Knowledge, Attitudes, and Practices for Using Sunscreen in 6th Year Students from Two Schools of Medicine in Peruvian Region of Lambayeque

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Abstract

Objective: The objective of this study was to determine the level of knowledge, attitudes, and practices with daily sunscreen in the 6th year students from two medical schools in the Peruvian region of Lambayeque. **Materials and Methods:** A quantitative study, descriptive, and transversal, in the Pedro Ruiz Gallo National University (UNPRG) (54) and San Martín de Porres University (USMP) (73), with a total of 127 students. The study was performed from July to November 2015. **Results:** There was an intermediate level of knowledge (48, 81%), but lower knowledge was more common in USMP (30, 14%) versus UNPRG (9, 26%), so there was a statistically significant difference between both universities. In attitudes, 67/72% of students had an adequate attitude; this was not a statistically significant difference. In relation to practices, only 29/13% had good practices. 35, 62% of students from USMP had good practices versus 18, 52% of students from UNPRG. There was found to be a relationship between the universities to which the students belong and sun protection practices. **Conclusions:** Students had an acceptable level of knowledge; only one in three had a low level of knowledge. Regarding attitude, students showed adequate answers, but in practice, less than one in three had a proper development of it.

Key words: Ultraviolet Rays. Sun Protection Factor. Medical Student. Knowledge. Attitude. Health Practices.

Introduction

A study was conducted among students in their 6th year of medicine at two universities of the Lambayeque region, located in the north of Peru.

Epidemiological studies around the world have proven that exposure to the sun and sensitivity to ultraviolet (UV) radiation are the main risk factors for the development of dermatological problems such as premature aging, keratosis, and even cutaneous neoplasias¹⁻⁵. Non-melanoma skin cancer (basal cell and squamous cell) is the most frequent form of cancer and is linked to accumulated sun exposure, in early life stages up to youth. On the other hand, melanoma has been linked

to recurrent acute exposure, which induces the onset of sunburns⁶.

Daily use of sunscreen is the most renowned tool for the prevention of skin damage and skin cancer, which is frequent in our field. According to the National Institute of Neoplastic Diseases (INEN by its Spanish acronym) of Peru, there is a high frequency of skin neoplasms in our country, where skin cancer is in sixth place in frequency, with 570 new cases in both genders in 2014, increasing to 698 in 2015⁷.

In a descriptive study conducted among students of medicine in Loja, Ecuador, who had previously taken the dermatology course, results showed that 66% of

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them had the proper knowledge about photoprotection; however, only half answered correctly about the proper hours of the day for optimal use⁸. Another transversal study at the University of Miami showed the level of knowledge and awareness that their students who were in their 1st and 2nd year of medical school had on photoprotection and skin cancer. Results were satisfactory, with a level of knowledge over 85% concerning cancer prevention; however, there was a difference between genders; males had a lower level of knowledge and awareness than females, with an approximately 20% difference⁹.

Skin cancer is an entirely preventable entity; nevertheless, according to data from the Health Ministry, about 300 people die every year from this disease in our country, 80% of which is caused by solar radiation¹⁰⁻¹³. In Peru, there are limited studies which assess the level of practices that the population practices regarding sun protection¹⁴, motivating the present study since all health professionals ought to have clear concepts to create awareness of skin cancer and its preventive measures among the population, as well as implement, said measures.

Objectives

The objectives of this study were to determine the level of knowledge, practices, and attitudes toward the use of daily sun protection among students in the 6th year who had already taken the dermatology subject at two schools of medicine in the Lambayeque region, during July-November 2015.

Materials and Methods

Study design

A transversal descriptive quantitative study conducted in the Lambayeque region in the north of Peru from July to November 2015.

Study population

Students in the 6th year of medical school at two universities, the National "Pedro Ruiz Gallo" University (Pedro Ruiz Gallo National University [UNPRG] by its Spanish acronym) and "San Martín de Porres" University's north subsidiary (San Martín de Porres University [USMP] FN by its Spanish acronym), and students who had successfully completed their corresponding dermatology assignment.

Sample

The sample was composed of 145 enrolled students, 83 from USMP FN and 62 students from UNPRG, excluding 18 students who had participated in the qualitative studies, for a total sample of 127; it was deemed relevant to survey all students.

Inclusion criteria

Medical students who were enrolled during 2015 and who were in their 6th year. All students were required to sign an informed consent to be a part of this study.

Exclusion criteria

Medical students who were not present in the classroom at the time of the survey.

Procedures

For the quantitative study, a structured, self-administered survey was used. After completion, the surveys were gathered in a container to retain their anonymity. The survey consisted of four blocks: personal data, knowledge about sun protection, and skin cancer with eight closed questions and two open questions, attitudes regarding sun exposure with 10 closed questions, and sun protection practices with 10 closed questions.

