

Promoting skin cancer awareness

Aryan Riahi, Bsc.

While the incidences of many cancers are declining in Canada, skin cancer continues to be on the rise. For instance, the incidence of melanoma rose by 2% for men and 1% for women between 1986 and 2010¹. By 2031, it is estimated that the annual financial burden for skin cancers will reach \$922 million in Canada alone². In addition to the economic implications, the morbidity, mortality, and psychological distress associated with skin cancer are significant.

The increasing incidence of skin cancer is rather surprising, considering its largely preventable nature. Among different risk factors, natural and artificial sources of ultraviolet (UV) radiation are responsible for over 50% of skin cancers worldwide³. Protection strategies from UV exposure are warranted, such as staying in the shade, and using clothing items or sunscreen when exposure is unavoidable. Unfortunately, these behaviours are less prevalent than one would expect. Canadian surveys reveal that only 30-40% of Canadian adults apply sunscreen or seek shade⁴. Furthermore, 37% of adults experience sunburns during summer, indicating non-adherence to the sun protective strategies⁴. Sunburns indicate skin damage, and are associated with skin cancers as both are linked to excessive UV radiation⁵⁻⁶.

The skin cancer epidemic in Canada persists in part from a lack of public awareness of its prevalence, seriousness and prevention techniques. Nevertheless, the preventable nature of skin cancers makes them a low-hanging fruit for public health intervention. In this commentary, we explore specific populations that are at-risk of skin cancer due to greater vulnerability to UV exposure. The need for public health campaigns and legislative policies aimed at these populations is discussed. Successful public health efforts in Australia area also mentioned, serving as a model for Canada.

Occupational Exposures

Individuals whose outdoor activity forms a large portion of their employment are at greater risk for UV radiation. These include, but are not limited to, workers in construction, landscaping, and recreational industries⁷. The levels of sun exposure experienced by these workers may be hazardous and reach the threshold for causing skin cancer. For instance, a study by Peters et al. measured sun exposure levels among Australian outdoor workers. An overwhelming proportion (90%)

of workers experienced exposures that were well above the exposure limits established by the International Radiation Protection Association⁸. We speculate that this would be comparable to Canadian figures, where many individuals are employed in outdoor industries.

Despite their increased risks, outdoor workers show different levels of awareness with regards to the hazards of UV exposure. In a 2012 review, 35% of farmworkers in California reported no knowledge of skin cancer⁹. Such unawareness may, in turn, translate to reduced adherence to sun protective behaviours. Accordingly, the authors found that 50-80% of building workers and farmers in multiple countries do not readily protect their skin using long-sleeved clothing⁹. Canadian figures are similar, with only 29% of construction workers applying sunscreen¹⁰.

Previous efforts aimed at promoting skin protection awareness among outdoors workers have yielded variable results. Among 16 studies investigating the efficacy of sun-safety educational programs, six reported long-term positive effects⁹. The most popular beneficial effect observed was on sunscreen application⁹.

These efforts ought to be trumpeted, expanded and appropriately modified to improve their outcomes while better tailoring for workers in different industries. For instance, workers in landscaping industries may be more receptive to a combination of wearing hats and sunscreens. In contrast, construction workers already have extensive personal protective equipment, and may find additional clothing to be burdensome and too hot. Lifeguards would require water resistant protective equipment, owing to the nature of their employment.

Moreover, legislation does not necessarily translate into compliance. More effort must be invested towards enforcing workplace guidelines to protect outdoor workers from non-ionizing radiation. A study by Peters et al. found that workplaces that requires hats and sleeved shirts to promote safety also happened to have higher sun protection behaviour scores⁷. Workers practiced better sun protection behaviour at the workplace compared to on weekends. When mandated, workplace policies can be effective. Young people in particular report a higher ability to cope with risk⁷. This may explain why they tend to protect themselves less⁷. Expanding and enforcing effective workplace policies that targets the younger generation of workers is critical in promoting efficacious and lifelong sun protection behaviours.

