Adolescent sun protection at secondary school athletic sporting events – a misnomer

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Skin cancer is the most common cancer in New Zealand, accounting for 80% of all cancers diagnosed,1 and 95% of skin cancers in high ultraviolet radiation (UVR) environments are potentially preventable.2 Excessive UVR exposure and sunburn in childhood and adolescence is an important risk factor for the development of skin cancer later in life.3 A SunSmart program provides accreditation by the Cancer Society of NZ for schools that have developed and implemented a sun protection policy for Terms 1 and 4. These policies have been successfully implemented in NZ primary schools,4 but do not routinely continue once students move onto secondary school.

A recent Parliamentary inquiry into skin cancer in Australia highlighted the lack of progress in embedding sun smart behaviours in young Australians, especially those at secondary school.5 It was recommended that “national sporting bodies and associations which engaged in outdoor activities adopt sun smart policies…”

Most NZ secondary schools hold a compulsory annual athletics sports day, organised and run by school staff. Students may spend long periods outdoors, resulting in prolonged sun exposure and – potentially – sunburn, which increases the subsequent risk of developing skin cancer.6 Staff role modelling behaviour of appropriate sun protection practices is recommended in a school setting.7 The study aims were to:

1. Record the sun-protective behaviours of adolescents (and adult supervisors) engaged in athletics activities.
2. Describe the physical and social environment in terms of access to shade and sunscreen, and adult role modelling.

Abstract

Objective: To observe the sun-protective practices of students and staff and related aspects of the physical environment at secondary school athletics days.

Methods: This observational study of 1,225 students and 215 adult supervisors examined the use of sun-protective items (hats, clothing coverage, sunglasses), sunscreen provision and shade.

Results: Sun-protective behaviour was poor with only 3% of students and 25% of adult supervisors wearing a sun-protective hat. Shade was not available to most students, either as competitors or while waiting to compete. Sunscreen provision was 50%.

Conclusion: Portable shade for students waiting to compete should be available at competitive events. Students should be encouraged to wear sun-protective hats and clothing while not competing and SPF30+ broad-spectrum sunscreen should always be provided. Guidelines for adult supervisors should be developed so they role model appropriate sun protection.

Key words: sun protection, secondary schools, teenager, skin cancer prevention

Methods

An observational study of 10 of Dunedin City’s 12 secondary schools (age range of students 13-18 years) was conducted at athletics days during February/March 2015. The athletics days consisted of various events conducted in rotation. During one rotation (e.g. 9:00 am to 9:30 am), a number of events were held concurrently (e.g. shot put, discus, long jump, running races) for particular age groups. Students not involved in that particular rotation were not counted. To ensure that students were only counted once, one rotation was chosen as the observation period for each school. Most sports days were held at one athletics arena maintained by the City Council. The number of observations was determined by the number of events held by the school.

A checklist of sun-protective practices was developed and counts of students and adults using each practice were conducted twice. The sun-protective behaviours measured were: sun-protective hat (broad-brimmed, bucket or legionnaires); clothing coverage (below the elbow, below the knee); and sunglasses use. Observation was carried out inconspicuously to ensure that behaviour was minimally affected. The collection of demographic information for individuals was not feasible. The availability of sunscreen and shade, and the broadcasting of reminders regarding sunscreen use were recorded. Weather information (temperature, cloud cover) was obtained from The Meteorological Service.8 Observational data was supplemented from a survey of secondary school principals in the summer of 2014/15 on their schools’ sun protection policies and practices.9

Any association between a factor (e.g. temperature) and the outcome variable (sun-protective hat) was assessed using the Pearson chi-square test.

Ethical approval was obtained through the Department of Preventive and Social Medicine, following University of Otago ethics guidelines.

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Submitted: August 2015; Revision requested: November 2015; Accepted: December 2015

The authors have stated they have no conflict of interest.
Results

The Ministry of Education Database was used to calculate the combined rolls (n=6,934) of the schools observed. Of these, 1,225 students (17.6%) and 215 adult supervisors were observed. All events were held when the UVI exceeded 7, when sun protection should be used regardless of temperature or cloud cover. With the exception of two schools where junior students (years 9 and 10) wore their physical education uniform, students wore their chosen clothing – usually themed to match their house colours. Table 1 summarises the observed sun-protection practices of the students and staff.

