

Evaluating the trend of cutaneous malignant tumors in Ilam from 2002 to 2011

Mohammad R. Hafezi Ahmadi^{1,2}, Zeinab Bakhtari³, Behrang Kazeminezhad⁴, Samiramis Ghavam⁵

¹Department of Pathology, ²Biotechnology and Medical Plants Research Center, Departments of ³Medicine and ⁵Cardiology, Ilam University of Medical Sciences, Ilam, ⁴Department of Pathology, Clinical Research Development Center, Shahid Modarres Hospital, Tehran, Iran

ABSTRACT

Introduction: Skin cancer, the melanoma type of which causes high mortality, is the most common malignancy in Iran and all over the world. UV is the most important cause of the incidence of this disease. This study evaluates the frequency of different types of cancer and their trajectory in Ilam province from 2002 to 2011. **Materials and Methods:** This analytical-descriptive study covered and evaluated all skin cancer patients who were registered in Ilam Province Cancer Registry during 2002 to 2011. Required information of each individual patient, such as age, sex, residence, pathological type of skin cancer, the location of the incidence of the disorder, and the year, was collected and studied. **Findings:** Out of total 347 cases, 240 cases (69.2%) were diagnosed with basal cell carcinoma (BCC), 63 cases (18.2%) with squamous cell carcinoma (SCC), 16 cases (4.6%) with malignant melanoma (MM), 8 cases (2.3%) with metastatic cancer, and 20 cases (37.7%) with other skin cancers. Mean age of patients was $62/42 \pm 16/11$ years, and the majority of them (37.7%) were men and lived in the city. Face was the most common place of the incidence of this disease (81.6%) and hand was the least common one (1.7%). The rate of incidence of cancer has experienced considerable growth in men and a slight decrease in the case of women between 2002 and 2011 in Ilam. **Conclusion:** According to the results of this study, the rate of skin cancer has increased among men during the studied period; thus, necessary measures are required to prevent and reduce the incidence of this disease, especially in people who are exposed to the sun's ultraviolet rays because of their jobs.

Keywords: Basal cell carcinoma, Ilam, skin cancer, squamous cell carcinoma

Introduction

Skin is the largest organ of the body that protects us against heat, light, and infection; it also helps in controlling body temperature, store water and fat, and produce vitamin D. Various cellular components of skin may change into malignancy. Skin cells grow and divide to take new forms. Cells age and die and new cells take their place; however, this orderly process sometimes goes wrong. Old cells do not die out and new cells grow when they are not actually needed in a specific part of the body. These extra cells form a mass of tissue called "tumor." Skin cancer is

one of the most common malignancies in the world.^[1] According to World Health Organization report, issued in 2000, out of total 13,627,699 cases of cancers, 10,532,711 patients were diagnosed with basal cell carcinoma (BCC), 2,833,037 patients with squamous cell carcinoma (SCC), and 211,921 patients with malignant melanoma (MM). Skin cancer will have a significant impact on the overall disease load in the coming decades.^[2] Several studies conducted in different countries across the world emphasize the increasing incidence of skin cancers. Reports issued from the UK, USA, and Australia show that cutaneous tumors are the most common human tumors; they also argue that BCC is the most common skin cancer.^[3,4] Skin cancer has a high rate of occurrence in old men of white race.^[5-7] Although several genetic factors affect the incidence of skin cancer, type of skin and exposure to the sun

Address for correspondence: Dr. Samiramis Ghavam, Department of Cardiology, Ilam University of Medical Sciences, Ilam, Iran.

E-mail: Reza.ahmadi56@yahoo.com

Access this article online

Quick Response Code:



Website:
www.jfmipc.com

DOI:
10.4103/jfmipc.jfmipc_178_17

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Ahmadi MR, Bakhtari Z, Kazeminezhad B, Ghavam S. Evaluating the trend of cutaneous malignant tumors in Ilam from 2002 to 2011. J Family Med Prim Care 2019;8:717-21.

are the most important factors in the development of skin cancer.^[8] Nonmelanoma skin cancers, such as basal cell carcinoma and SCC, are the most common malignancy in America and most parts of the world; these disorders have experienced considerable growth in recent years.^[9-11] According to official statistics, nonmelanoma skin cancer, the basic cause of incidence is exposure to sunlight, is one of the four most common cancers in adults.^[12] A total of 1.3 million Americans are diagnosed with nonmelanoma cancers each year.^[14] Although cancer rates are declining, skin cancer is rising at a rate of 3%–5%, despite being preventable and treatable, each year.^[15] Our country is prone to experience increasing skin cancer rates because of severe sunlight in most seasons of the year, exposure of farmers, herdsmen, and construction workers to ultraviolet radiation, and failure to use appropriate protection such as hats, glasses, and clothing when working in an open environment.^[16,17] Based on what has been mentioned so far, this study was conducted to evaluate and assess the frequency and trajectory of malignant cutaneous tumors in Ilam during 2002 to 2011 to plan and implement more precise measure for preventing and treating various skin cancers.

