systems, and treated with caffeine (CAF), trigonelline (TRI), chlorogenic acid (CGA), caffeic acid (CA), kahweol (KWL), SOR, ATZ, and BVZ for 24 and 48 h for half maximum effective concentration (EC50) determination (MTT/LDH assays). Next, the coffee compounds were combined with SOR or ATZ+BVZ at sub-effective and physiologically plausible EC50 fractions (1/5, 1/6, or 1/10) and evaluated by MTT (3D), scratch (migration), and colony formation assays (2D), with combination index calculation.

**Results:** CGA, CA, and TRI showed antagonistic effects to the therapies. In contrast, CAF or KWL synergistically enhanced the antitumor effects of SOR and ATZ plus BVZ in reducing spheroid viability. The combination of CAF plus KWL further intensified the anti-tumor effects of both treatments, also inhibiting colony formation and cell motility.

**Conclusions:** These findings suggest that coffee-derived compounds may strengthen the therapeutic efficacy against HCC. Further experiments include in vitro metabolomics and transcriptomics, and in vivo xenograft mouse model.

**Conflict of interest:** None

https://doi.org/10.1016/j.aohep.2025.101978

## #10

## INFLUENCE OF CARDIOMETABOLIC RISK FACTORS AND ALCOHOL CONSUMPTION ON LIVER STIFFNESS IN PATIENTS WITH MASLD: A MULTICENTER STUDY IN COLOMBIA

Ismael de Jesus Yepes Barreto[1], Nicole Chamorro[2], Guillermo Donado[2], Pablo Osorio[2], Juan Carlos Restrepo[3], Santiago Pino[4], Clara Caez[2], Jorge Ortiz[5], Yohana Poveda[6]

[1] *Universidad de Cartagena - Asociación Colombiana de Hepatología.*
[2] *Universidad de Cartagena, Colombia.*
[3] *Hospital Pablo Tobon Uribe - Asociación Colombiana de Hepatología.*
[4] *Universidad de Antioquia, Colombia.*
[5] *Clínica IMAT, Colombia.*
[6] *Gastropacksas, Colombia.*

**Introduction and Objectives:** Metabolic dysfunction-associated steatotic liver disease (MASLD) includes patients with hepatic steatosis and at least one cardiometabolic risk factor (CMRF). However, the influence of individual CMRFs and their interactions on disease progression remains unclear.

To assess the association between CMRFs, their interactions (including with alcohol consumption), and liver stiffness in MASLD

**Patients and Methods:** This multicenter study included patients with MASLD from four Colombian cities. Transient elastography was used to assess liver stiffness. Other causes of chronic liver disease were excluded. Patients with significant alcohol intake (≥30 g/day for men, ≥20 g/day for women) were excluded. CMRFs were defined using ATP III criteria. Alcohol consumption was estimated as grams per week based on standard drink units. A multivariate linear regression model evaluated associations with liver stiffness, including interaction terms between CMRFs and with alcohol. Statistical significance was set at $p \leq 0.05$

**Results:** A total of 354 patients were included (mean age: 54 years; 39.3% male). CMRF distribution: 1 (30.2%), 2 (31.9%), 3 (29.4%), and 4 (8.5%). The most prevalent CMRFs were dyslipidemia (68.6%) and hypertension (54.2%). In multivariate analysis, BMI ($\beta = 0.14$; 95% CI: 0.03–0.27; $p = 0.012$) and impaired glucose metabolism ($\beta = 0.11$; 95% CI: 0.08–2.6; $p = 0.03$) were independently associated with liver stiffness. Among interaction terms, only the diabetes–waist circumference interaction remained significant ($\beta = 0.19$; 95% CI: 1.15–4.4; $p < 0.01$). Alcohol consumption showed no association.

**Conclusions:** Diabetes and its interaction with waist circumference are key drivers of liver stiffness in MASLD, independent of alcohol intake.

