

Supplementary Table 1. Included Studies Reporting NAFLD Prevalence Among Population-Based Studies

Study	Country	Study design	Study sample	Baseline population excluded alcohol use	Baseline population excluded viral hepatitis	NAFLD diagnosis method	Overall, n	Women/ men, n	Age, mean, median, or range, y	BMI, mean, kg/m^2	IGT or type 2 DM, %	NAFLD overall, n	NAFLD in women /men, n	NAFLD prevalence, %
Chen et al, ¹ 2006	Taiwan	Prospective data, cross-sectional	Shengang Township	Yes, ≥ 30 g/d in men; ≥ 20 g/d in women	Yes	US	2520	1378/1142	51	NR	16	372	148/224	15
Zelber-Sagi et al, ² 2007	Israel	Retrospective data, cross-sectional	First Israeli National Health and Nutrition Survey	Yes, ≥ 30 g/d in men ; ≥ 20 g/d in women	Yes	US	349	165/184	51	27	NR	108	39/69	31
Riquelme et al, ³ 2009	Chile	Retrospective data, cross-sectional	Santiago, Chile	Yes, >20 g/d	HCV only	US	832	554/278	49	28	8	195	126/69	23
Das et al, ⁴ 2010	India	Prospective data, cross-sectional	West Bengal, India—single gram panchayat	Yes, any use	Yes	US plus CT attenuation index ≤ -14 HU	1911	893/1018	36	20	13	164	76/88	9
Zhang et al, ⁵ 2011	China	Prospective data, cross-sectional	Jilin province, China	Yes, >40 g/d	No	US	3583	2068/1515	Age 18–39 y: 32%; age 40–65y: 60%; age >64 : 7%	NR	17	626	403/223	17
Amirkalali et al, ⁶ 2014	Iran	Prospective data, cross-sectional	Amol cohort	Yes, >30 g/d in men, >20 g/d in women	Yes	US	5023	2175/2848	45	NR	30	2199	996/1203	44
Bai et al, ⁷ 2014	Taiwan	Prospective data, cross-sectional	Third National Nutrition and Health Survey in Taiwan	Yes, >30 g/wk men, >20 g/wk women	Yes	ALT >35 in men and ALT >26 in women	2186	1215/971	54	24	9	313	179/134	14

Supplementary Table 1. Continued

Study	Country	Study design	Study sample	Baseline population excluded alcohol use	Baseline population excluded viral hepatitis	NAFLD diagnosis method	Overall, n	Women/ men, n	Age, mean, median, or range, y	BMI, mean, kg/m ²	IGT or type 2 DM, %	NAFLD overall, n	NAFLD in women /men, n	NAFLD prevalence, %
Huang et al, ⁸ 2012	China	Prospective data, cross-sectional	All adults from Jiading district age>40	Yes, >140 g/wk men, >70 g/wk women	Yes	US	8632	5954/2678	59	25	18	2590	1778/812	30
Chan et al, ⁹ 2015	China	Retrospective data, cross-sectional	Hong Kong	Yes, >140 g/wk men; >70 g/wk women	Yes	H MRS with IHTG ≥5%	793	463/330	48	23	4	220	102/118	28
Ostovaneh et al, ¹⁰ 2015	Iran	Prospective data, cross-sectional	Amol region and Zahedan	Yes, >20 g/d	Yes	US	7723	3494/4229	40	27	11	3077	1454/1623	40
Pan et al, ¹¹ 2015	United States	Prospective data, cross-sectional	Cameron county Hispanic cohort	Yes, >20 g/d	Yes	US	442	290/152	49	31	22	230	156/74	52
Fattahi et al, ¹² 2016	Iran	Retrospective data, cross-sectional	Kavar cohort study	Yes, any use	Yes	US	2980	2116/864	41	NR	NR	864	579/285	29
Li et al, ¹³ 2016	China	Prospective data, cross-sectional	Weifang, Shandong Province, China, randomly selected adults ages 45–60 y	Yes, >20 g/d men, >10 g/d women	No	US	1006	537/469	51	24	NR	348	101/247	35
Majumdar et al, ¹⁴ 2016	India	Prospective data, cross-sectional	Ballabgarh, India, age ≥35 y	Yes, ≥20 g/d or ≥140 g/wk for >1 y	Yes	US	176	143/33	54 in NAFLD; 52 in non-NAFLD	23	5	54	43/11	31
Jinjuvadia et al, ¹⁵ 2017	United States	Retrospective data, cross-sectional	NHANES III	Yes, >21 drinks/wk men, >14 drinks/wk women	Yes	US	11674	6471/5203	42	NR	12	2113	1010/1103	18

