Supplementary table 1. Search strategy.

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| PubMed/MEDLINE | Scopus | Cochrane Library | Web of Science |
| (((((("Obesity, Abdominal"[Mesh] OR "Waist Circumference"[Mesh]) OR "Waist Circumference"[Title/Abstract]) OR "abdominal obesity"[Title/Abstract]) OR "central obesity"[Title/Abstract]) OR "abdominal adiposity"[Title/Abstract]) AND ((((prospective[Title/Abstract] OR longitudinal[Title/Abstract]) OR follow-up[Title/Abstract]) OR cohort[Title/Abstract]) OR retrospective[Title/Abstract])) AND ((((((((("Carcinoma, Hepatocellular"[Mesh] OR Liver Neoplasms[Title/Abstract]) OR hepatic neoplasm[Title/Abstract]) OR hepatocellular cancer[Title/Abstract]) OR hepatic cancer[Title/Abstract]) OR liver cancer[Title/Abstract]) OR liver cell carcinoma[Title/Abstract]) OR liver tumor[Title/Abstract]) OR hepatocellular carcinoma[Title/Abstract]) OR HCC[Title/Abstract]) | ( ( TITLE-ABS-KEY ( liver AND neoplasms ) OR TITLE-ABS-KEY ( hepatic AND neoplasm ) OR TITLE-ABS-KEY ( hepatocellular AND cancer ) OR TITLE-ABS-KEY ( hepatic AND cancer ) OR TITLE-ABS-KEY ( liver AND cancer ) OR TITLE-ABS-KEY ( liver AND cell AND carcinoma ) OR TITLE-ABS-KEY ( liver AND tumor ) OR TITLE-ABS-KEY ( hepatocellular AND carcinoma ) OR TITLE-ABS-KEY ( hcc ) ) ) AND ( ( TITLE-ABS-KEY ( "Waist Circumference" ) OR TITLE-ABS-KEY ( "abdominal obesity" ) OR TITLE-ABS-KEY ( "central obesity" ) OR TITLE-ABS-KEY ( "abdominal adiposity" ) ) ) AND ( ( TITLE-ABS-KEY ( prospective ) OR TITLE-ABS-KEY ( longitudinal ) OR TITLE-ABS-KEY ( follow-up ) OR TITLE-ABS-KEY ( cohort ) ) ) | ("Waist Circumference" OR "abdominal obesity" OR "central obesity" OR "abdominal adiposity") AND (prospective OR longitudinal OR follow-up OR cohort) AND ("Liver Neoplasms" OR "hepatic neoplasm" OR "hepatocellular cancer" OR "hepatic cancer" OR "liver cancer" OR "liver cell carcinoma" OR "liver tumor" OR "hepatocellular carcinoma" OR HCC) | TS=("Waist Circumference" OR "abdominal obesity" OR "central obesity" OR "abdominal adiposity") AND TS=(prospective OR longitudinal OR follow-up OR cohort) AND TS=("Liver Neoplasms" OR "hepatic neoplasm" OR "hepatocellular cancer" OR "hepatic cancer" OR "liver cancer" OR "liver cell carcinoma" OR "liver tumor" OR "hepatocellular carcinoma" OR HCC) |

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| Supplemental Table 2: Quality assessment of cohort study included in this study. | | | | | | |
| **Quality assessment**  **criteria** | **Acceptable(\*)** | Pang, Y. | Wei, L. | Lee, J. | Campbell . P.T | Schlesinger, S. |
| 2019 | 2018 | 2016 | 2015 | 2012 |
| Representativeness  of exposed cohort? | Representative of average adult in  community | \*  0.5 M form 10 areas  diversity in risk factor exposure and disease patterns | -  Males only | -  102 patients with chronic hepatitis and receiving entecavir treatment | \*  1.57 million adults enrolled in 14 U.S.-based prospective studies | \*  520,000 participants were recruited in 23 centers  in ten European countries from general population (except France and other subsamples) |
| Selection of the  non-exposed  cohort? | Drawn from the same community as exposed  Cohort | \* | \* | \* | \* | \* |
| Ascertainment of  exposure? | Measurement of WC | \*  recorded by trained technicians | \*  conducted by trained doctors and nurses | \*  measured | -  (self reported in most cohorts)  WC was measured by trained staff (WHI and NYUWHS) or self-measured (NIH-AARP, PHS, CPS-II, WHS, BCDDP, HPFS, IWHS and BWHS) | \*  In all centers, height, weight, waist and hip circumference  were measured using similar study protocols |
| Demonstration that  outcome of interest  was not present at  start of study? | Outcome is incidence of liver cancer | -  Not mentioned | -  Not mentioned | \*  Patients with Liver cancer were excluded | - | \*  Exclusion criteria were any prevalent cancer at baseline |
| Study controls for  age/sex? | Yes | \* | \*  Controlled for age (males only) | - | \* | \*  Analysis stratified by age and gender |
| Study controls for  at least 3 additional  risk factors? |  | \*  education, household income, smoking, alcohol, self-rated health, and family  history of cancer; BMI | \*  *Education; dust exposure; smoking; alcohol drinking;*  *diabetes ;* *HBsAg; BMI* | - | \*  age, sex, study center, alcohol, smoking, race, and BMI, diabetes | \*  BMI; waist-to-height ratio; education  , smoking ; alcohol |
| Assessment of  outcome? |  | \*  Record linkage | \*  medical records linkage | \* | \*  linking to state cancer registries, medical record abstraction, and/or linking to the National Death Index (NDI). | \*  record linkage with regional cancer registries or by a combination of  methods, including health insurance records cancer and pathology registries together with an active follow-  up |
| Was follow-up long  enough for outcome  to occur? | Follow-up ≥4 years | \*  10 years | \*  8.9 years | -  3.8 years | \* | \* |
| Adequacy of  follow-up of  cohorts? | Complete follow-up, or subjects lost to  follow-up unlikely to introduce bias | \*  (1%) were lost to follow-up | \*  All affiliated hospitals were checked-followed up | \* | \* | \* |
| Overall Quality Score (Maximum = 9) | | 8 | 7 | 5 | 7 | 9 |

Supplemental Fig 1. Sensitivity analysis

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