Materials and Methods

The sample size of this descriptive–analytical study included 347 subjects, all of whom were registered as suffering from skin cancers in Ilam Cancer registry between 2002 and 2011, with a confidence level of 95% and error rate of 5%. Required information of each individual patient, such as age, sex, residence, pathological type of skin cancer, the location of the incidence of

the disorder, and the year, was collected and recorded in Excel. SPSS software, version 20, was used to conduct an analytical analysis of the data; confirmation of ethics committee was received before the initiation of the study.

Findings

A total of 347 patients, including 227 (65.4%) male and 120 (34.6%) female subjects, were analyzed in this study; mean age of study participants was 62/42 ± 16/11 years, with a minimum age being 10 and maximum age being 110 years [Figure 1]. BCC had the highest frequency (69.2%). SCC, miscellaneous skin cancers, melanoma, and metastatic had a frequency of 18.2%, 5.8%, 4.6%, and 2.3%, respectively [Table 1]. In terms of the anatomical location of lesions, most to least common frequencies belonged to face (81.6%), body (7.5%), foot (5.2%), neck (4%), and hand (1.7%) [Table 1]. The statistical analysis showed that 63.7% of subjects resided in the city and urban areas; the incidence of cancer among all diseases was more prevalent in the city people in comparison with village people. According to the findings of this study, the highest incidence of malignant tumors transpires after the fifth decade of life, between 60 and 79 years, with a frequency of 156 subjects (45%) [Table 2]. Except for miscellaneous skin cancers, the incidence of cancer is more common among men rather than women in all types of skin cancers [Table 1 and Figure 2]. Bowen's disease had the highest frequency among miscellaneous skin cancers (20 cases) [Table 3]. The maximum and minimum relative incidence was 71.2% and 50% in the case of BCC and 24% and 0% in terms of SCC,

Table 1: The frequency distribution of clinical forms of cutaneous malignant tumors in terms of some variables

Total	Other tumors	Metastatic	Melanoma	SCC	BCC	Tumor type Variables	
227 (%100)	9 (%3/96)	4 (%1/76)	9 (%3/96)	49 (%21/58)	156 (%68/72)	Men	Sex
120 (%100)	11 (%9/16)	4 (%3/33)	7 (%5/83)	14 (%11/66)	84 (%70)	Women	
347 (%100)	20 (%5/76)	8 (%2/30)	16 (%4/61)	63 (%18/15)	240 (69/16%)	Total	
63/90±14/88	40.44±18/09	67/75±9/21	57/88±16/87	67/87±14/98	64/25±13/44	Men	Age (mean±SD)
59/60±17/95	56/63±22/47	52/00±20/47	64/00±22/75	62/85±21/31	59/45±16/44	Women	
62/41±16/11	49/35±21/72	59/87±16/94	60/56±19/20	66/76±16/53	62/57±14/70	Total	
283 (%100/0)	8 (%2/8)	4 (%1/4)	8 (%2/8)	47 (%16/6)	216(%76/3)	Face	Location of incidence
14 (%100/0)	0 (%0/0)	0 (%0/0)	1 (%7/1)	5 (%35/7)	8 (%57/1)	Neck	
26 (%100/0)	7 (%26/9)	3 (%11/5)	2 (%7/7)	5 (%19/2)	9 (%34/6)	Body	
6 (%100/0)	1 (%16/7)	0 (%0/0)	0 (%0/0)	2 (%33/3)	3 (%50/0)	Hand	
18 (%100/0)	4 (%22/2)	1 (%5/6)	5 (%27/8)	4 (%22/2)	4 (%22/2)	Foot	
221 (%100/0)	13 (%5/9)	6 (%2/7)	11 (%5/0)	35 (%15/8)	156 (%70/6)	Urban	Place
126 (%100/0)	7 (%5/6)	2 (%1/6)	5 (%4/0)	28 (%22/2)	84 (%66/7)	Rural	

