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Title

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Permalink

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Journal

Journal of Clinical Oncology, 33(15_suppl (May 20 Supplement))

ISSN

0732-183X

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Publication Date

2015-05-20

DOI

10.1200/jco.2015.33.15_suppl.e20012

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Peer reviewed

Gender difference in the association of melanoma etiology to solar UV exposure.

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[Abstract Disclosures](#)

Abstract

e20012

Background: UV radiation has been considered the major environmental causative factor for melanoma. Our previous limited epidemiologic study suggested additional causative factors for early age onset melanoma in females. **Methods:** Melanoma and non-melanoma skin cancer case and population information were retrieved from various cancer registries and public domains. Age-specific and age-standardized incidence rates were calculated and compared between genders and age groups; and correlated with average daily UV index. **Results:** The current study further compared the age and gender-specific incidence rates for melanoma and non-melanoma skin cancer (NMSC) from the Netherlands (N), UK and Nordic (NOR) countries, and confirmed a peak gender difference at age 20-24 (the peak age for pregnancy) for melanoma in all countries examined (N, RR = 2.40, 95% CI 2.12, 2.72; UK, RR = 2.10, 95% CI: 1.84, 2.38; NOR, RR = 2.14, 95% CI: 2.16, 2.68) which was not observed (N, RR = 0.98, 95% CI: 0.65-1.49; NOR, RR = 1.01, 95% CI: 0.74, 1.37) or less obvious (UK, RR = 1.36, 95% CI: 1.15, 1.61) in NMSC. We further analyzed the relationship between UV index (UVI) and gender-specific and age-standardized melanoma incidence rates from 14 selected countries and regions, where most populations are Caucasians and have light hair color, and discovered that there was a significant correlation between the male incidence rates and UVI (Pearson's coefficient $r = 0.67$, $p = 0.009$), but only modest and non-significant correlation ($r = 0.45$, $p = 0.109$) between the female incidence rates and UVI. **Conclusions:** These results suggest that UV radiation exhibits a limited effect on development of melanoma in females compared to males. To our knowledge, this study is the first to describe a non-significant association of UV radiation with female melanoma development. This extensive study suggests that melanoma is a gender-enhanced cancer whose development is heavily impacted by gender-specific factors including the immune changes and hormones