

Original Research Article

**A cross sectional study to know the prevalence of skin cancers and their distribution in a tertiary care centre of central India.**

**Dr. Saurabh Dubey<sup>1</sup> (Senior Resident), Dr. Sushil Yadav<sup>2</sup> (Senior Resident), Dr. Farah Khan<sup>3</sup> (Senior Resident), Dr. Ransingh Tanwar<sup>4</sup> (Resident)**

<sup>1,4</sup>Department of Dermatology, Venereology and Leprosy, Mahatma Gandhi Medical College & Maharaja YashwantRao Hospital Indore, M.P., India

<sup>2</sup>Department of Dermatology, Venereology and Leprosy, Netaji Subhash Chandra Bose Medical College Jabalpur, M.P., India

<sup>3</sup>Department of Dermatology, Venereology and Leprosy, Gandhi Medical College, Bhopal, M.P., India

Corresponding Author: Dr. Ransingh Tanwar

**Abstract**

**Background:** Skin cancers are not very severe and common but represent a significant proportion of cancers and have great psychological impact on patients living.

**Aim:** To know the prevalence of skin cancers and their distribution.

**Material and Methods:** This is an cross sectional study done over a period of 3 years in a tertiary care hospital of central India, all histopathologically diagnosed cases of skin cancers were included, a detailed history of demographic data, exposure and clinical data was obtained and examination was done findings were recorded and analysed using appropriate statistical tests.

**Results:** The incidence of skin cancers in Dermatology patients was 58/100000 and 1.24% of all cancers patients in our institute. Squamous cell carcinoma was the commonest skin cancer followed by basal cell carcinoma males were more affected than females in in squamous cell carcinoma and melanoma but female preponderance was observed in basal cell carcinoma sun exposure, smoking and occupations causing greater arsenic exposure were the major risk factors associated with skin cancer. Head and neck was the commonest site for skin cancers.

**Conclusion:** skin cancers are lower in percentage compared to other cancers but have a significant number of absolute cases owing to the larger population size of India. Sun protection and reducing exposure to arsenical compounds in pesticides and Tobacco products is emphasized.

**Key words:** Skin Cancers, Basal Cell Carcinoma, Squamous Cell Carcinoma, Melanoma

**1. INTRODUCTION:**

Skin cancers are mainly divided into two broad categories melanoma and non-melanoma skin cancers (NMSCs). Non-melanoma skin cancers (NMSCs) mainly include squamous cell carcinoma (SCC) and basal cell carcinoma (BCC). In the white population BCC is the major cancer reported in skin while African countries report SCC as major cancer.<sup>1</sup> In India, various study demonstrated SCC and BCC as common skin cancers.<sup>2</sup> Skin cancers are not as common as other cancers and also do not have significant morbidity and mortality unless they metastasizes or involve vital structures. But in recent years the incidence of skin cancers are

changing trends and are increasing significantly. Skin cancer incidence in India is relatively lower in comparison to the western world<sup>3</sup>, but the absolute number of cases are much more due to the larger population size of India. NMSCs arise from keratinocytes. Ultraviolet B radiation (UVB 290-320 nm) derived from sun exposure is a well-known agent causing NMSCs.<sup>4</sup> Other important aetiological agents are arsenic, sun exposure, radiation therapy and various hydrocarbons.<sup>5</sup> The present study was conducted to know the prevalence of various skin cancers and relationship with various etiological agents.

## 2. MATERIAL AND METHOD:

This was a cross sectional study done over a period 3 years in the Department of Dermatology Venereology, and Leprosy in a Tertiary Care Hospital of Central, India from duration July 2018 -June 2021,03 years. All the histopathologically diagnosed cases of skin cancer during study period, who gave consent for the participation were included.

A detailed history of demographic data like age, gender, locality and exposure to sunlight, tobacco, radiation therapy, PUVA/NB-UVB therapy was obtained and clinical examination was done.

