

Hepatitis B and C virus infection and diabetes mellitus: A cohort study

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Supplement Table 1. Participant characteristics by prevalence of diabetes at baseline in cross-sectional analysis ($n = 439,708$).

Characteristics	Prevalent diabetes		<i>P</i> value
	No	Yes	
Number	423,223	16,485	
Age, years*	39.0 (9.5)	50.6 (10.5)	< 0.001
Men, %	53.5	69.0	< 0.001
Current smoker, %	25.1	29.8	< 0.001
Alcohol intake, g/day [†]	5 (0-15)	6 (0-23)	< 0.001
Vigorous exercise, % [‡]	14.9	21.9	< 0.001
12+ years of education, % [§]	50.0	32.7	< 0.001
BMI, kg/m ² *	23.3 (3.2)	25.4 (3.3)	< 0.001
ALT, U/l [†]	20 (14-29)	28 (20-42)	< 0.001
AST, U/l [†]	21 (18-26)	25 (20-33)	< 0.001
GGT, U/l [†]	19 (12-33)	35 (21-64)	< 0.001
Glucose, mg/dl*	92.6 (8.9)	148.1 (46.3)	< 0.001
Family history of DM, %	14.1	31.8	< 0.001
USG Fatty liver disease, %	25.2	63.1	< 0.001
HBsAg (+), %	3.8	3.9	0.60
HCV Ab (+), %	0.2	0.4	< 0.001

Values are *means (standard deviation), [†]medians (interquartile range), or percentages.

[‡] ≥ 3 times per week.

Abbreviations: ALT, alanine aminotransferase; AST, aspartate aminotransferase; BMI, body mass index; DM, diabetes mellitus; GGT, gamma-glutamyl transferase; USG, ultrasonography.

Supplement Table 2. Odds ratios for prevalent diabetes among HCV Ab-negative participants and among HBsAg-negative participants.

Hepatitis virus infection	Prevalent diabetes N (%)	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)
HBsAg* (<i>n</i> = 438,924)				
Negative	15,778 (3.7)	1.00 (reference)	1.00 (reference)	1.00 (reference)
Positive	639 (3.8)	0.99 (0.91-1.07)	1.04 (0.93-1.15)	1.18 (1.06-1.31)
<i>P</i> Value		0.77	0.50	0.003
HCV Ab† (<i>n</i> = 423,001)				
Negative	15,846 (3.8)	1.00 (reference)	1.00 (reference)	1.00 (reference)
Positive	68 (9.1)	1.11 (0.85-1.44)	1.19 (0.84-1.68)	1.51 (1.06-2.13)
<i>P</i> Value		0.44	0.33	0.02

*Analyses restricted to participants who are HCV Ab-negative; †Analyses restricted to participants who are HBsAg-negative.

Model 1: adjusted for age, sex, and center; Model 2: further adjusted for smoking (never, former and current), alcohol (none, moderate and high), education (≤ 12 years or > 12 years of education), physical activity (< 3 times/week and ≥ 3 times/week), and BMI (continuous); Model 3: further adjusted for presence of fatty liver disease.

Supplement Table 3. Baseline participant characteristics by hepatitis virus infection in cohort analysis ($n = 219,448$).

Characteristics	Overall	Hepatitis B virus infection		<i>P</i> value	Hepatitis C virus infection		<i>P</i> value
		HBsAg (-)	HBsAg (+)		HCV Ab (-)	HCV Ab (+)	
Number (%)	219,448	210,754 (96.0)	8,694 (4.0)		219,165 (99.9)	283 (0.1)	
Age, years [*]	37.5 (7.6)	37.4 (7.6)	38.2 (7.3)	< 0.001	37.5 (7.6)	43.0 (10.2)	< 0.001
Men, %	58.3	58.2	65.6	< 0.001	58.3	50.2	0.005
Current smoker, %	27.3	27.3	28.8	< 0.001	27.3	25.8	0.92
Alcohol intake, g/day [†]	5 (0-15)	5 (0-15)	3 (0-12)	< 0.001	5 (0-15)	3 (0-12)	< 0.001
Vigorous exercise, % [‡]	14.9	14.8	16.3	< 0.001	14.9	20.1	0.005
12+ years of education, % [§]	51.5	51.5	52.4	0.004	51.5	40.6	< 0.001
BMI, kg/m ² [*]	23.3 (3.1)	23.3 (3.1)	23.6 (3.1)	< 0.001	23.3 (3.1)	23.6 (3.2)	0.08
ALT, U/l [†]	20 (15-30)	20 (14-29)	27 (19-39)	< 0.001	20 (15-30)	25 (17-43)	< 0.001
AST, U/l [†]	22 (18-26)	21 (18-26)	25 (21-32)	< 0.001	22 (18-26)	26 (20-35)	< 0.001
GGT, U/l [†]	19 (12-33)	19 (12-33)	20 (13-34)	< 0.001	19 (12-33)	20 (13-32)	0.52
Glucose, mg/dl [*]	92.4 (8.7)	92.4 (8.7)	91.8 (8.7)	< 0.001	92.4 (8.7)	92.9 (9.2)	0.35
Family history of DM, %	14.3	14.4	12.7	< 0.001	14.3	14.5	0.93
USG Fatty liver disease, %	24.9	25.1	22.1	< 0.001	25.0	19.4	0.03

Values are ^{*}means (standard deviation), [†]medians (interquartile range), or percentages.

[‡] ≥ 3 times per week.

Abbreviations: ALT, alanine aminotransferase; AST, aspartate aminotransferase; BMI, body mass index; DM, diabetes mellitus; GGT, gamma-glutamyl transferase; USG, ultrasonography.

Supplement Table 4. Hazard ratios for incident diabetes among HCV Ab-negative participants and among HBsAg-negative participants.

Hepatitis virus infection	No. of incident cases	Person-years	Model 1 HR (95% CI)	Model 2 HR (95% CI)	Model 3 HR (95% CI)
HBsAg*					
<i>(n = 219,165)</i>					
Negative	7179	1,015,039.3	1.00 (reference)	1.00 (reference)	1.00 (reference)
Positive	302	43,363.2	0.90 (0.81-1.01)	1.07 (0.93-1.22)	1.20 (1.05-1.37)
<i>P Value</i>			0.09	0.34	0.008
HCV Ab†					
<i>(n = 210,754)</i>					
Negative	7179	1,015,039.3	1.00 (reference)	1.00 (reference)	1.00 (reference)
Positive	9	1,191.9	0.73 (0.38-1.40)	0.74 (0.31-1.78)	0.77 (0.32-1.86)
<i>P Value</i>			0.34	0.50	0.57

*Analyses restricted to participants who are HCV Ab-negative; †Analyses restricted to participants who are HBsAg-negative.

Model 1: adjusted for age, sex, and center; Model 2: further adjusted for smoking (never, former and current), alcohol (none, moderate and high), education (≤ 12 years or > 12 years of education), physical activity (< 3 times/week and ≥ 3 times/week), BMI (continuous), and presence of fatty liver disease; Model 3: further adjusted for initial fasting glucose level.