

KNOWLEDGE AND HABITS OF SOLAR EXPOSURE IN STREET TRADERS OF A MARKET IN CHICLAYO, PERU

CONOCIMIENTOS Y HÁBITOS DE EXPOSICIÓN SOLAR EN COMERCIANTES AMBULANTES DE UN MERCADO DE CHICLAYO, PERÚ

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ABSTRACT

Objective: To determine the knowledge and habits of solar exposure in street vendors around a Chiclayo market. **Methods:** A questionnaire were applied to 291 street vendors located around the Chiclayo Model market, who evaluated the habits of sun exposure, photo protection measures, a history of sunburn and skin cancer, as well as knowledge of ultraviolet radiation and sources of information. **Results:** The ages were, 18-25 (42.3%), 36-54 (38.1%), 55 -78 (19.6%). At the educational level, 13.1% have a complete primary, 32.6% have a complete secondary and 8.2% have a complete superior. At the time of the study, 71.9% had been working as street vendors for more than 3 years. The phototypes of the participants were phototype I (0.3%), phototype II (4.5%), phototype III (24.7%), phototype IV (48.8%), phototype V (19.6%) , phototype VI (2.15). 90 ± 3.5% recognize that it causes skin cancer, 53.6% acknowledge that a characteristic of skin aging by radiation is spots and warts, 56% answered that solar radiation causes cataracts, 52.92% He replied that white-skinned people are more sensitive to the sun's rays. 48.5% of them declared that they were exposed to sunlight for more than 6 hours, 24.7% were exposed to 3-6 hours a day, while 8.6% had the shortest time of sun exposure (0 - 2 hours). 75.3% do not use sunscreen. **Conclusion:** The knowledge and habits of sun exposure in street traders are from fair to adequate and poor habits.

Key words: Radiation exposure; Ultraviolet rays; Sunscreening agents (source: MeSH NLM).

RESUMEN

Objetivo: Determinar los conocimientos y hábitos de exposición solar en comerciantes ambulantes alrededor de un mercado de Chiclayo. **Métodos:** Se aplicó un cuestionario a 291 comerciantes ambulantes ubicados alrededor del mercado Modelo de Chiclayo, que evaluaron los hábitos de exposición solar, medidas de foto protección, antecedentes de quemaduras solares y cáncer de piel, así como conocimientos de radiación ultravioleta y fuentes de información. **Resultados:** Las edades fueron, 18-25 (42,3%), 36-54 (38,1%), 55 -78 (19,6%). En nivel de educación, el 13,1% tiene primaria completa, el 32,6% tiene secundaria completa y el 8,2% superior completa. Al momento del estudio el 71,9% llevaban más de 3 años trabajando como comerciantes ambulantes. Los fototipos de los participantes fueron fototipo I (0,3%), fototipo II (4,5%), fototipo III (24,7%), fototipo IV (48,8%), fototipo V (19,6%), fototipo VI (2,15). Un 90 ± 3,5% reconoce que causa cáncer de piel, un 53,6% reconoce que una característica del envejecimiento de la piel por radiación son las manchas y verrugas, un 56% respondió que la radiación solar causa cataratas, un 52,92% respondió que la gente de piel blanca es más sensible a los rayos del sol. Un 48,5% de ellos declararon exponerse más de 6 horas a los rayos solares, un 24,7% se expone de 3 – 6 horas al día, mientras que el 8,6% registraron el menor tiempo de exposición solar (0 – 2 horas). El 75,3% no utiliza bloqueador solar. **Conclusión:** Los conocimientos y hábitos de exposición solar en los comerciantes ambulantes son de regular a adecuado y los hábitos deficientes.

Palabras clave: Exposición a la radiación; Rayos ultravioleta; Protectores solares (fuente: DeCS BIREME).

