

Appendix 1: Diagnosis codes for NAFLD and for the exclusion diagnosis of alcohol-related diseases, viral and autoimmune hepatitis, and biliary cirrhosis from the different Danish Registers

Table 1A. NAFLD diagnosis

Register	The National Patient Register
Diagnostic category	ICD 8/10 codes
NA Steatosis	571.11, 571.19/K76.0
NA Steatohepatitis	570.00, 570.01, 570.08, 570.09, 573.03/K73.0, K73.1, K73.2, K73.8, K73.9
NA Fibrosis	573.04/K74.0, K74.1, K74.2
NA Cirrhosis	571.92, 571.99/K74.6
Register	The National Register of Pathology
Diagnostic category	SNOMED codes
NA Steatosis	M50000, M50080, M50085, M50086, M55200, M55280, M71800
NA Steatohepatitis	M40000, M41000, M42000, M42100, M43000, M43005, M43006, M45000, M50070, M50110, M50130, M51620, M51630, M54000, M54001, M54003, M54070, M54120, M66080, M66160, M45400
NA Fibrosis	M49000, M49231, M49232, M49620, MYY493 = M49231 MYY494 = M49232
NA Cirrhosis	M49500, M49501, M49503, M49504, M49505, M49506, M49510, M49514, M49516, M49520, M49524, M49526, M49527, M49528, M49530,

Table 1B. Alcohol-related and viral or biliary liver disease diagnosis

Register	The National Patient Register and the National Register of Pathology
Diagnostic category	ICD 8/10 codes and SNOMED codes
Viral and auto-immune hepatitis	070.xx/B15-B19 S052, S63580
Biliary liver diseases	571.90, 571.91/K74.3, K74.4 M4958, M4959
Registers	The National Patient Register, the National Psychiatric Central Register and the National Register of Pathology
Alcohol-related diseases	291.xx, 303.xx, 571.09, 571.10, 577.10/F10.x, F10.0, F10.1, F10.3, F10.4, F10.5, F10.6, F10.7, F10.8, F10.9, G62.1, K70.x, K70.0, K70.1, K70.2, K70.3, K70.4, K70.9, K86.0 M49660, S63590, S87720

Supplementary Table 1. Hazard ratios and 95% CI according to one unit change in BMI z-scores between 7 through 13 years, adjusted for BMI 7 and BMI 13, respectively, in relation to clinically recognized non-alcoholic steatosis, steatohepatitis, fibrosis and cirrhosis in adulthood in a cohort of 244,464 children

	<i>Boys</i>		<i>Girls</i>	
	HR	95 % CI	HR	95 % CI
Steatosis				
Change*	1.28	1.26-1.46	1.12	0.99-1.28
BMI 7 below the median	1.06	0.91-1.24	0.86	0.72-1.02
BMI 7 above the median	1.10	0.92-1.31	1.05	0.90-1.25
Change**	1.27	1.12-1.44	1.01	0.90-1.15
BMI 13 below the median	1.10	0.92-1.31	1.04	0.87-1.25
BMI 13 above the median	1.11	0.94-1.32	1.25	1.07-1.46
Steatohepatitis				
Change*	1.05	0.90-1.23	1.16	0.99-1.37
BMI 7 below the median	1.10	0.91-1.32	0.85	0.69-1.05
BMI 7 above the median	1.12	0.91-1.37	0.92	0.73-1.46
Change**	1.05	0.90-1.22	1.11	0.95-1.30
BMI 13 below the median	1.10	0.90-1.34	0.89	0.71-1.13
BMI 13 above the median	1.10	0.90-1.35	0.98	0.80-1.21
Fibrosis				
Change*	1.17	0.92-1.48	1.16	0.90-1.50
BMI 7 below the median	1.01	0.76-1.32	0.76	0.54-1.09
BMI 7 above the median	0.99	0.71-1.38	0.96	0.67-1.37
Change**	1.17	0.94-1.47	1.04	0.81-1.33
BMI 13 below the median	1.06	0.78-1.44	0.95	0.65-1.37
BMI 13 above the median	1.05	0.77-1.44	1.17	0.85-1.61
Cirrhosis				
Change*	1.07	0.93-1.23	1.10	0.93-1.30
BMI 7 below the median	1.15	0.98-1.34	1.00	0.81-1.24
BMI 7 above the median	0.99	0.81-1.20	1.18	0.95-1.45
Change**	1.16	1.02-1.33	1.02	0.87-1.19
BMI 13 below the median	1.11	0.93-1.32	0.89	0.70-1.14
BMI 13 above the median	0.94	0.77-1.14	1.05	0.85-1.30