Zhai et al, ¹⁶ 2017	China	Retrospective data, cross- sectional	SPECT China study	Yes, >20 g/ d men, >10 g/d women	Yes	US	2011	1486/ 525	55	24	11	824	610/214	41
Shen et al, ²⁶	United States	Retrospective data, cross- sectional	NHANES 2001–2006	Yes	Yes	ALT >40 U/L or AST >37 U/L in men; ALT or AST >31 U/L in women	10,398	5717/ 4681	43 in NAFLD; 45 in non- NAFLD	30 in NAFLD/ 29 in non- NAFLD	9	2058	696/1362	20

NOTE. Retrospective data indicate retrospectively reviewed data, prospective data indicate prospectively collected data.

ALT, alanine aminotransferase; BMI, body mass index; CT, computed tomography; HCV, hepatitis C virus; HMRS, proton magnetic resonance spectrography; HU, Hounsfield unit; IGT, impaired glucose tolerance; IHTG, intrahepatic triglyceride content; NAFLD, nonalcoholic fatty liver disease; NHANES, National Health and Nutrition Examination Survey; NR, not reported; Type 2 DM, type 2 diabetes; US, ultrasound.

Supplementary Table 2. Included Studies Reporting NASH Prevalence Among Patients With Biopsy-Proven NAFLD

Study	Country	Study design	Study sample	Overall sample with NAFLD, n	Women/men with NAFLD, n	Age, mean, median, or range, y	Mean BMI, kg/m ²	IGT or DM, %	NASH, overall, n	NASH, women/men, n	NASH prevalence, %
Haukel and et al, ¹⁷ 2005	Norway	Prospective data, cross-sectional	Consecutive patients referred to hepatology clinic with suspected NAFLD (ALT >50 plus US/CT hepatic steatosis or ALT >70, either for >6 mo) were offered liver biopsy, multicenter (n = 88 representing 68% of eligible patients)	83	37/46	45	31	49	41	18/23	49
de Ledinghen et al, ¹⁸ 2004	France	Retrospective data, cross-sectional	Retrospectively identified consecutive patients referred to liver clinic with unexplained ALT increase × 6 mo and underwent liver biopsy, single center (n = 67)	67	22/45	47	26	NR	27	6/21	40
Yamauchi et al, ¹⁹ 2004	Japan	Retrospective data, cross-sectional	Retrospectively identified patients with biopsy-proven NAFLD from pathology registry, single center (n = 38)	38	14/24	50 among non-NASH; 45 among NASH	NR	21	20	7/13	53
Arun et al, ²⁰ 2006	United States	Retrospective data, cross-sectional	Retrospectively identified consecutive patients who had undergone liver biopsy at time of bariatric surgery, single center (n = 365)	280	227/53	41	NR	39	130	95/35	46
Kichian et al, ²¹ 2003	Canada	Retrospective data, cross-sectional	Retrospectively identified patients had undergone liver biopsy for evaluation of abnormal liver enzyme levels from pathology registry, single center (n = 49)	49	24/25	46	NR	27	36	18/18	73
Harrison et al, ²² 2008	United States	Retrospective data, cross-sectional	Retrospectively identified patients with biopsy-proven NAFLD from pathology registry, multicenter (n = 827)	827	425/402	49	NR	35	669	363/306	81
Hossain et al, ²³ 2009	United States	Retrospective data, cross-sectional	Retrospectively identified patients with biopsy-proven NAFLD from pathology registry, single center (n = 432)	432	333/99	44	46	25	116	70/46	27
Kashyap et al, ²⁴ 2009	United States	Prospective data, cross-sectional	Consecutive patients undergoing laparoscopic bariatric surgery underwent liver biopsy at the same time as surgery, single center (n = 142)	99	75/24	49	48	39	66	52/14	61
Malik et al, ²⁵ 2009	United States	Prospective data, cross-sectional	Consecutive patients attending a hepatology clinic with biopsy-proven NAFLD, single center (n = 95)	95	37/58	49	30 among non-NASH; 35 among NASH	27	60	24/36	63

