



Sun protection practices in New Zealand secondary schools: a 2014 baseline study

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ABSTRACT

Objective. Guided by the established primary school SunSmart programme, a survey of secondary schools' sun protection policies, planning, behavioural expectations, curriculum content and environment was undertaken in order to establish a baseline to inform advocacy and secondary level programme development.

Methods. All 448 principals of state or state integrated public secondary schools identified from the Ministry of Education database were mailed a hard copy questionnaire. School sun protection practices were assessed and a summative, non-weighted, 11-item Total Sun Protection Score (TSPS) was created. Associations between TSPS and socio-demographic factors, as well as school sun protection policy, were investigated using unadjusted and multiple linear regressions.

Results. Usable responses received from 211 of the 448 schools (47% participation) indicated reasonable representativeness of eligible schools, but under-representation of low socioeconomic decile institutions ($p = 0.003$) and those with the smallest roll size ($p = 0.004$). Only 50% of schools reported having a sun protection policy. The least attained TSPS components were outdoor event planning (17.1%), student breaks (16.6%), sun-protective clothing (8.5%) and shade provision (6.2%). The mean (SD) TSPS was 4.58 (2.06). In multivariable analysis, TSPS was statistically significantly positively associated with having a sun protection policy ($p < 0.001$) and the presence of primary level classes ($p < 0.001$) – the latter suggesting a possible influence of programme continuity, but negatively associated with integrated school status ($p = 0.036$).

Conclusion. A standard SunSmart programme could be promoted to all schools, irrespective of socioeconomic decile, overall roll size, gender status or regional population density. Low attainment of some TSPS components indicates targeting priorities.

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1. Introduction

New Zealand (NZ) schools are required to fulfil National Administrative Guidelines (NAGs) which include the need to “ensure that the school's buildings and facilities provide a safe, healthy learning environment” (NAG 4) and “provide a safe physical and emotional environment” (NAG 5) for students. (Ministry of Education) Although not specifically identified, these guidelines should be taken to include the provision of shade and appropriate sun protection practices for avoiding erythema and assisting skin cancer primary prevention.

In high solar ultraviolet radiation (UVR) environments, as NZ is seasonally, more than 90% of skin cancers are attributed to excessive UVR exposure, (Armstrong, 2004) so most cases are potentially preventable. The link between UVR exposure during childhood and adolescence, and subsequent cutaneous malignant melanoma (melanoma) incidence has

been specifically identified. (Levine et al., 2013; Whiteman et al., 2001) Given that students attend school during the hours of highest UVR (10am–4pm), spend at least part of that period outdoors and can receive a substantial fraction of their total UVR exposure while at school, (Moise et al., 1999) there is good justification to implement comprehensive school programmes that follow World Health Organization guidelines and address sun protection policy, practice, curriculum content and environment. (World Health Organization, 2003) This should be a priority in NZ which ‘leads’ the world with the highest overall (males and females combined) age standardised melanoma incidence rate, (International Agency for Research on Cancer, 2013) and where deaths from skin cancers exceed those from motor vehicle traffic crashes (513 vs 284 deaths in 2011). (Ministry of Health, 2011).

Having a written sun protection policy is associated with more comprehensive practice in primary schools, and policy comprehensiveness is associated with practice comprehensiveness. (Dono et al., 2014) With the exception of shade adequacy, the inclusion of specific aspects of sun protection in written policy is linked significantly to corresponding practice. (Jones et al., 2008) Higher sun protection policy scores are associated with higher sun protection practice scores among early

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childhood services. (Ettridge et al., 2011) Comparable studies of policy implementation in secondary schools have not been reported, although educational interventions can be associated with positive changes in students' knowledge, attitudes and behavioural intentions. (Geller et al., 2002) Systematic review evidence regarding behaviour change, however, was considered insufficient, (U.S. Centers for Disease Control and Prevention) with little additional evidence emerging since. (Haiducu & McLean, 2013).

At secondary schools sun protection tends not to be an identified priority and, as we observed in an earlier exploratory study, (Jopson & Reeder, 2004) secondary students are at an age when they are expressing their independence, challenge authority, and often have little thought for the possible long-term consequences of their actions. Sun. protection is difficult to encourage in these conditions. Nevertheless, schools have opportunities to educate about the issues and to provide environments which both protect and encourage sun protection."(p. 23).

In NZ, a comprehensive SunSmart Schools Accreditation Programme (SSAP) for Term 1 (January–April, southern hemisphere summer/autumn) and Term 4 (October–December, spring/summer) has been successfully implemented at primary and intermediate level since 2005. (Reeder et al., 2012) There is no comparable secondary level programme, but the SSAP provides a template with potential for extension to secondary levels. Baseline information is required to: 1). describe the existing situation, 2). inform advocacy, and 3). help assess the impact of any secondary school intervention implemented. Guided by the SSAP and exploratory secondary school site visits, (Jopson & Reeder, 2004) the national survey results reported here are intended to help meet these goals.