Furthermore, educational efforts should be complemented by legislations that promote sun protective behaviours. To the best of our knowledge, no national policy exists for promoting sun protection among outdoor workers. Current governmental policies focus on providing water for employees and preventing heat stress²³. These can be further adapted to also protect employees from excessive sun exposure. For example, employers can be required to provide sunscreen of adequate protection at their work site. Employees would then be mandated to apply and appropriately reapply sunscreen to ensure their skin remains protected at all times. Sunscreen can be added to the existing collection of personal protective equipment, such as helmets and closed toe boots. Such legislations require advocacy from the medical community at all levels of federal, provincial/territorial, and local governments.

Since Canada employs a significant number of outdoor workers in comparison to other sectors, the nation may have much to gain in investing towards policies and programs aimed at skin care prevention and awareness.

Indoor and Outdoor Tanning

Tanning, in both indoor and outdoor environments, poses risks of excess UV radiation. Tanned skin continues to be associated with desirability and attractiveness, encouraging many individuals to voluntarily expose themselves to natural and artificial UV exposures¹¹. Among the general population, indoor tanning is five times more common in young white women compared to other demographics¹². Moreover, Google search trends indicate that interest in tanning salons peak during March in Canada and the United States¹³.

Previous legislative efforts have led to recent regulations that ban indoor tanning for minors across all Canadian provinces¹⁴. Moreover, governmental guidelines mandate tanning salon owners to follow an appropriate tanning schedule. For instance, 48 hours must pass between first and second tanning sessions, and client records should be maintained to keep track of total exposure¹⁵.

These actions are not only warranted, but are necessary and thus should be expanded. Tanning salons can be mandated to openly report their average UV exposure dose, and the consequences of tanning. Similar to how cigarette packages contain warning messages, tanning salons could put up signs so that consumers are aware of the risks associated with tanning. These include not only skin cancer, but also premature skin aging, loss of skin elasticity, burns, and immune suppression⁴.

To complement these legislative actions, public health programs can aim to educate the public and increase awareness around the link between tanning, UV exposure, and skin cancers. These programs ought to be year-round, with greater efforts to reflect the demographics and temporal aspects of risk. On top of campaigns dedicated to the general public, more efforts can be placed for young white women, and during the months leading up to March.

Lessons from Australia

Sun exposure is ubiquitous across the globe, and Canada can follow successful examples from other countries. For instance, public health efforts over the last 30 years in Australia demonstrate the importance of employing several different approaches in tackling the skin cancer epidemic. In addition to educational programs, tax-free sunscreens, support for tree-planting, and sun protection policies in schools were implemented to protect children and adults alike¹⁶.

Now, 30 years later, the results of these efforts are clear¹⁷. The public's comfort with getting suntans has decreased, while the usage of hats and sunscreens has increased. The incidence of melanoma has considerably declined, especially for the younger generations who were exposed to these reforms at an early age¹⁸. These examples indicate that well-designed public health initiatives towards skin cancer are effective, and should be used as models to encourage Canada to begin implementing similar protocols. These efforts ought to be directed at not only the aforementioned at-risk populations, but also the general public.

Steps in the Right Direction

While the recent move to ban minors from accessing tanning salons was a start, adults may also benefit from legislation that limits exposure to carcinogenic non-ionizing radiation. The first steps would include awareness campaigns. Such campaigns have been successful in other nations. For example, ever since Australia banned the use of tanning for cosmetic purposes for all ages, more people have turned to alternatives including spray tan equipment. While banning indoor tanning would protect adults from exposing themselves to a carcinogen, informing adults shares a similar goal while promoting autonomy over paternalism.

An Investment Worth Considering

Indeed, skin cancer is a public health problem that is thankfully preventable. Public health strategies aimed at protecting the general public and vulnerable subpopulations will lead to a win-win situation

through reduced morbidity, mortality, and healthcare expenditures associated with skin cancers. Given the progress that has been made in reducing the burden of many other cancers, it is time that we take skin cancer in Canada more seriously.

