thousand) [5]. As the skin - the largest organ in the human body - is heterogeneous, non-melanoma skin cancer can present tumors of different strains. The most frequent are basal cell carcinoma, responsible for 70% of diagnoses, and squamous cell or squamous cell carcinoma, representing 25% of non-melanoma skin cancer cases [6]. BCC is originated from non-keratinizing cells that form the basal layer of the epidermis, being the most common of neoplasms, having as main risk factor ultraviolet radiation (UVR), whereas BCC originates from keratinocytes, cells differentiated from the tissue epithelial and its developmental power is superior when compared to BCC. The main risk factor for CPB is chronic and excessive exposure to the sun, which usually occurs in photoexposed areas, has a cure rate of 95% when treated early [7]. Therefore, non-melanoma skin cancer can present two types of diagnosis. Basal cell carcinoma is diagnosed through an injury (wound or nodule), and has a slow evolution. Basal cell carcinoma, although more incident, is also the least aggressive. Squamous cell carcinoma also appears through a wound, however, it evolves quickly and is accompanied by secretion and itching. The greater severity of squamous cell carcinoma is due to the possibility of it presenting metastasis (spreading to other organs). BCC is locally invasive, aggressive and destructive, however its capacity to produce metastasis is limited, because the tumor growth depends on its stroma, vascularized connective tissue that nourishes and supports the development of the pathology, it consists of a solid tumor formed by atypical, proliferative, large and oval basal cells, with rare mitosis and anaplasia [8]. Invasive CPB appears in general in pre-cancerous epidermal lesions, its aggressiveness depends on its etiology and level of differentiation, so that lesions induced by exposure to ultraviolet radiation (UVR) have low rates of metastases, however the immunosuppressed have greater tendency in the development of metastasis in this type of carcinoma [8]. On this topic, the American Cancer Society [9] confirms that the main types of non-melanoma skin cancer are: squamous cell carcinoma; basal cell carcinoma - which are the majority of cases -; and melanoma skin cancer (which forms in melanocytes), which grows and spreads faster, although less common.

In Brazil, the number of new cases of non-melanoma skin cancer (NSCLC) expected, for each year of the 2020-2022 triennium, will be 83,770 in men and 93,160 in women, corresponding to an estimated risk of 80.12 cases new per 100,000 men and 86.65 new cases per 100,000 women [5]. Non-melanoma skin cancer in men is more prevalent in the South, Midwest and Southeast Regions, with an estimated risk of 123.67 / 100 thousand, 89.68 / 100 thousand and 85.55 / 100 thousand, respectively. In the Northeast and North Regions, it occupies the second position, with an estimated risk of 65.59 / 100 thousand and 21.28 / 100 thousand, respectively. With regard to women, non-melanoma skin cancer is more prevalent in all Brazilian regions, with an estimated risk of 125.13 / 100 thousand (Midwest Region), 100.85 / 100 thousand (Southeast Region), 98.49 / 100 thousand (South Region), 63.02 / 100 thousand (Northeast Region) and 39.24 / 100 thousand (North Region) [5]. As for melanoma skin cancer (CPM), the estimated number of new cases will be 4,200 in men and 4,250 in women. These values correspond to an estimated risk of 4.03 new cases for every 100 thousand men and 3.94 for every 100 thousand women. In the South Region, melanoma skin cancer is more prevalent when compared to the other Regions, for both sexes [5]. Skin cancer is more common in people over the age of 40, being relatively rare in children and in people with black skin, with the exception of those who already have previous skin diseases. People with fair skin, sensitive to the action of sunlight, or with previous skin diseases are the main victims.

Skin tumors are related to some risk factors, mainly exposure to the sun's ultraviolet rays. People who work under direct exposure to the sun are more vulnerable to non-melanoma skin cancer. These risk factors are confirmed by the American Cancer Society [9] and INCA [10]. The main risk factors for skin cancer are prolonged exposure to the sun (ultraviolet rays - UV), especially in childhood and adolescence, exposure to tanning beds and family history of skin cancer [9]. Other risk factors are exposure to chemical agents (arsenic) and ionizing radiation, a chronic irritating process (Marjolin's ulcer), genodermatoses (xeroderma pigmentosum, etc.). Ceballos et al [11] and Imanichi et al [12] claim that skin cancer, in addition to exposure to the sun, is associated with old age and fair skin, but early treatment can increase the chances of cure. Continuous exposure to sunlight is the main cause of skin cancer according to Imanichi et al [12], taking into account the exposed life span, skin burns, skin color and intermittent exposures, in addition, there are other factors such as skin color eyes and hair, genetics, contact with arsenic, diseases and immunosuppressive drugs are also considered risk factors. In addition, the geographical position in which Brazil is located is also considered a risk factor, mainly for non-melanoma cancer, since the country is located between the Equator and Capricorn line, making it a tropical country, with high incidence of solar radiation, and its population more predisposed to the development of skin cancer [12]. In Brazil, 1,301 deaths from non-melanoma skin cancer in men occurred in 2017. For melanoma skin cancer, there were 1,031 deaths in men, with a risk of 1.02 / 100 thousand and 804 deaths in women, with a risk of 0.78 / 100 thousand [13]. The estimates for the year 2020 of the gross incidence rate per 100 thousand inhabitants and the number of new cases of cancer, according to sex and primary location, correspond to TB (Gross Rate) 80.12 / 100 thousand in men and TB (Gross Rate) 86.65 / 100 thousand in women. In the Northern Region of Brazil, for the year 2020, an estimated incidence rate of 100 thousand inhabitants is 5,610

new cases of non-melanoma skin cancer, distributed in 2,010 new cases in men (TB 21.28 / 100 thousand) and 3,600 new cases in women (TB 39.24 / 100 thousand). According to INCA [5] estimates for the year 2020 of the gross incidence rate per 100 thousand inhabitants and the number of new cases of cancer, according to sex and primary location in Rondônia, non-melanoma skin cancer represents 990 cases new, distributed in 380 new cases in men (TB 40.08 / 100 thousand) and 610 new cases in women (TB 66.49 / 100 thousand).

