

**Supplemental Table 1.** Baseline characteristics of participants according to the categories of onion consumption in the TCLSIH Cohort Study (n=7,739) and UK Biobank (n=169,806) <sup>a</sup>.

Characteristics	Category of onion consumption (g/(1000 kcal · d))				<i>P</i> values <sup>b</sup>
	Level 1	Level 2	Level 3	Level 4	
<b>The TCLSIH</b>	□	□	□	□	□
Medians	0.00	1.19	2.16	4.91	-
No. of subjects	1,143	2,194	2,201	2,201	-
Men (%)	50.7	56.2	60.8	59.4	-
Age (years)	38.3 (38.1, 38.5) <sup>c</sup>	38.1 (38.0, 38.3)	38.3 (38.2, 38.5)	38.3 (38.2, 38.5)	0.47
Married (%)	80.5	85.8	84.5	84.4	0.12
Education level (college or higher, %)	75.7	82.5	82.4	80.2	0.13
Occupation (%)					
Managers	47.6	53.2	52.2	52.0	0.13
Professionals	17.7	17.0	20.6	18.9	0.25
Other	34.7	29.8	27.2	29.1	0.01
Household income (≥10,000 Yuan, %)	41.7	47.7	47.6	46.4	0.08
BMI (kg/m <sup>2</sup> )	23.8 (23.6, 24.0)	23.9 (23.7, 24.0)	24.0 (23.8, 24.1)	24.1 (24.0, 24.2)	0.04
WC (cm)	80.2 (79.7, 80.7)	80.7 (79.9, 80.6)	80.4 (80.0, 80.7)	80.6 (80.2, 80.9)	0.56
TC (mmol/L)	4.64 (4.59, 4.69)	4.61 (4.61, 4.61)	4.61 (4.57, 4.64)	4.64 (4.60, 4.67)	0.49
TG (mmol/L)	1.11 (1.08, 1.15)	1.09 (1.07, 1.12)	1.08 (1.06, 1.11)	1.12 (1.09, 1.14)	0.18
LDL-C (mmol/L)	2.64 (2.59, 2.59)	2.61 (2.58, 2.64)	2.63 (2.59, 2.66)	2.64 (2.6, 2.67)	0.62
HDL-C (mmol/L)	1.35 (1.33, 1.37)	1.36 (1.35, 1.38)	1.35 (1.33, 1.36)	1.35 (1.35, 1.37)	0.44
FBG (mmol/L)	5.02 (4.98, 5.05)	5.05 (5.01, 5.06)	5.03 (5.00, 5.06)	5.07 (5.04, 5.09)	0.11
SBP (mmHg)	119.0 (118.2, 119.8)	118.2 (117.6, 118.8)	119.2 (118.6, 119.8)	119.4 (118.9, 120.0)	0.02

DBP (mmHg)	75.0 (74.5, 75.6)	74.7 (74.3, 75.1)	75.3 (74.9, 75.7)	75.5 (75.1, 75.9)	0.04
Total energy intake (kcal/day)	2024.5 (1982.8, 2067.0)	2572.9 (2534.4, 2611.9)	2132.2 (2100.3, 2164.7)	2252.0 (2218.3, 2286.2)	< 0.0001
PA (MET × hour/week)	9.96 (9.27, 10.7)	10.7 (10.2, 11.3)	10.2 (9.65, 10.7)	11.4 (10.9, 12.1)	0.003
Healthy diet scores	0.57 (0.41, 0.80)	0.57 (0.45, 0.73)	0.70 (0.55, 0.89)	1.36 (1.06, 1.73)	< 0.0001
Baseline SDS scores	33.8 (33.5, 34.2)	33.7 (33.4, 34.0)	33.7 (33.5, 34.0)	33.6 (33.3, 33.8)	0.52
Smoking status (%)					
Current smoker	17.4	17.2	18.7	18.5	0.68
Ex-smoker	4.73	5.49	5.74	5.51	0.65
Non-smoker	77.9	77.3	75.6	76.0	0.89
Drinking status (%)					
Everyday	2.70	3.45	2.94	3.16	0.98
Sometime	51.9	61.4	64.9	62.8	< 0.0001
Ex-drinker	9.98	9.38	8.11	8.78	0.16
Non-drinker	35.3	25.8	24.0	25.3	0.001
Living alone (%)	9.45	5.56	7.00	7.95	0.75
Visiting friends (%)	54.3	54.7	53.8	57.6	0.01
Individual history of disease (%)					
Hypertension	20.7	20.3	21.4	23.1	0.07
Hyperlipidemia	45.2	42.2	45.0	46.3	0.28
Diabetes	4.29	4.33	4.27	5.82	0.02
Family history of disease (%)					
CVD	32.1	32.7	34.2	33.8	0.11
Hypertension	51.5	55.7	55.0	54.4	0.27
Hyperlipidemia	0.61	0.41	0.45	0.41	0.57

