

Evaluation of the knowledge and photoprotection habits of children and their caregivers in the city of Porto Alegre, Brazil

Avaliação do conhecimento e hábitos de fotoproteção entre crianças e seus cuidadores na cidade de Porto Alegre, Brasil

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ABSTRACT

Introduction: Childhood is considered a critical period for photoprotection, since approximately 80% of the exposure to the sun occurs during this phase of life.

Objectives: To evaluate the characteristics of the knowledge and sun protection habits of children and their caregivers.

Methods: A cross sectional study was conducted with questionnaires from October 2011 to July 2012.

Results: 177 children (mean age = 7.66 years); 64.9% of children assessed exposure to the sun as dangerous, 88.7% knew what sunscreen is, and 94.3% considered its use important; however, 66.6% believed it was necessary only in summer. Regarding photoprotection habits, 37.3% reported exposure to the sun between 10a.m. and 4p.m. Among caregivers, 81.3% reported an absence of daily application of sunscreen on their children, and 33.9% reported that their children had already had some type of sunburn.

Conclusions: Strong dissociation between knowledge and practice regarding exposure to the sun was observed in the present study. The discrepancy between knowledge and habits that was observed in the two groups can be explained by the quality of information on exposure to the sun. The present study's data point to the need for a wider dissemination of adequate knowledge, both by the media and by physicians, to nurture healthy practices regarding exposure to the sun.

Keywords: solar activity; sun protection factor; suncreening agents; child restraint systems; caregivers

RESUMO

Introdução: A infância é considerada período crítico para fotoproteção, pois aproximadamente 80% da exposição solar ocorre nessa fase da vida.

Objetivos: Avaliar o perfil dos conhecimentos e hábitos de fotoproteção entre crianças e seus cuidadores.

Métodos: Estudo analítico transversal, realizado por meio de questionários aplicados de outubro de 2011 a julho de 2012.

Resultados: 177 crianças, com média de idade de 7,66 anos; 64,9% das crianças avaliaram a exposição solar como perigosa, 88,7% sabiam o que era fotoprotetor, e 94,3% consideraram seu uso importante; entretanto, 66,6% acreditavam ser necessário apenas no verão. Quanto aos hábitos, 37,3% relataram exposição solar entre 10h e 16h. Entre os cuidadores, 81,3% afirmaram não passar filtro solar diariamente em seus filhos, e 33,9% relataram que seu filho já havia tido alguma queimadura solar.

Conclusões: No presente estudo, observou-se forte dissociação entre conhecimentos e práticas no que se refere à fotoexposição. A discrepância entre conhecimentos e hábitos, observada nos dois grupos pode ser explicada pela qualidade das informações sobre fotoexposição. Os dados da presente pesquisa apontam para a necessidade de divulgação mais ampla de conhecimentos adequados, tanto pela mídia quanto pelos médicos, que consolide práticas saudáveis em relação à exposição solar.

Palavras-chave: atividade solar; protetores solares; hábitos; sistemas de proteção para crianças; cuidadores

INTRODUCTION

Childhood is considered a critical period for photoprotection, since approximately 80% of the exposure to the sun occurs during that phase of life.¹⁻³ Furthermore, early exposure to the sun has a greater influence on the development of cutaneous neoplasias as compared with the exposure that happens later in life, meaning that photoprotection from the first years of life reduces the risk of melanoma.^{4,5}

The association between exposure to the sun and skin cancer is well known, being publicized in various media.⁶ Research demonstrates that the population has significant knowledge about the subject, nevertheless it is not reflected in appropriate protective measures and practice.⁷⁻⁹

METHODS

A cross-sectional study was conducted with the aim of evaluating the knowledge profile and sun protection habits among children and their caregivers, and promoting education on measures aimed at preventing skin cancers.

The sample consisted of children aged five to ten years old and their caregivers, treated at the Dermatology and Pediatrics services of the Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA), between October 2011 and July 2012, who agreed to participate in the research project and signed the Free and Informed Term of Consent. The study was approved by the UFCSPA's Research Ethics Committee under the number 1432/11.