According to INCA [5] in Rondônia, the 10 highest frequencies in men are non-melanoma skin cancer (380), new cases, prostate (310), bronchi and lungs (110), stomach (80), colon and rectum (60), oral cavity (50), esophagus (40), central nervous system (40), leukemia (40) and larynx (30) new cases. In women, the most frequent estimates are non-melanoma skin cancer (600) new cases, breast (220), cervix (130), bronchi and lungs (70), colon and rectum (70), stomach (40), ovary (30), central nervous system (30), leukemias (30) and thyroid gland (20) new cases. Therefore, non-melanoma skin cancer is the most common type of cancer in the state of Rondônia [5]. A study by Paraguassu-Chaves et al [14] corroborates that non-melanoma skin cancer is more prevalent in the population of the State of Rondônia. The state of Rondônia is located close to the equatorial imaginary line, at geographic coordinates 08° 45 '43 "S between lines 0 and 150 and is located beyond the Greenwich meridian as a longitudinal reference between the angles west of 60° and 90° and 63° 54 '14 "W, and because it is the area with the highest incidence of ultraviolet rays and sunlight, significantly increases the likelihood that the exposed population will contract non-melanoma skin cancer in this part of the Amazon region. Allied to this, the Region also receives a strong incidence of the wavelength of the spectrum of ultraviolet radiation in three bands: UVA (315-400nm), UVB (280-315nm) and UVC (100-280nm), responsible for direct DNA damage, photo-immunosuppression, erythema, thickening of the stratum corneum, melanogenesis and carcinogens respectively. The incidence of UVA rays is independent of the ozone layer and, therefore, causes skin cancer in individuals who are exposed to the sun, especially during times of high incidence, continuously and for many years. In addition to sun exposure as a determining risk factor for the social production of skin cancer, the economy of the State of Rondônia has as main economic activities, agriculture, livestock, the food industry and plant and mineral extraction, activities that expose the intense workers RUV that plagues the Amazon Region. In view of this scenario, the objective of this work was to analyze the epidemiological and sociodemographic profile of non-melanoma skin cancer in the State of Rondônia, Brazilian Amazon.

MATERIALS AND METHODS

Study Type: The methodological design followed the characteristics of a cross-sectional and descriptive study, based on the raw data produced and sectorized, according to the methodological model recommended by Paraguassu-Chaves et al [15].

Model of Semi-structured Instrument Paraguassu-Chaves et al [16]: We used a semi-structured instrument developed by Paraguassu-Chaves et al [16], composed of 2 blocks of factors and their equivalent variables. Block I - Variables: sex; age range; ethnicity / color; education level; work activity; marital status; family history of cancer; alcoholism and smoking; place

of birth and origin of the municipality; exposure to solar radiation. Block II - Variables: type of tumor; entry clinic; diagnosis time and 1st treatment; type of 1st treatment; patient's situation after the first treatment; cancer death. These data were inserted in statistical platforms, reviewed, (re) classified, (re) interpreted, (re) analyzed and correlated according to the descriptive and analytical methods, using frequency distribution and proportional percentages in the statistical representations, according to instrument developed by Paraguassu-Chaves et al [16].

Sampling Number: The research was carried out with a database of 753 new cases of patients diagnosed with non-melanoma skin cancer, in a period corresponding to 3 years.

Inclusion and exclusion criteria and ethical aspects: Protocols and medical records with data and information with more than 80% of their totality were included. Protocols and medical records not correctly filled out were excluded. The research project is in line with Resolution No. 196/96 of the National Health Council of Brazil. It is a work with a database which does not require any contact or manipulation with human material.

Methodological model used by INCA [5]: The methodology is analogous to that used to calculate the estimates made for Globocan [4] and was developed based on short-term prediction models (up to five years) or by using the incidence / mortality ratio (I / M) [17]. The methods are summarized below in descending order of precision for derived estimates:

1. When incidence information was available in a historical series, with a minimum of six and up to a maximum of 15 years of information and at least 50 cases of cancer per year, estimates were made using the program Depreed - International Agency for Research on Cancer - IARC), based on time-linear prediction models [18]; [19].

$$E(\text{rate}(i,t)) = a_i + b_i \times t$$

$$\text{Log}(E(\text{rate}(i,t))) = a_i + b_i \times t$$

$$\text{Log}(E(\text{rate}(i,t))) = a_i + b \times t$$

Where: E (rate (i, t)) = Expected rate of incidence at age i, year t, where a_i , b and b_i parameters.

2. In situations where the incidence cannot be estimated by the previous method, the estimates were made using the I / M ratio [17]. The average rate (gross and adjusted) for the last five years available (2012 to 2016) was used as an alternative [13].

That is: $TIL = TML \times (IR / MO)$

Where:

TIL = Incidence rate (gross or adjusted) estimated for UF, Federal District or capital. TML = Mortality rate (gross or adjusted) estimated by the historical series of mortality for UF, Federal District or capital. IR = Quotient between the number of new cases (incidence) in the locations of the RCBP and the square root of the population. MO = Quotient between the number of deaths at RCBP sites and the square root of the population, obtained from SIM. The I / M ratio was obtained by dividing the number of new cancer cases in the last five years of the RCBP by the number of deaths in the same period and location. In order to prevent the fluctuation of information

due to the size of the population, the square root of the population was used as the denominator in both [20].

RESULTS AND DISCUSSION

In 3 years of studies, 4,763 new cases of cancer were diagnosed in the State of Rondônia. This number corresponds only to the top 10 types of cancer. Of this amount, 776 (16.3%) were diagnosed with skin cancer. Of this total skin cancer, 753 (97%) new cases were diagnosed with non-melanoma skin cancer and 23 (3%) new cases of melanoma skin cancer. According to INCA [5] in 2018 worldwide, an estimated 1.04 million new cases of non-melanoma skin cancer and 290 thousand new cases of melanoma skin cancer. Estimates for the year 2020 of incidence per 100 thousand inhabitants and the number of new cases of cancer, according to sex and primary location in Brazil, are 176,390 thousand new cases of non-melanoma skin cancer (NSCLC) and 8,450 new cases of cancer of melanoma skin (CPM). For the Northern Region of Brazil (Amazon Region) the estimate for the year 2020 is 5,610 new cases of non-melanoma skin cancer and 190 new cases of melanoma skin cancer. For the State of Rondônia, according to an INCA estimate, there are 990 new cases of non-melanoma skin cancer and only 30 new cases of melanoma skin cancer [5]. It is then estimated for Rondônia that non-melanoma skin cancer will be the neoplasm with the highest incidence. On the subject, Bomfim, Giotto, Silva [21] corroborate stating that skin cancer is the neoplasia with the highest incidence in Brazil. This neoplasm has different strains: non-melanoma skin cancer (NSCLC) and melanoma (MC) type, these being the most common types. NSCLC is the most frequent, it is a slow-growing tumor, locally invasive and with a good prognosis if treated in an appropriate and timely manner, however the delay in diagnosis can lead to ulcerations and severe physical deformities. The melanoma type is the least frequent and the most severe, detected in 4% of patients; in the initial stages it is curable, but, without treatment, it can result in the appearance of metastases that cause high mortality [22]. Numerous causes point to the risk factors for the development of skin cancer: amounts of nevi, white skin color, excessive sun exposure, family history of skin cancer, history of malignancy [21]. Cumulative or intense unprotected sun exposure with burns favors the development of cancer, especially when they occur in the first decades of life [22], [23] e [24]. According to Bandeira et al [25] the effective sun protection comprises in several measures, among which suitable clothes and the use of sunscreens. In this sense, there are three levels of prevention programs: the primary, which prevents risks of a specific disease, the secondary, which consists of early diagnosis, and the tertiary, which prevents deformities, recurrences and death. Early diagnosis plays a fundamental role in improving prognosis and reducing neoplasia.

