Predictors of Sun Protection in Canadian Adults

Mark P. Purdue, MSc

ABSTRACT

Objective: An analysis of Canadian survey data was performed to identify independent predictors of different protective behaviours and of their use in combination.

Methods: Data from light-skinned respondents of the 1996 National Survey on Sun Exposure & Protective Behaviours who spent 30+ minutes per day of their leisure time in the sun (N=1,027) were analyzed. Multivariable logistic regression models were developed to identify independent predictors of four types of sun protection behaviour (avoiding the sun between 11 a.m. and 4 p.m., seeking shade, wearing protective clothing, applying sunscreen to the body) and of their use in combination.

Results: Eighty-one percent of respondents reported performing at least one protective behaviour; each behaviour was practised by between 40% and 48% of individuals. Respondents more likely to perform the behaviours in combination were older individuals, women and those who did not report being unconcerned about sun protection, wanting a tan, finding sun protection inconvenient or being forgetful about protecting oneself from the sun. These characteristics were generally found to predict each of the individual behaviours, with some notable exceptions (women were less likely than men to wear protective clothing; older individuals were less likely to report sunscreen use). Individuals with a higher education level were more likely to report wearing protective clothing and applying sunscreen. Similarly, respondents reporting a higher income level reported sunscreen use more often.

Interpretation: These findings suggest predictors of sun protection to be considered for the targeting of sun safety initiatives to Canadians with poor sun protection practices.

La traduction du résumé se trouve à la fin de l'article.

Division of Preventive Oncology, Cancer Care Ontario, Toronto, ON

Correspondence: Mr. Mark P. Purdue, Division of Preventive Oncology, Cancer Care Ontario, 620 University Avenue, Suite 1500, Toronto, ON M5G 2L7, Tel: 416-971-9800 ext. 1231, Fax: 416-971-7554, E-mail: mark.purdue@cancercare.on.ca.

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Melanoma and non-melanocytic skin cancers (NMSC), having risen substantially in incidence in fair-skinned populations over the past two decades,¹ are important public health problems in Canada. Sun exposure has been implicated as the primary environmental risk factor for skin cancer; it has been estimated that 90% of NMSC and 65% of melanoma are attributable to ultraviolet radiation (UVR).^{2,3} Public health agencies in Canada have created consensus surrounding public health messages and strategies about sun safety to be disseminated to the public.⁴ In particular, these recommendations call for the adoption of a core set of protective behaviours, namely avoiding sun exposure between 11 a.m. and 4 p.m. (when UVR levels are highest) and seeking shade, wearing protective clothing and hats and using sunscreen when outdoors.

Recent findings suggest that the majority of adult Canadians are not engaging in these protective behaviours.^{5,6} Sun exposure in adult life appears to be relevant to the pathogenesis of skin cancer, with cumulative UVR dose believed to be important in the development of squamous cell carcinoma⁷ and two meta-analyses of published studies reporting intermittent sun exposure in adult life to be associated with increased melanoma risk.^{8,9} Knowledge of predictors of poor sun protection in this population would be informative in the development of future sun safety campaigns. At present, however, there are only a limited number of published analyses identifying predictors of the aforementioned behaviours.^{5,10,11}

The National Survey on Sun Exposure & Protective Behaviours (NSSE&PB) was conducted in 1996 to provide information about sun exposure and protective behaviours in the Canadian population.⁶ The data from this survey were analyzed using multivariable modelling to identify independent predictors of four types of sun protection behaviours (avoiding the sun between 11 a.m. and 4 p.m., seeking shade, wearing protective clothing and using sunscreen on the body) among adult light-skinned Canadians. Since light-skinned individuals are particularly susceptible to skin cancer because of their lower levels of skin pigmentation and are therefore in most need of practising safe sun behaviours, the analysis was restricted to respondents indicating light skin colour.