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INTRODUCTION

Ultraviolet radiation is the main risk factor in the development of skin cancer⁽¹⁾. Lifestyles lead to higher exposures to ultraviolet radiation, increases the risk of developing skin cancer as is the case with street vendors⁽²⁾. Skin cancers are defined as malignant or benign cells⁽³⁾, skin cancer is the most common malignancy in the world, and its prevalence has risen globally in recent years⁽⁴⁾. It is estimated that one in five Americans will develop skin cancer during their lifetime and that one person will die of melanoma every hour of the day⁽³⁾. In Peru, skin cancer ranks fourth in newly diagnosed cases (2010-2012)⁽⁵⁾. According to data from the Epidemiological Surveillance of Cancer carried out in Peru in 2016, skin cancer was the second most frequent in men and the third in women (MINSA). Sunlight is responsible for many biological effects essential to life. However, when excessive, it can pose risks to human health by causing sunburn, photo aging, and photo carcinogenesis⁽⁶⁾. Sun exposure is related to the development of all types of SC, both melanoma and nonmelanoma⁽⁷⁾.

Solar radiation consists of visible, infrared and ultraviolet (UV) light. The chronic undesirable effects of solar radiation are primarily due to the spectrum between 290 and 400 nm in length (UV). These include burns, carcinogenesis, immunosuppression, ocular cataracts and photo aging. Epidemiological studies have shown that solar exposure and UV sensitivity in the population are the main risk factors for the development of skin neoplasms^(5,8-12).

Everyday activities are carried out outdoors, such as informal trade in street vendors, which is a reality in all Latin American cities⁽¹³⁾. The importance of the practice of sunscreen measures in these people exposed to prolonged periods of UV radiation decreases the morbidity of suffering some type of injuries and diseases mentioned⁽¹⁴⁾.

The behaviour of skin cancer morbidity and mortality observed in these studies does not mean that it is a major public health problem, although its real prevalence and incidence are not known, new cases of cancer have been systematically increased. This highlights the need for primary prevention campaigns to reduce sun exposure, the main modifiable risk factor, and the promotion of early detection of skin cancer^(8,14). The objectives of the work were to assess the degree of knowledge and habits that street traders in a market in Lambayeque, Peru have about solar exposure and its relationship with skin cancer, as well as knowledge of the different forms of sun protection. Concepts and misconduct related to sunscreen were also evaluated.

METHODS

Design

Prospective cross-sectional study.

Population, sample size

291 street vendors located around the Chiclayo Modelo Market. We worked with the entire population located in the geographic data collection site at the time of data collection.

Procedures, variables and instruments

The instrument used by the authors was applied to street traders who sell their products outside the Modelo market from Chiclayo, Lambayeque during the first week of September 2017. The time of data collection was between 10:00 am and 2:00 pm, which guaranteed the need to use sunscreen material. In the field, the surveyor verified the information concerning the mentioned means of sun protection, being cross-examined if it does not coincide. All ambulants present on the day set for data collection were interviewed. The ambulants were located around the market, delimiting the space around up to two blocks from the market perimeter. Sun exposure habits, photo protection measures, a history of sunburn and skin cancer, knowledge of ultraviolet radiation and sources of information were evaluated. The instrument used was adapted from another instrument used in a study carried out in the Historic Center of Trujillo⁽¹⁵⁾. This adaptation, in turn, has been accompanied by expert judgement validation.

Statistical analysis

Descriptive statistics were used, representing qualitative variables using absolute and relative frequencies; likewise, for quantitative variables, measurements of central tendency and dispersion were used, after assessment of normality using the Kolmogorov-Smirnov test. All statistical analyses were executed using the statistical software Infostat.

Ethical issues

The project was approved by the Ethics and Research Committee of the Faculty of Medicine of the Universidad Católica Santo Toribio de Mogrovejo, and an informed consent was applied and signed by the participants.

RESULTS

A total of 291 street vendors from the Chiclayo Model Market were surveyed. Age ranges were distributed from 18-25 (42.3%), 36-54 (38.1%), 55-78 (19.6%). According to the level of education, 13.1% have

full primary education, 32.6% have full secondary education and 8.2% complete upper secondary education. At the time of the study, 71.9% had been working as street traders for more than three years.