The data was collected with questionnaires applied by medical students. Two questionnaires – one directed to caregivers and the other to children – were used. Data on phenotypic characteristics, level of education, and knowledge and habits of photoprotection was collected. After the questionnaires were administered, an explanation was given on the subject, with the aid of informative and clear material suitable for each age group, with potential doubts on the part of the participants being clarified. The data was stored and analyzed using Stata software.

RESULTS

Children

One hundred and seventy-seven (177) children, with a mean age of 7.66 ± 1.62 (min = 5 years old, max = 10 years old) were interviewed. Half of the sample (50.8%) was female. Skin phototype II was predominant (38.4%), and most study subjects (89.3%) did not have freckles. (Table 1)

When asked about the activities they engaged in on a sunny day, the most cited were: swimming in the pool (17.5%), playing ball (17.5%), and cycling (15.8%). (Table 2)

A significant proportion of the children (65%) assessed exposure to the sun as dangerous, showing that they knew what sunscreen was (88.7%). The vast majority (94.4%) considered the use of sunscreen important, nonetheless 66.7% answered that its use was only necessary in the summer. The use of hat and shirt and staying in the shade were cited as measures of photoprotection by 80.2% and 88.1% of children, respectively. On being asked about the influence of tanning on health, 68.9% of

TABLE 1: Characteristics of children participating in the study

Variable	% of participants	N.
Gender		
		N=177
Female	50.8	90
Male	49.2	87
Average age (years)	Mean \pm SD	
	7.66 \pm 1.62	
Phototype		
	% of participants	N.
I	5.60	10
II	38.4	68
III	21.50	38
IV	20.30	36
V	14.10	25
Presence of freckles		
	% of participants	N.
Yes	10.7	19
No	89.3	158

TABLE 2: Activities performed by children on a sunny day

Activity	% of participants	N.
		N=177
Swimming in the pool	17.5	31
Playingball	17.5	31
Cycling	15.8	28
Playing with dolls	5.7	10
Playing catch	5.1	9
Going to the park	4.0	7
Swimming in the sea	3.4	6
Other	23.7	42
Not informed	7.3	13

children rated it as healthy or indifferent, and only 31.1% rated it as harmful (Table 3). Regarding habits of exposure to the sun, most children (61%) described their exposure as being during appropriate times of the day, however 37.3% reported exposures between 10:00 and 16:00. A total of 44.6% of the children described frequent sunbathing in the summer, while 10.7% described doing the same year-round. (Table 4) The daily use of sunscreen was evaluated by means of information provided by parents and will be discussed in the next section. As for sunburns, 33.9% of parents reported that their children had already suffered some. (Table 4)

Caregivers

One hundred and seventy-seven individuals (mean age = 35.84 ± 9.47 years, females = 89.8%) were interviewed.

Regarding the level of education, about half of the sample (56.4%) had completed primary school. Skin phototype III was predominant, corresponding to 44.6% of the sample. Eighteen point six percent (18.6%) of the individuals had freck-

TABLE 3: Knowledge of photoprotection among participating children

Question	% of participants N=177	N.
Do you think it is dangerous to stay in the sun?		
Yes	65	115
No	34,4	61
Does not know	0,6	1
Do you know what sunscreen is?		
Yes	88,7	115
No	11,3	20
Acha importante usar filtro solar?		
Yes	94,4	167
No	2,2	4
Does not know	3,4	6
When should sunscreen be used?		
Only in summer	66,7	118
Only in winter	1,1	2
Always	24,9	44
Never	2,8	5
Does not know	4,5	8
Being tan is considered:		
Healthy/Indifferent	68,9	122
Unhealthy	31,1	55
Does the use of hat and shirt provide protection from the sun?		
Yes	80,2	142
No	19,7	35
Does staying in the shade provide protection from the sun?		
Yes	88,1	156
No	11,9	21

les. (Table 5) Among the interviewees, 15.8% reported a family history of cutaneous neoplasia, and rare individuals (1.7%) had a personal history of skin cancer.