Block 1 - sociodemographic profile of non-melanoma skin cancer: According to Rouquayrol, Almeida Filho [26] and IPEA [27] the sociodemographic aspects and their indicators allow us to know the characteristics of a given population and its evolution over time in the territory. In the health sector, this information supports the decision-making process, since it assists in the knowledge about health conditions, mortality and morbidity, risk factors, population, sex ratio, population growth, rates, incidences, prevalences, age range age, survival, among others. And these sociodemographic conditions include variables such as: sex, age, ethnicity / color, education, marital

status, work activity, alcoholism, smoking, family history with diseases, people's origins, place of residence, exposure and preventive means, among others. 753 new cases of non-melanoma skin cancer were diagnosed in Rondônia, in the period corresponding to 3 years. The male gender with 398 new cases (52.9%) "versus" 355 new cases (47.1%) in women represents the highest proportion of new cases of non-melanoma skin cancer. According to data from the Hospital Center for Epidemiology, there is a slight inversion of values in relation to the national and international bibliography. (Table 1). INCA [5] estimated for the year 2020, about 83,230 new cases of non-melanoma skin cancer in men and 93,160 new cases in women. For the Northern Region of Brazil, the estimate is 2,010 new cases in men and 3,600 new cases in women, while for Rondônia the estimate is 380 new cases for men and 610 new cases in women. In the study by Silva, Tommaselli, Corrêa [28], of the new cases of BCC recorded, approximately 51.4% developed in females and 48.6% in males. As for the CPB, the predominance was in males (52.3%), while females accounted for 47.7% of cases. Estrada, Sierra, Gómez [29], observed an index of 59.6% for men and 40.4% for women. The results found in this research contradict the INCA estimates regarding the incidence rate per 100 thousand inhabitants, according to sex and location of the primary tumor. However, international literature based on epidemiological surveys, already carried out in several other countries, reports that non-melanoma skin cancer is more common in males [30] e [31]. This fact corroborates the need for greater care in the epidemiological care given to non-melanoma skin cancer in Brazil, especially regarding the conditions that guarantee the early and accurate diagnosis of the condition, so that it is possible to reduce underreporting and maintain good credibility records. In the study by Gutjahr et al [32] the cutaneous lesions of the BCC, 59.2% were male and 40.8% female, in the proportion of 1.45: 1 and with statistical significance ($p < 0.05$). As for CPB injuries, 52.6% were male and 47.4% female, with a 1.1: 1 ratio ($p > 0.05$). These findings are similar to those by Bastiens et al [33] and those by Lage et al [34]. One of the explanations for the higher incidence in male patients may be the fact that this population is more exposed to UVR in their work activities.

Age is still an important risk factor for non-melanoma skin cancer. Incidence rates increased rapidly after age 30, for both women and men. In women, the age group from 30 to 49 years old reaches 23.6% and from 50 to 69 years old, it reaches the highest relative frequency with 52.7%. In men, the age group from 30 to 49 years old reaches 20.2% and from 50 to 69 years old, it reaches the highest relative frequency with 49.5%, remaining high in the age group from 70 to 79 years old, with relative frequency of 22%. (Table 2). According to INCA [10], non-melanoma skin cancer is more common in people over 40 years old, except for those already with skin diseases. Bomfim, Giotto, Silva [21] point out that patients over 60 years of age are the most affected by the disease. In the study by Gutjahr et al [32] the age for BCC ranged from 24 to 89 years, with a mean of 63 years and standard deviation of 14.4. Regarding CPB, age varied from 40 to 95 years, mean 68.9 and standard deviation 12.5. The mean age was higher for patients with CPB ($p < 0.001$). According to Silva, Tommaselli, Corrêa [28], for the two carcinomas the age group most affected was 70-79 years. The age range of patients affected by skin cancer was also very wide, varying between 20 and 100 years of age, for both sexes. The cases of skin cancer registered in female individuals occurred more frequently in the sixth and seventh

decade of age, whereas, in male individuals, the predominance was in the sixth decade of age. BCC developed more frequently in individuals of both sexes, predominantly in the sixth decade of age. For cases of CPB diagnosed between genders, it presented very similar patterns of predominance in terms of its distribution; however, the highest percentages recorded for this type of illness occurred in the seventh decade of age, for females, and in the sixth decade of age, for males. In the study by Campos et al [35] the mean age of patients at diagnosis was 70.8 years (median 71), ranging from 42 to 91 years. This value is equivalent to that found by another author, who obtained an average of 65.3 years for BCC, and 70.3 years for BCC [36]. Only 3% of patients were diagnosed before age 45 [36]. According to the proportion of individuals over the age of 60, a representative percentage of 86.4% of the sample was obtained, in agreement with the literature, which also indicates high values, of 68.4% for BCC and 78 % for CPB, consistent with chronic sun exposure and occurrence of skin tumors in older age [36]. There is agreement on the results in several studies found in national and international literature, such as those by Naser [37], Naser [38], Mantese et al [39], Lage et al [34], Alakloby, Bukhari, Shawarby [40], Carucci, Leffell [41] and Bastiaens et al [33]. In the study by Ferreira, Nascimento [36] and Villanueva, Vanegas, Quintana [42], the mean age of CEC is higher than that of CBC, a finding similar to the international literature. For Lascano et al [43] and Maia, Proença, Moraes [44] a cumulative exposure to ultraviolet radiation (UVR) is a factor that explains a greater performance in old age. In the study by Paraguassu-Chaves et al. [14] "Epidemiological and sociodemographic characterization of women and men with cancer in a state in the Brazilian Amazon" for all types of cancer diagnosed in Rondônia, the profile of the patients revealed a predominance in the age group of 45 to 69 years (47.1%) in women and in the age group of 55 to 74 years (54.5%) in men. In the study by Paraguassu-Chaves et al [14], the distribution of cancer in women by age was distributed as follows: 45 to 49 years (11.7%), 50 to 54 years (13.6%) and 55 to 59 years (12.7%), while in men, the age group between 55 and 59 years (14.6%), 60 to 64 years (14%), 65 to 69 years (12.2%), 70 to 74 years (12%) and extends from 75 to 79 years (11.3%). Paraguassu-Chaves et al [45] Sociodemographic profile of men diagnosed with câncer among the 10 main neoplasms in Rondônia: Age is still one of the most important risk factors for cancer in men. Incidence rates rise rapidly after age 40. In Rondônia, the age group of cancer in the age group of 50 to 79 years old reaches 77% of the 10 main types of cancer in men, with respectively 24.7% (age between 50 and 59 years), 28% (between 60 and 69 years) and 24.4% (between 70 and 79 years). Non-melanoma skin cancer is the second most common in men with 30 (27.5%) new cases (60 to 69 years), 64 (58.7%) new cases (70 to 79 years) and 54 (49.5%) new cases (over 80 years). Table 3 shows the distribution of non-melanoma skin cancer in women and men in the State of Rondônia, by ethnicity / color. Non-melanoma skin neoplasms diagnosed in brown (64.3%) and white (35.7%) women are more frequent than in other ethnicities, such as: yellow, black and indigenous. In brown men, these diagnoses were the majority with 65.9%, followed by white with 28.2%. Black men are represented with 5.9% of non-melanoma skin cancers. (Table 3). In the research by Gutjahr et al [32] the skin color of patients with BCC, 100% were white, and for the CPB 97.8% were white and 2.2% were non-white. For this author and collaborators, CPNM is more prevalent in individuals of white skin color. In a survey carried out in the State of Bahia, it was found that in the selected