Rafiq et al, ²⁶ 2009	United States	Retrospective data, cross-sectional	Retrospectively identified patients with biopsy-proven NAFLD from a research registry, multicenter (n = 173)	173	104/69	50	34	29	72	50/22	42
Argentou et al, ²⁷ 2009	Greece	Prospective data, cross-sectional	Consecutive patients undergoing biopancreatic diversion surgery had liver biopsy performed at time of surgery, single center (n = 50)	41	26/15	39	56	36	10	4/6	24
Prashanth et al, ²⁸ 2009	India	Prospective data, cross-sectional	Type 2 diabetes patients with NAFLD detected on screening ultrasound were offered liver biopsy, single center (n = 90, representing 90% of eligible patients)	72	47/25	54	26	100	52	32/20	72
Williams et al, ²⁹ 2011	United States	Prospective data, cross-sectional	Consecutive patients with ultrasound-detected NAFLD were offered liver biopsy, single center (n = 306, representing 93% of eligible patients)	151	62/89	55	30	26	40	14/26	26
Fracanzani et al, ³⁰ 2011	Italy	Retrospective data, cross-sectional	Retrospectively identified patients with biopsy-proven NAFLD in a research registry, multicenter (n = 431)	431	71/360	Reported as <50	NR	9	257	49/208	60
Yasui et al, ³¹ 2011	Japan	Retrospective data, cross-sectional	Retrospectively identified patients with biopsy-proven NAFLD from pathology registry, multicenter (n = 174)	174	72/102	54	26	31	92	47/45	53
Bambha et al, ³² 2012	United States	Retrospective data, cross-sectional	Retrospectively identified patients with biopsy-proven NAFLD in research registry, multicenter NASH CRN registry (n = 1026)	1026	649/377	50	34	37	628	427/201	61
Alam et al, ³³ 2013	Bangladesh	Retrospective data, cross-sectional	Retrospectively identified consecutive hepatology clinic patients with biopsy-proven NAFLD, single center (n = 177)	177	104/73	40	NR	22	75	44/31	42
Stepanova et al, ³⁴ 2013	United States	Retrospective data, cross-sectional	Retrospectively identified patients with biopsy-proven NAFLD in a research registry, multicenter (n = 289)	289	175/114	50	33	26	171	116/55	59
Subramanian et al, ³⁵ 2013	United Kingdom	Retrospective data, cross-sectional	Retrospective review of a prospective cohort of patients with biopsy-proven NAFLD in a research registry, single center (n = 141)	141	53/88	52	29	NR	118	43/75	84
Goh et al, ³⁶ 2016	United States	Prospective data, cross-sectional	Consecutive patients attending hepatology clinics with biopsy-proven NAFLD, multicenter (n = 405)	405	227/178	48	35	42	291	164/127	72

Supplementary Table 2. Continued

Study	Country	Study design	Study sample	Overall sample with NAFLD, n	Women/ men with NAFLD, n	Age, mean, median, or range, y	Mean BMI, kg/m^2	IGT or type 2 DM, %	NASH, overall, n	NASH, women/ men, n	NASH prevalence, %
Koo et al, ³⁷ 2017	South Korea	Prospective, cohort study (baseline cross-sectional data abstracted)	Consecutive subjects with ≥ 2 metabolic syndrome components or evidence of insulin resistance and/or clinically suspected NASH or fibrosis were offered liver biopsy (n = 309; proportion of eligible patients not reported by authors)	240	123/117	53	27	33	123	71/52	51
Machado et al, ³⁸ 2012	Portugal	Prospective data, cross-sectional	Consecutive patients undergoing bariatric surgery had liver biopsy performed at time of surgery (n = 148)	148	124/24	42	46	26	37	31/6	25

NOTE. Retrospective data indicates retrospectively reviewed data, and prospective data indicates prospectively collected data.

ALT, alanine aminotransferase; BMI, body mass index; CT, computed tomography; NAFLD, nonalcoholic fatty liver disease; NASH, nonalcoholic steatohepatitis; NR, not reported; IGT, impaired glucose tolerance; type 2 DM, type 2 diabetes; US, ultrasound.