Diabetes	29.2	27.6	28.7	29.9	0.22
<b>The UK Biobank</b>					
Medians	0.00	3.66	8.83	21.4	-
No. of subjects	112,649	19,036	19,051	19,070	-
Men (%)	47.8	44.7	39.9	35.4	-
Age (years)	55.0 (55.0, 55.1)	55.1 (55.1, 55.2)	55.1 (55.1, 55.1)	55.2 (55.2, 55.2)	< 0.0001
Ethnic background (%)					
White	91.4	90.7	90.6	90.5	< 0.0001
Mixed	3.16	2.86	3.03	3.50	0.07
Asian	4.02	4.82	4.56	4.27	0.01
Black	0.44	0.56	0.57	0.62	0.0001
Chinese	0.31	0.34	0.27	0.28	0.23
Others	0.68	0.76	0.95	0.83	0.0003
Townsend deprivation index	-1.63 (-1.64, -1.61)	-1.68 (-1.72, -1.64)	-1.64 (-1.68, -1.60)	-1.57 (-1.61, -1.53)	0.001
Education level (college or higher, %)	14.4	16.8	15.6	14.1	0.0007
BMI (kg/m <sup>2</sup> )	26.5 (26.5, 26.5)	26.1 (26.0, 26.2)	26.4 (26.3, 26.4)	26.8 (26.7, 26.9)	< 0.0001
Total energy intake (kcal/day)	2014.9 (2012.1, 2017.7)	2173.0 (2165.7, 2180.4)	2086.1 (2079.1, 2093.2)	1985.0 (1978.2, 1991.7)	< 0.0001
PA (MET × hour/week)	19.3 (19.0, 19.6)	21.0 (20.2, 21.8)	22.7 (21.8, 23.6)	22.7 (21.8, 23.6)	< 0.0001
Healthy diet scores	3.10 (3.07, 3.14)	3.52 (3.44, 3.61)	3.54 (3.46, 3.63)	3.53 (3.45, 3.62)	< 0.0001
Smoking status (%)					

Current smoker	7.76	6.67	6.71	7.71	0.88
Ex-smoker	33.7	35	35.5	37.0	< 0.0001
Non-smoker	58.5	58.3	57.8	55.3	< 0.0001
Drinking status (%)					
Current drinker	94.0	95.5	94.7	94.1	< 0.0001
Ex-drinker	2.76	2.14	2.42	2.83	0.06
Non-drinker	3.27	2.37	2.89	3.04	< 0.0001
Living alone	17.1	15.4	15.2	16.5	< 0.0001
Visiting friends (%)	75.4	75.0	76.4	77.8	0.0003
Individual history of disease (%)					
Hypertension	21.5	20.8	21.5	22.8	< 0.0001
Diabetes	2.91	2.4	2.81	3.21	0.007
Family history of disease (%)					
CVD	54.8	56	56.6	56.5	0.0002
Hypertension	48.6	49.7	49.6	51.4	< 0.0001
Diabetes	20.8	20.5	21.0	21.7	0.03

<sup>a</sup> Abbreviations: TCLSIH, Tianjin Chronic Low-grade Systemic Inflammation and Health; BMI, body mass index; WC, waist circumference; TC, total cholesterol; TG, triglycerides; LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; FBG fasting blood glucose; SBP, systolic blood pressure; DBP, diastolic blood pressure; PA, physical activity; SDS, Self-Rating Depression Scale; MET, metabolic equivalent; CVD, cardiovascular disease.