The questionnaire was validated by five experts: two in dermatology, one in public health, and two in epidemiology.

Ethical aspects

Formal permission from both universities was obtained before the application of the survey, and confidentiality was guaranteed. Written consents were used.

Statistical analysis

For the quantitative study, descriptive statistics were used, with tables and figures of frequency and percentages. SPSS 11.0 and the Excel program were used. We worked with a confidence level of 95% and an $\alpha = 0.05$.

Results

A total of 127 6th year medical students participated: 54 from UNPRG (42.5%) and 73 from USMP (57.5%); 42 females (33.1%) and 85 males (66.9%).

Knowledge

In general, the majority of students had an intermediate knowledge level of 48.81% regarding sun protection (Table 1). In detailed knowledge, 79.53% recognized that UV rays are carcinogenic to humans, but on the need to protect the skin with a sun protection factor (SPF) between the values considered appropriate, only 25.98% showed good knowledge (Table 2). The UNPRG students obtained a low level of knowledge of 9.26% compared to 30.14% for USMP students. There was a statistically significant difference between both universities ($p = 0.015$) (Fig. 1).

Attitudes

In general, the attitude of the students was adequate, mostly regarding the use of sun protection, which was at 67.72% (Table 1). Specific details on the importance of protection were appropriate in 85.04% of students, with 77.2% knowing the importance of putting on sunscreen. However, as a poor attitude, 59.84% considered sunscreen very expensive, and others did not have time to apply it (51.18%) (Table 3). Comparatively, the USMP presented (47.95%) better results than UNPRG (37.04%). However, there was no statistically significant difference ($p = 0.1847$) (Fig. 2).

Practices

Only 29.13% of the total students had adequate practices regarding the use of sunscreen (Table 1). In specific details, very few used sunscreen on cloudy days (23.62%) or when practicing outdoor sports (33.07%) (Table 4). The USMP presented a greater frequency of good practices (35.62% vs. 18.52%) than the UNPRG, this being a statistically significant difference ($p = 0.0345$) (Fig. 3).

Discussion

It can be seen that 6th year students of medicine who have already completed the subject of dermatology have an intermediate knowledge of 48.81% about measures of sun protection and skin cancer, while Romani et al.¹⁴ found a level of accuracy of 62.9% in interns of medicine from five general hospitals of Lima and Callao. On the other hand, Armijos⁸ in students from 7th to 9th grade in Loja noted that 96% had adequate knowledge about sun protection. On the other hand, about the SPF concept, students in our region answered

Table 1. Knowledge, attitudes, and practices of using sunscreen among 6th year students of two schools of medicine in Lambayeque, October-November 2015.

Knowledge	N° (127) (%)
High	24 (18.90)
Intermediate	62 (48.82)
Low	41 (32.28)
Total	127 (100.0)
Attitudes	
Adequate	86 (67.72)
Inadequate	41 (32.28)
Total	127 (100.0)
Practices	
Adequate	37 (29.13)
Inadequate	90 (70.87)
Total	127 (100.0)

Figure 1. Level of knowledge about using sunscreen between students of the 6th year of two medical schools in Lambayeque, October-November 2015. χ^2 : 8.3961 g.l.: 2 $p=0.015$.

Figure 2. Type of attitude on using sunscreen among students of the 6th year of two medical schools in Lambayeque, October-November 2015. χ^2 : 1.5043 g.l.: 1 $p=0.2200$.

Table 2. Detailed knowledge for using sunscreen among 6th year students in two medical schools of Lambayeque, October-November 2015.

Question/correct answer	Know	Did not know
	N° 127 (%)	N° 127 (%)
What is the most common type of skin cancer?/basal cell carcinoma	91 (71.65)	36 (28.35)
What is the most dangerous type of skin cancer?/melanoma	84 (66.14)	43 (33.86)
Do you know the four semiological diagnostic criteria of melanoma (ABCD)?/all	54 (42.52)	73 (57.48)
Are UVA rays carcinogenic to humans?/yes	101 (79.53)	26 (20.47)
Is the application of blockers necessary in the house?/yes	98 (77.17)	29 (22.83)
When you are not on the beach when is it necessary to protect the skin?/throughout the year	114 (89.76)	13 (10.24)
What is SPF?/SPF	105 (82.68)	22 (17.32)
What SPF values are enough to protect from the sun?/between 30 and 60	33 (25.98)	94 (74.02)
Is it necessary to wear sunglasses with UV protection when you are exposed to it?/yes	117 (92.13)	10 (7.87)
When you are submerged in water, are you protected from the sun's rays?/no	110 (86.61)	17 (13.39)

SPF: Sun protection factor

Table 3. Detailed attitudes of using sunscreen among students of the 6th year of the two medical schools in Lambayeque, October-November 2015.

