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Cigarette smoking as a risk factor for the development of and mortality from hepatocellular carcinoma; an updated systematic review of 81 epidemiological studies

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Introduction: Hepatocellular carcinoma (HCC) is the sixth most common cancer worldwide and its incidence has increased during the past decade. While hepatitis B and C virus infections and alcohol are established risk factors, the impact of smoking on the risk and mortality of HCC needs to be confirmed.

Objectives: We aimed to assess the correlation between cigarette smoking and HCC development and mortality.

Methods: Search methods: We reviewed cohort and case control studies evaluating the correlation between cigarette smoking and development risk and/or mortality risk of HCC from MEDLINE, and Google scholar. We also checked reference lists of original studies and review articles manually for cross-references up to February 2016. Data collection and analysis: We extracted the relevant information on participant characteristics and study outcomes, as well as information on the methodology of the studies. We also assessed the quality of the included trials using critical appraisal skills program checklists.

Results: After exclusion of non eligible studies, 81 studies were included in the systematic review. Pooled OR for the risk of HCC development with current smoking was 1.55 (95% CI: 1.46-1.65; P <0.00001) (see associated figure), pooled OR for the risk of HCC development with former smoking was 1.39 (95% CI: 1.26-1.52; P <0.00001) and pooled OR for the risk of HCC development with heavy smoking was 1.90 (95% CI: 1.68-2.14; P < 0.00001). Pooled OR for the added mortality risk of current smokers with HCC was 1.29 (95% CI: 1.23-1.34; P <0.00001); and for former smokers with HCC, it was 1.20 (95% CI: 1.00-1.42; P = 0.04).

Conclusion: Cigarette smoking increases the risk of development of and mortality from HCC. Further studies are needed to evaluate possible impact of quitting smoking on decreasing this risk.