Supplementary Table 3. Included Studies Reporting Advanced Fibrosis Prevalence Among Patients With Biopsy-Proven NAFLD

Study	Country	Study design	Study sample	Advanced fibrosis definition	Overall sample with NAFLD, n	Women/ men with NAFLD, n	Age, mean, median, or range, y	Mean BMI, kg/m ²	IGT or type 2 DM, %	Advanced fibrosis overall, n	Advanced fibrosis, women / men, n	Advanced fibrosis prevalence, %
Park et al, ³⁹ 2004	South Korea	Retrospective data, cross-sectional	Retrospectively identified patients with biopsy-proven NAFLD from pathology database, single center (n = 43)	Fibrosis stages 3–4	43	9/34	33	27	7	7	3/4	16
de Ledinghen et al, ¹⁸ 2004	France	Retrospective data, cross-sectional	Retrospectively identified consecutive patients referred to liver clinic with unexplained ALT increase × 6 mo and underwent liver biopsy, single center (n = 67)	Fibrosis stages 2–4	67	22/45	47	26	NR	20	7/13	30
Suzuki et al, ⁴⁰ 2005	United States	Retrospective data, cross-sectional	Consecutive untreated patients with biopsy-proven NAFLD presenting to a hepatology clinic, single center (n = 79)	Fibrosis stages 3–4	79	49/30	53	31	NR	20	13/7	25
Ong et al, ⁴¹ 2005	United States	Prospective data, cross-sectional	Consecutive patients undergoing bariatric surgery had liver biopsy performed at time of surgery, single center (n = 212)	Fibrosis stages 3–4	197	157/40	42	48	24	17	11/6	9
Hashimoto et al, ⁴² 2005	Japan	Retrospective data, cross-sectional	Retrospectively identified patients with biopsy-proven NAFLD from pathology database, single center (n = 247)	Fibrosis stages 3–4	247	117/130	53	NR	55	89	50/39	36
Arun et al, ²⁰ 2006	United States	Retrospective data, cross-sectional	Retrospectively identified consecutive patients who had undergone liver biopsy at time of bariatric surgery, single center (n = 365)	Fibrosis stages 3–4	280	227/53	41	NR	39	28	22/6	10
Malik et al, ⁴³ 2007	Malaysia	Prospective data, cross-sectional	Consecutive patients with persistently increased liver enzyme levels and/or US-detected hepatic steatosis were offered liver biopsy, single center (n = 70; proportion of eligible patients not reported by authors)	Fibrosis stages 3–4	70	33/37	47	28	39	18	5/13	26

Supplementary Table 3. Continued

Study	Country	Study design	Study sample	Advanced fibrosis definition	Overall sample with NAFLD, n	Women/ men with NAFLD, n	Age, mean, median, or range, y	Mean BMI, kg/m ²	IGT or type 2 DM, %	Advanced fibrosis overall, n	Advanced fibrosis, women / men, n	Advanced fibrosis prevalence, %
Harrison et al, ²² 2008	United States	Retrospective data, cross-sectional	Retrospectively identified patients with biopsy-proven NAFLD from pathology registry, multicenter (n = 827)	Fibrosis stages 3–4	827	425/402	49	NR	35	182	123/59	22
Miyaaki et al, ⁴⁴ 2008	Japan	Retrospective data, cross-sectional	Retrospectively identified patients with biopsy-proven NAFLD from pathology registry, multicenter (n = 182)	Fibrosis stages 3–4	182	108/74	51	27	48	32	27/5	18
Wong et al, ⁴⁵ 2008	Hong Kong	Prospective data, cross-sectional	Patients with clinical NAFLD and ALT increase for at least 12 weeks or features of metabolic syndrome were offered liver biopsy, single center (n = 162, proportion of eligible patients not reported by authors)	Fibrosis stages 3–4	162	66/96	46	29	57	18	6/12	11
Hossain et al, ²³ 2009	United States	Retrospective data, cross-sectional	Retrospectively identified patients with biopsy-proven NAFLD from pathology registry, single center (n = 432)	Fibrosis stages 2–4	432	333/99	44	46	25	75	50/25	17
Fracanzani et al, ³⁰ 2011	Italy	Retrospective data, cross-sectional	Retrospectively identified patients with biopsy-proven NAFLD in a research registry, multicenter (n = 431)	Fibrosis stages 2–4	431	71/360	<50	NR	9	130	32/98	30
Cichoż-Lach et al, ⁴⁶ 2012	Poland	Prospective data, cross-sectional	Consecutive patients with suspected NAFLD referred to hepatology clinic were offered liver biopsy, single center (n = 126, proportion of eligible patients not reported by authors)	Fibrosis stages 3–4	126	53/73	43	29	23	27	11/16	21
Xun et al, ⁴⁷ 2012	China	Retrospective data, cross-sectional	Consecutive patients with biopsy-proven NAFLD presenting to a hepatology clinic, single center (n = 152)	Fibrosis stages 3–4	152	31/121	37	26	32	24	9/15	16

