

New study shows that the combined effects of six main preventable risk factors are linked to high rates of oesophageal cancer in the Islamic Republic of Iran

Lyon, France, 2 April 2019 – The north-eastern region of the Islamic Republic of Iran, situated around the Caspian Sea and including Golestan Province, has some of the highest rates of oesophageal cancer anywhere in the world. New results from an international prospective study of 50 000 individuals, recently published online in the journal *Gastroenterology*,¹ provide evidence on how the combined effects of six main risk factors are responsible for the high rates of oesophageal cancer in this region.

The results are based on more than 10 years of follow-up of 50 000 individuals as part of the Golestan Cohort Study (GCS), which was initiated in 2004 by the Digestive Diseases Research Institute of the Tehran University of Medical Sciences, the International Agency for Research on Cancer (IARC), and the United States National Cancer Institute. The six most important risk factors identified were drinking hot tea, smoking opium, low intake of fruits and vegetables, drinking un piped water, exposure to indoor air pollution, and excessive tooth loss.

The study found that about three quarters of the oesophageal cancer cases in the north-eastern region can be attributed to a combination of exposures to the identified risk factors, which are all preventable through education and by improving basic social infrastructure.

The GCS is the largest prospective study of its kind in central and western Asia. It was established to provide a major resource for studying oesophageal cancer, through the collection of biological samples and detailed assessments of diet, lifestyle, and different exposures, at enrolment and then every 5 years. Instead of relying only on self-reported information, the GCS was the first study to also make objective measurements of the suspected risk factors for oesophageal cancer, including the actual temperature at which tea is drunk, and carry out precise oral examinations.

“The GCS was initiated in an area where oesophageal cancer constituted about 25% of the reported cancer cases, and the study has made important contributions to the discovery and development of the scientific information on the risk factors for upper gastrointestinal cancers and other noncommunicable diseases,” says Professor Reza Malekzadeh, who is the director of the Digestive Diseases Research Institute of the Tehran University of Medical Sciences and is the principal investigator of the GCS.

¹ Sheikh M, Poustchi H, Pourshams A, Etemadi A, Islami F, Khoshnia M, et al. (2019). Individual and combined effects of environmental risk factors for esophageal cancer based on results from the Golestan Cohort Study. *Gastroenterology*. 156(5):1416–1427; <https://doi.org/10.1053/j.gastro.2018.12.024>

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Professor Malekzadeh, who was recently awarded the IARC Medal of Honour for his work with the Agency, adds that “the GCS was the first study to demonstrate that opium use is a determinant factor in causing cancer, and provided strong evidence on the effect of drinking hot beverages on the development of oesophageal cancer, and also on the effect of poor oral health on the development of upper gastrointestinal cancers.”

“The GCS represents a major and long-standing collaboration between scientists in the Islamic Republic of Iran, IARC, and the United States National Cancer Institute, and it is an important representation of how medical research can overcome political and economic barriers,” says Dr Paul Brennan, who is the head of the Section of Genetics at IARC and is a co-principal investigator of the GCS. “This study shows how the combination of the risk factors can substantially increase the risk of oesophageal cancer, and strongly suggests that oesophageal cancer in high-incidence areas is a multifactorial disease, requiring a combination of exposures for its development. Therefore, this study has important implications for public health and policy, and will aid the translation of knowledge and the implementation of evidence into practice and policy decision-making.”

Worldwide, oesophageal cancer is the eighth most common cancer and the sixth leading cause of cancer-related mortality. The geographical distribution of oesophageal cancer varies greatly, with more than 20-fold differences between the high-risk and low-risk areas of the world.

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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 and 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 to have your name removed from our press release emailing list, please write to com@iarc.fr.