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Sun protection policy and practices in South African primary schools

KEYWORDS: Sun exposure, policy, school, South Africa, accreditation, sunsmart.

Abstract Sun-related policies and practices of South African primary schools were assessed using a questionnaire on policies, practices, shade provision, activity scheduling and curriculum content. While all 24 participating schools reported that they did not have a written sun protection policy in place, efforts were being made. A SunSmart Schools Accreditation Programme may be beneficial. Survey responses were evaluated against 15 criteria with schools assigned a score from 0-15. The most common score was 5, no school achieved 15 and the highest score was 8. South African primary schools require significant support and resources to address sun protection among schoolchildren.

INTRODUCTION

Excess exposure to solar ultraviolet (UV) radiation is associated with several adverse human health effects contributing towards the international burden of disease (1). Melanoma is the best known such consequence, with rates reportedly highest in parts of Australia and New Zealand (1). The International Agency for Research in Cancer (IARC) whole population age standardised incidence rates per 100 000 for all ages (male and female) in 2008 were 36.6 in Australia/New Zealand, 5.6 in southern Africa (including South Africa) and 2.8 in the world (2). Recently, it has been suggested that melanoma rates in South Africa, specifically the Western Cape Province, may be as high as those reported elsewhere. The estimated figure for the Western Cape Province in 2009 was 69 new cases per year per population of 100 000 Caucasians, where the same figure for Australia was 65 per 100 000 (3). Unfortunately, more recent and reliable skin cancer statistics are difficult to obtain for South Africa. Despite these statistics, exposure to solar UV radiation has not been a significant public health concern in South Africa; however, this may be changing. South Africa, located between 23° and 34° South with altitudes ranging from 0 m to 3450 m above sea level, experiences maximum summertime midday solar UV radiation levels above 11 UV Index units (where < 2 UVI is low; 6-7 is high; and 11+ is extreme; protection is required if UVI > 3). The demographic groups of South Africa include individuals with a range of skin types and skin colours, and include a sizeable population of individuals with oculocutaneous albinism (4). Therefore, there are many individuals at risk due to reduced melanin content in the skin, and also at risk for ocular damage and immune suppression, additional negative health consequences of excess solar UV radiation exposure.

Empirical evidence suggests that excess exposure to solar UV radiation, and particularly the occurrence of sunburn, during childhood and adolescence is associated with the development of melanoma and other skin cancers during adulthood (5). The international Community Preventive Services Task Force (CPSTF) recommends interventions that combine education and policy approaches to increase preventive behaviours (such as covering up, using shade etc) among populations in specific settings (6). The CPSTF recently concluded, subject to external peer review, that there was 'strong' evidence that implementing interventions in primary schools helped to increase child sun protective practices while reducing sunburn incidence and new melanocytic mole formation, strengthening earlier recommendations based on 'sufficient' evidence (7, 8). The World Health Organization (WHO) promotes the implementation of a schools' rewards programme for sun protection efforts that include policy, teaching, practices and awareness raising components (9). An evaluation of the Australian SSAP found that accredited schools had a higher level of policy and practice than non-accredited schools, and overall the inclusion of specific aspects of sun protection in the written policy was linked to practice in all areas excluding shade adequacy (10). In 2010, the Cancer Association of South Africa (CANSA) published 'Be Sunsmart: A Guide for Schools' to empower schoolteachers with knowledge and information to educate schoolchildren about safe sun behaviours (11). However, no national SunSmart Schools Accreditation Programme (SSAP), similar to those in Australia and New Zealand, exists in South Africa. The present study was commissioned by CANSA to provide baseline information about the sun protection policies and practices of South African primary schools prior to the possible implementation of a South African SSAP.

METHODS

Study design

A cross-sectional, descriptive epidemiological study was applied to determine school sun-related policies and practices using self-reported questionnaires completed by the school principal. The study took place during the third school term between 1 August and 31 October 2012 (late winter to early spring). This was part of a larger study to assess schoolchildren's sun-related knowledge, attitudes and behaviours (CY Wright, unpublished data) together with sun protection practices and policies at their schools.