BCC: Basal cell carcinoma; SCC: Squamous cell carcinoma

Table 2: The frequency distribution of clinical forms of cutaneous malignant tumors in terms of age groups

Total		Other tumors		Metastatic		Melanoma		SCC		BCC		Tumor type	Age
Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency		
1/7	6	50	3	0	0	0	0	0	0	50	3		1-19
6/9	24	12/5	3	4/2	1	12/5	3	16/7	4	54/2	13		20-39
31/7	110	6/4	7	0/9	1	4/5	5	12/7	14	75/5	83		40-59
45	156	3/2	5	0/6	1	3/8	6	17/9	28	74/4	116		60-79
14/7	51	3/9	2	0	0	3/9	2	33/3	17	58/8	30		>80

BCC: Basal cell carcinoma; SCC: Squamous cell carcinoma

respectively [Table 4]. The rate of incidence of cancer has experienced considerable growth in men and a slight decrease in the case of women between 2002 and 2011 in Ilam.

Discussion and Conclusion

This study, which lasted for 10 years, investigated an overall number of 347 patients. In terms of the frequency of the sex of subjects, the results of this study showed that men are diagnosed with skin cancer more than women, which is consistent with the findings of other research conducted around the world.^[6-18] The results of studies carried out in Mashhad^[1] and Hamedan^[19] showed that basal cell carcinoma is more common in men with a rate of 4 and 1.8, respectively. Based on Yazdanfar study, BCC is a more common phenomenon among men in comparison with women.^[20] The study which was conducted in Switzerland showed that BCC is more common among men in comparison with women.^[21] The results of Abdol-Seied^[22] and Ansarin study^[23] indicated a higher incidence of BCC among men. Based on the findings of research conducted in Japan, BCC occurs with an equal rate among both sexes.^[23] A study which was conducted in Bangkok on 67 patients showed that BCC is a more common phenomenon among women rather than men.^[24] The main causes of the higher rate of skin cancer among men might be exposure to sunlight and ultraviolet radiation because of occupational necessities. According to Miler *et al.*, hair follicles

may play a role in the incidence of BCC. Boxman *et al.*, discovered human papillomavirus DNA in isolated hair; they claimed that BCC can influence carcinogenesis;^[25] thus, a difference in the dermal appendages, such as hair follicles, could make a difference in the incidence of BCC in both sexes. In terms of incidence age, the emergence of skin cancer is more common and probably in the sixth and seventh decades of life.^[6,26-31] The incidence rate of BCC at the age of 40–79 years is 95%.^[32] According to Collins *et al.*'s study, the mean age of patients suffering from BCC is 64 years in the Netherlands, which is consistent with the findings of this study.^[33] The main causes of such a fact might be increased elderly population, skin type of the inhabitants of the region, the impact of environmental factors such as excessive exposure to the sun, late referral of patients to the doctor, increased awareness of younger generation of the dangers of sunlight, and decrease in professions, such as agriculture and raising animals among the younger generation. MM usually occurs at a younger age and this study reported 29–30 years of age as the highest frequency incidence age of these lesions. Based on the findings of a study conducted in Mashhad, the rate of the incidence of BCC, SCC, and MM was 57.7%, 20.2%, and 4.4%, respectively. The rate of

Table 3: Frequency distribution of miscellaneous skin cancers	
Name of the tumor	Frequency
Malignant fibrous histiocytoma	1
Sarcoma, NOS	2
Dermatofibrosarcoma protuberans	3
Kaposi sarcoma	3
Leiomyosarcoma	2
Bowen's disease	5
T-cell lymphoma	1
Malignant lymphoma	1
Fibrosarcoma	1
Basosquamous cell carcinoma	1
Total	20

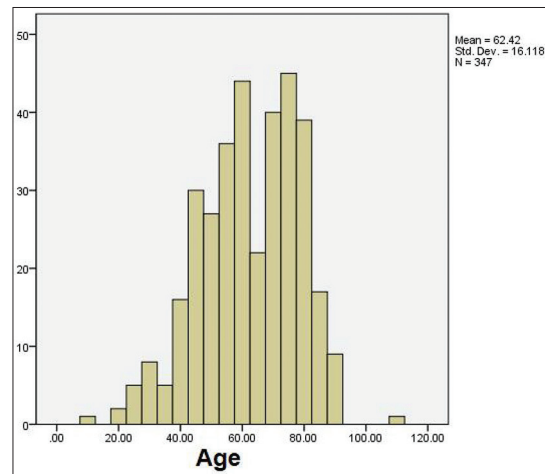


Figure 1: Age frequency distribution of skin cancer patients in Ilam during 2002 to 2011