sample, 94.3% had white skin [46]. As for Naser [38] and Ferreira, Nascimento [36], the risk of developing NSCLC is greater in individuals with difficulty tanning their skin and with light hair and eyes. In Rondônia there is a predominance of the population with brown skin color and this predominance may be the explanation for the higher incidence of non-melanoma skin cancer in this population group, regardless of gender. The brown patient is predominant in the state of Rondônia and also has higher frequencies, making a total of 73.3% of all types of cancer, followed by the white patient with 18.5% and black with 2,9%. The indigenous population is present with 0.7%, yellow with 0.6% and with no information representing 4.0% (Paraguassu-Chaves et al [14]. Paraguassu-Chaves et al [45] Neoplasms diagnosed in brown (64.2%) and white (28.3%) men are more frequent than in other ethnicities, such as: black, yellow and indigenous. Of the top 10 types of cancer in men, Brown predominated in non-melanoma skin cancer with 65.9%. According to the IBGE [47], in Rondônia the population with brown skin predominates (55.8%), accompanied by the population of white (35%), black (6.8%), yellow (1.4%) and indigenous (0.9%). Paraguassu-Chaves et al [15] when studying the distribution of cancer according to skin color, found a predominance of brown skin color (46.9%), followed by white skin color with 21.6% and, in smaller proportions of cancer in patients with black (3.3%), yellow (0.6%) and indigenous (0.5%) skin color. The brown color is predominant in the state of Rondônia and the one with the highest incidence of cancer, making up 64.4% of all registered neoplasms, followed by white with 19.5% and black with 3.0%. The indigenous population is present with 0.6% and yellow with 0.5%. The studies by Beleza et al [48] corroborate these findings. Therefore, the predominance of patients with non-melanoma skin cancer in brown patients in Rondônia, Brazilian Amazon, is justified.

The level of education is very low. The illiterate level is on average 25.3%, incomplete elementary school 35.2%, complete elementary school 21.2% and high school 17.1%. The level of education is distributed among women with non-melanoma skin cancer, in the following order: illiterate (25.7%), incomplete elementary school (22.8%), complete elementary school (28.7%) and high school (22.8%). Men diagnosed with non-melanoma skin cancer have a very low level of education: illiterate (25%), incomplete functional education (47.7%), complete elementary education (13.6%) and high school (11.4%). (Table 4). In the study by Campos et al [35] in relation to education, it was found that 62.1% of the patients had incomplete primary education, 15.2% completed primary education and 16.7% were illiterate. Low education seems to be quite evident in patients with non-melanoma skin cancer. According to Paraguassu-Chaves et al [14], patients with incomplete and complete elementary education represent 54.2% of the reported cases of cancer, when added to the illiterate (17.1%), the relative frequency rises to 71.3%. It is possible to observe, in general, low education, reaching 54.2% of the cases in illiterate patients, with incomplete elementary school and complete elementary school. It is concluded that most of the population with cancer has a low level of education [15]. Paraguassu-Chaves et al [45] it is possible to identify that the cancer rate in men with less education is much higher than the cases diagnosed in men with more education. Understanding this information is an effective way to prevent and treat disease. The same situation occurs with non-melanoma skin cancer (72.2%) of patients with low education, distributed as follows, 25% illiterate and 47.7% of patients

with incomplete primary education. According to Amorim et al [49], the low level of education makes it difficult to capture information on prevention and early detection of diseases, in addition to making access to health services more difficult. Knowing and measuring the proportional distribution of cancer cases, according to the level of emotional, psychological, educational, scientific and socioeconomic aspects, is essential to assess the real conditions of the population exposed to cancer. Understanding the concepts of health education suggests understanding the education-health and society triad underlying them. It can even be said that a person's level of education is a very important factor in determining their health. And it's not just diseases, but also accidents, they occur more in those who learn less. A person's education is much more decisive for their good health than all the vaccines they can receive; more important than the genetic heritage it has, however wonderful; more important than hygiene or care of the environment where it is created; even more important than the quality of medical services and the expertise or excellence of doctors at your disposal. Therefore, adopting the approach of social and educational determinants means understanding the value that health has for society and admitting that it depends on actions that are often not related to the health sector. Men and women working in agriculture represent 67.7% of the cases diagnosed with non-melanoma skin cancer, followed by those occupying professions in commerce, transport and other occupations with 30.5%. Professional occupation in agriculture predominates in women with 72.2% and in men with 63.3%. The second most important professional activity is commerce, transport and other similar activities with 27.8% in women and 33.3% in men. (Table 5).

For Campos et al [35], certain professions expose workers to sunlight for a prolonged period. In this series, the profession most associated with skin tumors was a farmer (25.8%), followed by a domestic worker (18.2%) and a driver (12.1%) [35]. In another analysis, similar to the current study, the activities of domestic workers (29.6%) and peasants (16.9%) were found to be among the professions most affected by skin tumors [39]. The professions of patients with BCC were distributed as follows: 19.82% agricultural and livestock workers; 7.21% fishermen; 13.51% work at home; 0.90% docker; 7.21% merchant; 23.42% other professions with direct sun exposure and 27.93% other professions without direct sun exposure. This distribution to the CEC was as follows: 32.65% agricultural and livestock workers; 6.12% fishermen; 14.29% work at home; 26.53% other professions with direct sun exposure and 20.41% other professions without exposure to sunlight. In the study by Gutjahr et al [32], there was a predominance of professions performed in unprotected places in the RUV, with a fifth of BCC diagnoses being made in agricultural and livestock workers and a third of CECs were diagnosed in these professionals. This can be explained by living conditions in rural areas that provide long-term exposure to the sun. According to Paraguassu-Chaves et al (45) men working in agriculture represent 67.7% of the cases diagnosed with cancer, followed by men occupying commercial occupations, banks, transportation and others with 26.7%, public agent with 1, 9% and independent professional, teacher or technician with 1.9%. The proportional distribution of cancer in men by professional activity is very well defined with agricultural activity, where non-melanoma skin cancer represents 63.3% of the cases of people who perform this work activity. In the research by Paraguassu-Chaves et al [14], the proportional distribution of cancer in Rondônia, according to

occupation or professional activity, patient profile based on professional occupation, the highest frequency was among agricultural workers and similar workers (farmer). In another study by Paraguassu-Chaves et al [50], the most frequent patients were agricultural workers and similar workers (farmer), agricultural workers not classified in other categories (farmer), health workers. And still industry workers, teachers and civilian workers. According to Paraguassu-Chaves et al [51], the female sex with a high incidence of cancer is represented by the class of workers linked to agriculture and agricultural services, commerce and related activities, independent or autonomous professionals, teachers and civil servants in general. The predominance of cancer in patients working in agriculture and farming activities is directly related to the economic activity of Rondônia. The economy of the state of Rondônia has as its main activities agriculture, livestock, food industry and plant and mineral extraction [15], [16]. In the context of Rondônia, it is important that information on professional activity be prioritized by the health service. The evaluation of the work activities of the population is extremely important, as it also identifies the nutritional, environmental, biological, structural risk and allows the practice of prevention, control, promotion or treatment and the cure of the patient.

