

**Quality Diet Indexes and Risk of Hepatocellular Carcinoma:
Findings from the Singapore Chinese Health Study**

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Supplementary Table 1: Dietary components and scoring standards of AHEI-2010, aMED, DASH and HDI scores in the Singapore Chinese Health Study¹

Index component	Diet quality indices, scoring standards			
	AHEI-2010	aMED	DASH	HDI
Index component	9 components; 10 points each; 90 total points	8 components; 1 point each;	8 components; 5 points each; 40 points	7 components; 10 points each; 70 total points
Vegetables ²	≥5 <i>servings/d</i>	≥ Median intake	Highest quintile	Fruit and vegetables: >400 g/d
Fruit ³	≥4 <i>servings/d</i>	≥ Median intake	Highest quintile	-
Whole grains	Men: 90 g/d, Women: 75 g/d	≥ Median intake	Highest quintile	-
Nuts ⁴	N/A	≥ Median intake	Nuts and legumes:	-
Legumes ⁴	Nuts and legumes: ≥1 <i>servings/d</i>	≥ Median intake	highest quintile	-
Dairy	-	-	Highest quintile	-
Fish	-	≥ Median intake	-	-
Alcohol ⁵	Not included	-	-	-
Dietary fiber	-	-	-	>25 g/d
Oils/fats	Long chain n-3 PUFAs: 250 mg/d	> Median	-	SFAs, ^{7,8} % of energy: <10%
Long-chain n-3 FA (mean±SD)	PUFAs, % of energy: ≥10%	(MUFA: SFA ratio) 0.50±0.50	-	PUFAs, ⁷ % of energy: 6-10%
MUFA (mean±SD)	-	-	-	-
PUFA (mean±SD)	5.05±1.83	-	7.62±2.15	-
SFA (mean±SD)	-	-	-	8.85±2.24
Trans fat (mean±SD)	Not included	-	-	-
Protein, ⁷ % of energy	-	-	-	10-15%
Mono-and disaccharides, ^{7,8} % of energy	-	-	-	<10%
Cholesterol ⁸	-	-	-	<300 mg/d
Red meat (fresh/preserved) ⁸	0 <i>servings/d</i>	< Median intake	Lowest quintile	-
SSBs and fruit juice ⁸	0 <i>servings/d</i>	-	Lowest quintile	-
Sodium ⁸	Lowest decile	-	Lowest quintile	-

¹ AHEI-2010, Alternative Healthy Eating Index-2010; aMED, alternate Mediterranean diet; DASH, Dietary Approaches to Stop Hypertension; HDI, Healthy Diet Indicator; MUFA, monounsaturated fatty acid; PUFA, polyunsaturated fatty acid; SFA, saturated fatty acid; SSB, sugar sweetened beverages.

² Excluded potatoes and preserved vegetables; One serving of vegetable is 67 g (0.5 cup of typical local vegetables).

³ Excluded preserved fruits; One serving is 1 medium piece of fruit.

⁴ One serving = 28 g of nuts or 1 tablespoon (16 g) of peanut butter or 1 medium size tofu item. In the AHEI-2010 score modified for East Asian populations, we used nuts only instead of the combination of legumes and nuts.

⁵ One serving of alcohol = 10 g. In the AHEI-2010 score modified for East Asian populations, we defined optimal intake of alcohol as less than 1 serving per day for both men and women (i.e., 10 points) and fewer points for higher intakes (minimum score 0 was given to heavy intake i.e., ≥ 3.5 servings/d for men and ≥ 2.5 servings/d for women).

⁶ Due to lack of information on *trans* Fat intake in SCHS cohort, it was not included as a component of the AHEI-2010 score. Hence, the total AHEI-2010 score ranged from 0 to 100 in our study.

⁷ Excluded energy provided by alcohol.

