

**Supplementary Table SI.** Sensitivity analyses to assess the effects of individual OBS components on the MASLD

OBS	MASLD		MASLD-related fibrosis	
	OBS original model 3	OR (95% CI)	P-value	OR (95% CI)
OBS excluding dietary fiber	0.48 (0.34 to 0.67)	< 0.0001	0.62 (0.40 to 0.59)	0.03
OBS excluding carotene	0.40 (0.30 to 0.55)	< 0.0001	0.64 (0.42 to 0.98)	0.04
OBS excluding riboflavin	0.42 (0.31 to 0.57)	< 0.0001	0.61 (0.42 to 0.88)	0.01
OBS excluding niacin	0.38 (0.28 to 0.53)	< 0.0001	0.64 (0.40 to 0.99)	0.049
OBS excluding vitamin B6	0.36 (0.26 to 0.51)	< 0.0001	0.56 (0.34 to 0.92)	0.02
OBS excluding total folate	0.50 (0.36 to 0.69)	< 0.0001	0.60 (0.39 to 0.93)	0.02
OBS excluding vitamin B12	0.38 (0.28 to 0.50)	< 0.0001	0.53 (0.35 to 0.81)	0.003
OBS excluding vitamin C	0.42 (0.30 to 0.57)	< 0.0001	0.71 (0.46 to 1.10)	0.12
OBS excluding vitamin E	0.41 (0.31 to 0.54)	< 0.0001	0.60 (0.41 to 0.88)	0.01
OBS excluding calcium	0.34 (0.26 to 0.45)	< 0.0001	0.51 (0.35 to 0.75)	< 0.001
OBS excluding magnesium	0.44 (0.33 to 0.60)	< 0.0001	0.69 (0.43 to 1.10)	0.12
OBS excluding zinc	0.37 (0.27 to 0.51)	< 0.0001	0.60 (0.41 to 0.88)	0.01
OBS excluding copper	0.44 (0.33 to 0.58)	< 0.0001	0.73 (0.48 to 1.10)	0.13
OBS excluding selenium	0.35 (0.26 to 0.46)	< 0.0001	0.55 (0.37 to 0.82)	0.004
OBS excluding total fat	0.36 (0.26 to 0.51)	< 0.0001	0.52 (0.34 to 0.82)	0.005
OBS excluding iron	0.42 (0.30 to 0.59)	< 0.0001	0.59 (0.35 to 0.99)	0.04
OBS excluding physical activity	0.28 (0.20 to 0.41)	< 0.0001	0.68 (0.40 to 1.13)	0.14
OBS excluding alcohol	0.37 (0.27 to 0.50)	< 0.0001	0.61 (0.41 to 0.91)	0.01
OBS excluding body mass index	0.64 (0.46 to 0.91)	0.01	1.07 (0.71 to 1.63)	0.74
OBS excluding cotinine	0.35 (0.26 to 0.48)	< 0.0001	0.57 (0.37 to 0.86)	0.01

**Supplementary Table SII A.** Subgroup analysis of associations between lifestyle OBS and odds of MASLD and MASLD related fibrosis

Subgroup	MASLD		<i>p</i> for interaction	MASLD related fibrosis		
	OR (95% CI)	P-value		OR (95% CI)	P-value	<i>p</i> for interaction
Sex			0.30			0.46
Male	0.65 (0.60, 0.70)	< 0.0001		0.75 (0.65, 0.86)	< 0.0001	
Female	0.72 (0.65, 0.80)	< 0.0001		0.82 (0.71, 0.93)	0.003	
Age			0.36			< 0.0001
< 60yr	0.71 (0.65, 0.78)	< 0.0001		0.72 (0.58, 0.90)	0.004	
≥ 60 yr	0.64 (0.58, 0.70)	< 0.0001		0.83 (0.75, 0.91)	< 0.0001	
Marital			0.08			0.50
Having a partner	0.67 (0.61, 0.75)	< 0.0001		0.79 (0.69, 0.90)	< 0.001	
No partner	0.73 (0.66, 0.81)	< 0.0001		0.79 (0.68, 0.91)	0.001	
Unmarried	0.61 (0.52, 0.72)	< 0.0001		0.77 (0.55, 1.06)	0.11	
PIR3			0.48			0.59
< 1.3	0.71 (0.62, 0.80)	< 0.0001		0.75 (0.65, 0.88)	0.01	
1.3-3.5	0.65 (0.60, 0.70)	< 0.0001		0.76 (0.64, 0.90)	< 0.001	
> 3.5	0.69 (0.62, 0.77)	< 0.0001		0.81 (0.69, 0.94)	0.002	
Edu			0.98			0.33
Less than high school	0.72 (0.63, 0.83)	< 0.0001		0.79 (0.68, 0.93)	0.004	
High school	0.67 (0.59, 0.75)	< 0.0001		0.70 (0.57, 0.84)	< 0.001	
More than high school	0.67 (0.61, 0.72)	0.01		0.82 (0.72, 0.94)	0.004	
Race			0.19			0.35
Mexican American	0.62 (0.53, 0.71)	< 0.0001		0.68 (0.57, 0.82)	< 0.0001	
Other Hispanic	0.61 (0.52, 0.72)	< 0.0001		0.53 (0.41, 0.67)	< 0.0001	
Non-Hispanic Black	0.86 (0.76, 0.96)	0.04		0.77 (0.67, 0.90)	< 0.001	
Non-Hispanic White	0.68 (0.62, 0.74)	< 0.001		0.80 (0.71, 0.91)	< 0.001	
Other race - including multi-racial	0.59 (0.47, 0.75)	< 0.0001		0.61 (0.46, 0.81)	0.001	

