



Fatty Liver Disease and Environmental Exposure to Cooking Oil Fume

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DESCRIPTION

Fatty liver disease includes a wide range of liver pathologies, from asymptomatic steatosis to steatohepatitis, fibrosis, and cirrhosis, and is defined by fat deposits in liver cells. It has significantly increased the financial load on the world's health care systems. The prevalence of fatty liver has been rising dramatically throughout Asia in recent years due to lifestyle changes, with the mean frequency in China reaching 15% in 2009. Therefore, it's critical to look for associated fatty liver disease risk factors and practical ways to prevent them. A crucial aspect of daily life is cooking. Chinese cooking includes stir-frying and deep-frying, both of which require preheating 25 to 100 cc of cooking oil to about 280°C and generate a lot of cooking oil smoke. Numerous carcinogens, including Polycyclic Aromatic Hydrocarbons (PAH), Fine Particulate Matter (PM), etc., are present in cooking oil fume. Chinese restaurants reportedly had an annual total PAH emission rate of 2038 kg/year, which was around 8 times greater than that of western eateries. According to a different study, around 12% of the world's total PM_{2.5} emissions come from cooking fuels. Cooking oil fume has been linked in epidemiologic studies to lung cancer and cardiovascular illness. Jian et al. recently discovered that diabetes is also linked to ambient exposure to cooking oil fume. Though the Ames test and the SOS chromo test have discovered that cooking oil fume contains genotoxicity that is associated to fatty deposition, few research have examined the association between cooking oil fume and fatty liver.

After controlling over several potential confounders, there is a positive correlation between fatty liver disease and cooking oil fume exposure in Chinese individuals. Participants who were exposed to greater cooking oil fume had a higher likelihood of developing fatty liver disease and a more severe form of the

disease. Additionally, we noted a significant relationship between gender and exposure to frying oil fumes and the risk of fatty liver disease. The highest reported odds ratio of fatty liver disease and a more severe disease extent were found in females who had frequent exposure to frying oil fumes. Exposure to cooking fumes has been linked to a number of chronic conditions, including diabetes, heart disease, and lung cancer. Previous research on animals revealed that the carcinogens in cigarette smoke, which are also present in the fumes from cooking, may hasten the deposition of fat in the liver. However, there is little clinical evidence linking environmental exposure to cooking oil fumes with fatty liver disease. Females were more likely than men to be harmed by cooking oil fume, as seen by the association between heavy exposure to cooking oil fume and the highest risk for fatty liver disease and the most severe disease extent. According to earlier research, women were found to be more vulnerable than males to environmental contaminants in relation to oxidative stress and diabetes.

The increased activity of CYP1A1, which can result in larger quantities of DNA adducts and less effective DNA repair in females than in males may be one factor. Additionally, it has been shown that body fat mass and belly fat mass are linked to increased systemic inflammation and decreased anti-inflammatory activity. These factors may also change the cross-sectional relationship between environmental contaminants and metabolic disease. The link between exposure to frying oil fumes and fatty liver disease may be dose-dependent. Additionally, there may be a synergistic relationship between fatty liver disease and female sex and high exposure to cooking oil fumes. Future research should be done to determine the underlying cause of this link and to determine whether using a fume extractor in the home kitchen to effectively manage cooking oil fumes can lower the risk of developing fatty liver.

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