Table 4: Frequency distribution of cutaneous malignant tumors in terms of the year of incidence												
Total		Other tumors		Metastatic		Melanoma		SCC		BCC		Tumor type Year
Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	
100/0	13731	0/0	0	9/1	1	0/0	0	0/0	0	9/9	10	2002
100/0	14	0/0	0	7/1	1	0/0	0	14/3	2	78/6	11	2003
100/0	16	6/2	1	6/2	1	12/5	2	25/0	4	50/0	8	2004
100/0	26	15/4	4	3/8	1	3/8	1	26/9	7	50/0	13	2005
100/0	40	2/5	1	5/0	2	7/5	3	17/5	7	67/5	27	2006
100/0	45	2/2	1	4/4	2	6/7	3	11/1	5	75/6	34	2007
100/0	50	6/0	3	0/0	0	4/0	2	24/0	12	66/0	33	2008
100/0	52	7/7	4	0/0	0	0/0	0	21/2	11	71/2	37	2009
100/0	48	6/2	3	0/0	0	2/1	1	16/7	8	75/0	36	2010
100/0	45	6/7	3	0/0	0	8/9	4	15/6	7	68/9	31	2011
100/0	347	5/8	20	2/3	8	4/6	16	18/2	63	69/2	240	Total

BCC: Basal cell carcinoma; SCC: Squamous cell carcinoma

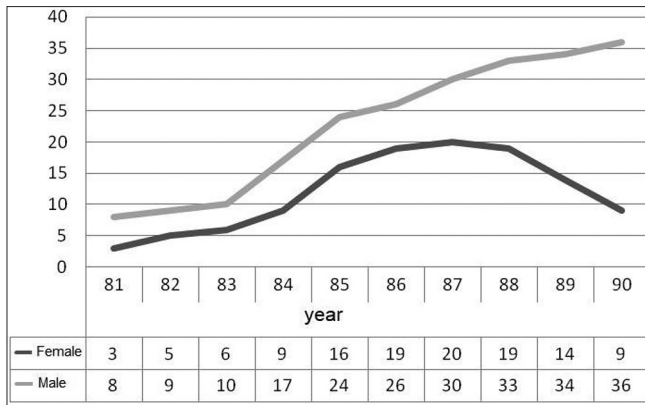


Figure 2: Sex-based growth of malignant cutaneous tumors during 2002 to 2011

the incidence of BCC was, for Yazd^[16] and Isfahan,^[17] 74% and 76%, respectively, in 1997. According to the Brisbane Pathology Center Report, 60% of 676 patients were diagnosed with BCC, 15% with SCC, and 4% with MM.^[33-35] According to the results of studies conducted in the USA, the incidence rate of BCC was 75% among different types of skin cancer;^[25-27] the incidence rate of BCC was, approximately, 79% in Australia;^[6,28,31] such statistics are almost consistent with the findings of this study. BCC, SCC, and MM had the highest incidence rate.^[6,36] Based on the results of a study conducted in Mashhad, 93% of BCC lesions and 74% of SCC lesions occurred in the area of head and neck and extremities were the most common sites for the emergence of MM. Based on the results of a study conducted in Kerman, the incidence sites of SCC were head and neck in 77% of patients.^[37] The most common, 81.6%, site of the incidence of skin cancer turned out to be face in this study. Because of being constantly exposed to severe sunlight, head and neck show to be more susceptible to skin abnormalities.^[6,26,28,31,36,38-42] Based on the results of this study, 63.7% of patients turned out to live in the city; the frequency of city people is more than that of village people in suffering from all kinds of skin cancers; however, considering the place of the conduction of this research, there are possibilities of bias. According to the results of this study, the rate of incidence of cancer has experienced considerable growth in men and a slight decrease in the case of women between 2002 and 2011; the main causes of such considerable difference of results might be usage of Islamic veil and prompt medical attention on the part of women and increased exposure to solar ultraviolet because of occupational reasons on the part of men. Skin cancer has become more common with increasing age; consequently, certain necessary measures must be implemented to prevent and reduce the incidence of such diseases, especially in individuals who are constantly exposed to solar ultraviolet because of occupational reasons.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Amouzgar MH, Yazdanpanah MJ, Ebrahimirad M. Frequency of different skin cancer in Qaem hospital of Mashhad, from 1975-1995. A cross-sectional study. *Iran J Dermatol* 2006;19:28-35.
