

Supplemental Table 1. Comparison of covariate-adjusted mean of serum vitamin A by groups of severity of NAFLD in first examination.

Concentration of serum vitamin A ($\mu\text{mol/L}$)	Absent	Mild	Moderate	Severe	%diff ¹	p-diff	p-trend
Total (n=2658)							
Case, n (%)	1296	1073	237	52			
Model 1 ²	1.591±0.012	1.673±0.013***	1.717±0.026***	1.735±0.057	9.05	<0.001	0.008
Model 2 ³	1.590±0.012	1.674±0.013***	1.720±0.027***	1.737±0.058	9.37	<0.001	0.006
Women (n=1819)							
Case, n (%)	908	710	162	39			
Model 1 ²	1.546±0.014	1.643±0.015***	1.657±0.032**	1.689±0.065	9.25	<0.001	0.030
Model 2 ³	1.545±0.014	1.644±0.015***	1.660±0.032**	1.695±0.066	9.84	<0.001	0.023
Men (n=839)							
Case, n (%)	388	363	75	13			
Model 1 ²	1.698±0.022	1.734±0.022	1.834±0.049	1.856±0.117	9.31	0.049	0.112
Model 2 ³	1.696±0.022	1.735±0.022	1.835±0.049	1.847±0.118	8.9	0.048	0.130

¹%Diff: percentage difference = (improved-progressed)/progressed × 100%;

²Model 1: ANCOVA covariables included age and gender;

³Model 2: adjust for variables in model 1 plus household income, physical activity, smoking, tea drinking, alcohol drinking and energy intake; polynomial contrasts method = Bonferroni; ** p<0.01, *** p<0.01, compared with absent;

Supplemental Table 2. Comparison of covariate-adjusted mean of serum vitamin A by groups of progress, stable and improve.

Concentration of serum vitamin A ($\mu\text{mol/L}$)	Progressed	Stable	Improved	%diff ¹	p-diff	p-trend
Total (n=2658)						
Case, n(%)	459 (17.3)	1645 (61.9)	554 (20.8)			
Model 1 ²	1.68±0.02	1.65±0.01	1.57±0.02***	-6.50	0.002	0.001
Model 2 ³	1.69±0.02	1.65±0.01	1.56±0.02***	-7.70	0.001	<0.001
Women (n=1819)						
Case, n(%)	349 (19.2)	1092 (60.0)	378 (20.8)			
Model 1	1.63±0.02	1.61±0.01	1.53±0.03*'	-6.10	0.019	0.010
Model 2	1.64±0.02	1.61±0.01	1.52±0.03*'	-7.30	0.011	0.005
Men (n=839)						
Case, n(%)	110 (13.1)	553 (65.9)	176 (21.0)			
Model 1	1.80±0.04	1.74±0.02	1.66±0.04	-7.80	0.062	0.019
Model 2	1.80±0.05	1.74±0.02	1.66±0.04	-7.80	0.076	0.024

¹%Diff: percentage difference = (improved-progressed)/progressed × 100%;

²Model 1: ANCOVA covariables included age, gender and the degree of NAFLD in 1st follow up;

³Model 2: adjust for variables in model 1 plus household income, physical activity, smoking, tea drinking, alcohol drinking and energy intake; polynomial contrasts method = Bonferroni. * p<0.05, compared with stable; ** p<0.01, compared with stable; ' p<0.05, compared with progressed; " p<0.01, compared with progressed;

Supplemental Table 3. The results of the path coefficients

Regression weights of trimmed model

			Estimate		SE	C.R.	p-value	GFI	AGFI
			Unstandardized	Standardized					
Degree of NAFLD in first examination								0.975	0.893
Serum RBP4	<---	serum vitamin A	0.133	0.304	0.008	16.552	***		
HOMA-IR	<---	serum vitamin A	0.229	0.065	0.068	3.393	***		
BMI	<---	serum vitamin A	0.489	0.066	0.143	3.409	***		
Serum TG	<---	serum vitamin A	0.565	0.198	0.054	10.459	***		
Degree of NAFLD	<---	Serum RBP4	0.172	0.045	0.065	2.661	0.008		
Degree of NAFLD	<---	HOMA-IR	0.105	0.220	0.009	12.309	***		
Degree of NAFLD	<---	BMI	0.087	0.384	0.004	21.527	***		
Degree of NAFLD	<---	Serum TG	0.061	0.104	0.010	6.159	***		
Change of degree of NAFLD between two examinations								0.976	0.897
Serum RBP4	<---	serum vitamin A	0.133	0.304	0.008	16.552	***		
HOMA-IR	<---	serum vitamin A	0.229	0.065	0.068	3.393	***		
BMI	<---	serum vitamin A	0.489	0.066	0.143	3.409	***		
Serum TG	<---	serum vitamin A	0.565	0.198	0.054	10.459	***		
Change of NAFLD	<---	Serum RBP4	0.237	0.087	0.053	4.521	***		
Change of NAFLD	<---	HOMA-IR	0.023	0.066	0.007	3.273	0.001		
Change of NAFLD	<---	BMI	0.028	0.173	0.003	8.530	***		
Change of NAFLD	<---	Serum TG	0.049	0.116	0.008	6.031	***		

Abbreviation: GFI, Goodness of Fit Index. AGFI, Adjusted Goodness of Fit Index; NAFLD, non-alcoholic fatty liver disease; RBP4, retinol binding protein 4; HOMA-IR, HOMA insulin resistance index; BMI, body mass index; TG, triglycerides; *** p<0.001

Supplemental Table 4. Estimated means and standard error of serum vitamin A in multiple-adjusted model and further adjustments.

Model	Multivariable adjusted mean (SEM) and the standard error (SE) of the serum vitamin A			
	Progressed	Stable	Improved	P-trend
Multiple adjusted model*	1.683 (1.642, 1.723)	1.651 (1.630, 1.671)	1.565 (1.521, 1.608)	<0.001
Further adjusted for intakes of animal fats	1.689 (1.647, 1.731)	1.650 (1.629, 1.671)	1.560 (1.515, 1.604)	<0.001
Further adjusted for intakes of cholesterol	1.688 (1.646, 1.731)	1.650 (1.629, 1.671)	1.560 (1.516, 1.605)	<0.001
Further adjusted for change of BMI	1.685 (1.644, 1.726)	1.650 (1.630, 1.671)	1.564 (1.521, 1.607)	<0.001
Further adjusted for change of weight	1.692 (1.649, 1.734)	1.646 (1.625, 1.668)	1.558 (1.514, 1.602)	<0.001

*: ANCOVA model adjusted for age, sex, energy intake, physical activity, household income, smoking, tea drinking, and alcohol drinking.