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Comments made on

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International prevalence of indoor tanning: a systematic review and meta-analysis.

Wehner MR1, Chren MM2, Nameth D3, Choudhry A4, Gaskins M5, Nead KT6, Boscardin WJ7, Linos E8.

[Diana Petitti](#) 2016 Jan 19 2:10 p.m. edited 1 of 1 people found this helpful

Financial Disclosure I was asked to review this publication by the American Suntanning Association. I was compensated for my time in conducting this review and in preparing a report based on the review. The American Suntanning Association did not have rights to comment on these comments or to modify the final report.

Scope of Comment These comments summarize my conclusions with regard to the estimates of the prevalence of ever exposure to indoor tanning in adults. These prevalence estimates are key inputs in the model used to estimate the number of skin cancers attributable each year to indoor tanning in United States, Northern and Western Europe, and Australia.

Description of Systematic Review Eligibility Wehner et al. (2104) state that their systematic review sought to obtain prevalence estimates "representative of the general population." They do not specify the criteria used to define an estimate of prevalence representative of the general population. The e-Appendix description of the studies deemed eligible does not provide detail on the sampling frame/study methods or response rates.

My Review I read the full text for all but one of the 17 publications that Wehner et al. (2014) identified as reporting estimates of the prevalence of ever exposure to indoor tanning in adults. The publication for which full text could not be retrieved (Mawn and Fleischer 1993; Wehner reference 23) provided detailed information on the study population in its abstract. I evaluated the accuracy/credibility of Wehner et al.'s meta-analytically derived estimates of the prevalence of ever exposure to indoor tanning in adults in the United States, Northern and Western Europe and Australia considering whether the studies were based on data representative of the general population. The accuracy/credibility of these estimates determines the accuracy/credibility of Wehner et al.'s model-based estimates of the number of skin cancers attributable each year to indoor tanning.

My Findings United States

None of the studies reporting the prevalence of ever exposure to indoor tanning in adults that Wehner et al. 2014 identified in their systematic review provide data representative of the general adult population of the United States. Several of the studies are from haphazard samples. For example, one study, Mawn and Fleischer 1993 (Wehner et al. reference 23), collected data using self-administered questionnaires distributed to "477 persons in a shopping mall, at a social gathering, and on a vacation cruise ship." Another study, Hoerster et al. 2007 (Wehner reference 40), collected data about the prevalence of ever exposure to indoor tanning in adults in the United States from a telephone survey of households that were selected because they had a high likelihood of having a child 14, 15, 16, or 17. Responses about ever exposure to indoor tanning in adults pertain to households with an adult who had a child age 14, 15, 16, or 17 years. One study, Lazovich et al. 2008 (Wehner reference 36), collected data about the prevalence of ever exposure to indoor tanning in adults in the United States using an interviewer-administered questionnaire given to a 26 adults recruited from an undergraduate psychology seminar and a convenience sample of adult staff and friends in Virginia and from flyers, announcements, and advertisements in Massachusetts. One study Cohen et al. 2013 (Wehner reference 29) collected data about the prevalence of ever exposure to indoor tanning in adults in the United States using a self-administered questionnaire given to a "convenience" sample of 100 parents of children being seen in three pediatric practices in Chicago.

One study, Mawn and Fleischer 1993 (Wehner et al. reference 23), collected data in 1992, more than two decades before 2014, the year for which the estimate of the prevalence of ever exposure to indoor tanning in adults was made. Several other studies collected data more than a decade before 2014.

The meta-analytically derived estimate of the prevalence of ever exposure to indoor tanning for adults in the United States based on the studies identified by Wehner et al. (2014) is meaningless; the estimate of the number of skin cancers attributable to indoor tanning in the United State based on this meaningless estimate is meaningless.

Northern and Western Europe

The Wehner et al. (2014) systematic review identified studies of the prevalence of ever exposure to indoor tanning adults that were done in the United Kingdom, Ireland, France, Germany, Denmark, and Sweden. Only one study, Borner et al. 2009 (Wehner reference 27), had a sampling frame that could have yielded data representative of Germany but the response rate was very low (13%). Germany is not representative of all of Northern and Western Europe. Austria, Belgium, Luxembourg, the Netherlands, Estonia, Finland, Iceland, Latvia, Lithuania, Norway and Switzerland are countries in Northern and Western Europe for which no prevalence data were identified.

One study, Bränstrom et al. 2004 (Wehner reference 28), collected data about the prevalence of ever exposure to indoor tanning in adults based on population-based sample limited to adults age 18-37 years in Stockholm County, Sweden. One study, Pertl et al. 2010 (Wehner reference 37), collected data about the prevalence of ever exposure to indoor tanning in adults using an interviewer-administered questionnaire given to “convenience sample” of adults between age 16 and 27 recruited in “various locations around Ireland (e.g., schools, sports clubs, universities and train stations.)”

One study, Jackson et al. 1999 (Wehner reference 33), collected data in 1995, nineteen years before 2014, the year for which the estimate of prevalence was made. Several other studies collected data more than a decade before 2014.

The meta-analytically derived estimate of the prevalence of ever exposure to indoor tanning for adults in Northern and Western Europe based on the studies identified by Wehner et al. (2014) is meaningless; the estimate of the number of skin cancers attributable to indoor tanning in Northern and Western Europe based on this meaningless estimate is meaningless.

Australia

The Wehner et al. (2014) systematic review identified one study (Francis et al. 2010; Wehner reference 31) that reported a measure of the prevalence of ever exposure to indoor tanning adults in Australia that is probably “in the ballpark.” The prevalence measure based on data collected in 2007/2008 is reasonably current considering 2014 as the year for which the estimate was made. The sources of data on the annual number of incident melanoma and non-melanoma skin cancers in Australia is credible and I was able to verify the accuracy of these estimates.