**Statistics:** To analyze the results, appropriate statistical tests such as chi-square ( $\chi^2$ ), mean, standard deviation (SD) and frequency tables were applied using SPSS software version 28.0

### Observations and Results:

**Table-1: Age and gender wise distribution of skin cancers**

Variable		Squamous cell Carcinoma	Basal cell Carcinoma	Melanoma	Others	Total
Age	> 60 Years	38 (74.5%)	36 (80%)	8 (57.14%)	2 (33.3%)	84(72.41%)
	< 60 Years	13 (25.5%)	9 (20%)	6 (42.86%)	4 (66.7%)	32(27.59%)
Total		51	45	24	6	116(100%,)
Gender	Male	37 (72.55%)	21 (46.67%)	9 (64.28%)	4 (66.7%)	71(61.2%)
	Female	14 (27.45%)	24(53.33%)	5 (35.72%)	2 (33.3%)	45(38.8%)
Total		51	45	14	6	116(100%)

**Table 2: Distribution of skin cancer according to site of occurrence**

Location	Squamous cell Carcinoma	Basal cell Carcinoma	Melanoma	Others	Total
Head and Neck	30(58.8%)	39 (86.67%)	7 (50%)	0	76 (65.5%)
Upper Limb	2 (3.9%)	1 (2.2%)	3 (21.43%)	0	6 (5.2%)
Lower Limb	7 (13.72%)	0	4 (28.57%)	2 (33.3%)	13 (11.2%)
Trunk	3 (5.8%)	2 (4.4%)	0	4 (66.67%)	9 (7.75%)
Perineum	9 (17.6%)	3 (6.6%)	0	0	12 (10.34%)
<b>Total</b>	51	45	14	6	116

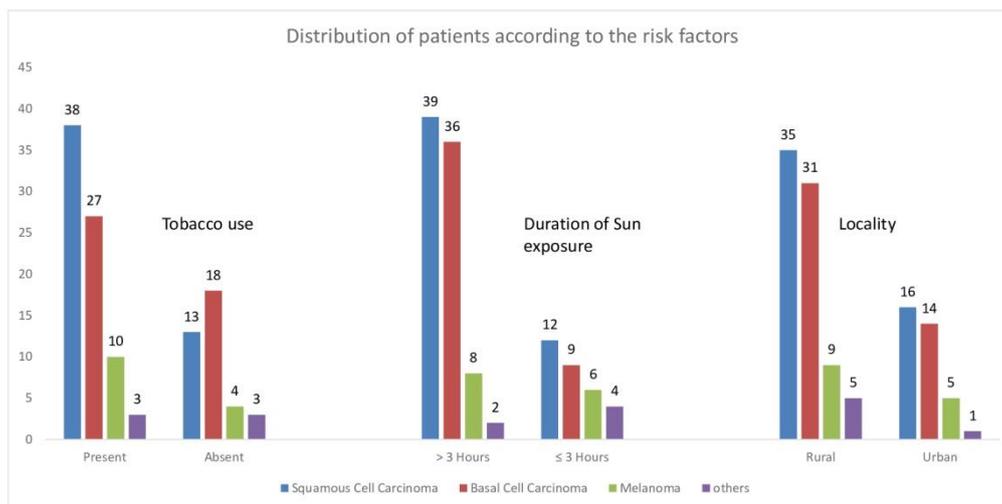
Skin cancers constituted 116 out of 200725 patients visiting our Dermatology outpatient clinic (58/100,000) and out of 9354 patients registered in the cancer department of our institutions (1.24%) over a period of 3 year. Out of these 116 patients, 71 (61.2%) were male and 45 (38.8%) were female. 84 (72.41%) patients were above the age of 60 years with mean age of 64.7±10.4 years with a p-value of 0.05, (**Table-1**) and 78 (67.24%) cases had history of consumption of tobacco (smoking or chewing), 85 (73.27%) had history of sunlight exposure more than 3 hours with mean duration of sun exposure was 3.62 ± 1.2 hours with a significant p-value of 0.04. Majority of patients 80 (68.96%) were from rural area. (**Figure-1**) The most common site affected with skin cancer was head and neck region where 76 (65.5%) of patients had skin cancer with a significant p-value of <0.0001. (**Table-2**) None of the patients had a history of radiation exposure or PUVA therapy.

Squamous cell carcinoma 51 (43.97%) was the most commonly encountered skin cancer in our study, followed by basal cell carcinoma 45 (38.79%) and melanoma 14 (12%). Clinical and histopathological findings were shown in (**Figure-2**)(a,b,c&d).

