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 |
| Representativenessof exposed cohort? | Representative of average adult incommunity  | \*0.5 M form 10 areasdiversity 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 centersin ten European countries from general population (except France and other subsamples) |
| Selection of thenon-exposedcohort? | Drawn from the same community as exposedCohort | \* | \* | \* | \* | \* |
| Ascertainment ofexposure? | 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 circumferencewere measured using similar study protocols |
| Demonstration thatoutcome of interestwas not present atstart 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 forage/sex? | Yes | \* | \*Controlled for age (males only) | - | \* | \*Analysis stratified by age and gender |
| Study controls forat least 3 additionalrisk factors? |  | \*education, household income, smoking, alcohol, self-rated health, and familyhistory 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 ofoutcome? |  | \*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 ofmethods, including health insurance records cancer and pathology registries together with an active follow-up |
| Was follow-up longenough for outcometo occur? | Follow-up ≥4 years | \*10 years | \*8.9 years | -3.8 years | \* | \* |
| Adequacy offollow-up ofcohorts? | Complete follow-up, or subjects lost tofollow-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