METHODS

The methodology of this survey is briefly described in this article; a more detailed description has been reported previously.¹² The NSSE&PB was carried out by Statistics Canada using trained telephone interviewers in September 1996. Respondents were sampled using a multi-stage design and asked to report on their sun exposure and protective behaviours for the period of June through August, 1996. The target population included all persons aged 15 years or older residing in Canada, with the exception of residents of institutions, of Yukon and Northwest Territories, and of households without telephones. When a household was reached, an attempt was made to list all eligible household residents, and to sample one of these residents at random. All interviews were carried out with the selected respondent only. The national response rate was 69%.

Information on sun protection behaviours was collected from all respondents who reported spending on average 30 minutes/day or longer in the sun during their leisure hours that summer. A five-point Likert-type scale (1=always, 5=never) was used by these respondents to indicate the frequency with which they would perform each protective behaviour (avoiding the sun between 11 a.m. and 4 p.m., seeking shade, wearing protective clothing and using sunscreen) during their leisure time in the sun. SAS[®] software was used to calculate the prevalence of always or often performing each type of sun protection behaviour. Sampling probability weights of observations were applied in order to calculate prevalence estimates for the Canadian population. In accordance with Statistics Canada guidelines, the reliability of these prevalence estimates were screened on the basis of their estimated coefficients of variation (CV).¹³

Responses from participants in the 1996 NSSE&PB who reported having light skin colour and spending on average 30 minutes/day or longer in the sun during their leisure hours that summer were used for these analyses. To account for the sample design in the analysis, sampling probability weights were used and the effective sample sizes were downweighted by the reciprocal of the overall calculated design effect (deff = 1.27).

TABLE I

Sun Protection Behaviours Among Adult (Aged 15+) Canadians with Light Skin, NSSE&PB, 1996

	All (%)	With 30+ Min Leisure Time in Sun (%)
Leisure Time in Sun		
<30 min	28.2	—
30+ min	71.8	100.0
Number of Behaviours Practised Always or Often		
None	—	19.1
One	—	27.0
Two	—	24.0
Three	—	20.8
Four	—	9.2
Avoid the Sun Between 11am – 4pm		
Always/Often	—	42.5
Sometimes/Rarely/Never	—	57.5
Seek Shade		
Always/Often	—	43.6
Sometimes/Rarely/Never	—	56.4
Wear Protective Clothing		
Always/Often	—	47.4
Sometimes/Rarely/Never	—	52.6
Apply Sunscreen to Body		
Always/Often	—	40.0
Sometimes/Rarely/Never	—	60.0

TABLE II

Factors Associated with Practising Different Numbers of Protective Behaviours Always or Often When Outdoors in Leisure Time Among Canadian Adults with Light Skin, NSSE&PB, 1996

Factor	Number of Protective Behaviours Practised Always or Often	
	1-2 OR* (95% CI)	3-4 OR (95% CI)
Age Group (years)		
15-24	1.00	1.00
25-34	1.67 (0.93-3.00)	2.20 (0.99-4.92)
35-44	0.98 (0.53-1.79)	1.94 (0.87-4.30)
45-54	1.23 (0.63-2.40)	2.61 (1.10-6.22)
55-64	2.25 (0.88-5.75)	2.49 (0.77-7.98)
65+	4.19 (1.32-13.36)	8.77 (2.33-32.94)
<i>P for Trend</i>	0.0537	0.0026
Sex		
Male	1.00	1.00
Female	1.71 (1.13-2.60)	3.07 (1.80-5.23)
Unconcerned about Sun		
No	1.00	1.00
Yes	0.80 (0.50-1.28)	0.48 (0.26-0.89)
Want a Tan		
No	1.00	1.00
Yes	0.44 (0.29-0.68)	0.16 (0.09-0.28)
Sun Protection Inconvenient		
No	1.00	1.00
Yes	0.63 (0.42-0.96)	0.51 (0.30-0.85)
Forgetful about Sun Protection		
No	1.00	1.00
Yes	1.15 (0.72-1.85)	0.55 (0.32-0.95)

Note: OR, odds ratio; CI, confidence interval.