Sample

The schools invited to participate in the research were randomly selected from the Department of Basic Education schools database. Schools were eligible for inclusion if they had classes of Grade 7 students (modal age 13 years), were public (government) urban schools (urban schools were chosen due to challenges in accessing rural schools) and where English or Afrikaans (being the two main languages in South Africa) was the main spoken and written language. Private schools, correspondence and home schools, and schools for children with special needs were excluded (because they require an alternative research methodology for inclusion). Schools with classes of Grade 7 students with fewer than 10 students were excluded to optimize the use of the limited fieldwork budget. Since the student questionnaires were posted to the school, a random selection of government urban primary schools from all nine provinces was made to ensure fair representation of co-educational schools. The Department of Basic Education schools database was manually edited to exclude all ineligible schools identified above. From this edited list, 36 schools (4 from each of the 9 provinces in South Africa) were randomly selected. School principals were telephoned, briefed about the study and invited to participate. When a school chose not to participate, the next randomly selected school from the same province was contacted and invited until the total of 36 schools was reached. The school principals were asked to complete a questionnaire. The principals were provided with a brief project summary and an informed consent letter. Follow-up for questionnaire return was made when necessary and a personalised thank you letter with a summary report was written and sent to the participating school principals after completion of the study.

Ethical considerations and approvals

Ethical approval for this study was obtained from the Council for Scientific and Industrial Research Ethics Committee (35/2012) on 27 June 2012. Provincial approvals were granted by the following departments: KwaZulu-Natal Department of Education; Northern Cape Department of Education; Eastern Cape Department of Education; Department of Education: Mpumalanga; Western Cape Department of Education; Department of Education Free State; North-West Department of Basic Education; Gauteng Department of Education; and Limpopo Department of Education. School

principals gave informed consent prior to their completion of the questionnaire.

School principal questionnaire

The school questionnaire was based on a similar instrument used in two New Zealand studies (12, 13, 14) but adapted to local conditions using findings from a preliminary pilot study among five schools carried out in South Africa in 2010 (CY Wright, unpublished data). Questions focussed on school sun policies, sun-relevant practices, physical shade provision, outdoor activity scheduling, and curriculum content. For several questions, principals were given the opportunity to make an open-ended comment or remark. These comments were collated by question and categorised into similar themes in Microsoft Excel and results are included in the results section.

Statistical analysis

All questionnaire data were coded and entered into an electronic database. These data were cleaned and prepared for analysis in Microsoft Excel (2010). The data were then imported into Stata 11.0 statistical analysis software for analyses, including descriptive statistics and coding scores. Summary descriptive statistics included observed frequencies for all variables included in the questionnaire. The evaluation of schools against an SSAP was based on an approach adopted in a New Zealand study (15). A coding frame was implemented to calculate a score for each school based on 15 accreditation criteria. Where a school met a specific criterion, it scored 1 point. Each school's survey responses were scored against the 15 criteria and these scores were totalled to give an overall school score.

RESULTS

Descriptive results

Overall, 24 schools participated in the study, 37 schools were invited hence the school participation rate was 66%. All 24 schools were co-educational, i.e. both boys and girls are entitled to enrol (however no information is available on how many of each gender do enrol), and government urban schools. By Province, there were two schools from each of Gauteng, KwaZulu-Natal, Western Cape and Northern Cape Provinces; three schools from Limpopo, Mpumalanga, North-West and Free State Provinces; and four schools from the Eastern Cape Province. Since the sample is relatively small, no attempt was made to represent the country or provinces with these results, therefore no weightings were applied.



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Sun protection policy

Table 1 provides the frequencies (percentage and number of schools) of school principal responses by main question for all questions in the questionnaire. As indicated, no schools reported that they had a written sun protection policy in place. In the open-ended responses requesting why the school did not have a policy, one principal was concerned that policies are not implemented, but remain as "pieces of paper", and are therefore not effective; and several principals wrote that they had never considered the need for a sun protection policy until the time of completing the questionnaire.

Scheduling of activities

More than half of the schools (58%) responded that they do encourage students to avoid excess sun exposure during morning and afternoon tea/lunch breaks in Terms 1 and 4 (summer, early autumn and late spring) (see Table 1). However, most schools (91%) reported that they do not schedule breaks to avoid times when the sun is most intense, mostly due to timetabling constraints. A greater effort was made to schedule sports events to avoid times when the sun is most intense, with 54% of schools doing so. When asked why re-scheduling to avoid intense solar UV radiation hours was not done, principals were concerned about upsetting the school programme and they stated that re-scheduling was not practical. One principal stated that the law governs timetabling. Several principals reported that challenges with arranging afternoon transport for students from school to home was a constraint, and that many schools were part of sports leagues, which constrained the sports timetable after school hours.

