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## New study shows that one in three cases of oral cancer globally are due to smokeless tobacco and areca nut use

**Lyon, France, 9 October 2024** – A new study from the International Agency for Research on Cancer (IARC) and partners evaluates the global burden of oral cancer linked to smokeless tobacco and areca nut use. In 2022, more than 120 000 cases of oral cancer were caused by these risk factors, accounting for one third of oral cancer cases globally. The analysis, published today in *The Lancet Oncology*<sup>1</sup>, highlights that nearly 9 in 10 (88%) of all oral cancer cases caused by smokeless tobacco and areca nut use occurred in South-Central Asia and more than 95% (96.4%) occurred in low- and middle-income countries.

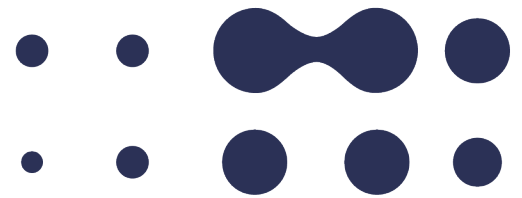
As part of this study, an in-depth analysis looked at the cancer burden associated with specific products in the countries most affected by smokeless tobacco and areca nut use. The analysis indicated the importance of areca nut; a higher proportion of oral cancers were due to use of areca nut products, with or without tobacco, compared with other smokeless tobacco-only products.

Globally, an estimated 300 million people use smokeless tobacco and 600 million people use areca nut. The highest rates of use are found in South-Central Asia, South-East Asia, and Melanesia. Smokeless tobacco products are consumed without burning and can be chewed, sucked, inhaled, applied locally, or ingested. Areca nut is the seed of the areca palm and is consumed in various forms, with or without smokeless tobacco, including in betel quid, or on its own.

“Smokeless tobacco and areca nut products are available to consumers in many different forms across the world, but consuming smokeless tobacco and areca nut is linked to multiple diseases, including oral cancer,” says Dr Harriet Rungay, a scientist in the Cancer Surveillance Branch at IARC and the first author of the article. “We found that more than 120 000 people across the world were diagnosed with oral cancer that could have been caused by using smokeless tobacco or areca nut. Our estimates highlight the burden these products pose on health care and the importance of prevention strategies to reduce consumption of smokeless tobacco and areca nut.”

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<sup>1</sup> Rungay H, Nethan ST, Shah R, Vignat J, Ayo-Yusuf O, Chaturvedi P, et al. (2024). Global burden of oral cancer in 2022 attributable to smokeless tobacco and areca nut consumption: a population attributable fraction analysis. *Lancet Oncol*. Published online 9 October 2024; [https://doi.org/10.1016/S1470-2045\(24\)00458-3](https://doi.org/10.1016/S1470-2045(24)00458-3)



## Methodology

The scientists obtained data on smokeless tobacco and areca nut use from national surveys of the general population in countries across the world. They then linked these data with estimates of the increased risk of oral cancer due to using smokeless tobacco or areca nut, from epidemiological studies identified by the recent *IARC Handbooks of Cancer Prevention Volume 19 on Oral Cancer Prevention*. These were then applied to estimates of the number of people diagnosed with oral cancer in countries globally in 2022 from the IARC Global Cancer Observatory's *Cancer Today* (GLOBOCAN 2022) database to estimate the number of new cases of oral cancer that were caused by smokeless tobacco and areca nut use. Specific results for each country are available in the appendix of the article (Appendix Table 6, on page 15).

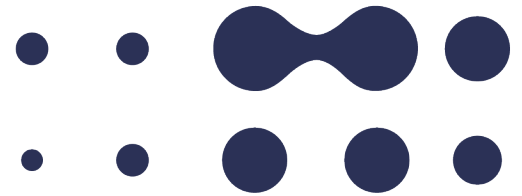
The study shows that 120 200 of the 389 800 oral cancer cases in 2022 could be caused by smokeless tobacco and areca nut use. This also means that by preventing smokeless tobacco and areca nut use, one third (31%) of all oral cancer cases could be avoided.

More than 95% of all oral cancer cases caused by smokeless tobacco and areca nut use occurred in low- and middle-income countries (115 900 cases). The regions that contributed the largest numbers of oral cancers caused by smokeless tobacco and areca nut use were South-Central Asia (a total of 105 500 cases, with 83 400 in India, 9700 in Bangladesh, 8900 in Pakistan, and 1300 in Sri Lanka), followed by South-East Asia (a total of 3900 cases, with 1600 in Myanmar, 990 in Indonesia, and 785 in Thailand) and East Asia (a total of 3300 cases, with 3200 in China).

The authors' focused analysis for Bangladesh, India, Pakistan, and Papua New Guinea highlighted the significant contributions of smokeless tobacco and areca nut products to oral cancer diagnoses in these high-burden countries:

- In Bangladesh, consumption of betel quid with tobacco caused 67% of oral cancer cases among women and 54% of oral cancer cases among men in 2022.
- In India, consumption of areca nut (30%) and betel quid with tobacco (28%) were responsible for the most oral cancer cases among women, followed by *gutka* (21%) and *khaini* (21%). Among men, the products that caused the largest proportions of oral cancer cases were *khaini* (47%), *gutka* (43%), betel quid with tobacco (33%), and areca nut (32%).
- In Pakistan, *naswar* was responsible for 21% of oral cancer cases among women and 52% among men. *Paan* with tobacco was responsible for 12% of oral cancer cases among both sexes, and *gutka* was responsible for 9% of oral cancer cases among men.
- In Papua New Guinea, areca nut was the only product reported. More than 77% of the population currently uses areca nut. Areca nut was responsible for 84% of oral cancer cases among both sexes in 2022.

In terms of differences between world regions, the highest proportions of oral cancers caused by smokeless tobacco and areca nut use were in Melanesia, Micronesia, and Polynesia (79%), followed by South-Central Asia (58%) and South-East Asia (20%). These regions had the highest proportions of oral cancer cases due



to smokeless tobacco and areca nut use because these regions had the highest rates of use in the population.

An estimated 77% of oral cancer cases attributable to smokeless tobacco and areca nut use were among men (92 600 cases) and 23% were among women (27 600 cases). Generally, the proportions of oral cancer cases attributable to smokeless tobacco and areca nut use were higher among men than among women, except in Southern Africa and South-East Asia. Although men are the main consumers of smokeless tobacco or areca nut in most regions of the world, in these regions the prevalence of smokeless tobacco or areca nut use among women is higher than that among men. Therefore, gender-sensitive policies must be implemented to ensure reduction of areca nut and smokeless and smoked tobacco use in diverse cultural contexts.

“Although control of tobacco smoking has improved, prevention of smokeless tobacco use has stalled, and areca nut remains largely unregulated. To reduce inequities, smokeless tobacco control must be prioritized, and a framework for areca nut prevention should be integrated into cancer control programmes,” says Dr Isabelle Soerjomataram, Deputy Head of the Cancer Surveillance Branch at IARC.

**For more information, please contact**

Veronique Terrasse, at [terrassev@iarc.who.int](mailto:terrassev@iarc.who.int)

The International Agency for Research on Cancer (IARC) is part of the World Health Organization. Its mission is to coordinate and conduct research on the causes of human cancer, the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control. The Agency is involved in both epidemiological and laboratory research and disseminates scientific information through publications, meetings, courses, and fellowships. If you wish your name to be removed from our press release emailing list, please write to [com@iarc.who.int](mailto:com@iarc.who.int).