Questions	Adequate N° 127 (%)	Inadequate N° 127 (%)
Do you think that photoprotection is important?	108 (85.04)	19 (14.96)
Do you like to look tanned?	85 (66.93)	42 (33.07)
Do you forget to use photoprotection methods?	19 (14.96)	108 (85.04)
Do you think that sunscreen is very expensive?	51 (40.16)	76 (59.84)
Do you think that people with dark skin need to use photoprotection?	68 (53.54)	59 (46.46)
Do you think you have enough time to apply sunscreen?	65 (51.18)	62 (48.82)
Do you think you are at risk for skin cancer?	52 (40.94)	75 (59.06)
Do you believe that sun exposure is the most important risk factor?	97 (76.38)	30 (23.62)
Do you think that by not using sunscreen you are aging faster?	79 (62.20)	48 (37.80)
What attitude would you take if you were exposed to the sun?		
Sunblock	64 (50.39)	63 (49.61)
Sunglasses	75 (59.06)	52 (40.94)
Hat or cap	55 (43.31)	72 (56.69)
Clothing that covers your skin	57 (44.88)	70 (55.12)

correctly in 82.6% of cases, while in Lima, only 34.1% of answers were correct¹⁴. However, regarding the accuracy of FPS values alone, it was found that only a quarter of respondents had adequate knowledge, which indicates the urgent need to improve the quality of information provided in the dermatology courses taught by different teachers at both universities.

Regarding the type of attitude in this study, in general, it was appropriate, with a highlight: to the question “Do you think that photoprotection is important?” Students responded appropriately in 85.0% of cases, a similar figure to the Loja⁸ study; in questions like “What is the attitude I would take if I were exposed to the sun?” Sunblock was the answer given in 50.1% of

Table 4. Detailed practices of using sunscreen among students of the 6th year of two schools of medicine in Lambayeque, October-November 2015.

Questions	Adequate N° 127 (%)	Inadequate N° 127 (%)
Have you used sunscreen in the past 6 months?	33 (25.98)	94 (74.02)
On what part of your body do you use sunscreen?	81 (63.78)	46 (36.22)
What is the range of sunscreen factor (SPF) that you use?	104 (81.89)	23 (18.11)
At what point do you apply sunscreen before exposure?	49 (38.58)	78 (61.42)
How many times is sunscreen applied on a sunny day (not on the beach)?	26 (20.47)	101 (79.53)
Do you use sunscreen on cloudy days?	30 (23.62)	97 (76.38)
Do you use sunscreen when going to the beach or the pool?	88 (69.29)	39 (30.71)
Do you use sunscreen when you practice outdoor sports?	42 (33.07)	85 (66.93)
Do you avoid the sun from 10 am to 4 pm?	49 (38.58)	78 (61.42)
Do you use other protective measures?		
Sunglasses	36 (28.35)	91 (71.65)
Hat or cap	43 (33.86)	84 (66.14)
Clothing that covers your skin	59 (46.46)	68 (53.54)

Figure 3. Type of practice about using sunscreen among students of the 6th year of two medical schools in Lambayeque, October-November 2015. χ^2 : 4,4675 g.l.: 1 $p=0.0345$

cases, close to what was found in Lima¹⁴, with 58.2%, but in contrast to Loja⁸, which was much higher at 84%.

Regarding practices in the use of sunscreen, it was found that only 29.13% of students used it in the past 6 months. This is a very different figure from other studies such as the one from Romani¹⁴ that found a 42.3% rate of use in medical interns in Lima and that of Armijos⁸, with a 66% rate of use in students in Loja. On “the application of sunscreen on a sunny day that was not spent at the beach,” only 20.4% of adequate responses were obtained, in contrast to the 53.1% presented in Lima¹⁴. It is convenient to highlight that the USMP students presented 35.62% of suitable

practices, a higher number compared to the UNPRG, which presented only 18.52%. A qualitative local study remarked in a similar way that despite an apparent good knowledge and attitude toward SPF, its actual use is not broad, and has several obvious objections with the phrases: “leaves the skin greasy,” “you do not have time,” or “you do not remember its use.”¹⁵

It can be observed in this study that despite the fact that the vast majority presented an intermediate knowledge and generally acceptable attitude, they present inadequate practices. This is worrying because it indicates that despite the academic information provided by the teachers of dermatology, medical students do not apply it in themselves, which would show that in reality they are not convinced of this preventive practice of skin cancer. This leads us to reflect on the need to improve preventative information through new educational strategies. Perhaps with life histories and complications of patients with skin cancer and educational campaigns in the community to reiterate the messages so that future doctors will really come out convinced of the need for sun protection and provide an example to the population in this era of aggressive global climate change.