Shade in school environment

Two-thirds of schools responded that some efforts had been made in the past three years to increase summer shade in the school environment (Table 1), for example, by planting trees or erecting shade structures. While about 70% of schools said that they had future plans to plant trees, fewer schools (25%) planned to erect shade structures mainly due to financial constraints. Only 9 schools (37%) stated that they have sufficient seating in the shade for all students during breaks (see Table 1). Most schools (79%) did not keep classrooms routinely open during breaks for students to sit indoors, the reasons being for safety and security purposes as well as discipline problems with children when they were not under adult supervision. Only 1 school had carried out a shade audit and maintained a shade inventory. The main reason given by principals for not erecting shade (either trees or shade structures) was a lack of funding and space on the school premises. One school mentioned the need to gain approval from the school governing body for installing shade and that this was a hindrance to the process. For many schools, shade was not considered a priority issue.

Hats and protective clothing

No school had a 'no hat, no play' or 'no hat, play in the shade' rule and only two schools had a sun protective hat (1 school broad-brimmed hat, 1 school peak cap only) as part of the standard school uniform (Table 1). Three schools required students to wear sun protective hats when outdoors in the sun during Terms 1 and 4. School principals responded that their reasons for not having a hat policy was because hats get lost and stolen; parents cannot afford to buy hats; schools do not have funds to provide hats; and one principal stated that the school's children do not need hats, probably because the children have dark skin and the principal deems this adequate skin protection from excess sun exposure. Several schools reported that they did have hats as part of the school sports uniform for use during extracurricular sports activities. A total of 62% of schools allowed students to wear sun protective clothing whenever they chose to do so but only 12% of schools included sun protective clothing, other than a hat, as part of the standard school uniform. Two-thirds of schools responded that the school's physical education kit did not have sun protective features such as long sleeves shirts, collared shirts and hats.

Sunscreen use

Two thirds of schools (66%) encouraged sunscreen use by students when outdoors in general and at special events (75%). More than 90% of schools did not provide sunscreen for students, due to the cost of sunscreen and financial (Table 1) constraints. Students were expected to provide their own sunscreen. The main reason suggested by principals for why sunscreen was not used by students was that the surrounding community was relatively poor and funds were seldom available for uniforms, let alone sunscreen. An interesting finding was that there was a misconception by two school principals regarding the use of the terms sunscreen and suntanning oil, where suntanning oil was used instead of sunscreen.

Curriculum and teaching

Fourteen schools responded that they teach the importance of wearing sunscreen when outdoors between 11am and 4pm in Terms 1 and 4. Sun protection is addressed as a health issue by eleven

Question	Percentage of schools responding positively	Number of schools (n=24)
Have a written sun protection policy	0	0
Sun protection policy under development	8.3	2
Sun protection recognised as a component of other school policies, e.g. health and safety policy	16.6	4
Students encouraged to avoid excess sun exposure during morning and afternoon tea breaks in Terms 1 and 4	58.3	14
Students encouraged to avoid excess sun exposure during lunch breaks in Terms 1 and 4	58.3	14
Schedule breaks to avoid times when sun is at its most intense	8.3	2
Schedule sports activities to avoid times when sun is at its most intense	54.1	13
Teach the importance of wearing sunscreen when outdoors	58.3	14
Sun protection addressed as a health issue in the curriculum	45.8	11
Aware of resources made available to schools by CANSA for teaching about sun protection	25.0	6
Students able to access sun protection information or advice at school	54.1	13
School staff expected to wear sun protective clothing during outdoor activities in Terms 1 and 4	20.8	5
School staff encouraged to be role models for the students in terms of sun protection behaviours in Terms 1 and 4	45.8	11
Have sufficient seating in the shade for all students during breaks	37.5	9
Indoor areas, i.e. classrooms, kept open during breaks	20.8	5
Any efforts made in past 3 years to increase summer shade	62.5	15
Any future plans to increase summer shade by planting trees	70.8	17
Undertaken a shade audit	4.1	1
Maintain a shade inventory	4.1	1
Have a 'no hat, no play' or 'no hat, play in the shade' rule	0	0
Have a sun protective hat as part of the standard school uniform	8.3	2
Broad-brimmed hat	8.3	2
Cap with peak	4.1	1
Legionnaires hat with neck/ear protection	0	0
Bucket hat	0	0
Require students to wear sun protective hats when outdoors in Terms 1 and 4	12.5	3
Include sun protective clothing other than a hat as part of the standard school uniform	12.5	3
Allow students to wear sun protective clothing whenever they choose to use sun protective measures	62.5	15