In squamous cell carcinoma the majority of patients were male 37 (72.55%) of age more than 60 years 38 (74.5%). History of tobacco consumption was present in 38 (74.5%) and 39 (76.47%) had a history of sun exposure of more than 3 hours. Head and neck 30 (58.8%) was the commonest site for SCC followed by perineal area 9 (17.6%) and lower limbs 7(13.72%). In basal cell carcinoma the majority of patients were female 24 (53.33%), of age more than 60 years 36(80%). History of tobacco consumption was present in 27(60.0%) and 36 (80.0%) had a history of sun exposure of more than 3 hours. Head and neck 39 (86.67.0%) was the commonest site for BCC followed by perineal area 3 (6.6%) and trunk 2 (4.4%).

In melanoma the majority of patients were male 9 (64.28%), of age more than 60 years 8 (57.14%). History of tobacco consumption was present in 10 (71.42%) and 8 (57.14%) had history of sun exposure of more than 3 hours. Head and neck 7 (50.0%) was the commonest site for Melanoma followed by lower 4 (28.57%) and upper limbs 3 (21.43%). 3 cases of Cutaneous lymphoma, 2 case of metastasis and 1 case of mycoses fungoides was present.

**Figure 1: Showing the distribution of skin cancers according to various risk factors like sun exposure, tobacco consumption and locality**



**Figure 2(a, b, c & d): Showing clinical and histopathological images of skin cancers**

a. Clinical case of disseminated melanoma

b. Clinical case of basal cell carcinoma

c. Histopathology of Melanoma showing moderately dense dermal infiltrate of large spindle shaped cells with pleomorphism which is replacing the part of reticular dermis. Many of these cells show melanin pigment in the cytoplasm. Nuclei are hyperchromatic, large, with inconspicuous nucleoli. Superficial epidermis is atrophic and not infiltrated by these cells.

d. Histopathology of basal cell carcinoma made up of small round cells that vary greatly in size and shape and show peripheral palisading. Occasional pyknotic cells are scattered between these cells. The surrounding stroma shows mucin and a moderately dense perivascular lymphoplasmocytic infiltrate. The tumor islands are separated from this stroma by a cleft at a few places.

### 3. DISCUSSION:

Over last few decades, skin cancer are continuously increasing, non- melanoma skin cancers are the commonest type of skin cancer .<sup>6</sup>

In Present study the prevalence of skin cancers among dermatology patients was 58/100,000 and 1.24% among the total cancers which is higher compared to what reported by various authors where it was less than 1% of all cancers <sup>7</sup> and lower than the findings of study conducted by Lal et al(2016) which reported 3.18 of all cancers.<sup>2</sup>

SCC was the commonest skin cancer reported in our study which is comparable to various studies conducted in India <sup>8-11</sup> but in contrast to white population where BCC accounts for 70% of all malignant cancers of skin.<sup>1</sup>This can be due to the protective effect of eumelanin from UVB radiation in dark skin population.<sup>12</sup>

The majority of cases in present study were of more than 60 years and the mean age is  $64.7 \pm 10.4$  years. Which is comparable to a study conducted Kumar et al(2014) where the mean age was  $60.9 \pm 14.2$ .<sup>13</sup>

In present study SCC and Melanoma were more common in male while BCC is more common in female which is comparable to findings reported by Lal et al where BCC was more prevalent among females (78.20%) while SCC (70.96%) and MM (71.43%) were common among males.<sup>2</sup> It is also comparable to findings of Kumar et al where BCC was common in female.<sup>13</sup>

In present study majority of cases were from rural area and have history of sun-exposure for more than 3 hours. The main occupation of rural area in vicinity of our tertiary care centre is farming. Which leads to increased sun exposure<sup>14</sup> and exposure to arsenical compounds in pesticides which are major factors reported in causation of skin cancers.<sup>15</sup> These findings are similar to the finding reported by Lal et al which showed that 92% of the cases of skin cancer were farmer.<sup>2</sup>

There was history of tobacco smoking and chewing was present in majority of our patients, which is also a causative factor for squamous cell carcinoma, also tobacco has arsenic which leads to increased chances of skin cancers.<sup>16</sup>

In present study head and neck (86.67%) is the commonest site for BCC, which is comparable to the findings reported by Kumar et al where the commonest site for BCC was head and neck (97.2%),<sup>13</sup> Also comparable to findings of a study done by Lal et al where the commonest site was head and neck (100%).<sup>2</sup> This could be explained by sun exposure to the head and neck is highest compared to other sites.