Most respondents had already heard about the risks of exposure to the sun (97.7%), with the media being the information source most frequently cited (74.6%). Only 22.6% reported having obtained information about exposure to the sun from their own physicians. A large portion of the sample rated the risk associated with exposure to the sun as high (88.1%), and all respondents considered the use of sunscreen important (100%). Among the protections provided by the use of sunscreen, protection against skin cancer was recognized by 93.8%, while protection against sunburn and skin aging was recognized by 63.8% and 53.6% of the sample, respectively. Regarding the appropriate time of day for exposure to the sun, only a third of the caregivers (32.6%) described it as the time period before 10:00 and after 15:00 (Table 6). Most respondents (76.3%) deemed their knowledge of photoprotection as appropriate.

Among the interviewed caregivers, 70.6% said that sunscreen should be used daily, although only 29.4% stated using it with such frequency (Table 6). The main reasons cited were: sporadic exposure to the sun (15.8%), forgetfulness (13.5%) and

TABLE 4: Photoprotection habits among participating children

Question	% of participants N=177	N.
At what time you are you usually exposed to the sun?		
Before 10:00 and/or after 16:00	61	108
Between 10:00 and 16:00	37,3	66
Does not know	1,7	3
Do you usually get suntanned?		
Never	44.6	79
Only in the summer	44.6	79
All year round	10.7	19
Have you ever had a sunburn? *		
Yes	33.9	60
No	61.6	109
Did not answer	4.5	8

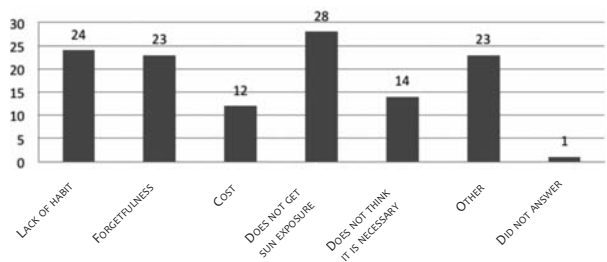
* Information provided by parents/caregivers

lack of habit (13%). (Graph 1) Of the parents who use sunscreen daily, 75% do it once or twice a day, and 7.3% apply the product three or more times per day. Most respondents (77.5%) did not deem the use of self-tanners as a measure of protection against sunrays. Tanning was considered detrimental to good health by 58.2% of the sample, while 62.5% declared not engaging in the habit of sunbathing – though most had previously already undergone some type of sunburn that required medical attention (21.5% of cases).

When asked about the use of sunscreen in children, 22% of the respondents reported applying it always, 40.1% often, 9.6% rarely, and 5.6% never. The sun protection factor (SPF) that was most frequently used in children was SPF30 (27.1%). Most parents (75.1%) resort to other measures of photoprotection regarding their children, the most cited being the use of a hat (65%). The regular screening of children’s skin is carried out by 82.5% of the respondents.

DISCUSSION AND CONCLUSIONS

In the present study, a strong dissociation between knowledge and practice regarding exposure to the sun was observed. Almost all of the children interviewed (88.7%) were aware of what sunscreen is and deemed its use important (94.3%), nevertheless only 18.3% used it daily. Similarly, a study conducted in



GRAPH 1: Reasons mentioned for not using sunscreen every day

TABLE 5: Characteristics of adults and children participating in the study

Variable	% of participants N=177	N.
Gender		
Female	89,8	159
Male	10,2	18
Education		
Incomplete primary education	36,1	64
Completed primary education	20,3	36
Incomplete secondary education	9,6	17
Completed secondary education	28,2	50
Incomplete higher education	3,9	7
Complete higher education	1,7	3
Predominant skin phototype		
Adults		
I	1,70	3
II	22,60	40
III	44,6	79
IV	16,9	30
V	12,4	22
VI	1,1	2
Not recorded	0,5	1
Presence of freckles		
Yes	18,6	33
No	80,2	142
Did not answer	1,13	2
Average age (years)	mean \pm SD	
	35,84 \pm 9,47	

the southern Brazilian State of Minas Gerais with elementary school children demonstrated that only 13.4% applied sunscreen on a daily basis.¹⁰ A European multicenter study on photoprotection in childhood with 631 children, revealed the routine use of sunscreen by only 25% of respondents.¹¹ A survey with 503 adults conducted in the USA showed that, even in summer, 24% never applied sunscreen on their children.¹²

A study carried out in Lithuania with 5th graders revealed that 66.7% knew that prolonged exposure to the sun was associated with skin cancer whereas only 18.8% reported using sunscreen "almost always".¹³ As in the present study, it was possible to observe in these studies that adequate knowledge about the harmful effects of the sun do not translate into appropriate photoprotection behavior. It is important to note, however, that the difficulty in turning knowledge into healthy practice is a medical challenge that transcends national and cultural barriers.