* Odds ratios adjusted for all other predictors in table and for region of Canada

Multiple logistic regression models identifying independent predictors of always/often performing 1 or 2 protective behaviours (vs. always/often performing no behaviours) and of always/often reporting 3 or 4 of the protective behaviours (vs. always/often performing no behaviours) were developed using a backward elimination variable selection algorithm (significance level for staying in the model of $p < 0.05$ using the likelihood ratio test). If a

variable was retained in only one of the two models, it was included in the other model for purposes of comparison. Independent predictors were identified from among the following characteristics: age, sex, region of Canada, hair colour, ethnicity, education level, and income adequacy. In addition, the following potential barriers to sun protection were considered as potential predictors: finding sun protection inconvenient, being forgetful about

TABLE III

Factors Associated with Always or Often Avoiding the Sun Between 11-4, Seeking Shade, Wearing Protective Clothing or Using Sunscreen on the Body Among Canadian Adults with Light Skin, NSSE&PB, 1996

Factor	Protective Behaviour			
	Avoid the Sun	Seek Shade	Wear Clothing	Use Sunscreen (Body)
	OR* (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Age Group (years)				
15-24	1.00	1.00	1.00	1.00
25-34	0.71 (0.43-1.18)	1.37 (0.82-2.31)	1.72 (1.02-2.92)	1.22 (0.72-2.06)
35-44	1.15 (0.69-1.93)	2.18 (1.27-3.73)	1.88 (1.09-3.24)	0.88 (0.51-1.54)
45-54	1.33 (0.77-2.32)	1.80 (1.01-3.20)	2.35 (1.32-4.19)	0.76 (0.42-1.38)
55-64	1.81 (0.94-3.48)	2.28 (1.16-4.48)	2.37 (1.20-4.67)	0.45 (0.22-0.93)
65+	1.68 (0.89-3.18)	2.25 (1.17-4.32)	3.79 (1.91-7.52)	0.48 (0.23-0.98)
<i>P for Trend</i>	0.0020	0.0050	0.0001	0.0013
Sex				
Male	1.00	1.00	1.00	1.00
Female	1.86 (1.37-2.54)	1.82 (1.33-2.49)	0.59 (0.43-0.80)	3.89 (2.77-5.46)
Hair Colour				
Black	1.00	1.00	1.00	1.00
Dark Brown	1.34 (0.60-3.00)	1.22 (0.55-2.71)	0.93 (0.41-2.09)	0.65 (0.29-1.49)
Light Brown	1.52 (0.70-3.33)	1.51 (0.70-3.29)	1.07 (0.48-2.35)	0.90 (0.40-2.00)
Blond	1.36 (0.61-3.02)	1.15 (0.52-2.55)	1.11 (0.49-2.48)	0.82 (0.36-1.86)
Red	1.73 (0.70-4.25)	1.49 (0.61-3.66)	1.84 (0.72-4.66)	2.00 (0.79-5.11)
Education Level				
< Secondary	1.00	1.00	1.00	1.00
Completed				
Secondary	1.03 (0.64-1.64)	0.75 (0.47-1.21)	1.22 (0.75-1.99)	1.76 (1.03-3.01)
Completed				
College	1.25 (0.73-2.14)	0.72 (0.42-1.24)	2.04 (1.17-3.56)	1.34 (0.73-2.46)
Completed				
University	1.30 (0.76-2.20)	0.85 (0.50-1.45)	1.87 (1.08-3.24)	2.05 (1.13-3.73)
<i>P for Trend</i>	0.2052	0.7863	0.0052	0.0970
Income Adequacy				
Lowest	1.00	1.00	1.00	1.00
Lower Middle	1.07 (0.49-2.31)	0.72 (0.33-1.59)	0.63 (0.28-1.40)	1.33 (0.55-3.20)
Middle	0.84 (0.39-1.79)	0.63 (0.29-1.35)	0.88 (0.40-1.93)	1.75 (0.75-4.12)
Upper Middle	1.02 (0.49-2.11)	0.53 (0.25-1.11)	0.68 (0.32-1.45)	1.92 (0.84-4.38)
Highest	0.88 (0.40-1.90)	0.61 (0.28-1.34)	0.68 (0.30-1.50)	2.51 (1.04-6.03)
<i>P for Trend</i>	0.7308	0.1550	0.5280	0.0108
Unconcerned about Sun				
No	1.00	1.00	1.00	1.00
Yes	0.88 (0.60-1.29)	0.80 (0.54-1.18)	0.90 (0.61-1.32)	0.51 (0.33-0.78)
Want a Tan				
No	1.00	1.00	1.00	1.00
Yes	0.48 (0.37-0.69)	0.36 (0.25-0.52)	0.38 (0.27-0.55)	0.89 (0.61-1.30)
Sun Protection Inconvenient				
No	1.00	1.00	1.00	1.00
Yes	0.98 (0.72-1.34)	0.82 (0.60-1.13)	0.77 (0.56-1.05)	0.52 (0.37-0.73)
Forgetful about Sun Protection				
No	1.00	1.00	1.00	1.00
Yes	0.81 (0.58-1.13)	0.81 (0.58-1.13)	0.76 (0.54-1.06)	0.62 (0.43-0.88)