2. Lucas R, McMichael T, Smith W, Armstrong B. Environmental Burden of Disease Series No. 13, Solar Ultraviolet Radiation: Global Burden of Disease from Solar Ultraviolet Radiation. World health organization; Geneva: 2006. p. 20-65.
3. Murphy GF, Mihm MC. Robbins' pathologic basis of disease, 5th Edition; New York: WB Saunders; 1994. p. 1174-8.
4. Sadler TW. Langman's Medical Embryology. 6th ed. Philadelphia: WB Saunders; 1995. p. 19.
5. Leshin B, White WL. Malignant neoplasm's of keratinocytes. In: Arndt KA, Leboi PE, Robinson JK, Wintroub BU, editors. *Cutaneous Medicine and Surgery*. 1st ed. Philadelphia WB: Saunders Company; 1996. p. 1378-440.
6. Mackie RM, Quinin AG. Non-melanoma skin cancer and other epidermal skin tumors. Edited by: Tony Burns, Stephen Breathnach, Neil Cox, Christopher Griffiths. Wiley Blackwell Science Publication; Oxford: 2008. p. 36-50.
7. Ansing AC, Heintz AP. Epidemiology and etiology of squamous cell carcinoma of the vulva. *Eur J Obstet Gynaecol Reprod Biol* 1993;48:111-5.
8. Kricker A, Armstrong BK, English DR. Sun exposure and non-melanocytic skin cancer. *Cancer Causes Control* 1994;5:367-92.
9. Quinn AG, Perkins W. Non-melanoma skin cancers and other epidermal skin tumor. In: Burns T, Breathnach S, Cox N, Griffiths C, editors. *Rooks Text Book of Dermatology*. 8th ed, vol 36. Oxford: Wiley-Blackwell; 2010. p. 1-24.
10. Katz MH. Non-melanoma skin cancer. *Md Med J* 1997;46:239-42.
11. Eide MJ, Krajenta R, Johnson D, Long JJ, Jacobsen G, Asgari MM, et al. Identification of patients with nonmelanoma skin cancer using health maintenance organization claims data. *Am J Epid* 2009;171:123-8.
12. Wheless L, Black J, Alberg AJ. Nonmelanoma skin cancer and the risk of second primary cancers: A systematic review. *Cancer Epidemiol Biomarkers Prev* 2010;19:1686-95.
13. Albert MR, Weinstock MA. Keratinocyte carcinoma. *CA Cancer J Clin* 2003;53:292-302.
14. Noorbala, Taghi M, Kafaie P. Analysis of 15 years of skin cancer in central Iran (Yazd). *Dermatology Online Journal* 2007;(4):1-4.
15. McClendon BT, Dunn SP. Reducing skin cancer risk: An intervention based on protection motivation theory. *Journal of Health Psychology* 2001;6:321-8.
16. Asilian U, Hassanpoor A, Meqdadi M. Consideration over the geographical prevalence of skin cancer in the center of Iran. *Journal of Research in Medical Science* 1997;2:65-8.
17. Noorbala M, Geti T. Consideration of skin cancer frequency in yazd. *Puls* 1995;4:15-20.
18. Shibuya K, Mathers CD, Boschi-Pinto C, Lopez AD, Murray JL. Global and regional estimates of cancer mortality and incidence by site: II. Results for the global burden of disease 2000. *BMC Cancer* 2002;2:1471-2407.
19. Staples M, Marks R, Giles G. Trends in the incidence of non melanocytic skin cancer treated in Australia 1985-1995. Are primary prevention program stating to have an effect? *Int*