Among parents, the risks of exposure to the sun were well known (97.7%), as well as the benefits of using sunscreen – especially the prevention of skin cancer. Contrary to the children's opinion –most of whom felt sunscreens should be used only in the summer – most parents (70.6%) considered it important to use the product throughout the year.

Nonetheless, that difference did not significantly translate into changes in habits, since only 29.4% of parents made daily

TABLE 6: Conhecimentos e hábitos de fotoproteção dos adultos participantes

Knowledge	% of participants N=177	N.
Has already heard about the risks of sun exposure		
Yes	97,7	173
No	2,26	4
Parents' source of information about the risks of sun exposure		
Media	74,6	141
Family	9	16
Friends	9	16
Physician	22,6	40
Other	10,1	18
Deems the risks associated with sun exposure to be high		
Yes	88,1	156
No	11,8	21
Considers it important to use sunscreen		
Yes	100	177
No	-	
Considers sunscreens to provide protection against:		
Cancer	93,8	166
Sunburns	63,8	113
Skin aging	53,6	95
Time considered appropriate for exposure to the sun		
Before 10:00	32,7	58
Between 10:00 and 15:00	3,4	6
After 15:00	26,5	47
Before 10:00 and after 15:00	32,6	63
It does not matter	1,7	3
Frequency at which its considered important to use sunscreen		
Daily	70,6	125
Only during the summer	29,4	62
Believes that self-tanners protect the skin from the sun		
Yes	11,3	20
No	77,5	137
Does not know	10,2	18
Did not inform	1,1	2
Believes tanning is unhealthy		
Yes	58,2	103
No	17,5	31
It does not matter	23,7	42
Did not inform	0,5	1
Habits		
Uses sunscreen daily		
Yes	29,4	52
No	70,6	125
Frequency of getting suntanned		
Never	62,5	111
Only during the summer	30,7	54
All year round	5,7	10
Did not answer	1,1	2
Frequency with which applies sunscreen on their children		
Always	18,6	33
Frequently	22	39
Sometimes	40,1	71
Rarely	9,6	17
Never	5,6	10
Did not answer	3,9	7
Uses other photoprotection measures in their children		
Yes	75,1	133
No	20,9	37
Did not answer	3,9	7
Photoprotection measures used		
Hat	65	115)
T-shirt	23,1	41
Long sleeves	3,4	6
Sunglasses	6,2	11
Lip sunscreen	2,2	4

use of sunscreen. Even among them, only a small portion (7.3%) reported applying the product three or more times per day. Among those who did not apply sunscreen daily, the most commonly cited reasons were: sporadic exposure to the sun, forgetfulness, and lack of habit. However a predominant, single explanation was not possible to ascertain, which highlights the level of complexity involved in the educational process of the population regarding photoprotection. Limited adhesion by adults has already been observed in previous studies. A study carried out with 1,143 individuals in Chile noticed the prevalence of appropriate use of sunscreen among 70% of adults.¹⁵ Those results, however, appear to be associated with the study's methodology, in which data collection was carried out in the summer, at leisure resorts.

Regarding the use of sunscreen among children, 81.3% of parents reported that they did not apply it on their children daily. In the present study, as in previous research, there was a statistical association between parental photoprotection habits and those of their children ($p < 0.001$). With similar data, a Spanish study published in 2000 considers parental habits as the strongest determining factor of the children's photoprotection.¹⁶ However, bibliographic production on the subject is diverse, to the extent that while such a correlation is observed in some studies,¹⁴ it is not in others.¹²

Previous research has shown an association between the use of sunscreen and family income, sunny weather conditions, family history of skin cancer, and fairer skin tones.¹² In the present study, it was not possible to observe association between the use of sunscreen and the socioeconomic or phenotypic variables of the sample.

