

## Research Article

# Prevalence of melanoma and nonmelanoma malignancies in patients visiting dermatology clinics in Ardabil City, 2002-2013

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### ABSTRACT

**Background:** BCC and SCC are the most prevalent malignant non-melanoma skin tumors. BCC is the most common skin tumor in white-skinned people, and as one ages, after being 40 year-old, incidence rate of BCC increases. SCC has the next rank and is more common in middle-aged and old persons. The present study addresses the prevalence of melanoma and non-melanoma malignancies in patients visiting dermatology clinics in Ardabil during 2002-2013.

**Methods:** This study was of retrospective descriptive type. Approximately out of 100000 medical records of patients visiting dermatology clinics, 371 cases were chosen. The selected cases had undergone biopsy on suspicion of malignancy and their pathological response was attached to the record. Data were analyzed through SPSS, version 19, and descriptive as well as inferential statistical tests were used.

**Results:** The prevalence of malignant skin tumors was 0.37%. 48% of cases were male, and 52% were females. The mean age of patients was 62.4 with a standard deviation of 15, and individuals of 50-70 age range had the peak incidence (46.1%). BCC was the most prevalent lesion (72%). Nose was the most common area for skin tumors (35.6%). For BCC the mean age was  $62 \pm 14$ , and for SCC it was  $64.6 \pm 17$ .

**Conclusions:** According to the results, BCC was the most prevalent tumor. Skin tumors were mostly observed among females, and the most common locus was nose.

**Keywords:** Skin cancer, Incidence rate, Iran, Melanoma

### INTRODUCTION

Cancers are the cause of 8% of all deaths and the ninth major cause of mortality in average-income countries of the world.<sup>1</sup> According to World Health Organization (WHO) reports, cancer-induced mortality rate will have increased about 80-100% in the middle-east by the next 15 years.<sup>2</sup>

Skin cancer is the most common human cancer in the world.<sup>3</sup> This cancer occurs as the most frequent cancer in males and as the second highest rank cancer in females,

of which frequency is steadily increasing.<sup>4</sup> It is also the most common cancer in the middle-east.<sup>5</sup>

Skin cancer is an important skin disease. The skin tumors may originate from Basal Cell Carcinoma (BCC), Squamous Cell Carcinoma (SCC), melanocytic cells (malignant melanoma), immune cells such as lymphoma, skin appendages, vascular tissue, and connective or metastatic tissue.<sup>6</sup>

According to WHO records, annually there are 2-3 million cases of this type of cancer in the world, and this cancer forms one third of all cancers.<sup>7</sup> Malignant skin

cancer is the most common in most countries of the world, and according to predictions, this disease will be an important factor in total disease load in the next decade.<sup>8</sup> However, more painful than the pain of death due to cancer is the emotional and physical suffering resulting from it. In addition, researchers have failed to take great steps in understanding etiology and molecular basis of cancer.<sup>4</sup>

Skin malignancy is one of prevalent malignancies. BCC and SCC are the most common malignant non-melanoma skin tumors. BCC is the most prevalent tumor in white race, that is more than 99% of patients are white-skinned.<sup>9</sup> As one ages, especially after 40, BCC incidence rate increases. Some risk factors are sun exposure and fair skin. In 85% of cases, BCC develops on head and neck 25-35% of which develops on nose. Although back of the hands are more exposed to sun, BCC incidence is very rare in them. BCC is usually in the form of local invasion, but sometimes metastasis occurs too. After BCC, SCC is the most common non-melanoma tumor in which, unlike BCC, metastasis is very likely. SCC is most common among middle-ages and old populations and is twice more prevalent in males than in females. Factors such as UVB, X radiation, immunodeficiency, and sunlight are among risk factors. Like BCC, SCC is more common in the skin areas that are highly exposed to sun. Both BCC and SCC are diagnosed through biopsy. Melanoma, a dangerous malignant tumor which can produce metastasis to all organs, mostly occurs in females of 25-29 ages. The rate of melanoma incidence is increasing and is more prevalent in white race. Probably sun causes melanoma through cutaneous immunosuppression. Hence, by avoiding massive exposure to sun, one can protect himself against melanoma.<sup>9</sup>

After BCC, SCC is the most common non-melanoma cancer in white race, which unlike BCC, is highly prone to metastasis. It can be widely seen among the middle-aged and old, and is approximately twice more prevalent in males than in females. It is also the most prevalent cancer in southern latitudes such as Australia.<sup>10</sup> Solar factors such as UVB induce DNA destruction and immunosuppression. Arsenic hydrocarbons, thermal factors such as infrared, X ray, thermal burn scars, verrucae carcinoma, HPV, and immunodeficiency can be referred as its risk factors.<sup>9</sup> Both SCC and BCC mostly develop in the areas that receive prolonged exposure to sun. SCC develops on head, back of the hand, and upper part of auricle, whereas BCC rarely develops in these parts.<sup>1</sup> Although numerous factors have been suggested to play role in its incidence, the major factor for SCC is not known yet. A study in Australia showed that reduced sun exposure decreased incidence of SCC and keratoz actinic in children. Melanoma is a dangerous and malignant tumor which originates from melanocytic system cells, and can produce metastasis to any organ. It is the most common cancer in 25-29 age range and the second major cause of cancer in females of 30-34 ages.<sup>10</sup>

