The association of long-term opium use with overall and cause-specific mortality: Results from a long-term, prospective population-based study

Ramin Shakeri,[1*] Farin Kamangar,[1,2*] Hossein Poustchi,[1,3] Akram Pourshams,[1,3] Shahin Merat,[3,4] Arash Etemadi,[5,1] Siavosh Nasseri Moghaddam,[1,4] Masoud Sotoudeh,[1,3,4] Masoud Khoshnia,[1,6] Abdolsamad Gharavi,[1,6] Amir Ali Sohrabpour,[1,3] Farhad Islami,[7,1] Atieh Rahmati,[1] Christian C Abnet,[5] Sanford M Dawsey,[5] Nicholas E Day,[8] Paul D Pharoah,[8] Paolo Boffetta,[9] Paul Brennan,[10] Neal D Freedman,[5] Reza Malekzadeh§[1,3,4]

1- Digestive Oncology Research Center, Digestive Disease Research Institute, Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran
2- Department of Biology, School of Computer, Mathematical, and Natural Sciences, Morgan State University, Baltimore, Maryland, USA
3- Liver and Pancreaticobiliary Research Center, Digestive Disease Research Institute, Tehran University of Medical Sciences, Tehran, Iran
4- Digestive Disease Research Center, Digestive Disease Research Institute, Tehran University of Medical Sciences, Tehran, Iran
5- Metabolic Epidemiology Branch, Division of Cancer Epidemiology and Genetics, National Cancer Institute, NIH, Bethesda, Maryland, USA
6- Golestan Research Center of Gastroenterology and Hepatology, Golestan University of Medical Sciences, Gorgan, Iran
7- Surveillance and Health Services Research, American Cancer Society, Atlanta, Georgia, USA
8- Departments of Oncology and Public Health and Primary Care, University of Cambridge, Cambridge, UK
9- The Tisch Cancer Institute, Ichan School of Medicine at Mount Sinai, New York, USA
10- Genetic Epidemiology Group, International Agency for Research on Cancer, Lyon, France

Abstract

Background: Over 35 million people use opioids for medicinal or recreational purposes. Opioid overdose is well known to cause death. However, there is a dearth of data on the long-term health effects of opioids, including opium itself. Therefore, we compared overall and cause-specific mortality of long-term opium users to non-users.

Methods: Detailed and validated data on opium use were obtained at baseline from 50,045 participants of the Golestan Cohort Study. Data were also collected on other covariates, including sex, age, tobacco and alcohol use, education, and income.

Results: At baseline, 17% (n=8,487) of the study participants reported ever using opium, of whom 89.8% were current users. During 500,718 person-years of follow-up, 6,466 of the participants died. Ever use of opium was associated with higher risk of all-cause mortality, with an adjusted HR (95% CI) of 1.68 (1.58-1.79). It was also significantly associated with higher risk of death from ischemic heart disease (1.92; 95% CI 1.66-2.22), cerebrovascular disease (1.41; 1.17-1.71), cancers of the esophagus (1.47; 1.07-2.02) and stomach (1.44; 1.04-1.98), COPD (4.38; 2.95-6.51), asthma (2.96; 1.39-6.30), liver disease (2.83; 1.72-4.63), and infectious diseases (1.72; 1.22-2.42). The associations persisted after stringent sensitivity analyses. Overall, 40% of deaths among opium users, and 10% of all deaths in this population were attributable to opium use.

Conclusions: Together, these results strongly suggest that chronic opium use causes numerous chronic diseases, including cardiovascular disease and several forms of cancer. Future studies in other populations using these and other forms of opioids are urgently needed.

Key Words: opium, opioids, cardiovascular, stroke, cancer, cohort