**Supplementary materials**

**Table S1. Information of included studies and consortia.**

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| **Exposure/Mediator/Outcome** | **GWAS ID** |
| major depression | ieu-b-102 |
| nonalcoholic fatty liver disease | ebi-a-GCST90091033 |
| viral hepatitis | finn-b-AB1\_VIRAL\_HEPATITIS |
| malignant tumors of liver and bile ducts | finn-b-C3\_LIVER\_INTRAHEPATIC\_BILE\_DUCTS |
| cirrhosis | finn-b-CIRRHOSIS\_BROAD |
| cholelithiasis | ebi-a-GCST90013889 |
| cholecystitis | ebi-a-GCST90018818 |
| primary biliary cholangitis | ebi-a-GCST003129 |
| autoimmune hepatitis | ebi-a-GCST90018785 |
| cholangiocarcinoma | ebi-a-GCST90018803 |
| bile duct stones | ukb-b-8268 |
| chronic hepatitis C | ebi-a-GCST90018805 |
| chronic hepatitis | finn-b-CHRONHEP\_NAS |
| Secondary malignant liver tumor | ukb-b-16713 |
| acute pancreatitis | finn-b-K11\_ACUTPANC |
| alcoholic liver disease | finn-b-K11\_ALCOLIV |
| alcohol-induced chronic pancreatitis | finn-b-ALCOPANCCHRON |
| chronic pancreatitis | ebi-a-GCST90018821 |
| alcohol-related hepatocrllular carcinoma | ebi-a-GCST90092003 |
| Hypertension | finn-b-I9\_HYPTENS |
| Daytime nap | ebi-a-GCST011494 |
| Waist-hip ratio | ebi-a-GCST90029009 |