Subramanian et al, ³⁵ 2013	United Kingdom	Retrospective data, cross-sectional	Retrospective review of a prospective cohort of patients with biopsy-proven NAFLD in a research registry, single center (n = 141)	Fibrosis stages 2–4	141	53/88	52	29	NR	74	33/41	52
McPherson et al, ⁴⁸ 2014	Australia	Retrospective data, cross-sectional	Retrospective review of patients with biopsy-proven NAFLD in a research registry, single center (n = 285)	Fibrosis stages 3–4	285	111/174	50	34	39	55	34/21	19
Nakahara et al, ⁴⁹ 2014	Japan	Retrospective data, cross-sectional	Retrospective review of patients with biopsy-proven NAFLD in a research registry, multicenter (n = 1365)	Fibrosis stages 3–4	1365	656/709	51	28	47	303	185/118	22
Bambha et al, ⁵⁰ 2014	United States	Retrospective data, cross-sectional	Retrospective review of patients with biopsy-proven NAFLD in a research registry, multicenter NASH-CRN (n = 782)	Fibrosis stages 3–4	782	487/295	48	34	24	199	137/62	25
Jun et al, ⁵¹ 2017	South Korea	Retrospective data, cross-sectional	Retrospectively identified patients with biopsy-proven NAFLD from pathology registry, multicenter (n = 328)	Fibrosis stages 3–4	328	96/232	36	29	33	60	20/40	18
Petta et al, ⁵² 2017	Italy	Retrospective data, cross-sectional	Retrospective review of patients with biopsy-proven NAFLD in a research registry, single center (n = 225)	Fibrosis stages 3–4	225	84/141	48	30	NR	71	41/30	32
Atay et al, ⁵³ 2017	Turkey	Retrospective data, cross-sectional	Retrospective review of patients with biopsy-proven NAFLD in a research registry, single center (n = 40)	Fibrosis stages 2–4	23	11/12	56	≥30	53	17	10/7	74

NOTE. Retrospective data indicates retrospectively reviewed data, and prospective data indicates prospectively collected data.

ALT, alanine aminotransferase; BMI, body mass index; CRN, Clinical Research Network; IGT, impaired glucose tolerance; NAFLD, nonalcoholic fatty liver disease; NR, not reported; type 2 DM, type 2 diabetes; US, ultrasound.