Annually, 51000 melanoma cases are reported in US, among which approximately 7800 cases lead to death. Its rate is increasing and may even get epidemic.<sup>10</sup> It develops more in white race. According to conducted studies, such a growth may be attributed to the increase in daily activities outdoor or in places without sufficient protective cover, beach vacations, prolonged exposure to sun, and ozone depletion.<sup>11,12</sup>

Skin cancer is a general health problem in Iran, which has always been the most prevalent cancer in our country. Excessive exposure to UV radiation of sun is the most important environmental factor in the incidence of these malignancies. Totally, in Iran the incidence rate of skin cancer is 10.1339 per 100000. The incidence rate of BCC is 7.53; of SCC is 1.79; and of malignant melanoma cancer is 0.39 per 100000.<sup>12</sup> Although skin cancer is the most common type of cancer in Iran, its epidemiology and studies conducted in this regard are limited and scattered.<sup>13</sup>

Melanoma and non-melanoma skin cancers are the most prevalent cancers in white-skinned people. Incidence rate of both pathologies of the tumor shows an increasing rate all over the world, but mortality rate due to cancer is either constant or decreasing. Increase in incidence rate of NMSC is probably because of a rise in individuals' exposure to sun or UV radiation of light, an increase in outdoor activities, changes in clothing style, increased longevity, ozone depletion, genetics, and in some cases body immunosuppression.<sup>14</sup>

Recently, skin cancer have increased to the extent that it has become the most common malignancy in the world resulting in severe inability and rather low mortality (except for melanoma which has higher mortality).<sup>15</sup> Skin cancer is among the most common cancers all over the world,<sup>12</sup> especially countries such as America, Europe, and Australia, where people have white and fair skin and blue and green eyes, are at peak incidence. In such countries one cause of mortality is malignant melanoma.<sup>16</sup>

Skin cancer is among the most common malignancies in the world which leads to severe inability and low death rate. BCC is the most prevalent type of this cancer which is growing day by day.<sup>17</sup> So far, no researches have been performed on patients visiting dermatology clinics in Ardabil city. The present study investigated the prevalence of melanoma and non-melanoma skin malignancies in patients visiting dermatology clinics, relative gender-based prevalence, and involved locus of body.

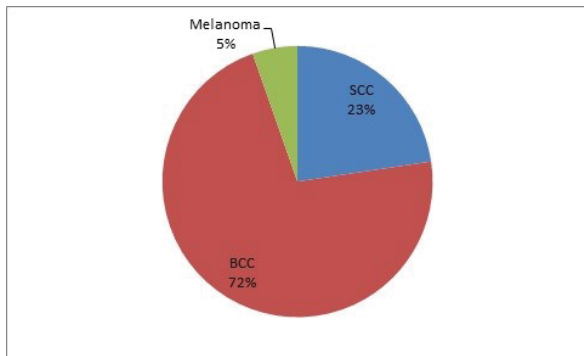
## METHODS

This study is a retrospective descriptive one, and the research populations were 100000 medical records in dermatology clinics of Ardabil. The sample included 341 medical cases which had undergone biopsy for suspicion

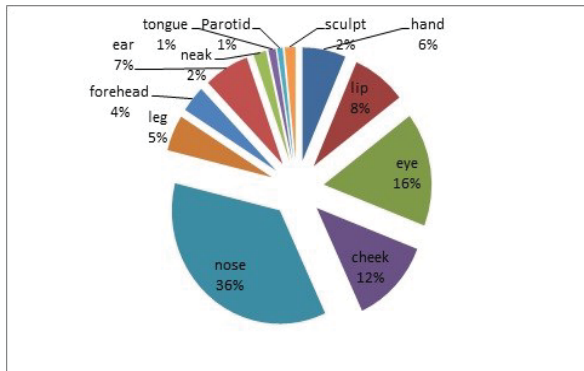
of malignancy. Pathological responses were also attached to the records. Data related to each patient, including age, gender, pathological response of involved area/locus, duration of lesion, address, and job, were recorded, and, then, analyzed and interpreted through SPSS, version 19.