The distribution of non-melanoma skin cancer prevails in married patients, with an average of 69.9%. In single patients, the relative frequency is 16.6% and widowers and widows 9%. According to the marital status of each patient, it is possible that there is no great difference between the diagnoses of cancer in married women, when compared to married men. Married women prevail with 63.4% and men with 76.4%. As for single patients, women have a relative frequency of 20.4% and men, 12.7%. Widowed women are more frequent (12.2%) than men (5.5%). (Table 6). A study by Paraguassu-Chaves et al [15] and [16] found a predominance of married patients. Married patients have a greater number of new cases, corresponding to 54.1%. Paraguassu-Chaves et al [57] married people have the highest frequencies (74.9%). According to the marital status of each patient, it is possible to notice a difference between the diagnoses of cancer in married men when compared to single men and other conjugated states. The highest frequencies of cancer in men were found in married men, without exception. 76.4% of patients with non-melanoma skin cancer are married. Palmer, Lythgoe, Smith [52] and Lannin et al [53], do not consider marital status to be an important factor, although these studies are necessary for the complete assessment of the patient's profile. According to Croft, Sorkin, Gallicchio [54] the marital factor is not considered a risk factor for the development of the disease, but the fact of having a partner is associated with better social support, optimism and quality of life among survivors. Studies on gender and in particular on marital status have become more frequent in the field of Oncology, an area in which quality of life is considered an important indicator of treatment results and the patient's level of well-being. Differences are fundamental in the choice of cancer coping strategies, since men and women use mechanisms and forms of psychosocial and physiological adaptations in the most different stages of treatment and configuration of facing the disease. Among female and male patients diagnosed with non-melanoma skin cancer, 27.9% of women with cancer have a family history of cancer and 24.6% of men link the cancer to a family history of cancer. (Table 7). Campos et al, analyzing the family history, found 78.9% of skin cancer patients who did not have a family

history of skin cancer, while 21.1% patients had a first-degree relative with skin cancer. Studies by Paraguassu-Chaves et al [15], Paraguassu-Chaves et al [16], Paraguassu-Chaves et al [45], Paraguassu-Chaves et al [50], Paraguassu-Chaves et al [51] and Beleza et al [48] corroborate the findings of this research. These authors demonstrate the significance of previous cancer in the family as an important risk factor for non-melanoma skin cancer.

According to table 8, alcoholism is not a determining factor for non-melanoma skin cancer in the State of Rondônia. Of the women diagnosed with non-melanoma skin cancer, 1.6% use alcoholic beverages and 6.3% are ex-consumers. The relative frequency of women who never used alcohol was 92.1%. In men diagnosed with non-melanoma skin cancer, 11.8% use alcoholic beverages and 17.6% are ex-consumers, while 70.6% have never used alcoholic beverages. (Table 8). The relative frequency of women who declared smokers was 9.1% and 6.1% ex-smokers. Women with non-melanoma skin cancer who had never smoked prevails with 84.8%. In men it also prevails in nonsmokers with 74.6%. Those who declared themselves to be smokers represent a relative frequency of 9% and ex-smokers 16.4%. (Table 8). In a study by Haddad, Carvalho, Novaes [55] on the most diverse types of cancer, active smoking (current or previous) was present in 40.7% of participants (vs. 59.3% non-smokers). As part of the study by Dugno et al [56], non-smokers and non-consumers of alcohol prevail (78% and 96.7%, respectively). In the survey of 78% of patients say they never smoke and no relationship was found between tobacco and disease staging [56]. Paraguassu-Chaves et al [45] men with non-melanoma skin cancer who consume alcoholic beverages represent 11.8%. In other studies by Paraguassu-Chaves et al [57] the relative incidence of men who declared smokers was 18.6% and 15.3% ex-smokers. According to Campos et al [35], despite the fact that smoking is associated with the appearance of neoplasms in places other than the skin, in the researched literature, no studies were found correlating smoking with the appearance of skin cancer. In this study by Campos et al [35], 34.8% of the patients had a smoking habit, 34.8% of whom smoked over 30 packyears.

In Rondônia, patients diagnosed with non-melanoma skin cancer have their origin in the State of birth in the following decreasing order: State of Paraná with 18.1% of new cases (Southern Region of Brazil), the State of Rondônia itself with 15.8% of new cases (North Region or Amazon Region), State of São Paulo with 12.9% (Region Southeast Brazil), Espírito Santo with 11.9% (Southeast Region of Brazil) and Minas Gerais State with 8.9% (Southeast Region of Brazil). Only these 5 (five) States are responsible for 67.6% of all new cases of non-melanoma skin cancer. Other States that contribute to the frequency of non-melanoma skin cancer diagnosed in Rondônia are: States of Santa Catarina and Rio Grande do Sul (South Region of Brazil), States of Bahia, Pernambuco, Ceará, Alagoas, Maranhão, Paraíba and Rio Grande do Norte (Northeast Region of Brazil), State of Mato Grosso do Sul (Region Central-West of Brazil), State of Rio de Janeiro (Southeast Region of Brazil), States of Acre, Amazonas and Pará (North Region or Amazon Region). (Table 9). Of the distribution of non-melanoma skin cancer among the 52 municipalities that make up the State of Rondônia, 58.8% of new cases are concentrated in only 5 (five) municipalities. Porto Velho with 34.3% of new cases is the municipality with the highest relative frequency. Ariquemes with 8.2%, Ji-Paraná with 6.6%, Vilhena 6.1% and Alta Floresta do Oeste with