**Conflict of interest:** None

| Variable | b | IC 95% | p |
|---|---|---|---|
| Male sex | -0,031 | (-1,6 ) - 0,93 | 0,57 |
| Age (years) | 0,118 | 0,004 - 0,98 | 0,03 |
| BMI (Kgs/m2) | 0,13 | 0,026 - 0,26 | 0,018 |
| Weekly alcohol consumption (gr) | -0,033 | (-0,023) - 0,012 | 0,55 |
| CAP (dB/m) | -0,07 | (-0,019) - 0,004 | 0,22 |
| Obesity or overweigth | 0,037 | (-1,42) - 2,8 | 0,51 |
| Number of cardiometabolic risk factors | 0,128 | 0,12 - 1,4 | 0,021 |
| Abdominal circumference | 0,08 | (-0,25) - 2,2 | 0,11 |
| Dyslipidemia | -0,09 | (-2,5) - 0,14 | 0,07 |
| Hypertension arterial | 0,08 | (-0,24) - 2,2 | 0,11 |
| Disorder of glucose metabolism | 0,16 | 0,62 - 3,11 | 0,003 |

Table 1. Factors associated with elastographic values. Univariate linear regression.

| Interaction term | b | IC 95% | p |
|---|---|---|---|
| Disorder of glucose metabolism * Dyslipidemia | 0,014 | (-1,13) - 1,4 | 0,8 |
| Disorder of glucose metabolism*Abdominal circumference | 0,22 | 1,6 - 4,7 | < 0,001 |
| Disorder of glucose metabolism * Hypertension | 0,16 | 0,61 - 3,2 | 0,004 |
| Dyslipidemia * Abdominal circumference | 0,018 | (-1,2) - 1,7 | 0,74 |
| Dyslipidemia * Hypertension | -0,038 | (-1,7) - 0,84 | 0,49 |
| Abdominal circumference * Hypertension | 0,14 | 0,44 - 3,5 | 0,012 |
| Disorder of glucose metabolism * Abdominal circumference * Hypertension | 0,22 | 2,1 - 5,8 | < 0,001 |
| Disorder of glucose metabolism * Abdominal circumference * Dyslipidemia | 0,06 | (-0,8) - 2,8 | 0,26 |
| Disorder of glucose metabolism * Hypertension* Dyslipidemia | 0,017 | (-1,2) - 1,6 | 0,76 |
| Dyslipidemia * Abdominal circumference* Hypertension | 0,02 | (-1,4) - 2,2 | 0,66 |

Table 2. Relationship between the interaction terms of cardiovascular risk factors and liver stiffness. Univariate linear regression.

| Variable | b | p |
|---|---|---|
| Disorder of glucose metabolism*Abdominal circunference | 0,19 | < 0,01 |
| BMI (Kgs/m2) | 0,14 | 0,012 |
| Disorder of glucose metabolism | 0,11 | 0,03 |

Table 3. Factors associated with liver stiffness. Multivariate linear regression analysis

https://doi.org/10.1016/j.aohep.2025.101979

## #11

## HEALTH LITERACY AS A DETERMINANT OF FRAILTY IN PATIENTS WITH LIVER CIRRHOSIS

Ismael de Jesús Yepes Barreto[1], Nicole Chamorro[2], Guillermo Donado[2]

[1] *Universidad de Cartagena. Asociación Colombiana de Hepatología.*
[2] *Universidad de Cartagena, Colombia.*

**Introduction and Objectives:** Health literacy (HL) is a key social determinant of health, especially in chronic conditions like cirrhosis, where disease management depends heavily on patient comprehension and engagement. HL refers to the ability to access, understand, and use health information to make informed decisions. Frailty, a state of decreased physiological reserve and increased vulnerability, is a strong predictor of adverse outcomes in cirrhosis. Although the Liver Frailty Index (LFI) is commonly used to assess physical frailty, the role of HL in this context remains poorly explored. This study aimed to determine the association between HL and frailty in patients with cirrhosis.

**Patients and Methods:** We conducted a cross-sectional study among adults with confirmed cirrhosis attending outpatient hepatology clinics in Cartagena, Colombia, between September and December 2024. HL was measured using the Short Assessment of Health Literacy for Spanish Adults (SAHL-S), and frailty was assessed with the LFI, which includes grip strength, chair stands, and balance tests. Trained clinicians performed all tests using calibrated equipment. Demographic and clinical variables were obtained from records and structured interviews. Patients with encephalopathy or severe mobility limitations were excluded. Frailty was defined as LFI ≥ 4.5.

**Results:** Among 89 participants (57.3% women, mean age 64.8), 85.4% were Child-Pugh A. History of decompensation and variceal