**RESULTS**

In this research there were 178 male (48%) and 193 female (52%) participants. Most patients resided in Ardabil (50.9%). 32.9% of patients were housewives; 26.2% were workers and self-employed; and 14.6% were employees. 90.2% had cigarette-smoking history. Among different types of skin cancers, BCC was the most prevalent one (72%) (Figure 1). The most commonly involved area (35.6%) was nose (Figure 2).



**Figure 1: Frequency kind of tumors confirmed by pathological results.**



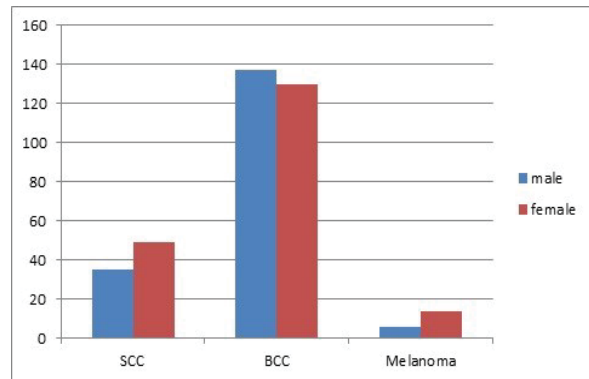
**Figure 2: Frequency of patients by lesion location.**

Most patients didn't have the conditions to be susceptible to any specific tumor (84.6%). After itching (48.0%), secretion (33.7%) and pain (22.9%) were most frequent signs of disease.

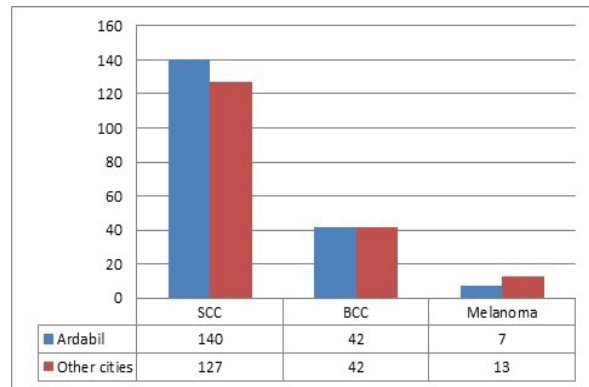
Taking gender of patients into account it can be said that, BCC was more common in males (51.3%) than females (48.7%) (Figure 3).

52.4% of those with BCC were from Ardabil, 47.6% were from other cities (Figure 4). According to this

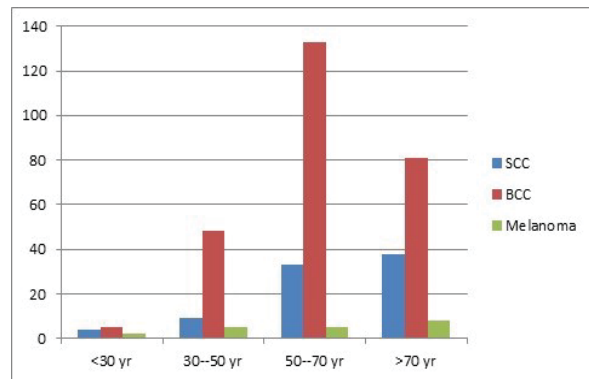
research, 49.8% of patients with BCC were from 50-70 age groups (Figure 5). Most patients with BCC (107 cases) and SCC (48 cases) stated that the duration of affliction was less than one year (Figure 6). Totally, the mean age of patients with malignant BCC and SCC was  $62.6 \pm 14.7$  and  $64.6 \pm 16.7$  but difference was not statistically significant. The average duration of lesions in patients with BCC or SCC malignancies was  $3.3 \pm 0.26$  and  $3.1 \pm 0.8$  but difference was not statistically significant between two groups.



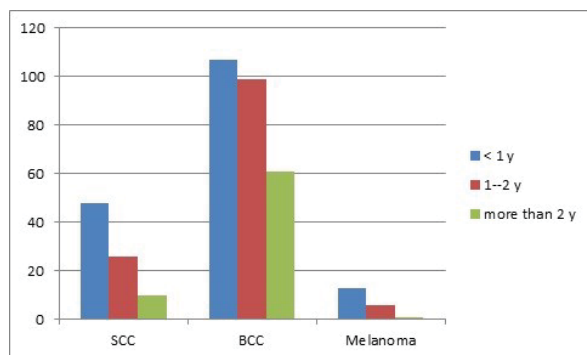
**Figure 3: Frequency kind of tumors by sex.**