Table 1. Frequency of principal responses by main question pertaining to policy, scheduling and teaching

schools (45%), mainly in the Life Orientation programme. Six schools were aware of materials and resources made available to schools by CANSA for teaching sun protection. Interestingly, results from the recently completed schoolchildren survey (CY Wright, unpublished data) indicated that 55% of schoolchildren responded that they had not had any teaching about sun protection in the past 12 months and 22% said that they had had one lesson or part of a lesson about sun protection (C Wright, unpublished data). About 62% of students thought that their school did not have a sun protection policy, 16% thought that their school did have a policy (this is promising since it suggests that the school may be doing something to promote sun protection) and 19% didn't know whether their school had a policy or not.

Staff role-modelling

Generally, school staff members were encouraged (45%) to be role models rather than expected (20%) to be role models for students in terms of sun protection in Terms 1 and 4. One principal reported that staff members are adults and it is their own responsibility to protect themselves, therefore the use of sun protection is not prescribed.

Scoring of schools

Schools were scored against 15 accreditation criteria proposed for a possible SSAP for implementation in South Africa (Table 2). No criterion was 100% met by all schools. The criteria for which the most schools were in compliance were: (1) students actively encouraged to wear sunscreen (66.6%); (2) students allowed to wear sun protective clothing whenever they choose (62.5%); (3) teaching on sun protection at all levels every year (75.0%); (4) sports activities scheduled before 11am and after 4pm (54.1%); and (5) messages about sun protection are given at school (54.1%). Table 3 gives a summary of the school scores. No school met all 15 accreditation criteria. School scores ranged from 0 to 8, the mode was 5 (29.1% of schools attained a score of 5) and the mean was 4.1. Nineteen schools (79.1%) attained a score equal to or less than the mode of 5.

DISCUSSION

Schools have been regarded as important contexts for helping to shape health-related values, attitudes and behaviours of

Main theme	Minimum criteria	Draft requirement (criterion) to meet	Percentage (%) of schools attaining (n)
Policy	The sun protection policy is implemented during Terms 1 and Terms 4 when solar UVR levels are highest	1. There is a sun protection policy in place	0 (0)
Hats	All students wear a broad-brimmed (minimum 7.5 cm brim) or bucket hat (minimum 6 cm brim, deep crown) when outside	2. Hat wearing is enforced	12.5 (3)
Play in the shade	Students not wearing hats are required to play in shady areas	3. Hat wearing is enforced 4. Consequences for students not wearing hats	12.5 (3) 0 (0)
Sunscreen	The use of sunscreen is encouraged	5. Students actively encouraged to wear sunscreen 6. Sunscreen available at school	66.6 (16) 8.3 (2)
Clothing	The use of sun protective clothing is encouraged	7. Students allowed to wear sun protective clothing whenever they choose 8. Uniform has sun protective options	62.5 (15) 12.5 (3)
Role modelling	Staff are encouraged to act as role models by practising SunSmart behaviours	9. Staff expected to wear sun protective clothing in Terms 1 and 4	20.8 (5)
Curriculum	SunSmart education levels are included in the curriculum at all levels every year	10. Teaching on sun protection at all levels every year	75.0 (18)
Planning	The sun protection policy is reflected in the planning of all outdoor activities (e.g. camps, beach outings, sporting events, excursions)	11. Sunscreen is available for student use 12. Schedule breaks to avoid peak UVR times	8.3 (2) 8.3 (2)
Scheduling	Outdoor activities are scheduled, whenever possible, to minimise time outdoors between 10 am and 3 pm.	13. Sports activities scheduled before 11am and after 4pm 14. Children can stay indoors on fine days for breaks	54.1 (13) 20.8 (5)
Information	All staff, students and parents/caregivers are to be informed of the SunSmart policy and its intended purposes	15. Messages about sun protection are given at school	54.1 (13)