In conclusion, the students had an acceptable level of knowledge, but one of every three had a low level of knowledge. There was a statistically significant difference between both universities. Regarding attitudes, most of them showed adequate responses, without a statistically significant difference between the two

universities, and in regard to practices, only one out of every three medical students in the 6th year performed them adequately. There was a statistically significant difference between the two universities in this regard. It is essential to carry out appropriate strategies to improve information and stimulate the use of sun protection among those who will be the example of practicing prevention in their community.

As a limitation, this study was not carried out with a previous pilot study to show the reliability of the survey because the sample population chosen would have been reduced.

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Ethical disclosures

Protection of human and animal subjects. The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki).

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

References

1. Heike IM, Mahler E. Reasons for using and failing to use sunscreen: comparison among whites, Hispanics, and Asian/Pacific Islanders in Southern California. *JAMA Dermatol.* 2014;150:90-1.
2. Akamine KL, Gustafson CJ, Davis SA, Levender MM, Feldman SR. Trends in sunscreen recommendation among US physicians. *JAMA Dermatol.* 2014;150:51-5.
3. Mahler HI, Kulik J, Harrell J, Correa A, Gibbons FX. Effects of UV photographs, photoaging information, and use of sunless tanning lotion on sun protection behaviors. *Arch Dermatol.* 2005;141:373-80.
4. Thieden E, Philipsen PA, Sandby-Møller J, Wulf HC. Sunscreen use related to UV exposure, age, sex, and occupation based on personal dosimeter readings and sun-exposure behavior diaries. *Arch Dermatol.* 2005;141:967-73.
5. Sordo C, Gutiérrez C. Cáncer de piel y radiación solar: experiencia peruana en la prevención y detección temprana del cáncer de piel y melanoma. *Rev Peru Med Exp Salud Publica.* 2013;30:113-7.
6. Mulero M. Efecto de la radiación ultravioleta (ruv) sobre los procesos de estrés oxidativo e inmunodepresión cutánea. Efecto protector de los filtros solares [Reus]: Facultad de medicina Universidad "Rovira I Virgili"; 2004.
7. Instituto Nacional de Enfermedades Neoplásicas. Cuadros estadísticos; 2006-2015. Avalúale forma: http://www.inen.sld.pe/portal/documentos/pdf/estadistica/datos_estadisticos/17042017_Casos_Nuevos_de_C%-C3%A4ncer_%20en_el_INEN_del_2006_al_2015.pdf
8. Armijos R. Conocimientos, actitudes y prácticas, sobre protección solar en los alumnos de la carrera de medicina humana de la universidad nacional de Loja en el periodo junio del 2010 a diciembre del 2010. [Ecuador]: Universidad Nacional de Loja; 2010.
9. Collado-Mesa MF, Hu S, Kirsner RS. Skin cancer awareness, attitude, and sun protection behavior among medical students at the university of Miami miller school of medicine. *Arch Dermatol.* 2007;146:797-801.
10. Ramos W, Venegas D, Ojeda. Análisis de la situación del cáncer en el Perú. Ministerio de Salud. Dirección general de epidemiología; 2013. p. 108.
11. Huisacayna FM, Aguilar Y, Malpartida W. Conocimiento y actitud sobre los efectos nocivos de la radiación solar y prácticas de fotoprotección en estudiantes de enfermería que realizan prácticas comunitarias en la Universidad Nacional San Luis Gonzaga De Ica, agosto 2011-setiembre 2012. *Rev enferm vanguard.* 2013;1:21-4.
12. Ramos C, Ramos M. Conocimientos, actitudes y prácticas en fotoprotección y fototipo cutáneo en asistentes a una campaña preventiva del cáncer de piel. Callao-Perú. Febrero 2010. *Dermatol Perú.* 2010; 20:169-173.
13. Vera D, González PC, Domínguez J. Intervención educativa en los conocimientos, actitudes y prácticas sobre la protección solar en estudiantes de educación secundaria. *Dermatología CMQ.* 2013;11:93-103.
14. Romani F, Ramos C, Posso M, Rúa O, Rojas J. Conocimientos, actitudes y prácticas sobre protección solar en internos de medicina de cinco hospitales generales de lima y callao. *Folia Dermatol.* 2005;16:61-6.
15. Aliaga-Echevarría K, Soto-Cáceres V. Algunas razones por las que no usan bloqueador solar alumnos del sexto año de medicina en la región lambayeque. *Rev Exp Medicina.* 2017;3:178-80.