Non-Ionizing Radiation & Children's Health

International Joint Workshop
18 - 20 May 2011, Ljubljana, Slovenia

PLATFORM PRESENTATION ☐

Meta-analysis on artificial light and skin cancer: update

Sara Gandini (1), Mathieu Boniol (2), Philippe Autier (2) and Peter Boyle (2)

1) European Institute of Oncology, Milan, Italy

International Prevention Research Institute, Lyon, France

Background
Sunlight is recognized as the main environmental cause of skin cancer, and in 2009 the WHO classified the full spectrum of ultraviolet radiation (UV) as a human carcinogen. Sunbed use represents an increasingly frequent source of artificial UV exposure in light-skinned populations.
In a previous meta-analysis on artificial light and skin cancer, conducted with the International Agency for Research on Cancer, we showed that the risk of cutaneous melanoma was increased by 75% for people who have used tanning beds before 35 years of age compared to those who have never used them.
The aim of this work is to update the available evidence, assessing also high exposure versus low exposure and a dose-response effect.
Methods
A comprehensive bibliographic search was conducted to identify relevant studies on sunbed use. Estimates were extracted from 24 studies published before March 2011, for a total of 10003 cases. Random effects models were used to obtain summary risk estimates (SRR) for ever and high versus lowest exposure; dose-response model were used to evaluate the risk for increase number of sunbed session. Subgroup analysis and meta-regression have been carried out to explore sources of between-study variation and bias. Sensitivity analyses were done to investigate reliability of results and publication bias.
Results
Ever-use of sunbeds was positively associated with melanoma: SRR= 1.36; 95% CI, 1.16–1.61; I2=62. No indication of publication bias was found.
In order to decrease the influence of possible biases, we also calculated summary estimates including only cohorts and population-based case–control studies. The summary relative risk was very similar (SRR=1.35; CI, 1.12–1.63).
We evaluated also the frequency of use comparing the highest exposure versus no exposure, a significant 50% increase risk was found (SRR=1.51; CI, 1.19–1.92; I2=40). Considering dose-response calculations of lifetime sessions we found that the SRR is: 1.004; CI, 0.999–1.009 per session.
First exposure to sunbeds before 35 years of age doubled the risk of melanoma, with no indication of heterogeneity (SRR=2.05; 95% CI, 1.47–2.85; I2=0; based on 11 informative studies).
Stratified analysis showed no significant difference in risk level in countries with different prevalence of phototypes (data not shown).
The estimate for squamous cell carcinoma showed a significant increased risk (SRR=1.89; 95% CI, 1.10–3.24; I2=57). For basal cell carcinoma, this work confirmed no significant association with sunbeds use.
Sunbeds exposure is confirmed to significantly increase the risk of melanoma and squamous cell carcinoma.