<sup>b</sup> Continuous variables are expressed as geometric means (95% confidence intervals) and categorical variables are expressed as percentages.

<sup>c</sup> Analysis of covariance analysis or Chi-square tests adjusted for age and sex where appropriate.

**Supplemental Table 2.** The association between onion consumption and risk of depressive symptoms in the TCLSIH Cohort Study (n=8,073) and UK Biobank (n=193,516) when including participants with cancer and CVD <sup>a</sup>.

□	Categories of onion consumption				<i>P</i> for trend <sup>b</sup>
	Level 1	Level 2	Level 3	Level 4	
<b>The TCLSIH</b>	□	□	□	□	□
Participants, n	1,208	2,274	2,295	2,296	-
Cases, n	219	329	292	317	-
Person-years	2,239	4,466	4,428	4,501	-
Model 1 <sup>c</sup>	1.00 (reference)	0.75 (0.64, 0.90) <sup>f</sup>	0.68 (0.57, 0.80)	0.72 (0.61, 0.86)	0.0006
Model 2 <sup>d</sup>	1.00 (reference)	0.76 (0.64, 0.90)	0.68 (0.57, 0.81)	0.72 (0.61, 0.86)	0.0006
Model 3 <sup>e</sup>	1.00 (reference)	0.77 (0.64, 0.91)	0.72 (0.60, 0.86)	0.75 (0.63, 0.90)	0.005
<b>The UK Biobank</b>					
Participants, n	128,425	21,647	21,712	21,732	-
Cases, n	1,628	212	233	295	-
Person-years	935,721	160,463	160,497	157,494	-
Model 1 <sup>c</sup>	1.00 (reference)	0.77 (0.66, 0.88)	0.84 (0.73, 0.97)	1.07 (0.95, 1.22)	0.54
Model 2 <sup>d</sup>	1.00 (reference)	0.78 (0.68, 0.90)	0.82 (0.72, 0.94)	1.00 (0.89, 1.14)	0.12
Model 3 <sup>e</sup>	1.00 (reference)	0.80 (0.70, 0.93)	0.84 (0.73, 0.96)	1.00 (0.88, 1.13)	0.15

<sup>a</sup> Abbreviations: TCLSIH, Tianjin Chronic Low-grade Systemic Inflammation and Health; BMI, body mass index; SDS, Self-Rating Depression Scale.

<sup>b</sup> Based on categories of onion consumption as a continuous variable.

<sup>c</sup> Model 1 was a crude model.

<sup>d</sup> Model 2 was further adjusted for age, sex, and BMI.

<sup>e</sup> Model 3 was further adjusted for smoking status, drinking status, education level, ethnic background (only in the UK Biobank), occupation (only in the TCLSIH cohort), household income (only in the TCLSIH cohort), Townsend deprivation index (only in the UK Biobank), total energy intake, physical activity, individual history of disease

(including hypertension, hyperlipidemia [only in the TCLSIH cohort], and diabetes), friends visiting, living alone, marital status (only in the TCLSIH cohort), family history of disease (including cardiovascular disease, hypertension, hyperlipidemia [only in the TCLSIH cohort], and diabetes), baseline SDS score (only in the TCLSIH cohort), and healthy diet scores.

<sup>f</sup>Hazard ratios (95% confidence intervals) (all such values).

**Supplemental Table 3.** The association between onion consumption and risk of depressive symptoms in the TCLSIH Cohort Study (n=6,842) and UK Biobank (n=163,803) when excluding participants who reported dietary changes during follow-up <sup>a</sup>.