**Supplementary Table SIIB.** Subgroup analysis of associations between dietary OBS and odds of MASLD and MASLD related fibrosis

Subgroup	MASLD			MASLD related fibrosis		<i>p</i> for interaction
	OR (95% CI)	<i>P</i> -value	<i>p</i> for interaction	OR (95% CI)	<i>P</i> -value	
Sex			0.32			0.84
Male	0.95 (0.93, 0.98)	< 0.001		0.98 (0.95, 1.02)	0.33	
Female	0.98 (0.96, 1.01)	0.13		0.97 (0.95, 1.00)	0.07	
Age			0.66			0.50
< 60 yr	0.97 (0.95, 0.99)	0.01		0.99 (0.94, 1.05)	0.82	
≥ 60 yr	0.97 (0.95, 0.99)	0.004		0.99 (0.97, 1.01)	0.37	
Marital			0.63			0.35
Having a partner	0.96 (0.94, 0.98)	< 0.001		0.97 (0.94, 1.00)	0.03	
No partner	0.97 (0.94, 1.00)	0.05		0.99 (0.96, 1.02)	0.44	
Unmarried	0.97 (0.93, 1.02)	0.26		1.02 (0.93, 1.12)	0.66	
PIR3			0.86			0.88
< 1.3	0.99 (0.96, 1.01)	0.34		1.00 (0.96, 1.04)	0.84	
1.3–3.5	0.98 (0.95, 1.00)	0.06		0.97 (0.94, 1.00)	0.08	
> 3.5	0.96 (0.93, 0.98)	0.002		0.97 (0.93, 1.01)	0.14	
Edu			0.96			0.69
Less than high school	1.00 (0.97, 1.04)	0.83		0.98 (0.93, 1.02)	0.3	
High school	0.97 (0.94, 1.01)	0.12		0.96 (0.92, 1.01)	0.09	
More than high school	0.96 (0.94, 0.98)	< 0.0001		0.98 (0.95, 1.02)	0.3	
Race			0.61			0.60
Mexican American	0.99 (0.95, 1.03)	0.55		0.99 (0.93, 1.05)	0.72	
Other Hispanic	0.91 (0.87, 0.96)	< 0.001		0.93 (0.85, 1.01)	0.07	
Non-Hispanic Black	0.95 (0.92, 0.99)	0.01		0.96 (0.93, 1.01)	0.09	
Non-Hispanic White	0.97 (0.95, 0.99)	0.002		0.98 (0.95, 1.01)	0.22	
Other race - including multi-racial	0.97 (0.92, 1.04)	0.40		0.84 (0.77, 0.92)	< 0.001	

**Supplementary Table SIIB.** The formulas for calculating USFLI and FIB-4

$$\text{USFLI} = \frac{e^{-0.8073 \times \text{non-Hispanic black} + 0.3458 \times \text{Mexican American} + 0.0093 \times \text{age} + 0.6151 \times \log_e(\text{GGT}) + 0.0249 \times \text{waist} + 1.1792 \times \log_e(\text{insulin}) + 0.8242 \times \log_e(\text{glucose}) - 14.7812}}{(1 + e^{-0.8073 \times \text{non-Hispanic black} + 0.3458 \times \text{Mexican American} + 0.0093 \times \text{age} + 0.6151 \times \log_e(\text{GGT}) + 0.0249 \times \text{waist} + 1.1792 \times \log_e(\text{insulin}) + 0.8242 \times \log_e(\text{glucose}) - 14.7812})} \times 100$$

$$\text{NFS} = -1.675 + 0.037 \times \text{age} + 0.094 \times \text{BMI} + 1.13 \times \text{impaired fasting}$$

$$\text{glycemia or diabetes (yes = 1, no = 0)} + 0.99 \times \text{AST/alanine}$$

$$\text{aminotransferase (ALT)} - 0.013 \times \text{platelet} - 0.66 \times \text{albumin}$$

$$\text{FIB-4} = \text{Age} \times \text{AST} / (\text{platelet} \times \text{ALT}^{1/2})$$