We also studied the skin phototype of ambulants working around a market, in which the following frequency was observed: phototype I (0.3%), phototype II (4.5%), phototype III (24.7%), phototype IV (48.8%), phototype V (19.6%), phototype VI (2.15%).

Table 3 shows the results of questions addressed on the notions of traders regarding the effects caused by solar radiation. The most relevant responses in the item disease by prolonged sun exposure are that $90 \pm 3.5\%$ recognize that it causes skin cancer, 53.6% recognize that a characteristic of skin aging by radiation are spots and warts, in the item of damage to the eyes by sun exposure 56% responded that solar radiation causes cataracts, also 52.92% responded that white skin people are more sensitive to sun rays as well as skin cancer (90%).

59.5% of traders (173/291) reported working from Monday to Sunday, 39.4% worked 5-6 days a week, and 4.1% worked 4 or less days a week. Where approximately one (48,5 %) of them reported exposure for more than 6 hours, 24,7 % were exposed to sunlight for 3 - 6 hours a day, while 8,6 % reported the lowest solar exposure time (0 - 2 hours). Most traders do not use sunscreen (75.3%), only 72 traders used sunscreen at the time of the survey. Only 24.7% of the respondents (72) said they used this product as a photoprotection measure; of these, 63.9% (68) said that a family member recommended its use, 94.4% used it 1-2 times a day, 38.9% used it only when going to work, 52.8% (38) uses it on face, neck, ears and hands, and half of them (50%) get it from a catalog (Table 4).

The most common habits used as a photo protection practice were the use of umbrellas (45%) and trousers (61%), while the least used were the use of lenses (60%) and caps (27%) (Table 5).

Table 1. Sociodemographic Characteristics of Street Vendors in a Market in Lambayeque, Chiclayo - September, 2017.

Sociodemographic characteristics		n°	%
Gender	Men	149	48.8%
	Women	142	51.2%
Education level	Incomplete primary	39	13.4%
	Complete primary	38	13.1%
	Incomplete secondary	65	22.3%
	Complete secondary	95	32.6%
	Incomplete Superior	30	10.3%
	Complete Superior	24	8.2%
Working time	1 - 2 weeks	4	1.4%
	3 weeks - 1 month	5	1.7%
	2 - 12 months	32	11%
	1 year - 3 years	41	14.1%
	More tan 3 years	209	71.9%
Age	18 - 35 years	123	42.3%
	36 - 54 years	111	38.1%
	55 - 78 years	67	19.6%
Total		291	100%

Table 2. Knowledge of the street traders of a market in Lambayeque, Chiclayo - September, 2017.

		Correct	%	Incorrect	%
Illness from prolonged sun exposure	Stretch marks	12	4.12%	279	95.88%
	Skin cancer	262	90.03%	17	9.07%
	Scabies	11	3.78%	268	96.22%
	Cellulitis	6	2.06%	273	97.94%
Skin aging characteristic	Warts, moles	39	13.4%	240	86.6%
	Acne, hives	33	11.3%	246	88.7%
	Spots, wrinkles	156	53.6%	135	46.3%
	Itching, rash	63	21.6%	228	78.4%
Damage to the eyes from sun exposure	Squint	7	2.4%	284	97.6%
	Bleeding in the eyes	21	7.2%	270	92.8%
	Myopia	100	34.36%	191	65.64%
	Waterfalls	163	56.01%	128	43.99%
Hours when the sun's rays are strongest	Between 10 am and 3 pm	234	80.41%	57	19.59%
	Before 7 am	6	2.06%	285	97.94%
	Between 3 pm and 6 pm	27	9.27%	264	90.73%
	Between 7 am and 10 am	24	8.24%	267	91.76%
The truth about sun rays	On a cloudy day you can't burn	48	16.49%	243	83.51%
	White-skinned people are more sensitive to the sun's rays	154	52.92%	137	47.08%
	If I'm in the sun and I don't feel hot, I won't burn	40	13.74%	251	86.26%
	The sun in the Winter is not dangerous	49	16.83%	242	83.17%