Note: OR, odds ratio; CI, confidence interval.

* Odds ratios adjusted for all other predictors in table and for region of Canada

sun protection, being unconcerned about sun protection, wanting to get a suntan, and other reasons for not protecting oneself.

Multiple logistic regression analysis was also performed to identify independent predictors of always or often (vs. sometimes/rarely/never) performing each protective behaviour. Initially, models were fit for each protective behaviour adjusting for all potential predictors. Those variables found to be associated ($p < 0.05$ using the likelihood ratio test) with at least one of

the four protective behaviours were retained in all of the models.

All variables in the multivariate analyses were defined as categorical. For each ordinal-type variable, a test for trend was performed using the Wald statistic obtained when the final models were refit with that variable defined using a quantitative covariate (i.e., assuming a linear effect on the logit scale). Region of Canada was retained in all models given that it was included as a stratification level in the sample design.

RESULTS

Nearly three out of every four (71.8%) light-skinned Canadians aged 15 years or older reported spending on average 30 min/day or longer in the sun during their leisure hours (Table I). Individuals reporting 30+ min/day of leisure time in the sun were more likely to be younger, to be male and to have higher levels of education and income than those reporting <30 min/day of leisure time in the sun (data not shown).

More than three quarters of individuals (80.9%) who were asked about sun protection reported always or often performing at least one type of behaviour (Table I). Twenty-seven percent of individuals practised only one type of protective behaviour, 24% practised two behaviours, 21% practised three behaviours and 9% reported practising all four behaviours. Less than half of the respondents reported always or often performing each type of protective behaviour.

Complete information for multivariable analysis was available for 1,027 (84.0%) of the 1,222 survey respondents indicating light skin colour and spending at least 30 minutes/day of their leisure time in the sun that summer. Individuals who always or often practise one or two of the four protective behaviours were more likely than those who always or often practise no behaviours to be older (borderline statistical significance) and female and less likely to report being unconcerned about sun protection, wanting a tan, and finding sun protection inconvenient (Table II). These characteristics and being forgetful about protecting oneself from the sun were more strongly associated with always/often practising three or all four protective behaviours (vs. always/often practising no behaviours).

Characteristics found to be independent predictors of both avoiding the sun and seeking shade were older age, female sex and not wanting to get a tan (Table III). Older age, higher level of education and not wanting to get a tan were positively associated with wearing protective clothing. Women were less likely than men to report using this method of protection. Sunscreen use on the body was found to be associated with younger age, female sex, a university education and higher levels of income adequacy. Individuals who report-

ed being unconcerned about sun protection, finding sun protection inconvenient and being forgetful about protecting themselves from the sun were less likely to use sunscreen. Sunscreen use was also found to be dependent upon hair colour, with high-use among red-haired individuals.

DISCUSSION

From this analysis of sun protective behaviours among light-skinned Canadian adults from the 1996 NSSE&PB, it is somewhat encouraging that over three quarters of adults reported practising at least one protective behaviour. However, the finding that only 30% of respondents reported always/often employing three or four of the behaviours suggests a need to encourage Canadians to adopt a wider breadth of sun protection strategies.