3.6% completes the list of municipalities most frequent in non-melanoma skin cancer. The sum of new cases in the other 45 municipalities in Rondônia corresponds to 41.2% of non-melanoma skin cancer. (Table 9). There is no information regarding the place of residence (urban or rural) of the patients. Rondônia is an Amazonian state made up of migrants from different states and regions of Brazil. A more mixed Brazilian state. More than 40% of the inhabitants who live in Rondônia were born in other States of Brazil [58], [59]. Paraguassu-Chaves et al [14], [45], [50] and [57], had recognized the uneven distribution of cancer at the municipal level, where a small number of municipalities are responsible for the highest incidences of cancer in Rondônia. De acordo com Paraguassu-Chaves et al [14] patients born in the State of Rondônia are predominant and contributed with 753 new cases (22.6%), followed by patients born in the State of Minas Gerais with 386 new cases (11.6%), in the State of Paraná with 380 new ones cases (11.4%), State of Amazonas with 247 new cases (7.4%), State of Espírito Santo with 246 cases, São Paulo with 183 cases and Acre with 173 cases. The other States of Brazil contributed with 26.1% and foreign patients with 0.9%. Paraguassu-Chaves et al [57] patients born in the State of Rondônia are predominant and contributed with 15.5% new cases, followed by patients born in the State of Paraná (South Region) with 13.2%, in the State of Minas Gerais (Southeast Region) with 11.6%, and the State of São Paulo (Southeast Region) with 11% new cases (11%). Patients born in other states in Brazil correspond to 48.7%. Patients born in Rondônia represent patients diagnosed with 14% with non-melanoma skin cancer. Paraguassu-Chaves et al [57] the municipality of Porto Velho is responsible for 40.8% of all cases of neoplasms of Rondônia. Adding to the municipalities of Vilhena, Ariquemes and Ji-Paraná, the relative frequency reaches 58.4%. Only the municipality of Porto Velho accounts for 36.7% of non-melanoma skin cancers.

Regarding the distribution of the incidence of non-melanoma skin and patient exposure, the study showed that 83% of men and 83% of women are exposed to the sun's rays, with 17% respectively between the 2 genders claiming not to be exposed to radiation solar. When asked whether they use RUV protection, 69% of men and 79% of women say Yes. Among men, 29% do not use sunscreen while 19% of women do not use protection from the sun's rays. (Table 10). In the study by Mantese et al [39], it was observed that 81.4% of patients with non-melanoma skin tumors had frequent exposure to the sun and at times of greater intensity. It was also found that only 1.5% used sun protection factor (SPF) regularly, whereas most of the sample (62.1%) did not use any type of protection [39]. No statistical data were found in the researched literature on barrier means used against sunlight. Naser [38] finds that 93.9% of the patients were Fitzpatrick I, II or III, as observed in the literature, which states that white-skinned patients with Fitzpatrick I and II, or of European origin are at a higher risk of developing cancer of skin. This study is corroborated by Weinstock [60], Vitaliano, Urbach [61] and Fritzpatrik [62]. The research by Campos et al [35] demonstrated that the incidence of skin cancer seems to be more frequent among skin types I, II and III, and that the physician's prevention and attention must be extended to all types. Patients were analyzed according to exposure to UVB rays, which is responsible for erythema, pigmentation and mainly changes that induce cancer, but it is now known that UVA rays are also carcinogenic.

Table 1. Distribution of non-melanoma skin cancer by gender / sex. Rondônia / Brazil

Genre / Sex	Women	Man	Fa*
Fa*	355	398	753
Fr %	47.1	52.9	100.0

Fa* Absolute frequency. Fr % Relative frequency.

Table 2. Distribution of non-melanoma skin cancer by age in the diagnosis of cancer. Rondônia / Brazil

Age Range Cancer Diagnosis	<29 years	30 – 49	50 – 69	70 – 79	> 80 years	Fr %
Women	6.4	23.6	52.7	7.3	10.0	100.0
Man	3.7	20.2	49.5	22.0	4.6	100.0

Fr % Relative frequency.

Table 3. Proportional distribution of non-melanoma skin cancer in women and men, by ethnicity / color

Ethnicity / Color	Brown	White	Black	Fr %
Women	64.3	35.7	0.0	100.0
Man	65.9	28.2	5.9	100.0

Fr % Relative frequency.

Table 4. Proportional distribution of non-melanoma skin cancer by level of education

Degree of Education	Illiterate	Incomplete elementary school	Complete elementary school	Complete high school	Graduated	Fr %
Women	25.7	22.8	28.7	22.8	0.0	100.0
Man	25.0	47.7	13.6	11.4	2.3	100.0

Fr % Relative frequency.

Table 5. Proportional distribution of non-melanoma cancer by occupation

Professional occupation	Agriculture	Commerce, Transport and Others	Independent Professional	Fr %
Women	72.2	27.8	0.0	100.0
Man	63.3	33.3	3.4	100.0

Fr % Relative frequency.

Table 6. Proportional distribution of non-melanoma skin cancer by marital status

Marital Status	Married	Single	Widow	Separated /Divorced	União Consensual	Fr %
Women	63.4	20.4	12.2	0.0	4.0	100.0
Man	76.4	12.7	5.5	1.8	3.6	100.0

Fr % Relative frequency.

Table 7. Proportional distribution of non-melanoma skin cancer in women and men, by family history of cancer

Family Cancer History	Yes	Not	Fr %
Women	27.9	72.1	100.0
Man	24.6	75.4	100.0

Fr % Relative frequency.

Table 8. Proportional distribution of non-melanoma skin cancer due to alcoholism and smoking

Alcoholism	Yes	Ex-Consumer	Never	Fr %	Smoking	Yes	Ex-consumer	Never	Fr %
Women	1.6	6.3	92.1	100.0	Women	9.1	6.1	84.8	100.0
Man	11.8	17.6	70.6	100.0	Man	9.0	16.4	74.6	100.0

Fr % Relative frequency.

Table 9. Proportional distribution of non-melanoma skin cancer by patient's State of birth and origin the municipality of Rondônia

State	Fr %	Municipality of Rondônia	Fr %
Paraná	18.1	Porto Velho	34.3
Rondônia	15.8	Ariquemes	8.2
São Paulo	12.9	Ji-Paraná	6.6
Espírito Santo	11.9	Vilhena	6.1
Minas Gerais	8.9	Alta Floresta do Oeste	3.6
Other States	32.4	Other municipalities	41.2
Fr %	100.0	Fr %	100.0

Fr % Relative frequency.

Table 10. Proportional distribution of non-melanoma skin cancer due to sun exposure

Exposição RUV	Yes	Not	Others	Fr %
Women	83.0	17.0	0.0	100.0
Man	83.0	17.0	0.0	100.0
Proteção RUV				
Women	69.0	29.0	2.0	100.0
Man	79.0	19.0	2.0	100.0

Fr % Relative frequency.