Students were significantly more likely to wear a sun-protective hat on days when cloud cover was less than 50% (χ²=12.85, p<0.05) and temperature exceeded 20°C (χ²=8.27, p<0.05). There was no statistically significant difference in hat wearing between coeducational and single-sex schools or by sex of the student (for single sex schools).

Sunscreen was provided at five (50%) school events, in four cases sufficiently protected by shade. In two instances, the researcher heard an announcement advising students to apply sunscreen. Shade cover provided for students was variable and not generally at specific events (e.g. discus circle). Some schools provided shade cover for teachers/officials.

Discussion

This is the first published study of observed sun-protection practices among NZ secondary school students attending school sports events. The study’s strength is that it does not rely on self-reported behaviour, which can be subject to recall, misclassification and social desirability biases. A systematic observation protocol was used to avoid selection bias. Simple repeat counts were used and these were not open to alternative interpretations. Although only one researcher undertook the observations, a study where a similar technique was used for direct observation of hat use in schools found total agreement between observers.

Although the observations were done systematically, it can be difficult to apply this to large groups of people. Our observations were aided by the low proportions of people using sun protection.

A study limitation was the inability to assess sunscreen use. That being said, sunscreen is not the recommended first line of defence against sun exposure as it needs to be reapplied and reapplied correctly, particularly during physical exertion when sweating occurs. A further limitation was that we were unable to observe the sun protection behaviour of spectators at the athletics days. The observed levels of sun protection for students were low, particularly with respect to hat use, with only a very small proportion (5%) wearing a sun-protective hat. All forms of sun protection were used significantly more among the adult supervisors than students, although only one-quarter of supervisors wore a sun-protective hat. It has previously been reported that adults tend to take more sun-protection precautions than younger people. During sports days, adults in supervisory roles may spend longer exposed to the sun than students as they often officiate at events all day, so their better practices may – at least in part – have been due to this. Providing guidelines for staff officiating at sports events is likely to be beneficial.

Interventions for the primary prevention of skin cancer need to be realistic in a school environment. The school day encompasses the hours of high UVR (11am to 4pm) and it is not practical to suggest rescheduling athletes events outside this period. During sports days, students compete in physically demanding events where the wearing of sun-protective items may impede performance. However, competing in events constitutes only a small component of total time spent at the venue. Much time was spent waiting to compete and, in such situations, students should be protected from the sun – yet shade was not generally available at event sites. Providing shade in the form of portable sun shelters would be the best solution.

An Australian study found that secondary school students used, rather than avoided, built shade sails at school and a pilot study of shade at a youth sporting event found that it was well utilised during breaks in participation.

Other studies have shown that sun protection varies with weather conditions. The relatively modest ambient temperatures may not have been sufficient to trigger sun-protective behaviours that are often associated with higher temperatures (rather than awareness of high UVR risk).

In addition to encouraging shade use, sun-protective hats and clothing and good role modelling of staff, schools should provide broad spectrum SPF30+ sunscreen at sports days and regularly remind students to use it. In the national survey, 87% of schools reported providing students with sunscreen during outdoor activities, but the observed practice was substantially less (50%). Secondary schools that have a sun protection policy in place are more likely to have a greater number of self-reported sun protection practices than those secondary schools without such a policy.

It would be beneficial if the Ministry of Education required secondary schools to have a sun protection policy that included direction on the management of outdoor recreational activities, so that students and staff are adequately protected in a high UVR environment.

The use of council-owned facilities suggests positive changes in sun-protection policies and expectations at council level would likely have a favourable impact on multiple school events over many years. Advocacy at the local council may be particularly beneficial.

Acknowledgements

This study was funded by an internal grant from the Department of Preventive and Social Medicine, University of Otago. We are grateful to Ella Iosua for her statistical advice and Dave Buller for his advice on the observation of sun-protective behaviour.

References

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