Younger adults were found to be less likely to report avoiding the sun during peak hours, seeking shade and wearing protective clothing, but more likely to report applying sunscreen to their body when outside during leisure hours. These findings are consistent with those reported from other studies of protective behaviours among adults.^{5,10,11} Such poor protection among younger individuals is particularly important as sun exposure early in life has been found in many studies to be associated with high risk of melanoma and other skin cancers later in adulthood.¹⁴⁻¹⁶

Similarly troubling is the finding that men, who have a higher incidence of skin cancer,^{1,16,17} are less likely than women to engage in sun protection. Poor sun protection behaviour by men has also been consistently reported with respect to avoiding the sun, seeking shade and sunscreen use.^{5,10,11,18-20} It is interesting that women, who otherwise reported better protective behaviour than men, were less likely to wear protective clothing when outside; this finding was also reported by Campbell et al.⁵ and Hall et al.¹⁰

There is evidence suggesting that respondents with light hair colour practise better sun protection, although statistical significance was reached only for the association with sunscreen use. This is not surprising, given that the mixture of melanin pigment that governs hair colour is also related to the sensitivity of skin to UVR, and that individuals with sun-sensitive phenotype practise better sun protection.^{5,10}

TABLE IV

Barriers to Sun Protection by Age and Sex Among Canadian Adults with Light Skin, NSSE&PB, 1996

	Barriers to Sun Protection			
	Percent who Want a Tan	Percent who Forget About Protection	Percent who Find Protection Inconvenient	Percent who are Unconcerned About Protection
Age Group (years)				
15-24	56.0	73.7	45.1	24.0
25-34	35.3	73.5	44.9	19.8
35+	22.2	57.3	48.1	23.8
P-value*	<0.0001	<0.0001	0.56	0.33
Sex				
Male	29.6	64.5	50.6	27.6
Female	31.2	63.5	44.0	19.1
P-value*	0.56	0.73	0.02	0.0004

* p-value obtained from Pearson chi-square test for independence

Education and income adequacy were found to predict only some protective behaviours: the use of protective clothing was higher among those with a higher education level, and sunscreen use was positively associated with university education and higher income level among respondents. The observed relationship between these measures of socio-economic status and sunscreen use has been reported previously in the literature^{10,11} and has raised the question of whether the cost of sunscreens presents a barrier to their regular use among poorer adults.¹⁰

One advantage of using NSSE&PB data is that it was possible to consider the importance of potential barriers to sun protection in this analysis; such barriers were not considered in previously reported studies.^{5,10,11} However, the interpretation of these findings is restricted by three limitations to the analysis. First, taking into account the response rate and the exclusion of observations due to missing data, only 58% of the sampled population were included in the multivariable analysis. There is the potential for bias if inclusion in the analyzed sample is associated with sun protective behaviour and with the putative predictors of sun protection considered in the analysis. Second, there is also the potential for bias due to measurement error, given that information on self-reported sun protection behaviour was collected rather than actual behaviour. Third, it was not possible to properly account for the survey design effect in calculating the variance surrounding estimated odds ratios, due to the suppression of sample design information for reasons of confidentiality. The only available technique of

accounting for the survey design in calculating variance was to downweight observations by the design effect so as to reflect the effective sample size. With this method of variance estimation, one cannot guarantee that the true sample variance has been estimated for any given odds ratio. However, the consistency of these results with those from other studies that were able to fully account for the sample design in their analyses provide support for our findings.

In conclusion, the observation that a minority of adult light-skinned Canadians regularly practises multiple sun protection behaviours suggests a need for public education to emphasize that sun safety strategies should be practised in combination. Our findings suggest that young adults and men of all ages could particularly benefit from future education initiatives. Both the NSSE&PB data (Table IV) and studies in the psychological literature²¹ suggest that the important barriers to sun protection for adolescents and young adults are the social desirability of a suntan and forgetfulness regarding sun protection, while the barriers to protection for men include finding sun protection inconvenient and a lack of concern about the health effects of excessive sun exposure. These barriers should be considered in the development of sun safety initiatives targeting young adults and men. The question of whether the cost of sunscreen represents a barrier to their use is worthy of further investigation.

