

## 論 文 要 旨

**Bidi smoking increases gastric cancer risk in a cohort study  
conducted in Kerala, south India**

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**【Backgrounds and Study Purpose】**

In south Asia, bidi smoking is a popular form of tobacco smoking. A bidi is 0.15-0.25 grams of sundried tobacco flakes hand-wrapped in a Temburni leaf. Bidi smoking has been shown to cause various cancers, such as cancers of the lung and oral cavity, by several epidemiological studies including the Karunagappally cohort study, one of the most important cohort study in south Asia. However, only a few studies examined the relationship between bidi smoking and stomach cancer risk.

This study aimed to assess the risk of gastric cancer in relation to tobacco use and alcohol drinking in the Karunagappally cohort in Kerala, South India.

**【Study subjects and Methods】**

This study examined the association of tobacco use and alcohol drinking with gastric cancer incidence among 65,553 men aged 30-84 in the Karunagappally cohort. During the period from 1990-2009, 116 gastric cancer cases in the cohort were identified as incident cancers. These cases were identified from the population-based cancer registry. Information regarding risk factors such as socioeconomic factors and tobacco and alcohol habits of cohort members were collected from the database of the baseline survey conducted during 1990-1997. The relative risks (RRs) and the corresponding 95% confidence intervals (95% CIs) for tobacco use were obtained from Poisson regression analysis of grouped survival data, considering age, follow-up period, occupation and education.

**【Results】**

Bidi smoking was associated with gastric cancer risk ( $P=0.042$ ). The RR comparing current versus never smokers was 1.6 (95%CI: 1.0-2.5). Gastric cancer risk was associated with the number of bidis smoked daily ( $P$  for trend=0.012) and with the duration of bidi smoking ( $P$  for trend=0.036). Those who started bidi smoking at younger ages were at an elevated gastric cancer risk; the RRs for those starting bidi smoking under the age of 18 and ages 18-22 were 2.0 (95%CI: 1.0-3.9) and 1.8 (95%CI: 1.1-2.9), respectively, when their risks were compared with lifetime non-smokers of bidis. Bidi smoking increased the risk of gastric cancer among never cigarette smokers more evidently (RR=2.2; 95%CI: 1.3-4.0). Gastric cancer risk increased with the cumulative amount of bidi smoking, which was calculated as the number of bidis smoked per day x years of smoking (bidi-year;  $P$  for trend: 0.017). Cigarette smoking, tobacco chewing or alcohol drinking was not significantly associated with gastric cancer risk.

**【Discussions and Conclusion】**

The present study revealed that the gastric cancer risk increased with the number and duration of bidi smoking among a male cohort in South India. To our knowledge, this is the first cohort study in India to show the association between bidi smoking and gastric cancer. From a public health viewpoint, revealing the associations of bidi smoking with all the major cancers in Asia is important for establishing effective and efficient preventive measures. The information obtained by this study will be useful for this purpose.