Supplementary Table 4. Quality Assessment for Included Studies

Study	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Score	Outcome
Chen 2006	Yes	Yes	No	Yes	No	No	No	No	Yes	NA	Yes	Yes	NA	No	6	NAFLD
Zelber-Sagi 2007	Yes	Yes	No	Yes	No	No	No	Yes	Yes	NA	Yes	Yes	NA	Yes	8	NAFLD
Riquelme 2009	Yes	Yes	Yes	Yes	No	No	No	NA	No	NA	Yes	Yes	NA	NA	6	NAFLD
Das 2010	Yes	Yes	Yes	Yes	No	No	No	NA	Yes	NA	Yes	Yes	NA	Yes	8	NAFLD
Zhang 2011	Yes	Yes	Yes	Yes	No	No	No	NA	Yes	NA	Yes	Yes	NA	NA	7	NAFLD
Amirkalali 2014	Yes	Yes	Yes	Yes	No	No	No	NA	Yes	NA	Yes	Yes	NA	NA	7	NAFLD
Bai 2014	Yes	Yes	CD	Yes	No	No	No	NA	Yes	NA	Yes	Yes	NA	Yes	7	NAFLD
Huang 2012	Yes	Yes	Yes	Yes	No	No	No	NA	Yes	NA	Yes	Yes	NA	Yes	8	NAFLD
Chan 2015	Yes	Yes	CD	Yes	No	No	No	Yes	Yes	NA	Yes	Yes	NA	Yes	8	NAFLD
Ostovaneh 2015	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	NA	Yes	Yes	NA	Yes	9	NAFLD
Fattahi 2016	Yes	Yes	Yes	Yes	No	No	No	NA	Yes	NA	Yes	Yes	NA	No	7	NAFLD
Li 2016	Yes	Yes	Yes	Yes	No	No	No	NA	Yes	NA	Yes	Yes	NA	Yes	8	NAFLD
Majumdar 2016	Yes	Yes	Yes	Yes	Yes	No	No	NA	No	NA	Yes	Yes	NA	Yes	8	NAFLD
Jinjuvidia 2017	Yes	Yes	Yes	Yes	No	No	No	No	NA	NA	Yes	Yes	NA	Yes	7	NAFLD
Zhai 2017	Yes	Yes	Yes	Yes	No	No	No	No	Yes	NA	Yes	Yes	NA	Yes	8	NAFLD
Shen 2016	Yes	Yes	Yes	Yes	No	No	No	No	Yes	NA	Yes	Yes	NA	Yes	8	NAFLD
Pan 2015	Yes	Yes	Yes	Yes	No	No	No	No	NA	NA	Yes	Yes	NA	NA	6	NAFLD
Ong 2005	Yes	Yes	Yes	Yes	No	No	No	NA	Yes	NA	Yes	Nr	NA	Yes	7	Fibrosis
Haukeland 2005	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	NA	Yes	Yes	NA	Yes	9	NASH
de Ledinghen 2004	Yes	No	CD	CD	No	No	No	NA	Yes	NA	Yes	Yes	NA	No	4	NASH, fibrosis
Yamauchi 2004	Yes	Yes	CD	CD	No	No	No	No	Yes	NA	Yes	Yes	NA	No	5	NASH
Arun 2006	Yes	Yes	CD	CD	No	No	No	No	Yes	NA	Yes	Yes	NA	No	5	NASH, fibrosis
Kichian 2003	Yes	Yes	CD	CD	No	No	No	NA	NA	NA	Yes	Yes	NA	NA	4	NASH
Harrison 2008	Yes	Yes	CD	CD	No	No	No	NA	Yes	NA	Yes	Yes	NA	Yes	6	NASH, fibrosis
Hossain 2009	Yes	No	CD	CD	No	No	No	NA	Yes	NA	Yes	Yes	NA	Yes	5	NASH, fibrosis
Kashyap 2009	Yes	Yes	Yes	Yes	No	No	No	No	Yes	NA	Yes	Yes	NA	NA	6	NASH
Malik 2009	Yes	Yes	Yes	Yes	No	No	No	NA	Yes	NA	Yes	Yes	NA	NA	8	NASH
Rafiq 2009	Yes	Yes	CD	CD	No	Yes	Yes	No	Yes	NA	Yes	Yes	NR	Yes	7	NASH
Argentou 2009	Yes	Yes	Yes	Yes	No	No	No	NA	Yes	NA	Yes	Yes	NA	NA	7	NASH
Prashanth 2009	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	NA	Yes	Yes	NA	No	8	NASH
Williams 2011	Yes	Yes	Yes	Yes	No	No	No	NA	Yes	NA	Yes	NR	NA	Yes	7	NASH
Francanzani 2011	Yes	Yes	CD	CD	No	No	No	NA	Yes	NA	Yes	Yes	NA	Yes	6	NASH, fibrosis
Yasui 2011	Yes	Yes	CD	CD	No	No	No	No	Yes	NA	Yes	Yes	NA	Yes	6	NASH
Alam 2013	Yes	Yes	CD	CD	No	No	No	NA	Yes	NA	Yes	Yes	NA	Yes	6	NASH
Goh 2016	Yes	Yes	CD	Yes	No	No	No	NA	Yes	NA	Yes	Yes	NA	NA	6	NASH
Koo 2017	Yes	Yes	CD	Yes	No	No	No	NA	Yes	NA	Yes	Yes	NA	Yes	7	NASH
Machado 2012	Yes	Yes	Yes	Yes	No	No	No	NA	NA	NA	Yes	Yes	NA	Yes	7	NASH
Park 2004	Yes	Yes	CD	No	No	No	No	No	Yes	NA	Yes	Yes	NA	No	5	Fibrosis stages 3–4
Suzuki 2005	Yes	No	CD	Yes	No	No	No	Yes	Yes	NA	Yes	Yes	NA	Yes	7	Fibrosis stages 3–4
Hashimoto 2005	Yes	Yes	CD	No	No	No	CD	No	Yes	NA	Yes	Yes	NA	No	5	Fibrosis stages 3–4
Malik 2007	Yes	Yes	CD	Yes	No	No	No	NA	Yes	NA	Yes	Yes	NA	Yes	7	Fibrosis stages 3–4
Miyaaki 2008	Yes	No	CD	CD	No	No	No	NA	Yes	NA	Yes	Yes	NA	Yes	5	Fibrosis stages 3–4
McPherson 2014	Yes	Yes	CD	Yes	No	No	No	NA	NA	NA	Yes	Yes	NA	NA	5	Fibrosis stages 3–4
Nakahara 2014	Yes	Yes	CD	CD	No	No	No	NA	Yes	NA	Yes	Yes	NA	Yes	6	Fibrosis stages 3–4
Bambha 2014	Yes	Yes	CD	CD	No	No	No	NA	Yes	NA	Yes	Yes	NA	Yes	6	Fibrosis stages 3–4
Jun 2017	Yes	Yes	Yes	Yes	No	No	NA	NA	Yes	NA	Yes	Yes	NA	NA	7	Fibrosis stages 3–4
Xun 2012	Yes	Yes	CD	CD	No	No	No	NA	NA	NA	Yes	Yes	NA	NA	4	Fibrosis stages 3–4
Atay 2017	Yes	CD	CD	Yes	No	No	No	NA	Yes	NA	Yes	Yes	NA	NA	5	Fibrosis stages 2–4
Wong 2008	Yes	Yes	CD	Yes	Yes	No	No	NA	No	NA	Yes	Yes	NA	NA	6	Fibrosis stages 3–4
Petta 2017	Yes	Yes	CD	CD	No	No	No	No	Yes	NA	Yes	Yes	NA	Yes	6	Fibrosis stages 3–4
Stepanova 2013	Yes	Yes	CD	CD	No	Yes	Yes	NA	Yes	No	Yes	NR	NR	Yes	7	NASH
Malik 2009	Yes	Yes	Yes	Yes	Yes	No	No	NA	Yes	NA	Yes	Yes	NA	NA	8	NASH