- J Cancer 1998;78:144-8.
20. Yazdanfar A, Ghasemi E. Frequency of skin cancers in Hamedan from 1991 to 2007. *Dermatol Cosmet* 2011;123-30. [Persian].
 21. Bath-Hextall FJ, Perkins W, Bong J. Interventions for basal cell carcinoma of the skin. *Cochrane Database Syst Rev* 2007;CD003412. doi: 10.1002/14651858.CD003412.pub2.
 22. Abdelsayed RA, Guijarro-Rojas M, Ibrahim NA, Sanguenza OP. Immunohistochemical evaluation of basal cell carcinoma and trichopilioma using Bcl-2, Ki67, PCNA and P53. *J Cutan Pathol* 2000;27:169-75.
 23. Ansarin H, Daliri M, Soltani-Arabshahi R. Expression of P53 in aggressive and nonaggressive histologic variants of basal cell carcinoma. *Eur J Dermatol Cosmet* 2006;16:543-7.
 24. Bastiaens M, Hoefriagel J, Bruijn J, Westendorp RG, Vermeer BJ, Bouwes Bavinck JN. Differences in age, site distribution, and sex between nodular and superficial basal cell carcinomas indicate different types of tumors. *J Invest Dermatol* 1998;110:880-4.
 25. Kikuchi A, Shimizu H, Nishikawa T. Clinical histopathological characteristics of basal cell carcinoma in Japanese patients. *Arch Dermatol* 1996;132:320-4.
 26. Nakiang Y, Kullavanijaya P. Basal cell carcinoma: Seven years experience at the Institute of Dermatology in Bangkok Thailand. *J Dermatol* 1994;21:660-3.
 27. Goldsmith LA, Katz SI, Gilchrist BA, Paller AS, Leffell DJ, Wolff K. *Fitzpatrick's Dermatology in General Medicine*, 8th edition. New York: McGraw-Hill; 1999. p. 857-64.
 28. Miller DL, Weinstock MA. Nonmelanoma skin cancer in United States: Incidence. *J Am Acad Dermatol* 1994;30:774-8.
 29. Geller AC, Zhang Z, Sober AJ, Halpern AC, Weinstock MA, Daniels S, *et al.* The first 15 years of the American Academy of Dermatology skin cancer screening programs: 1985-1999. *J Am Acad Dermatol* 2003;48:34-41.
 30. Guibert P, Mollat F, Ligen M, Dieno B. Melanoma screening. *Arch Dermatol* 2000;136:199-202.
 31. Kennedy C, Bajdik CD. Descriptive epidemiology of skin cancer in Aruba: 1980-1999. *Int J Dermatol* 2001;40:169-74.
 32. Gillos G. The incidence of non melanoma skin cancer in Australia. *BMJ* 1998;296:13-7.
 33. Miller SJ. Biology of basal cell carcinoma (Part I). *J Am Acad Dermatol* 1991;24:1-13.
 34. Coolins GL, Nickoonahand N, Morgan MB. Changing demographics and pathology of nonmelanoma skin cancer in the last 30 years. *Semin Cutan Med Surg* 2004;23:80-3.
 35. Dahl E, Aberg M, Rausing A. Defined population. *Cancer* 1992;70:104-8.
 36. Thomas JM. Premalignant and malignant epithelial tumors. In: Sams WM, Lynch PJ, editors. *Principles and Practice of Dermatology*. 1st ed. London: Churchill Livingstone; 1990. p. 200-4.
 37. Schwartz RA, Stell HL, Eisen AZ, Wolff K, Austen KF, Goldsmith LA, *et al.* *Fitzpatrick's Dermatology in General Medicine*. New York: Mc Graw Hill; 1999. p. 840-56.
 38. Langely RG, Barnhill RL, Mihm MC, Fitzpatrick TB, Sober AJ. Cutaneous melanoma. In: Freedberg IM, Eisen AZ, Wolff K, Austen KF, Goldsmith LA, Katz S, editors. *Fitzpatrick's Dermatology in General Medicine*. USA: McGraw Hill; 1999. p. 1080-116.
 39. Federman DG, Kravetz JD, Kirsner RS. Skin cancer screening by dermatologist: Prevalence and barriers. *J Am Acad Dermatol* 2002;46:710-4.
 40. Farmer KC, Naylor MF. Sun Exposure sun screen and skin cancer prevention. *J Am Pharmacother* 1996;30:662-73.
 41. Corona P, Dayliotti E, D'Errico M, Sera F, Iavarone I, Baliva G, *et al.* Risk factors for BCC in mediterranean population. *Arch Dermatol* 2001;137:1162-8.
 42. Heymann WR. Skin cancer in African Americans. *J Am Acad Dermatol* 2005;53:484-5.