**Figure 4: Frequency kind of tumors by patient's residence place.**



**Figure 5: Frequency kind of tumors by patient's age.**



**Figure 6: Frequency kind of tumors by duration of the lesion.**

## DISCUSSION

In the present study Out of 100000 patients visiting dermatology clinics 371 patients have skin tumors and the prevalence of skin tumors was 0.37%. The most common type of tumor was pathological BCC (72%). A research conducted in skin unit of Sina hospital of Hamedan in 1997-1999, showed that the most common pathological type was Nodular, and the most commonly involved area was nose.<sup>18</sup> Another investigation carried out in Fatemi hospital of Ardabil in 2000-2001, revealed that among 35 hospitalized patients, BCC was the most frequent type (85.7%), and SCC, held the second position in terms of high frequency, and nose was the most common involved area.<sup>19</sup> In another research performed in New Mexico in 2003, it was found that BCC prevalence had increased by 50% in males and 20% in females, and that SCC incidence rate had been doubled in both genders.<sup>20</sup> A study in Essen university in Germany from 1995 to 1999, disclosed that SCC and BCC's incidence rate per 100000 was 11.2 cases in males, with the mean age of 43.7 and 4.4 cases in females with the mean age of 31.7.<sup>21</sup> Also, another investigation in America in 2003 suggested that non-melanoma tumors had the highest incidence rate, and out of 1.3 million cases with skin malignancy 53,000 cases had melanoma which is a dangerous and malignant tumor. Findings of the present study conform to those of above study.

Results of this study suggested that most of patients (52%) were females, which is in contrast with that of the research conducted in Mashhad which found that skin cancer was more common in males than females.<sup>22</sup> Likewise, in Sweden the BCC prevalence was higher in males compared to females.<sup>23</sup> Therefore, it can be concluded that high incidence rate of the disease in males might be attributed to the large amount of their daily activities outdoors or in other sunny environments or to their high exposure to substances that cause cancer.<sup>24</sup> In the study performed in Kerman on patients with SCC, the mean age was 60.<sup>25</sup> Also in Collins et al.'s research<sup>26</sup> in Holland, the mean age of patients is reported 64, which is almost in concordance with the results of the present study. In the current study, the mean age of incidence of

three types of cancer showed significant differences. Regarding the distribution of place of residence, most patients (71%) of this study lived in urban areas which matches the findings of Yazdanian-far's study in Hamedan province in which most patients, i.e. 70.8%, were from urban areas.<sup>11</sup>

Similar to the findings of the study which showed that face is the most involved area, which can be ascribed to high exposure to sun, in an investigation performed in Kerman it was found that the involved areas in patients with SCC were head and neck in 77% of cases. However, in their studies Revenga Arranz et al. in Spain and Johnson et al. in England discovered that males are more prone to have melanoma in their upper body, while females are more likely to have it in their lower body. It is likely that these areas have more intense and frequent exposure to UV radiations and, thus, are more prone to sunburn and melanoma in turn.<sup>17</sup>

Over the years under study, the incidence rate of skin cancer has been fluctuating in Ardabil province and is rather low compared to country's statistics. Therefore, it requires that environmental factors such as type of job, work hours outdoors, dryness and humidity of environment, cigarette-smoking and using other addictive materials and infectious factors to be investigated. Some limitations of this study are incomplete record of data in some cases and the possibility that patients had visited clinics out of province.

This research showed that skin cancer is more common in females than males and often develops in old ages. Therefore, there should be screening programs for early prognosis of the disease in elderly males, especially those whose job requires to be excessively exposed to sun.

Frequency of BCC, SCC, and malignant Melanoma was respectively 72%, 22.6%, and 5.4% in Ardabil, and there was a significant difference between frequency distribution of different types of skin cancers and individuals' age ( $P = 0.013$ ). The incidence rate of skin cancer was highest in the age range of 50-70 years (46.1%), and was the lowest in those below 30 years of age (2.9%). Over the years under study, i.e. 2002-2013, the highest incidence rate was concerned with the age range of 50-70 years and the lowest rate was related to the age range below 30; and Ardabil city with 50.9% had the highest incidence rate. In terms of the incidence rate of different types of skin cancer, our findings are compatible with those of previous studies.<sup>27-29</sup> However, regarding the age group, in the study undertaken in Arak the highest incidence rate relates to individuals above 80. Additionally, gender pattern of this study is not in line with that of others<sup>27,28</sup> since in this study SCC's incidence was more common in females than males and BCC was more common in males. However, statistically speaking, the gender pattern did not show significant difference.

## CONCLUSION

Skin tumors are more prevalent in males than females which might be attributed to the fact that males are more exposed to sun than females. BCC was the most common non-melanoma tumor followed by SCC. Findings were in line with those of other studies.

## Suggestions

Due to the effect of some risk factors such as age above 40, maleness, massive exposure to sun, etc., in the incidence of such diseases, it is suggested that sunscreen and hat to be used and an attempt to be made not to be excessively exposed to sun.

Individuals who are treated with radiotherapy, irrespective of cause; patients undergoing grafts; and those with immunodeficiency or those who use immunosuppressive medicines should be occasionally (at least once in 6 months) examined by dermatologists.

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