Table 3. Solar exposure habits of street vendors using sunscreen.

		n	%
Who recommended its use to you?	Doctor	15	20.8%
	Nurse	3	4.2%
	Family	46	63.9%
	Pharmacist / Apothecary	5	6.9%
	Other	3	4.2%
How many times do you apply it?	1 to 2 times	68	94.4%
	3 to 4 times	1	1.4%
	5 to 6 times	3	4.2%
When do you use it?	Only sunny days	24	33.3%
	Only when I go to work at the market	28	38.9%
	Everyday	20	27.8%
Where do you apply it?	Only in the face	17	23.6%
	Face and neck	17	23.6%
	Face, neck, ears and hands	38	52.8%
Where do you get sunscreen?	Pharmacy / Apothecary	35	48.6%
	Supermarket	1	1.4%
	Catalogue	36	50.0%

Table 4. Photo protection practices, according to Likert's scale in street vendors.

	Always		Usually		Sometimes		Almost never		Never	
	n	%	n	%	n	%	n	%	n	%
Wear an umbrella	132	45%	25	9%	52	18%	23	8%	59	20%
Wear sunglasses	32	11%	14	5%	48	16%	21	7%	176	60%
Wear a cap	105	36%	39	13%	63	22%	4	1%	80	27%
Wear long sleeve	65	22%	40	14%	114	39%	31	11%	41	14%
Wear pants	177	61%	42	14%	56	19%	4	1%	12	4%
Wear clear clothing	61	21%	74	25%	119	41%	31	11%	6	2%

Around a Chiclayo market, September 2017.

DISCUSSION

Many agents affect the transmission of ultraviolet light to human skin. These include natural photoprotective agents (ozone, pollutants, clouds and fog), natural biological agents (epidermal chromophores), physical photoprotective agents (clothing, hats, make-up, sunglasses and window glasses) and ultraviolet light filters (sun protection ingredients and tanning agents without sun). In addition, there are agents that can modulate the effects of ultraviolet light on the skin (antioxidants and others). All the above is revised in this article⁽¹⁶⁾, applied to street vendors or street vendors.

We found that traders answered some correct questions about the damage caused by solar exposure. About half of the respondents answered correctly at least four questions out of a total of five correctly, corresponding to the knowledge section, this relationship with sun exposure which is the main cause of photocarcinogenesis, photoaging and photosensitivity⁽¹⁴⁾, our results show that a large majority of sellers know that prolonged sun exposure causes skin cancer, this is corroborated by other studies^(2,4), also known to cause spots and wrinkles called photoaging⁽¹⁸⁾.

For questions about long-term exposure illness and higher solar radiation schedules, most answered correctly, while for the other three questions, just over half answered correctly. Rosso et al. mentions that intermittent and intense sun exposure, such as during beach holidays, increases the risk of malignant melanoma (CMM) and basal cell carcinoma (BCC), while prolonged sun exposure, such as during outdoor occupations, was not associated with CMM or BCC⁽¹⁵⁾.

At the time of the study 71.9% had been working as street traders for more than 3 years. No street vendors were found between the ages of 24-36. The