These studies are corroborated by Almeida et al [63], and are in agreement with the studies of Tomaz [64], Simis, Simis [65], Maverakis et al [66]. Estudos do INCA [67], Kutting, Drexler [31] and Newton Bishop [68] that are references when it comes to risk factors for skin cancer. According to these studies, excessive and chronic exposure to the sun is the main risk factor for the onset of non-melanoma skin cancers. In relation to melanoma, in general, a greater risk includes personal or family history of melanoma, in addition to sporadic and intense exposure to the sun with consequent sunburn in more than one episode. Other risk factors for all types of skin cancer include skin sensitivity to the sun (lighter-skinned people are more sensitive to ultraviolet radiation from the sun), immunosuppressive diseases and occupational sun exposure. Bayh-Hextall et al [69] adds that immunodepressed patients (such as transplant patients and patients with acquired immunodeficiency syndrome [aids], for example) are at greater risk for the development of non-melanoma skin cancer, as they present a reduction in carcinogenic skin control. In Rondônia, in the period corresponding to three years of study, 753 cases of non-melanoma skin were diagnosed, among the 10 (ten) most common types of cancer. Basal cell carcinoma (BCC) predominates with an absolute frequency with 634 new cases and squamous cell carcinoma (SCC) represents an absolute frequency of 119 new cases. These values correspond to 84.2% relative frequency for basal cell carcinoma and 15.8% for squamous cell carcinoma. (Table 11).

Table 11: Proportional distribution of the most frequent types of non-melanoma skin cancer tumors

Tumor Type	basal cell carcinoma (BCC)	squamous cell carcinoma (SCC)	Fa*
Fa*	634	119	753
Fr %	84.2	15.8	100.0

Fa* Absolute frequency. Fr % Relative frequency.

Table 12. Proportional distribution of non-melanoma skin cancer by entry clinic

Entrance Clinic	Oncology Clinic	Other Clinics	Fa *
Fa*	684	69	753
Fr %	90.8	9.2	100.0

Fa* Absolute frequency. Fr % Relative frequency.

According to Campos et al [35], the histological type found most frequently in his research was basal cell carcinoma (66.7%), followed by squamous cell carcinoma (33.3%). The higher prevalence of BCC in relation to CPB is supported by the literature, in which BCC corresponds to 73% of non-melanoma skin tumors and CPB to 27% [70]. According to this author and collaborators, skin cancers can be of two types: non-melanoma and melanoma. The term non-melanoma skin cancer encompasses the most common basal cell carcinoma and squamous cell carcinoma. According to Quinn, Perkins [30], these two malignant tumors present themselves differently to clinical examination and histopathological examination. However, both are very similar in terms of prognosis: have low lethality, that is, they rarely lead to death and metastasis is rare. For Gutjahr et al [32], skin cancer has, in recent decades, acquired special importance due to its increasing incidence. Non-melanoma skin cancer (NSCLC), represented by basal cell carcinoma (BCC) and squamous cell carcinoma (SCC), corresponds to about 25% of all malignant tumors registered in Brazil. CBC is responsible for 70% of skin cancer diagnoses, followed by CEC, diagnosed in 25% of cases [67]. For Naldi et al [71] and Green et al [72], these

tumors are observed mainly in male individuals, after the fifth decade of life, white people and with reports of repetitive sun exposure, both in recreational and professional forms. The oncology clinic was responsible for 90.8% of patients with non-melanoma skin cancer. This relative frequency corresponds to 684 patients who were diagnosed with non-melanoma skin cancer in its 2 main types of tumors, basal cell carcinoma (BCC) and squamous cell carcinoma (SCC). Another entry clinic was the dermatology clinic, where 69 patients entered, equivalent to 9.2% of patients with non-melanoma skin cancer, regardless of gender. (Table 12). In the study by Paraguassu-Chaves et al [14] Clínica Oncologia is responsible for 28% of all cancer cases in Rondônia and is responsible for the first cancer service. The studies by Paraguassu-Chaves et al [51], Paraguassu-Chaves et al [57] corroborate the importance of the oncology clinic as the clinic responsible for the patient's entry for the diagnosis of non-melanoma skin cancer.

The average time elapsed between the patient's registration, the diagnosis of the disease and the 1st treatment, are essential factors and conditions in the evaluation of the quality of care of a reference institution in the treatment of cancer. In this study we take into account the time between diagnosis and the first treatment. The shortest waiting time between diagnosis and the first treatment was 3 days, the longest waiting time was 10 years and the average elapsed time was 14 months or 1 year and two months. (Table 13). Paraguassu-Chaves et al [14], the average time since registration / diagnosis is 19.5 days, the period of diagnosis / 1st treatment can reach 79 days and the maximum duration of 2,444 days. The median between enrollment and diagnosis is 10 days and the 1st treatment between diagnosis reaches 40.5 days. No estudo de Paraguassu-Chaves et al [51] at the oncology clinic, the main entry clinic for diagnosis and treatment, the time in days, elapsed, second median, between a first consultation and the diagnosis was 15 days, a median between diagnosis and the start of treatment was 49.5 days and median between enrollment (1st consultation) and the start of treatment was 1 day. In the study by Soares et al [73], the time interval above 6 months between a clinical suspicion and a diagnostic confirmation prevailed. Also according to Soares et al [73], there is a strong association between the time interval between suspicion and diagnostic confirmation with cancer staging and diagnosis (RPajustada = 2.97 and 3.04). This interval was longer than 6 months in almost half of the female patients (42.7%). There was a change in the period studied, due to the slow health system [73]. According to Soares et al [73], the prolonged time between clinical suspicion and confirmation of the diagnosis, diagnosis and non-immediate treatment are factors that more efficiently hinder the resolution of the disease. It has already been proven that early diagnosis favors the treatment of the disease and brings greater possibilities of cure, thus investing in public policies and techniques that help increase the rate of diagnosis in the early stages is extremely important.

Surgery with 72.5% of cases was the first treatment and therapeutic procedure received by women with non-melanoma skin cancer. The second most frequent procedure was chemotherapy (15%) and the third most frequent with 12.5% was "other isolated therapeutic procedures". In men, other isolated therapeutic procedures prevailed in 38.5% of cases, surgery comes in second place with 22.9% and then chemotherapy with 6.4%.

Table 13. Proportional distribution of time between diagnosis and 1st consultation

Diagnosis and 1st Treatment	Time interval
Shorter waiting time	3 days
Longer waiting time	10 years
Average time in months	14 months

Table 14. Proportional distribution of non-melanoma skin cancer in women and men by type of treatment

Treatment Type	Surgery	Chemotherapy	Others	None	Fr %
Women	72.5	15.0	12.5	0.0	100.0
Man	22.9	6.4	38.5	32.2	100.0

Fr % Relative frequency.

Table 15. Proportional distribution of non-melanoma skin cancer in women and men after the first treatment

After the 1st treatment	Progression	Stable	Total Remission	Partial Remission	Death	Fr %
Fr %	5.7	67.2	1.4	24.3	1.4	100.0

Fr % Relative frequency.

Table 16. Proportional distribution of non-melanoma skin cancer in women and men by death / cancer

Death / Cancer	Yes	Not
Women	1.8	98.2
Man	4.6	95.4

Fr % Relative frequency.

