Daily cigarette smoking research from the Global Flourishing Study

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Sung Joon Jang from the Institute for Studies of Religion, Baylor University and Pepperdine University, shares some of the new findings about daily cigarette smoking from the Global Flourishing Study

According to the World Health Organization (WHO), in 2022, 21% of people aged 15 years or older – approximately 1.245 billion individuals – used tobacco. Among them, 80% smoked tobacco, and 89% of those smokers used cigarettes, which equates to an estimated 890 million people. Cigarette smoking is the most prevalent form of tobacco use globally and is a leading cause of preventable diseases. Each year, tobacco use is responsible for more than 8 million deaths.

Much research on cigarette smoking has been conducted. Still, previous studies mainly focused on the prevalence of lifetime or "current" (non-daily as well as daily) use of cigarettes, failing to isolate the more harmful form of cigarette use, daily smoking. Also, global research on the intensity (quantity) of daily smoking (i.e., daily cigarette consumption per smoker) is scarce.

Global Flourishing Study

To address these gaps in global research, we analyzed data from the first wave of the Global Flourishing Study (GFS), a 5-wave panel study of over 200,000 adults (age 18 or older) sampled to be representative of 22 geographically and culturally diverse countries (including a territory): Argentina, Australia, Brazil, Egypt, Germany, Hong Kong, India, Indonesia, Israel, Japan, Kenya, Mexico, Nigeria, the Philippines, Poland, South Africa, Spain, Sweden, Tanzania, Turkey, the United Kingdom, and the United States. A total of 202,898 individuals participated in a Wave 1 survey conducted by Gallup in 2022-23.

Daily smoking was measured by an item, asking, "About how many cigarettes do you smoke each day, if any?" (0 = None/Do not smoke, 1 = one, 2 = two, … 97 = 97+). We used this item as a continuous variable to assess the quantity of daily smoking – average daily cigarette consumption per capita *(mean)* and per daily smoker *(intensity)* – and then dichotomized it to evaluate *the prevalence* of daily smoking.

Daily cigarette smoking research findings

When 22 countries' mean, intensity, and prevalence of daily smoking were ordered from high to low, Turkey had the highest mean (9.79), substantially larger than the overall mean (1.98), with the next two highest countries being Argentina (3.88) and Indonesia (3.83). The three lowest were all African countries: Tanzania (0.23), Nigeria (0.26), and

Kenya (0.28). When the intensity was used to rank GFS countries, Turkey remained at the top with almost one pack of cigarettes (18.40) being consumed daily by smokers, but Egypt and Germany – which ranked numbers 7 and 5 in the mean – came in second (14.88) and third (13.75).

Although Kenya (5.26, the lowest) and Tanzania (5.72) were found again in the bottom three countries, Nigeria (5.76) – which slightly moved up from number 21 in the mean to number 19 in the intensity – was replaced by Mexico (5.31), which moved down from number 17 in the mean to number 21 in the intensity. The rank of other countries changed between the two quantity measures of daily smoking to a varying degree, with the largest move up and down being the U.S. (from numbers 16 to 8) and Indonesia (from numbers 3 to 13), respectively.

The rank order in the prevalence was similar to that in the mean, indicated by a strong, positive Spearman's correlation (ρ = .889, p < .001). However, the intensity was not significantly related to the prevalence at the level of .05 (ρ = .421, ρ = .051), while being positively associated with the mean (ρ = .730, ρ < .001). This finding indicates the usefulness of using intensity to assess country-level smoking along with prevalence or mean.

A typology of country-level health risk

When these ordered statistics are examined, it is important to remember that differences across countries may be partly a function of factors other than actual differences in daily smoking, such as response bias (e.g., underreporting due to a country's anti-tobacco campaign). Having said that, we applied a typological approach to the present finding.

Specifically, we divided GFS countries into three approximately equal groups in terms of prevalence and intensity (low, middle, and high) to create a 3 x 3 typology:

1. Low-prevalence-low-intensity (Kenya, Nigeria, and Tanzania),
2. Low-prevalence-middle-intensity (Australia, India, Sweden, and the U.S.),
3. Low-prevalence-high-intensity (no country),
4. Middle-prevalence-low-intensity (Mexico, the Philippines, and South Africa),
5. Middle-prevalence-middle-intensity (the U.K.),
6. Middle-prevalence-high-intensity (Brazil, Egypt, Israel, and Japan),
7. High-prevalence-low-intensity (Hong Kong),
8. High-prevalence-middle-intensity (Argentina, Indonesia, and Spain), and
9. High-prevalence-high-intensity (Germany, Poland, and Turkey).

Daily cigarette smoking: Policy implications

This typological approach is potentially beneficial because it has implications for formulating global and national health policies. That is, a typology like this captures different aspects simultaneously, thereby helping to identify countries at a higher health risk than others, which may otherwise be overlooked or underrecognized if only

prevalence was used to measure a country's state of smoking. Specifically, compared to those in the low-low, middle-middle, and high-high categories, countries in other categories are likely subject to incorrect health-risk assessment.

For example, the health risk of low- prevalence-middle-intensity (Australia, India, Sweden, and the U.S.) and middle-prevalence-high-intensity countries (Brazil, Egypt, Israel, and Japan) will be underestimated with a prevalence measure alone, as they will be assessed to be at lower risk based on prevalence rather than intensity as well as prevalence.

Furthermore, jointly using the two distinct measures will help a county determine how different anti-tobacco programs should be prioritized. For instance, the present finding suggests that high-prevalence-low-intensity Hong Kong should assign more resources to smoking initiation prevention than reduction and cessation programs. Similarly, a low-prevalence-high- intensity country would benefit from programs focusing on individuals who smoke cigarettes intensely, although no GFS country was found in that category.

Jang, S. J., De La Rosa, P. A., Padgett, R. N., Bradshaw, M., VanderWeele, T. J., & Johnson, B. R. (2025). A cross- national analysis of demographic variation in daily smoking across 22 countries. Scientific Reports, 15, 14324. 10.1038/s41598-024-76318-9

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