In present study head and neck (58.8%) was the commonest site for SCC followed by perineal area (17.6%) and lower limbs (13.72%), which is comparable to findings reported by Lal et al where SCC was present over head and neck in 67.7% cases followed by perineal area (16%) and Lower Limb (9.6%).<sup>2</sup>

#### 4. CONCLUSION:

Squamous cell carcinoma is the commonest histological type and may be attributed to tobacco consumption, climate changes, exposure to sunlight and high levels of arsenic in drinking water. Old population and males are affected more than females in all skin cancers while females are affected more in BCC. As the incidence rate of skin cancers is dramatically increasing, a clear understanding of the multiple causative factors is an essential step in their prevention. A multipronged strategy to use adequate sun exposure, reduction of tobacco consumption, safe water supply and discouraging the indiscriminate use of pesticides is recommended.

**Conflicts of interest: Nil**

**Source of funding: Nil**

#### 5. REFERENCES

- [1] Casson P. Basal cell carcinoma. *ClinPlast Surg.* 1980;7:301–11.
- [2] Lal ST, Banipal RP, Bhatti DJ, YadavHP. Changing Trends of Skin Cancer: A Tertiary Care Hospital Study in Malwa Region of Punjab. *JClin of Diagn Res.* 2016; 10(6):PC12-PC15.

- [3] Deo SV, Hazarika S, Shukla NK, Kumar S, Kar M, Samaiya A. Surgical management of skin cancer: Experience from a regional cancer centre in India. *Indian J Cancer*. 2005;42:145–50.
- [4] Leaf A. Potential health effects of global climatic and environmental changes. *N Engl J Med*. 1989;321:1577–83.
- [5] Tadini G, Restano L, Gonzales–Parez R, Gonzales-Ensenat MA, Vincente-Villa MA, Cambiaghi S, et al. Phacomatosis pigmentokeratolica. Report of new cases and further delineation of syndrome. *Arch Dermatol*. 1998;134:333–37.
- [6] Preston DS, Stern RS. Nonmelanoma cancers of the skin. *N Engl J Med*. 1992;327:1649–62.
- [7] Mahajan MK, Lal P, Biswal BM, Mohanti BK. Text book of radiation oncology: principles and practice. New York: B. I. Churchill Livingstone; 2000. Cancer of skin. In: Rath GK, Mohanti BK, editors; pp. 223–37. .
- [8] Khanolkar VR, Suryabhai B. Cancer in relation to usages. *Arch Patho*. 1945;40:351–61.
- [9] Talvalkar GV. Squamous cell carcinoma of skin: its incidence and aetiopathogenesis in 625 cases. *Ind J Cancer*. 1970;7:24–33.
- [10] National Cancer Registry Programme, Indian Council of Medical Research (1990-1996) consolidated report of the population based cancer registries.
- [11] Adinarayan M, Krishnamurthy SP. Clinicopathological evaluation of nonmelanoma skin cancer. *Indian J Dermatol*. 2011;56:670–72.
- [12] Yamaguchi Y, Beer JZ, Hearing VJ. Melanin mediated apoptosis of epidermal cells damaged by ultraviolet radiation: factors influencing the incidence of skin cancer. *Arch Dermatol Res*. 2008;300:S43–50.
- [13] Kumar S, Mahajan BB, Kaur S, Yadav A, Singh N, Singh A. A study of Basal cell carcinoma in South asians for risk factor and clinicopathological characterization: a hospital based study. *J Skin Cancer*. 2014;2014:173582. doi:10.1155/2014/173582
- [14] Krickler A, Armstrong BK, English DR. Sun exposure and non-melanocytic skin cancer. *Cancer Causes Control*. 1994 Jul;5(4):367-92.
- [15] Li Y, Ye F, Wang A, Wang D, Yang B, Zheng Q, Sun G, Gao X. Chronic Arsenic Poisoning Probably Caused by Arsenic-Based Pesticides: Findings from an Investigation Study of a Household. *International Journal of Environmental Research and Public Health*. 2016; 13(1):133.
- [16] Campbell R C, Stephens W E, Meharg A A. Consistency of arsenic speciation in global tobacco products with implications for health and regulation. *Tobacco Induced Diseases*. 2014;12(December):24