results of the questions addressed on the notions of traders regarding the effects caused by solar radiation, the most relevant answers in the item disease by prolonged sun exposure are that 90% recognize that it causes skin cancer, this result is consistent with the study of Montserrat et al. and Castanedo-Cazares et al. states that most of the respondents recognized the relationship between ultraviolet radiation and skin cancer^(6,7), 53.6% recognize that a characteristic of the aging of the skin by radiation are spots and warts that are consistent with the Castanedo-Cazares study⁽⁷⁾, in the item of damage to the eyes by sun exposure 56% responded that solar radiation causes cataracts, in which also concludes a study evaluating carcinogenesis by ultraviolet radiation⁽⁹⁾, 52.92% also replied that white-skinned people are more sensitive to the sun's rays, this was studied in the phototype of skin of ambulants working around a market, in which it was observed that the following frequency: phototype I (0.3%) that always burns and never sunbathes, phototype II (4.5%) that burns easily and is minimally bronzed, phototype III (24.7%), phototype IV (48.8%), phototype V (19.6%) that burns rarely and sunbathes intensely, phototype VI (2.15%). In contrast, a Spanish study by Peña Ortega indicates that phototype III (37.23%) represents the majority and is followed by phototype IV, which burns very little and tan easily (31.08%)⁽¹⁰⁾. Solorzano in a study in the southern cone of Lima, Peru found phototype IV in 77.9%, phototype III in 11.3%, phototype V in 9.9%, and phototype I, II and VI in 0.9% that resemble the results found in this study⁽¹⁶⁾. 59.5% of traders (173/291) reported working from Monday to Sunday, 39.4% work 5-6 days a week, and 4.1% work 4 or less days a week. Where approximately one (48.5%) of them reported to be exposed more than 6 hours, 24.7% were exposed to solar rays of 3 - 6 hours a day, while 8.6% recorded the lowest solar exposure time (0 - 2 hours). The concept of skin phototype is practical

and useful for predicting the individual's sensitivity to UV rays, risk and preventative factors, and choosing sunscreen even with limitation⁽¹⁷⁾. Most merchants do not use sunscreen (75.3%), this represents a serious health risk since according to Castanedo-Cazares phototype III will present sunburn with 22-33 min exposure on a summer day, While V requires more than 1 h of exposure⁽⁸⁾, it was also found that only 72 traders used sunscreen at the time of survey. Regular use of sunscreen prevents the development of solar keratosis and, by implication, possibly reduces the risk of long-term skin cancer⁽¹⁸⁾.

Only 24.7% of respondents (72) reported using this product as a photoprotection measure; of these, 63.9%⁽⁶⁸⁾ reported that a relative recommended its use, this is contrasted with the Molgó study where 72% of the population acknowledged having received information on skin cancer prevention, the main source of information being television (57.7%), while family members (5.7%)⁽⁶⁾. 94.4% use it 1-2 times a day, 38.9% only apply it when going to work, 52.8% (38/72) use it on face, neck, ears and hands, this behavior is risky since according to Sordo apply a photoprotector 30 minutes before leaving and re-apply every one or two hours, depending on the sporting or work activity⁽¹⁹⁾, this should be minimal with SPF 30+(24) protectors. and half of them (50%) get it from a catalog. The most common habits used as a photoprotection practice were using umbrellas and trousers, while the least used were wearing glasses and caps. Behavioural measures, for example, wearing sun protection clothing and a hat and minimising sun exposure, should be preferred to sun protectors⁽¹⁴⁾. Our work mainly contributes to the identification of who should be the main targets of the campaigns, especially people who have a low knowledge of solar radiation in health, because they are the most exposed and suffer from the effects of acute solar toxicity. However, even with sufficient prevention methods, lack of education and promotion of a practice will not lead to favourable results⁽¹⁾.

The limitations of the study were affected by the sampling days as the work of the ambulants is very variable, attending to the vicinity of the market not on a daily basis, if not interdaily or having their own schedules which did not allow to survey the majority of ambulants. The sample size was reduced, being able to add the street vendors from other markets such as shopping centers and different streets of the city. We conclude that the knowledge and habits of solar exposure in street traders are to regulate to adequate and poor habits.

CONCLUSION

Our work contributes mainly to the identification of those who should be the main recipients of the campaigns, especially people who have a low knowledge of solar radiation in health, since they are the ones who are most exposed and suffer from the effects of solar toxicity. acute. However, even with sufficient prevention methods, lack of education and promotion of a practice will not lead to favorable results⁽¹⁾.

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