Table 2. Minimum criteria for SunSmart School Accreditation and percentage of schools attaining each of the draft requirements based on principal survey responses

children through the curriculum, role-modelling, school health services, structural environmental design and policy within a Health Promoting Schools framework (16). That no South African primary school sampled in this study had a sun protection policy is of concern. In other countries, presence of a sun protection policy has varied from 0% in Massachusetts elementary schools (17), as was the case in this study, to 58% in a New Zealand study among primary schools (14). Financial constraints, timetabling constraints and competing health issues at school were the main reasons why many of the sun-related activities and issues had not been pursued or adopted by the schools in this study. Despite the lack of a sun protection policy, several schools were making an effort to increase summer shade, encouraging children to wear hats and use sunscreen and staff to act as role models in terms of sun protection for the students. Regarding



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teaching about sun protection, many schools noted that they do teach about sun protection in the Life Orientation curriculum and teachers may also have promoted sun protection through incidental learning just before children go outdoors. These positive steps need to be streamlined into a comprehensive approach to sun protection and the development and implementation of a sun protection policy would facilitate this process. No school sampled fully met the 15 accreditation criteria applied in this study. In a New Zealand study, the same was true at baseline, however, some schools attained scores of 10 or 11 out of a possible 12 points (2% of schools) and the most commonly achieved (by 23%) score was 7 out of 12. Compared to the present study in which the most commonly acquired score was 8 out of a possible 15, it shows a similar finding that South African and New Zealand primary schools tend to achieve about half of the full attainment score. This differs from findings in Australia where 52% of schools surveyed attained a SSAP status in full, meeting all criteria against which they were scored (10). Clearly, there is some room for improvement among South African primary schools and the implementation of a South African SSAP programme with the requirement for a sun protection policy is likely the most suitable first step. A second step should be the reinforcement of the CANSA health promotion activities in schools since a New Zealand study found that an improvement in school accreditation score was significantly and positively associated with school acknowledgement of the Cancer Society of New Zealand's health promotion efforts (14). The current study encountered several limitations, including that questionnaires were answered by school principals, hence, self-report bias (i.e. social desirability) is a concern and future studies should contain a procedure to validate study findings on site. The SSAP criteria applied in this study were based on the Australian and New Zealand programmes and accreditation criteria and have yet to be tried and tested for applicability in the South African context. Finally, a common comment made by several school principals was that they had never before considered sun protection or related issues, i.e. they had never thought about it before this study made them aware. Many school principals made a final remark that stated that they were grateful to have been informed about sun protection issues and welcomed information to help implement sun protection at school, and that they planned to address some of the key issues in the near future.

CONCLUSIONS

South African urban, government primary schools are making some efforts to address sun protection for their schoolchildren's health benefit, but with the present complete lack of sun protection policy and no national SSAP, it is unlikely that significant and sustained changes to sun-related practices in South African primary schools will be achieved. In Australia, the benefits of SunSmart / sun protection awareness and health promotion campaigns and initiatives have been published and include an estimated reduction in skin cancer rates (18). A similar population-based campaign combined with setting-specific interventions, as promoted by the Community Preventive Services Task Force for primary school settings, may

Accreditation score	Number of schools n (%)
0	1 (4.1)
1	3 (12.5)
2	1 (4.1)
3	5 (20.8)
4	2 (8.3)
5	7 (29.1)
6	2 (8.3)
7	0
8	3 (12.5)
9	0
10	0
11	0
12	0
13	0
14	0
15	0
Total	24 (100)
Mean	4.1
Mode	5
Range	0 - 8

Table 3. Summary of school accreditation scores

be beneficial for South Africa. Presently, there is no nationwide SSAP in South Africa; however, the possibility of such a programme being implemented in the near future is likely. It is most important that, whatever approach is taken in the school environment to address sun protection, the breadth of content includes all health consequences (i.e. skin, eyes etc), prevention strategies and addresses common barriers to sun protection that need to be removed to motivate children to take appropriate and effective precautions against harmful sun exposure.

ACKNOWLEDGEMENTS

Funding for this project was granted by the Cancer Association of South Africa, the Council for Scientific and Industrial Research and the Medical Research Council of South Africa. Sincere thanks go to the School Principals, School Teachers and Schoolchildren who participated in the study and completed the questionnaires. The authors would like to thank Research Associate Professor Anthony Reeder for reading an earlier version of this manuscript and providing valuable recommendations for its improvement.

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