REFERENCES

1. Gaudette LA, Gao RN. Changing trends in melanoma incidence and mortality. *Health Rep* 1998;10(2):29-41.

2. Armstrong BK, Kricke A. How much melanoma is caused by sun exposure? *Melanoma Res* 1993;3(6):395-401.
3. Koh HK. Preventive strategies and research for ultraviolet-associated cancer. *Environ Health Perspect* 1995;103(Suppl 8):255-57.
4. Mills CJ, Jackson S. Public education messages for reducing health risks from ultraviolet radiation. *Chronic Dis Can* 1995;16(1):33-36.
5. Campbell HS, Birdsell JM. Knowledge, beliefs and sun protection behaviors of Alberta adults. *Prev Med* 1994;23:160-66.
6. Shoveller JA, Lovato CY, Peters L, Rivers JK. Canadian National Survey on Sun Exposure & Protective Behaviours: Adults at leisure. *Cancer Prev Control* 1998;2(3):111-16.
7. English DR, Armstrong BK, Kricke A, Winter MG, Heenan PJ, Randell PL. Case-control study of sun exposure and squamous cell carcinoma of the skin. *Int J Cancer* 1995;60:489-94.
8. Elwood M, Jopson J. Melanoma and sun exposure: An overview of published studies. *Int J Cancer* 1997;73:198-203.
9. Whiteman DC, Whiteman CA, Green AC. Childhood sun exposure as a risk factor for melanoma: A systematic review of epidemiologic studies. *Cancer Causes Control* 2001;12:69-82.
10. Hall HI, May DS, Lew RA, Koh MK, Nadel M. Sun protection behaviors of the U.S. White population. *Prev Med* 1997;26:401-7.
11. Hoegh HJ, Davis BD, Manthe AF. Sun avoidance practices among non-Hispanic White Californians. *Health Educ Behav* 1999;26(3):360-68.
12. Lovato CY, Shoveller JA, Peters L, Rivers JK. Canadian National Survey on Sun Exposure & Protective Behaviours: Methods. *Cancer Prev Control* 1998;2(3):105-9.
13. Statistics Canada, Special Surveys Division. 1996 Sun Exposure Survey: Microdata User's Guide. Ottawa: Statistics Canada; 1997. Cat no 82M0019XDPGPE.
14. Weinstock MA, Colditz GA, Willett WC, Stampfer MJ, Bronstein BR, Mihm MC Jr., et al. Nonfamilial cutaneous melanoma incidence in women associated with sun exposure before 20 years of age. *Pediatrics* 1989;84(2):199-204.
15. Zanetti R, Rosso S, Martinez C, Navarro C, Schraub S, Sancho-Carnier H, et al. The multi-centre south European study 'Helios'. I. Skin characteristics and sunburns in basal cell and squamous cell carcinomas of the skin. *Br J Cancer* 1996;73:1440-46.
16. Elwood JM, Gallagher RP. Sun exposure and the epidemiology of melanoma. In: Gallagher RP, Elwood JM (Eds.). *Epidemiological Aspects of Cutaneous Malignant Melanoma*. Boston: Kluwer Academic, 1994;15-66.
17. Miller DL, Weinstock MA. Nonmelanoma skin cancer in the United States: Incidence. *J Am Acad Dermatol* 1994;30:774-77.
18. Berwick M, Fine JA, Bologna JL. Sun exposure and sunscreen use following a community skin cancer screening. *Prev Med* 1992;21:302-10.
19. Hourani LL, LaFleur B. Predictors of gender differences in sunscreen use and screening outcome among skin cancer screening participants. *J Behav Med* 1995;18(5):461-77.
20. Rosenman KD, Gardiner J, Swanson GM, Mullan P, Zhu Z. Use of skin-cancer prevention strategies among farmers and their spouses. *Am J Prev Med* 1995;11(5):342-47.
21. Arthey S, Clarke VA. Suntanning and sun protection: A review of the psychological literature. *Soc Sci Med* 1995;40(2):265-74.

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RÉSUMÉ

Objectif : Par l'analyse des données d'une étude canadienne, nous avons voulu cerner les variables prédictives de divers comportements de protection et de la combinaison de ces comportements.

