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**Gender differences in the relationship between alcohol consumption and gastric cancer risk are uncertain and not well-delineated**

Verma HK *et al*. Gender and alcohol consumption in GC risk

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**Abstract**

The role of alcoholic and other beverage consumption in the etiology of gastric cancer is unknown. Several studies have summarized and established a significant association between heavy alcohol consumption and gastric cancer risk, but evidence on alcohol-related cancer risk is conflicting.

**Key Words:** Alcohol; Gastric cancer; Meta-analysis; Gender and alcohol intake; Alcohol consumption

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**Core Tip:** Alcohol consumption among adult men and women is consistently linked to an increased risk of gastric cancer. Its role as a confounding factor in the gastric cancer burden is frequently overlooked. Although many cancers are genetically determined, most cancers are caused by interactions between the host and environmental/lifestyle factors.

**TO THE EDITOR**

Cancer is a complex disease that arises from interactions between genetic and environmental factors. There is overwhelming evidence that alcohol consumption affects cancer risk. According to the 4th edition of the European Code against Cancer, not drinking alcohol is better for cancer prevention[1]. We read the recent publication on “Sex as an effect modifier in the association between alcohol intake and gastric cancer risk” by Bae[2]. I sincerely appreciate the author for providing relevant information about the relationship between alcohol consumption and the risk of gastric cancer in men and women. It has been of great interest to us. In this systematic review and meta-analysis, the authors included ten Asian, seven European and three American cohort studies comprising 27 cohorts, making the study more robust.

The meta-analysis showed that overall alcohol intake increased the risk of gastric cancer with a summary risk ratio of 1.13 [95% confidence interval (CI): 1.04-1.23]. However, subgroup analysis by gender demonstrated higher relative risk (RR) in male cohorts (RR = 1.18, 95%CI: 1.06-1.32, *I*2 = 55.5%) than in female cohorts (RR = 1.07, 95%CI: 0.96-1.19, *I*2 = 0.0%). Several previous meta-analyses that have investigated the relationship between alcohol consumption and gastric cancer risk were inconclusive. Previous meta-analyses demonstrated no association between alcohol drinking and gastric cancer risk in overall and gender-stratified analyses[3]. In contrast to this, heavy alcohol consumption significantly increased the risk of gastric cancer in both men and women[4]. Subsequent meta-analyses indicated that alcohol consumption was associated with an increased risk of gastric cancer in men but not in women[5,6]. Recently, Kim *et al*[7] shown that high alcohol consumption of alcohol (≥ 20 g/d for women or ≥ 40 g/d for men) significantly increased the risk of gastric cancer. Further, large-scale meta-analyses by Han *et al*[8] found a protective effect of alcohol consumption in Europe and a significant harmful impact in men in America. That depends on other confounding factors, including age, education level, smoking status, and body mass index.

Although the systematic review and meta-analyses have linked gastric cancer risk with alcohol consumption, gender differences in the relationship between alcohol consumption and gastric cancer risk are uncertain and not well-delineated. Indeed, hormonal, genetic and environmental differences influence how men and women consume alcohol[9]. While men are more likely to drink excessive amounts of alcohol, women are more likely to abstain for long periods. Bae[2] has not considered the frequency of heavy and light alcohol drinking habits in men and women, which is the main factor that determines modulating effect of sex on the relationship between alcohol consumption and gastric cancer risk[2].More research with critical confounding factors such as drinking intensity is needed to provide a more precise relationship between alcohol consumption and the risk of gastric cancer in men and women.

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