□	Categories of onion consumption				<i>P</i> for trend <sup>b</sup>
	Level 1	Level 2	Level 3	Level 4	
<b>The TCLSIH cohort</b>	□	□	□	□	□
Participants, n	1,019	1,963	1,944	1,916	-
Cases, n	176	265	239	265	-
Person-years	1,900	3,844	3,758	3,777	-
Model 1 <sup>c</sup>	1.00 (reference)	0.74 (0.62, 0.90) <sup>f</sup>	0.69 (0.57, 0.84)	0.76 (0.63, 0.92)	0.02
Model 2 <sup>d</sup>	1.00 (reference)	0.75 (0.62, 0.90)	0.69 (0.57, 0.84)	0.76 (0.63, 0.92)	0.02
Model 3 <sup>e</sup>	1.00 (reference)	0.76 (0.62, 0.92)	0.71 (0.58, 0.86)	0.78 (0.63, 0.95)	0.04
<b>The UK Biobank</b>					
Participants, n	108,548	18,416	18,411	18,428	-
Cases, n	1,267	164	180	221	-
Person-years	793,233	136,506	136,349	134,007	-
Model 1 <sup>c</sup>	1.00 (reference)	0.76 (0.64, 0.89)	0.83 (0.71, 0.97)	1.03 (0.89, 1.19)	0.27
Model 2 <sup>d</sup>	1.00 (reference)	0.77 (0.65, 0.91)	0.81 (0.69, 0.95)	0.96 (0.83, 1.10)	0.04
Model 3 <sup>e</sup>	1.00 (reference)	0.79 (0.67, 0.93)	0.82 (0.70, 0.96)	0.96 (0.83, 1.10)	0.06

<sup>a</sup> Abbreviations: TCLSIH, Tianjin Chronic Low-grade Systemic Inflammation and Health; BMI, body mass index; SDS, Self-Rating Depression Scale.

<sup>b</sup> Based on categories of onion consumption as a continuous variable.

<sup>c</sup> Model 1 was a crude model.

<sup>d</sup> Model 2 was further adjusted for age, sex, and BMI.

<sup>e</sup> Model 3 was further adjusted for smoking status, drinking status, education level, ethnic background (only in the UK Biobank), occupation (only in the TCLSIH cohort), household income (only in the TCLSIH cohort), Townsend deprivation index (only in the UK Biobank), total energy intake, physical activity, individual history of disease (including hypertension, hyperlipidemia



[only in the TCLSIH cohort], and diabetes), friends visiting, living alone, marital status (only in the TCLSIH cohort), family history of disease (including cardiovascular disease, hypertension, hyperlipidemia [only in the TCLSIH cohort], and diabetes), baseline SDS score (only in the TCLSIH cohort), and healthy diet scores.

<sup>f</sup>Hazard ratios (95% confidence intervals) (all such values).

**Supplemental Table 4.** The association between onion consumption and risk of depressive symptoms in the TCLSIH Cohort Study when excluding participants younger than 40 or older than 70 years (n=3,189) <sup>a</sup>.

□	Categories of onion consumption				<i>P</i> for trend <sup>b</sup>
	Level 1	Level 2	Level 3	Level 4	
Participants, n	476	927	882	904	-
Cases, n	92	138	108	129	-
Person-years	850	1,792	1,653	1,729	-
Model 1 <sup>c</sup>	1.00 (reference)	0.71 (0.55, 0.93) <sup>f</sup>	0.61 (0.46, 0.80)	0.69 (0.53, 0.90)	0.01
Model 2 <sup>d</sup>	1.00 (reference)	0.73 (0.56, 0.95)	0.62 (0.47, 0.81)	0.69 (0.53, 0.91)	0.01
Model 3 <sup>e</sup>	1.00 (reference)	0.75 (0.57, 0.99)	0.65 (0.49, 0.87)	0.73 (0.55, 0.98)	0.04

<sup>a</sup> Abbreviations: TCLSIH, Tianjin Chronic Low-grade Systemic Inflammation and Health; BMI, body mass index; SDS, Self-Rating Depression Scale.

<sup>b</sup> Based on categories of onion consumption as a continuous variable.

<sup>c</sup> Model 1 was a crude model.

<sup>d</sup> Model 2 was further adjusted for age, sex, and BMI.

<sup>e</sup> Model 3 was further adjusted for smoking status, drinking status, education level, occupation, household income, total energy intake, physical activity, individual history of disease (including hypertension, hyperlipidemia, and diabetes), friends visiting, living alone, marital status, family history of disease (including cardiovascular disease, hypertension, hyperlipidemia, and diabetes), baseline SDS score, and healthy diet scores.

<sup>f</sup> Hazard ratios (95% confidence intervals) (all such values).