⁸ Components were reverse-scored; Higher scores were assigned for lower intakes. For aHEI-2010: One serving = 1 glass, packet, or typical local portion of sugar-sweetened beverage or fruit juice

Supplementary Table 2. Association Between the Diet Quality Indexes and Risk of Hepatocellular Carcinoma in the Singapore Chinese Health Study, Stratified Analysis by BMI and History of Diabetes

DQI	BMI<25 kg/m ² ^a		BMI≥25 kg/m ² ^a		No History of Diabetes ^b		Diabetes History ^b	
	Cases	HR (95% CI) ^a	Cases	HR (95% CI) ^a	Cases	HR (95% CI) ^a	Cases	HR (95% CI) ^a
AHEI-2010								
Quartile 1 (17.0-42.1) (lowest)	116	1.00	52	1.00	144	1.00	24	1.00
Quartile 2 (42.1-46.7)	100	0.94 (0.71-1.22)	44	0.86 (0.57-1.28)	122	0.93 (0.73-1.18)	22	0.82 (0.46-1.47)
Quartile 3 (46.7-51.5)	101	1.02 (0.78-1.34)	48	0.91 (0.61-1.35)	128	1.04 (0.82-1.33)	21	0.72 (0.40-1.29)
Quartile 4 (51.5-75.9) (highest)	64	0.69 (0.50-0.95)	36	0.65 (0.42-1.01)	82	0.71 (0.53-0.94)	18	0.59 (0.31-1.11)
<i>P</i> _{trend}		0.07		0.09		0.07		0.09
<i>P</i> _{interaction}		0.97				0.31		
Continuous scale (per SD increase)		0.91 (0.81-1.00)		0.87 (0.75-1.01)		0.92 (0.84-1.01)		0.81 (0.65-1.01)
aMED								
Quartile 1 (0-2.0) (lowest)	106	1.00	38	1.00	126	1.00	18	1.00
Quartile 2 (3.0)	76	0.82 (0.61-1.10)	33	0.92 (0.58-1.48)	94	0.85 (0.65-1.12)	15	0.83 (0.42-1.65)
Quartile 3 (4.0-5.0)	162	0.93 (0.72-1.21)	64	0.80 (0.53-1.21)	186	0.88 (0.69-1.11)	40	1.10 (0.62-1.96)
Quartile 4 (6.0-8.0) (highest)	37	0.46 (0.31-0.69)	45	1.21 (0.75-1.94)	70	0.71 (0.52-0.98)	12	0.67 (0.31-1.48)
<i>P</i> _{trend}		0.007		0.71		0.07		0.06
<i>P</i> _{interaction}		0.07				0.06		
Continuous scale (per SD increase)		0.85 (0.76-0.96)		0.99 (0.84-1.16)		0.90 (0.81-0.99)		0.94 (0.74-1.20)
DASH								
Quartile 1 (8.0-21.0) (lowest)	140	1.00	52	1.00	170	1.00	22	1.00
Quartile 2 (22.0-23.0)	77	0.91 (0.69-1.21)	31	0.88 (0.56-1.38)	85	0.85 (0.65-1.10)	23	1.33 (0.74-2.40)
Quartile 3 (24.0-27.0)	108	0.75 (0.58-0.97)	69	1.12 (0.77-1.62)	146	0.85 (0.67-1.06)	31	0.99 (0.56-1.72)
Quartile 4 (28.0-39.0) (highest)	56	0.64 (0.46-0.88)	28	0.74 (0.46-1.19)	75	0.73 (0.55-0.97)	9	0.40 (0.18-0.88)
<i>P</i> _{trend}		0.002		0.54		0.03		0.03
<i>P</i> _{interaction}		0.10				0.15		
Continuous scale (per SD increase)		0.83 (0.75-0.93)		0.94 (0.80-1.09)		0.89 (0.81-0.98)		0.75 (0.59-0.94)
HDI								
Quartile 1 (14.2-45.2) (lowest)	96	1.00	54	1.00	137	1.00	13	1.00
Quartile 2 (45.2-50.2)	116	1.23 (0.94-1.62)	43	0.76 (0.51-1.14)	133	0.98 (0.77-1.24)	26	1.90 (0.97-3.71)
Quartile 3 (50.2-55.1)	84	0.86 (0.64-1.16)	37	0.67 (0.44-1.02)	97	0.69 (0.53-0.90)	24	1.80 (0.91-3.56)
Quartile 4 (55.1-70.0) (highest)	85	0.91 (0.67-1.24)	46	0.74 (0.49-1.10)	109	0.75 (0.58-0.98)	22	1.92 (0.94-3.90)
<i>P</i> _{trend}		0.18		0.11		0.005		0.11