The hazard ratios of BMI 7 and 13 years, respectively, illustrate the risk associated with each 1-unit difference in BMI z-score away from zero. E.g. a HR of 1.06 (CI 0.91-1.24) in 7 year old boys with a BMI z-score below the median means that the risk of adult steatosis increases with 6% per 1-unit *lower* BMI z-score below zero. A HR of 1.25 (CI 1.07-1.46) in 13 year old girls with a BMI z-score above the median means that the risk of adult steatosis increases with 25% per 1-unit *higher* BMI z-score above zero.

*Adjusted for BMI z-score at age 7 years

** Adjusted for BMI z-score at age 13 years

Supplementary Table 2. Hazard ratios and 95% CI according to one unit change in BMI z-scores between 7 through 13 years, adjusted for BMI 7 and BMI 13, respectively, in relation to clinically recognized NAFLD in adulthood in a cohort of 231,664 children with follow-up starting in 1994

	<i>Boys</i>		<i>Girls</i>	
	HR	95 % CI	HR	95 % CI
NAFLD				
Change*	1.21	1.08-1.37	1.25	1.11-1.40
BMI 7 below the median	1.02	0.89-1.18	0.91	0.79-1.06
BMI 7 above the median	1.17	1.00-1.36	1.11	0.95-1.29
Change**	1.14	1.02-1.28	1.13	1.02-1.27
BMI 13 below the median	0.97	0.83-1.15	0.95	0.81-1.13
BMI 13 above the median	1.10	0.94-1.28	1.14	0.99-1.31

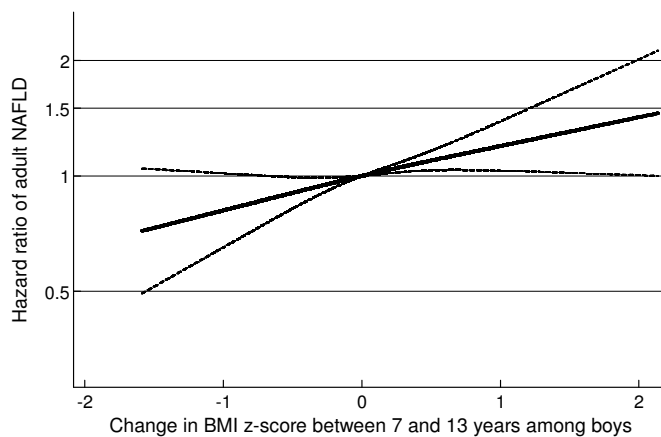
This analysis is based on 231,664 individuals of whom 1,514 were diagnosed with NAFLD during the follow-up period from 1994 to 2010. The hazard ratios of BMI 7 and 13 years, respectively, illustrate the risk associated with each 1-unit difference in BMI z-score away from zero. E.g. a HR of 1.02 (CI 0.89-1.18) in 7 year old boys with a BMI z-score below the median means that the risk of adult NAFLD increases with 2% per 1-unit *lower* BMI z-score below zero. A HR of 1.14 (CI 0.99-1.31) in 13 year old girls with a BMI z-score above the median means that the risk of adult NAFLD increases with 14% per 1-unit *higher* BMI z-score above zero.

*Adjusted for BMI z-score at age 7 years

** Adjusted for BMI z-score at age 13 years

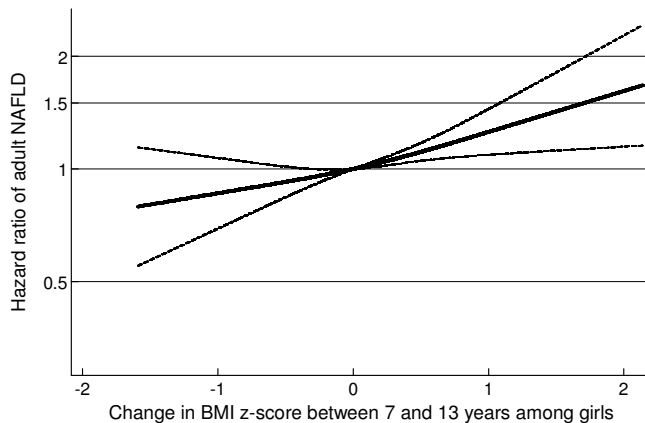
Supplementary Figure 1. Hazard ratios and 95% CI according to change in BMI z-score between the ages of 7 and 13 years, adjusted for BMI z-score at 7 years of age, in relation to clinically recognized NAFLD in adulthood for (A) boys and (B) girls free of any alcohol-related diagnosis