Méthode : Nous avons analysé les données des répondants à la peau claire de l'Étude nationale sur l'exposition au soleil et les comportements de protection (1996) qui passaient plus de 30 minutes par jour au soleil durant leurs loisirs (n=1 027). Par des modèles de régression logistique multivariable, nous avons cerné les prédicteurs de quatre types de comportements en matière de protection solaire (éviter le soleil entre 11 h et 16 h, rester à l'ombre, porter des vêtements couvrants, appliquer un écran solaire) et de la combinaison de plusieurs comportements.

Résultats : Quatre-vingt-un p. cent des répondants ont dit avoir eu au moins un comportement de protection; chaque comportement était pratiqué par 40 à 48 % des répondants. Les répondants les plus susceptibles de combiner plusieurs comportements étaient les personnes âgées, les femmes et les répondants qui n'ont pas indiqué que la protection solaire ne les préoccupait pas, qu'ils voulaient bronzer, qu'ils trouvaient la protection solaire gênante ou qu'ils avaient tendance à l'oublier. Dans l'ensemble, ces caractéristiques prédisaient chacun des comportements de protection, à quelques exceptions notables (les femmes étaient moins susceptibles que les hommes de porter des vêtements couvrants, et les personnes âgées, moins susceptibles d'appliquer un écran solaire). Les répondants plus scolarisés étaient proportionnellement plus nombreux à dire porter des vêtements couvrants et appliquer un écran solaire. De même, les répondants dont le revenu était plus élevé déclaraient plus souvent appliquer un écran solaire.

Interprétation : Ces résultats portent à croire qu'il faudrait tenir compte des prédicteurs de la protection solaire pour axer les initiatives encourageant la prudence au soleil vers les Canadiens dont les pratiques de protection sont déficientes.

OBITUARY

Dr. Milton Terris

Dr. Milton Terris died on October 3, 2002 of bone cancer and heart failure. He was 87 years old.

Dr. Terris was recognized internationally as a leader in the field of public health and epidemiology. Through his work as researcher, writer, educator, activist, and journal editor, he exercised a powerful influence on the development of public health in countries around the world.

Dr. Terris was an influential mentor to health care practitioners in both developed and undeveloped countries. He organized and taught graduate summer schools in epidemiology for health professionals for many years, including 17 summers at the University of Minnesota. His series of academic exercises, known informally as "the Milton Terris exercises" helped to train generations of health care workers.

As an activist for health care reform in the United States and Canada, he called for a "Second Epidemiological Revolution" to recognize the primacy of prevention in combating such contemporary scourges as heart disease, cancer, lung disease, and premature births. This emphasis on prevention before the fact rather than treatment after the fact was a recurring theme in much of his work. For example, he publicly criticized the highly regarded Canadian health care system for "a defect it shares with most of the world's developed nations; its enormous expenditures for medical care have left little money for preventing disease and injury."

Through his writings and lectures, Dr. Terris expanded the field of epidemiology to include non-biological factors, especially socio-economic ones. Terris argued that: "public health workers should support a higher standard of living as the main determinant of health." He also saw the epidemic of violence in the United States as a major public health issue: "Serious action to combat racism, poverty, and militarism must be at the core of the public health program to reduce violence."

Dr. Terris' contributions have been recognized through numerous awards, including, most recently, an honorary doctorate from the University of Montreal. The presentation was unreserved in its praise for his activism, stating that: "Milton Terris embodied urgency of action in the face of human suffering."

Over a period of 35 years, Dr. Terris taught at medical schools in the United States and Canada, including New York University, Tulane University, the Universities of Michigan, Buffalo, Minnesota, Toronto, and Montreal, and the Public Health Research Institute of the City of New York.

Dr. Terris retired in 1980 after serving 12 years as chairperson of the Department of Community and Preventive Medicine at New York Medical College, but that was hardly the end of his lifelong commitment to public health. He immediately founded the *Journal of Public Health Policy* to address a wide range of public health issues for a worldwide subscriber base. Such is his commitment to the Journal that he was engaged in editing Volume 23, Number 4 at the time of his death.