References

1. Melanoma: deadliest type of skin cancer is on the rise - Canadian. Available at: <https://www.cancer.ca:443/en/about-us/for-media/media-releases/national/2014/2014-canadian-cancer-statistics/?region=on>. Accessed May 30, 2019.
2. Joshua AM. Melanoma prevention: are we doing enough? A Canadian perspective. *Current oncology (Toronto, Ont.)* 2012 Dec;19(6):e462.
3. Lucas RM, McMichael AJ, Armstrong BK, Smith WT. Estimating the global disease burden due to ultraviolet radiation exposure. *Int J Epidemiol* 2008 Jun;37(3):654-667.
4. Pinault L, Fioletov V. Sun exposure, sun protection and sunburn among Canadian adults. *Health reports* 2017 May 17;28(5):12.
5. How does the sun and UV cause cancer? 2019; Available at: <https://www.cancerresearchuk.org/about-cancer/causes-of-cancer/sun-uv-and-cancer/how-does-the-sun-and-uv-cause-cancer>. Accessed May 30, 2019.
6. Skin Cancer: Types, Causes & Prevention. Available at: <https://my.clevelandclinic.org/health/diseases/10985-sun-exposure--skin-cancer>. Accessed May 30, 2019.
7. Peters CE, Demers PA, Kalia S, Nicol A, Koehoorn MW. Levels of Occupational Exposure to Solar Ultraviolet Radiation in Vancouver, Canada. *Ann Occup Hyg* 2016 Aug;60(7):825-835.
8. Gies P, Wright J. Measured solar ultraviolet radiation exposures of outdoor workers in Queensland in the building and construction industry. *Photochem Photobiol* 2003 Oct;78(4):342-348.
9. Reinau D, Weiss M, Meier CR, Diepgen TL, Surber C. Outdoor workers' sun-related knowledge, attitudes and protective behaviours: a systematic review of cross-sectional and interventional studies. *British Journal of Dermatology* 2013 May;168(5):928-940.
10. Peters CE, Koehoorn MW, Demers PA, Nicol AM, Kalia S. Outdoor Workers' Use of Sun Protection at Work and Leisure. *Saf Health Work*. 2016;7(3):208-212. doi:10.1016/j.shaw.2016.01.006
11. Chang C, Murzaku EC, Penn L, Abbasi NR, Davis PD, Berwick M, et al. More Skin, More Sun, More Tan, More Melanoma. *American journal of public health* 2014 Nov;104(11):e99.
12. Coelho SG, Hearing VJ. UVA tanning is involved in the increased incidence of skin cancers in fair-skinned young women. *Pigment Cell Melanoma Res* 2010 Feb;23(1):57-63.
13. Toosi B, Kalia S. Seasonal and Geographic Patterns in Tanning Using Real-Time Data From Google Trends. *JAMA Dermatol* 2016 Feb;152(2):215-217.
14. Melanoma: deadliest type of skin cancer is on the rise - Canadian. Available at: <https://www.cancer.ca:443/en/about-us/for-media/media-releases/national/2014/2014-canadian-cancer-statistics/?region=on>. Accessed May 30, 2019.
15. Guidelines for Tanning Salon Owners, Operators and Users: <https://www.canada.ca/en/health-canada/services/publications/health-risks-safety/2017-guidelines-tanning-salon-owners-operators-users.html>. Accessed May 30, 2019.
16. Edlich RE, Winters KL, Cox MJ, Becker DG, Horowitz JH, Nichter LS, et al. National health strategies to reduce sun exposure in Australia and the United States. *J Long Term Eff Med Implants* 2004;14(3):215-224.
17. Baade P, Coory M. Trends in melanoma mortality in Australia: 1950-2002 and their implications for melanoma control. *Aust N Z J Public Health* 2005 Aug;29(4):383-386.
18. Montague M, Borland R, Sinclair C. Slip! Slop! Slap! and SunSmart, 1980-2000: Skin cancer control and 20 years of population-based campaigning. *Health Educ Behav* 2001 Jun;28(3):290-305.
19. Legal Issues in Sun Safety For Workplaces in British Columbia. Available at: https://sunsafetyatwork.ca/sites/default/files/ssawc_legal_issues_british_columbia_fact_sheet.pdf. Accessed May 30, 2019.