2. Methods

2.1. Participants

The most recent available Ministry of Education schools database was obtained and all non-private, state or state-integrated (formerly private and 'special character' – often church affiliated) schools with secondary age students (Year 9–modal age 13 years, and above) were selected (August 2014) and 448 schools were identified as eligible for inclusion. Special schools for teenage mothers and those with disabilities were excluded because they offer specialist services for young people with high needs who may also be enrolled at their local mainstream school, have the curriculum adapted for them, receive support from specialist staff, additional teaching time and teacher's aide support.

2.2. Procedures

An invitation to participate in the survey was mailed to school principals or statutory managers, with the option of delegating survey completion to the most appropriate person. The mailing included a letter of support from the Cancer Society, an Information Sheet, the survey instrument and a postage paid, pre-addressed envelope for returning the completed questionnaire. One email reminder was provided if no survey response was received after three weeks, followed by a telephone reminder after at least a further two weeks. The final cut-off for inclusion was 3 March 2015. As an incentive to participate, there was a prize draw for a sunscreen dispenser (value NZ\$25) for five randomly selected participating schools. Departmental ethical approval was obtained following University of Otago procedures, and the project was reviewed and approved by the Human Ethics Committee (D14/336).

2.3. Survey instrument

The survey instrument, which takes approximately 10 min to complete, was developed from the primary school SSAP questionnaire. Feedback was sought and obtained from Cancer Society national and regional health promotion staff. The questionnaire (*Supplementary File 1*)

contained items on the respondent's role at school, whether the school had a written sun protection policy or procedure (and policy location and accessibility), and sun protection practices (10am–4pm Terms 1 and 4). Sun protection practices surveyed included how sun protection messages were communicated, lunch break sun exposure, provision and assessment of shade, uniform and dress codes, hat wearing, sun-screen use, guidelines for outdoor events and assemblies, curriculum content and staff role modelling.

2.4. Measures

The Total Sun Protection Score (TSPS) is a summative, non-weighted score reflecting sun protection planning and behavioural expectations at school and school events, curriculum content and environmental provision. It comprises 11 components each contributing one point if the school meets the specified criterion (Table 1).

Other measures obtained from the Ministry of Education database included: school integration status (state, state integrated, special character), socioeconomic decile (with 1 being the lowest 10% of schools with highest proportions of students enrolled from low socioeconomic communities), type (year range either years 7–15, 9–15, or composite/area schools 1–15), overall roll size, gender status (co-educational/single sex), geographic region (six Cancer Society divisions used for health promotion programme dissemination and useful for monitoring advocacy efforts and institutional change) and Ministry of Education population density categories, (rural, minor urban, secondary urban, main urban).

2.5. Analysis

The chi-square goodness of fit test was used to assess the representativeness of participating schools in terms of socio-demographic characteristics. The frequency distributions of the TSPS and its eleven component items were evaluated. In order to assist the prioritisation of targeting, school sun protective practices were categorised into four groups: those which were attained by 75% or more of participating schools, those attained by less than 75% but at least 50%, those attained by less than 50% but more than 25% and those by less than 25%. Associations between TSPS and school sun protection policy, as well as socio-demographic factors were investigated using unadjusted and multiple linear regressions. The residuals of the multiple linear regression model were assessed for heteroscedasticity and non-normality, and variance inflation factors were investigated for collinearity. Stata software version 13.1 was used for all statistical analyses. The two-sided significance level $\alpha = 0.05$ was specified for all statistical tests.

3. Results

Usable responses were received from 211 of 448 schools surveyed (47% participation). Responding schools were somewhat under-representative of low socioeconomic decile schools ($p = 0.003$) and those with the smallest roll size ($p = 0.004$), but otherwise reasonably representative of all eligible schools (Table 2). Survey respondents were mainly principals and/or held senior management positions (141; 67.14%), followed by teachers (47; 22.38%). The remainder (22, 10.48%) held roles primarily with health responsibilities, such as school nurses, first aid officers and counsellors.

Only 50.24% of schools reported having a sun protection policy. A single school reported meeting the criteria for all 11 TSPS components (Table 3). Although 19 schools (9%) scored 8 or more and most (74.9%) scored between 3 and 7, 34 (16.1%) scored 2 or less, and the mean (SD) TSPS was only 4.58 (2.06). When ranked by the percentage of schools meeting the criteria for each TSPS item (Table 1), almost all schools (96%) met the "assemblies" criterion, since assemblies were mostly held indoors, and more than 75% met the sunglasses criterion. Sunscreen and information provision criteria were met by more than

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