It is noteworthy that 32.2% of men diagnosed with non-melanoma skin cancer did not receive any treatment or therapeutic procedure. (Table 14). As for the therapeutic procedures, a study by Paraguassu-Chaves et al [14] contradicts the results of this research. In his work with all types of cancer diagnosed in Rondônia, "other isolated therapeutic procedures" showed a higher frequency with 44.4% of cases. Next comes 27% of patients who did not receive any procedure. Surgery with 15.2% of cases and chemotherapy with 6.0% are also representative for the first treatment of cancer patients. Among the types of treatment and therapeutic procedures, "other therapeutic procedures used" prevailed with an absolute prevalence of (42.4%) cases of the 1st treatment received by the patient. The second highest absolute frequency is surgery with relative incidence of 16%, followed by chemotherapy with 8.6% of the first treatments received by women diagnosed with cancer [51]. Surgery is the most indicated treatment for both basal cell and squamous cell carcinoma. However, small basal cell carcinoma can be treated with topical medication (ointment) or radiation therapy. In contrast to squamous cell carcinoma, the usual treatment combines surgery and radiation therapy. For the analysis of the distribution of non-melanoma skin cancer after the first treatment, the result obtained was verified. Regarding the disease status at the end of the 1st (first) treatment, it is observed that patients with stable disease represent 67.2%, followed by partial remission with 24.3% and the disease in progression with 5.7%. Only 1.4% had complete remission of the disease, that is, without evidence of the disease and 1.4% of the patients died during treatment. (Table 15). Another study by Paraguassu-Chaves et al [14] pointed out that of the total of 3,333 cases, 101 were not submitted to the first (first) treatment. Of these, 9 (8.4%) undergo treatment in the State, 3 cases (3%) simply abandoned treatment, 2 cases (2%) due to the advanced stage of the disease, lack of clinical conditions or other associated diseases and 84 patients (83.1%) did not treat the disease for any other reason. Regarding the state of the disease at the end of the 1st (first) treatment, it is observed that 2,457 (73.7%) of the patients presented disease progression, 430 (12.9%) cases with stable disease and 224 (6.7%) died [14].

Of this sample, 1.8% of women diagnosed with non-melanoma skin cancer died of the disease. Male patients diagnosed with non-melanoma skin cancer (4.6%) had a higher frequency of deaths than women. (Table 16). In the study by Paraguassu-Chaves et al [57], 4.6% of patients with non-melanoma skin cancer died of the disease. Low mortality is still one of the causes pointed to the underreporting of non-melanoma skin cancer worldwide, even with the increasing incidence. In Brazil, the National Cancer Institute (INCA) recommends that the announced estimates be considered as minimal, as there is a high probability of under-registration and under-diagnosis [30] e [67]. However, according to Bath-Hextall et al [69] the impact of non-melanoma skin cancer on public health is high and, although it does not represent a threat to life, it can cause significant aesthetic damage to patients, as it appears more frequently on skin constantly exposed to the sun, the head and neck region and especially the face.

Conclusions

The present study allowed us to analyze the epidemiological and sociodemographic profile of non-melanoma skin cancer in the State of Rondônia, Brazilian Amazon. A semi-structured instrument developed by Paraguassu-Chaves et al [16] was used, composed of 2 blocks of factors and their equivalent variables. Block I - Variables: sex; age group; ethnicity / color; schooling; work activity; Marital status; family history of cancer; alcoholism and smoking; place of birth and origin of the municipality; exposure to solar radiation. Block II - Variables: type of tumor; entry clinic; diagnosis time and 1st treatment; type of 1st treatment; patient's situation after the first treatment; cancer death. In a period corresponding to 3 years, 753 new cases of non-melanoma skin cancer were diagnosed, representing 97% of skin cancers. Patients diagnosed with non-melanoma skin cancer in this study have the following sociodemographic characteristics: the male gender with 52.9% "versus" 355 new 47.1% in women represents the highest proportion of new cases of non-melanoma skin cancer; incidence rates increased rapidly after age 30, for both women and men; non-melanoma skin cancers diagnosed in brown women 64.3% and brown men

65.9%, are the most frequent; the level of education is very low; men and women working in agriculture represent 67.7% of the cases diagnosed with non-melanoma skin cancer, followed by those occupying professions in commerce, transport and other occupations with 30.5%; prevails in married patients, with an average of 69.9%; 27.9% of women with cancer have a family history of cancer and 24.6% of men link the cancer to a family history of cancer; alcoholism is not a determining factor for non-melanoma skin cancer and the relative frequency of smokers is less than 10%; 5 (five) States are responsible for 67.6% of all new cases of non-melanoma skin cancer and 58.8% of new cases are concentrated in only 5 (five) municipalities in Rondônia. Only the municipality of Porto Velho concentrates 34.3% of new cases of non-melanoma skin cancer; 83% of men and 83% of women are exposed to UVR daily.

The epidemiological profile has the following characteristics: basal cell carcinoma (BCC) predominates with 84.2% relative frequency. Squamous cell carcinoma corresponds to 15.8% of the relative frequency. The oncology clinic was responsible for 90.8% of patients with non-melanoma skin cancer. Another entry clinic was the dermatology clinic, where 9.2% of patients entered for diagnosis and treatment. The shortest waiting time between diagnosis and the first treatment was 3 days, the longest waiting time was 10 years and the average elapsed time was 14 months or 1 year and two months. Surgery with 72.5% of cases was the first treatment and therapeutic procedure received by women with non-melanoma skin cancer. In men, other isolated therapeutic procedures prevailed in 38.5% of cases, surgery comes in second place with 22.9%. After the 1st treatment, patients with stable disease account for 67.2%, followed by partial remission with 24.3% and progressing disease with 5.7%. Only 1.4% had complete remission of the disease. 1.8% of women and 4.6% of men diagnosed with non-melanoma skin cancer died of the disease. Exposure to sunlight is still the greatest risk factor for non-melanoma skin cancer in this Region of the Brazilian Amazon, regardless of gender and age.

Despite the claim of photoprotection measures, such as the use of appropriate clothing and caps, some important aspects were not considered by patients, such as sun exposure at inappropriate times, use of sun protection glasses, sunscreens with SPF 30 or more, clothes with greater possibility of ultraviolet protection (FPU) among others. It is concluded by the need to recommend that it is mandatory to register non-melanoma skin cancer in the Municipal and State Health Departments, with notification of primary health care doctors, promotion of prevention campaigns to raise awareness, in order to increase raising awareness about the risks of skin cancer among the population and planning public policy strategies for preventive measures, early diagnosis and treatment of non-melanoma skin cancer. The records of non-melanoma skin cancer in Rondônia are of fundamental importance for monitoring the evolution of this disease with greater incidence, considering that the identification of the sociodemographic and epidemiological profile becomes an essential element for the development of actions in search of its control, treatment and cure. The findings of this research reaffirm the public health problem represented by non-melanoma skin cancer in the State of Rondônia, pointing to the urgent need for prevention, diagnosis and early treatment of the disease.

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