Supplementary Table 4. Continued

Study	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Score	Outcome
Subramaniam 2013	Yes	Yes	CD	CD	No	No	No	Yes	Yes	NA	Yes	Yes	NA	Yes	7	NASH, fibrosis stages 2–4
Bambha 2012	Yes	Yes	Yes	Yes	No	No	No	NA	Yes	NA	Yes	Yes	NA	Yes	8	NASH
Cichoż-Lach 2012	Yes	Yes	CD	Yes	No	No	No	NA	NA	NA	Yes	NR	NA	NA	4	Fibrosis stages 3–4

NOTE. The National Institutes of Health Quality Assessment Tool for Observational Cohort and Cross-sectional Studies 14 questions are as follows:

1. Was the research question or objective clearly stated?
2. Was the study population clearly specified and defined?
3. Was the participation rate of eligible persons at least 50%?
4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)?
5. Was a sample size justification, power description, or variance and effect estimates provided?
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?
7. Was the time frame sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?
8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome?
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?
10. Was the exposure(s) assessed more than once over time?
11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?
12. Were the outcome assessors blinded to the exposure status of participants?
13. Was loss to follow-up evaluation after baseline 20% or less?
14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship?

CD, cannot determine; NA, not applicable; NAFLD, nonalcoholic fatty liver disease; NASH, nonalcoholic steatohepatitis.