<i>P_{interaction}</i>		0.76		0.03	
Continuous scale (per SD increase)		0.94 (0.85-1.05)	0.87 (0.75-1.01)	0.89 (0.82-0.98)	1.09 (0.87-1.37)

Abbreviations: AHEI-2010, Alternative Healthy Eating Index-2010; aMED, alternate Mediterranean diet; DASH, Dietary Approaches to Stop Hypertension; DQI, Diet Quality Index; HDI, Healthy Diet Indicator

^aModels adjusted for age, sex, dialect, year of enrollment, education level, smoking status, coffee drinking status, alcohol drinking status, total energy intake, diabetes.

^aModels adjusted for age, sex, dialect, year of enrollment, education level, smoking status, coffee drinking status, alcohol drinking status, total energy intake, BMI,

Supplementary Table 3. Associations Between the Diet Quality Indices and Risk of Hepatocellular Carcinoma in the Singapore Chinese Health Study, After Excluding Incident Cases and Person-Years Observed in the First Two Years Post-Enrollment

Dietary Quality Index (DQI)	Person-year	Cases	HR (95% CI) ^a
AHEI-2010			
Quartile 1 (17.0-42.1) (lowest)	231,448	156	1.00
Quartile 2 (42.1-46.7)	239,055	127	0.85 (0.67-1.07)
Quartile 3 (46.7-51.5)	242,295	141	0.99 (0.78-1.24)
Quartile 4 (51.5-75.9) (highest)	248,992	96	0.70 (0.54-0.91)
<i>P_{trend}</i>			0.04
Continuous scale (per SD increase)			0.89 (0.82-0.98)
aMED			
Quartile 1 (0-2.0) (lowest)	192,334	132	1.00
Quartile 2 (3.0)	185,134	103	0.87 (0.67-1.12)
Quartile 3 (4.0-5.0)	387,452	209	0.88 (0.70-1.10)
Quartile 4 (6.0-8.0) (highest)	196,869	76	0.68 (0.50-0.92)
<i>P_{trend}</i>			0.03
Continuous scale (per SD increase)			0.89 (0.81-0.98)
DASH			
Quartile 1 (8.0-21.0) (lowest)	262,257	173	1.00
Quartile 2 (22.0-23.0)	170,898	100	0.90 (0.70-1.15)
Quartile 3 (24.0-27.0)	316,266	161	0.84 (0.67-1.04)
Quartile 4 (28.0-39.0) (highest)	212,369	81	0.69 (0.53-0.91)
<i>P_{trend}</i>			0.008
Continuous scale (per SD increase)			0.87 (0.80-0.96)
HDI			
Quartile 1 (14.2-45.2) (lowest)	233,575	142	1.00
Quartile 2 (45.2-50.2)	239,874	148	1.03 (0.81-1.29)
Quartile 3 (50.2-55.1)	241,773	113	0.77 (0.60-0.98)
Quartile 4 (55.1-70.0) (highest)	246,567	117	0.78 (0.61-1.01)
<i>P_{trend}</i>			0.01
Continuous scale (per SD increase)			0.90 (0.82-0.98)

Abbreviations: AHEI-2010, Alternative Healthy Eating Index-2010; aMED, alternate Mediterranean diet; DASH, Dietary Approaches to Stop Hypertension; DQI, Diet Quality Index; HDI, Healthy Diet Indicator
^aModels adjusted for age, sex, dialect, year of enrollment, education level, smoking status, coffee drinking status, alcohol drinking status, total energy intake, BMI, diabetes status.