(A) Boys



HR of adult NAFLD per 1-unit increase in BMI z-score between 7 and 13 years of age among boys:
1.19 (95% CI: 1.07-1.32)

(B) Girls



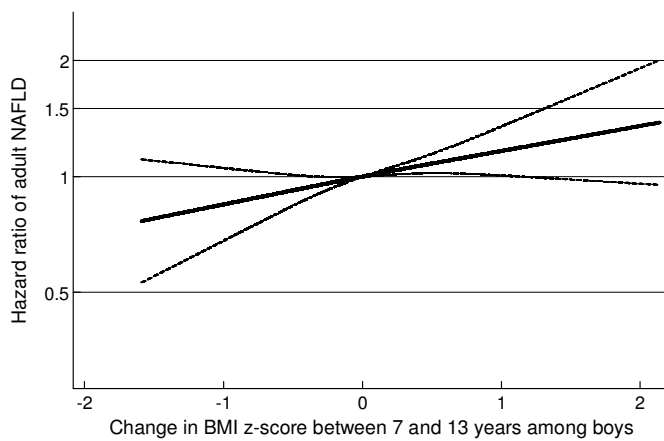
HR of adult NAFLD per 1-unit increase in BMI z-score between 7 and 13 years of age among girls:
1.19 (95% CI: 1.08-1.32)

The associations are adjusted for BMI z-score at 7 years of age and stratified by birth cohort. The hazard ratios in Supplementary Figure 1 are estimated by Cox regression including change in body mass index (BMI) z-score between the ages of 7 and 13 years, as a restricted cubic spline with 3 knot points located at the 10th, 50th and 90th percentile, with a reference point in change in BMI z-score equal to 0, and truncated to depict the inner 99% part of the distribution. There was no interaction between the change and initial BMI ($p > 0.05$ in both boys and girls).

Abbreviations: BMI: body mass index; NAFLD: Non-alcoholic fatty liver disease

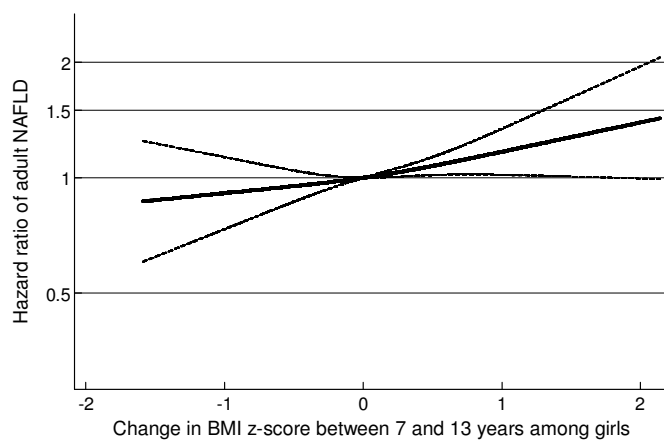
Supplementary Figure 2. Hazard ratios and 95% CI according to change in BMI z-score between the ages of 7 and 13 years, adjusted for BMI z-score at 13 years, in relation to clinically recognized NAFLD in adulthood for (A) boys and (B) girls free of any alcohol-related diagnosis

(A) Boys



HR of adult NAFLD per 1-unit increase in BMI z-score between 7 and 13 years of age among boys:
1.15 (95% CI: 1.04-1.27)

(B) Girls



HR of adult NAFLD per 1-unit increase in BMI z-score between 7 and 13 years of age among girls:
1.11 (95% CI: 1.01-1.23)

The associations are adjusted for BMI z-score at 13 years of age and stratified by birth cohort. The hazard ratios in Supplementary Figure 2 are estimated by Cox regression including change in body mass index (BMI) z-score between the ages of 7 and 13 years, as a restricted cubic spline with 3 knot points located at the 10th, 50th and 90th

percentile, with a reference point in change in BMI z-score equal to 0, and truncated to depict the inner 99% part of the distribution.

Abbreviations: BMI: body mass index; NAFLD: Non-alcoholic fatty liver disease