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Original Research

Sex differences in the association between countries' smoking prevalence and happiness ratings

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ARTICLE INFO

Article history:

Received 1 November 2017

Received in revised form

3 March 2018

Accepted 21 March 2018

Keywords:

Smoking

Happiness

Tobacco

Tobacco use

Sex differences

Positive affect

ABSTRACT

Objectives: To examine the cross-sectional relationship between measures of countries' happiness and countries' prevalence of tobacco smoking. Since smoking prevalence differs widely based on sex in some countries and is similar in other countries, it was examined if there was a sex difference in the relationship between smoking prevalence and country-specific happiness ratings.

Study design: Ecological study design.

Methods: Countries' age-standardized prevalence estimates of smoking any tobacco product among persons aged 15 years and older (%) for 2015 were obtained from the World Health Organization (WHO) Global Health Observatory. Country-specific scores from the World Happiness Report 2016 Update Ranking of Happiness (2013–15) and the 2015 Gallup Positive Experience Index were matched and correlated to 2015 WHO estimates of tobacco smoking prevalence for males and females. The difference between male and female age-standardized smoking prevalence estimates in each country was calculated by subtracting female prevalence from male prevalence and was then correlated to countries' World Happiness Report scores. The analyses did not control for potential confounders.

Results: The association between male age-standardized smoking prevalence estimates and countries' World Happiness Report scores was inversely correlated [$r(104) = -0.22, P = 0.03$], whereas the association between female age-standardized smoking prevalence estimates and countries' World Happiness Report scores was positively correlated [$r(104) = 0.48, P = 0.00$]. An inverse correlation was found between the difference in male and female smoking prevalence estimates and countries' World Happiness Report scores [$r(104) = -0.50, P = 0.00$]. The association between countries' male age-standardized smoking prevalence estimates and the Positive Experience Index scores was inversely correlated [$r(99) = -0.37, P = 0.00$], whereas the female age-standardized smoking prevalence estimates in countries were not significantly associated with Positive Experience Index scores [$r(99) = -0.03, P = 0.75$].

Conclusion: There are distinct sex differences between the amounts of happiness measured in countries and male and female smoking rates. Greater inequality in age-standardized

Abbreviations: WHO, World Health Organization.

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<https://doi.org/10.1016/j.puhe.2018.03.027>

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smoking prevalence estimates between males and females is associated with lower amounts of happiness as measured by the World Happiness Report. These findings can be applied to population-based strategies aimed at reducing national smoking rates in men and women.

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Introduction

Tobacco has historically and continues today to be promoted by tobacco companies as a product that promises to deliver the benefit of happiness and joy to its users. As early as the 1920s, print advertisements in the United States touted slogans such as *When it's evening, and it suddenly seems that no other happiness compares with receiving and welcoming friends, have a Camel!*¹ and *Have a Camel. Camels add to the joy of living.*² *Double Happiness* is one of the oldest Chinese-produced brands of cigarettes that started in 1906 and it remains a well-selling brand internationally.³ American print advertisements from the 1950s and 60s marketed cigarettes with messages such as *Enjoy happy smoking with Winston*;⁴ *To a Smoker: Happiness is the Taste of Kent*;⁵ *Lucky Strike cigarettes Be Happy—Go Lucky!*⁶ Recent ad campaigns from countries around the world are modern examples of how the tobacco industry continues to frame their products as agents of happiness and joy:

- *Full of flavor! Full of Pleasure!*, Newport (2013, United States)⁷
- *mai optimist* which translates to *more optimistic*, Pall Mall (2010, Romania)⁸
- *taste success*, Rothmans (2010, Nigeria and Ghana)⁹
- *Slow Down, Pleasure Up*, Camel (2010, Greece and Spain)¹⁰
- *Hopes & Dreams*, Benson & Hedges (2010, Kenya)¹¹
- *Ciesz Sie Chwila, Dziel Sie Smakiem* which translates to *Enjoy the Moment, Share the Taste*, Partner (2010, Poland)¹²
- *Pleasure to Burn*, Camel (2010, United States)¹³
- *It Just Doesn't Get Any Sweeter Than This*, Swisher Sweets (2010, United States)¹⁴

Despite the daily barrage of marketing messages people around the world are exposed to in an attempt to frame smoking as a lifestyle choice that will bring joy, pleasure, and happiness, a number of recent studies have suggested there is a positive association between smoking cessation and happiness among individuals.^{15–19} Interestingly, a couple of population-level assessments of smoking and happiness have also shown associations between these two variables. A 2013 cross-sectional study determined the prevalence of smoking in US states is highly inversely associated ($r = -0.69$, $P < 0.01$) with state-specific ratings of happiness using the Gallup and Healthways' Well-Being Index.²⁰ Although it is important to recognize that a correlational finding does not imply a causal relationship between lower amount happiness and higher rates of smoking in US states, these macro-level data describe a landscape of addiction to tobacco smoking and happiness that is much different than that portrayed in tobacco industry promotion and advertising.

A recent study by La Torre et al. conducted a similar type of cross-sectional analysis using country-level data that examined the relationship between WHO age-standardized smoking prevalence estimates from 2009 to 2010 and self-reported level of thriving as measured by the 2010 Gallup Global Well-being Index as a proxy for happiness.^{21,22} The study revealed a distinct sex difference between men and women. Men display an inverse correlation such that lower male smoking prevalence is associated with living in a county that reports higher amounts of thriving. The trend for women is in the opposite direction showing higher female smoking prevalence being associated with living in countries that report higher amounts of thriving.²¹ Explanations for why the directions of the associations between the amount of thriving measured in countries and smoking prevalence differ for men and women have not been identified. This article examines if similar trends for men and women are detected when examining country-specific levels of happiness as reported in the World Happiness Report 2016 Update Ranking of Happiness (2013–15) and 2015 WHO country-specific age-standardized smoking prevalence estimates.²³ The recognition that smoking prevalence differs widely based on sex in some countries and is similar in other countries²⁴ spurred this analysis to examine if gender equality in smoking prevalence helps to describe this curious sex difference observed in the relationship between smoking rates and happiness levels of people in countries. Historical patterns of sex differences in smoking have followed a trend that women's traditionally lower smoking rates tend to increase as women gain greater social equality with men.²⁵ How traditional sex roles influence the social acceptance of smoking for men and women can also vary by region and culture.²⁶

Another popular measure of country-level happiness is Gallup's Positive Experience Index.²⁷ Gallup's Positive Experience Index measures a different concept of happiness than the World Happiness Report in that the Positive Experience Index measures happiness with a set questions that asks people to rate the positive emotions experienced the day before the survey, whereas the World Happiness Report scores are calculated based on a life ladder item where people are asked to reflect on their life as a whole and rate their life from the worst possible to the best possible.^{23,27} This article examines if the relationships between countries' 2015 Positive Experience Index scores and 2015 WHO age-standardized smoking prevalence estimates among men and women are consistent with the associations found using the World Happiness Report scores. In addition, Gallup collects data to construct a Negative Experience Index using a different set of questions to measure negative emotions experienced by people the previous day.²⁷ For comparison,

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