Interestingly enough, the prevalence of daily sunscreen use in the present study was higher among parents than among children. Additionally, there is evidence that the caregiver's age and gender were associated with greater use of sunscreens in children,¹⁷ a fact that could not be verified in the environment where the present study was carried out. In line with that finding, it is therefore important to note that in the present study, the child's caregiver was often not a parent, but a grandparent or other family member, a fact that may have influenced the present analysis. Likewise, the high prevalence of female caregivers in the present study (89.8%) hampers the analysis of the impact of the caregiver's gender on the photoprotection care of their children.

Still, regarding the caregivers' knowledge, it is worth analyzing the recognition of the protections provided by sunscreen. As in previous studies,¹⁵ although almost all (93.8%) adults recognize the benefits of the protection against skin cancer, a significantly smaller portion acknowledges its protective properties against sunburns (63.8%) and the aging of the skin (53.5%). Even among medical students and resident physicians, this knowledge is scarce – especially regarding photodamage.¹⁸ In light of this data, it is worth highlighting the necessity for photo-education campaigns to focus on aspects other than exclusively cutaneous neoplasias.

The appropriate time of day for exposure to the sun – a frequent theme in photoprotection campaigns – was correctly

identified by about two-thirds of adults. Data from previous studies suggested there is less knowledge on that subject among the adult population, with this finding possibly being associated with methodological differences among studies.¹⁵

In the present study, tanning was considered harmful by a significant portion of the sample (37.3% of children and 58.2% of adults). Nevertheless, tanning behavior – whether in summer or throughout the year – was reported by 55.3% of children and 37.5% of adults. The persistence of the habit of sunbathing, as well as its association with good health, could be observed in previous research. In a Spanish study published in 2009, 50.7% of parents stated they enjoyed being suntanned.¹⁴ In a research study conducted in 2004, 38.1% of boys and 40% girls associated having a suntan with good health.¹³

Sunburns are still common, having occurred in 33.9% of children in the present study's sample, indicating improper exposure to the sun in childhood. This data corroborates the information found in the literature regarding high rates of sunburn in children. Previous studies showed a sunburn prevalence of up to 80%,^{13,18,17} suggesting there is a possibility for the present study's data to be underestimated. A tendency for parents to underestimate the number of sunburns suffered by their children has already been suggested in previous studies.¹⁶ In the present study, there was no association between the occurrence of sunburn and the sample's variables, both in adults and in children. In contrast, previous studies have shown a higher incidence of sunburns in adults younger than 25 years old and in women.¹⁵

The gap found between knowledge and sun exposure habits, observed both among caregivers and among children, however, can be explained – at least partially – by the quality of information on exposure to the sun. It is important to highlight the central role played by the media in informing the population, cited by 79.6% of adults as a source of knowledge in the present study – a finding that is in line with previously conducted research.¹⁵ Thus, it is worth highlighting and observing the quality of the information conveyed by the media. In a study on the subject, it was found that although almost half of the articles on the theme of cancer address the importance of prevention, only 24.1% explained the methods to achieve that.⁶

It is also important to take into consideration that less than one fifth of the articles analyzed had more than one opinion on the subject matter and that less than one third made reference to scientific publications. In addition to the information provided by the media, it is also important to emphasize the role of physicians in the transmission of knowledge about photoprotection. In a study with pediatric resident physicians, it was found that they do not consider themselves informed enough about photoprotection and skin cancer.¹⁹ Aligned with this data, only 22.6% of adults surveyed in the present study stated they had obtained information about photoprotection through physicians – similar to what was found in previous studies.^{14,17}

It is also important to note that educational programs on photoprotection with students at school age lead to improved knowledge and practices related to exposure to the sun.^{13,20} In particular, the importance of creating educational programs

guided by teachers and involving parents on a frequent basis, stands out.^{20, 14}

The data of the present research – as well as that available in the literature,^{5, 21} – points to the need for a wider dissemination of proper knowledge about photoprotection in order to consolidate healthy practices regarding the exposure to the sun. Therefore, it is important that campaigns focus not only on the

use of sunscreen, but also on other measures of photoprotection, in addition to a wider dissemination of the various harmful effects of the exposure to the sun, besides cancer. Changing ingrained habits is undoubtedly a slow process, however it is only possible with the active participation of society, despite the responsibility of physicians, regardless of their area of expertise. ●

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