

**Supplemental Table 1.** Part of the food frequency questionnaire of the Golestan Cohort Study that ask about consumption of meat

Question. Over the last 12 months, how often did you eat the following foods?

Type of food		Typical portion size	How often				How much	notes
			daily	weekly	monthly	yearly		
Chopped red meat (beef or lamb)		1 stew piece (30 grams)						
Ground red meat (beef or lamb)								
Hamberger								
Heart, liver, kidney		1 skewer contains 3 pieces						
Chicken liver, gizzard, and heart		43, 17, and 7 grams						
sausage		1 slice						
Deli meat		1 slice						
Chicken with skin	thigh	1 piece (small, medium, large)						
	breast	1 piece (small, medium, large)						
	wing	1 piece (small, medium, large)						
	neck	1 piece (small, medium, large)						
	Whole chicken	1 piece (small, medium, large)						
Chicken without skin	thigh	1 piece (small, medium, large)						
	breast	1 piece (small, medium, large)						
	wing	1 piece (small, medium, large)						
	neck	1 piece (small, medium, large)						

	Whole chicken	1 piece (small, medium, large)						
Tuna fish		1 can=200 grams						
Stellate fish		1 piece 12*10*5 cm= 150 grams						
Sturgeon fish		1 piece 12*10*5 cm= 150 grams						
Carp fish		1 piece 12*10*5 cm= 150 grams						
Smoked fish		1 piece 1*18*3 cm= 31 grams						
Salty fish		1 piece 1*18*3 cm= 31 grams						
Others								

**Supplemental Table 2.** Categorizations of food items in the food frequency questionnaire of the Golestan Cohort Study

Total red meat	Unprocessed meat		Chopped red meat (beef or lamb)
			Ground red meat (beef or lamb)
			Hamberger
	Organ meat		Heart, liver, kidney
			Chicken liver, gizzard, and heart
	Processed meat		sausage
			Deli meat
Total white meat	Chicken	With skin	thigh
			breast
			wing
			neck
			Whole chicken
		Without skin	thigh
			breast
			wing
			neck
			Whole chicken
	Fish		Tuna fish
			Stellate
			sturgeon
			Carp

**Supplemental Table 3.** Odds ratios (95% CIs) for Non Alcoholic Fatty Liver Disease (NAFLD) plus elevated ALT (defined as ALT>30 in men and ALT>20) in women by quartiles of meat consumption in the Golestan Cohort Study

	Quartiles of meat consumption				
	Q1	Q2	Q3	Q4	P trend
<b>Total Red meat</b>					
Case/participant, n	37/178	51/244	83/315	110/374	
Age and sex adjusted OR (95%CI)	1	1.09 (0.67-1.77)	1.44 (0.92-2.27)	<b>1.90 (1.22-2.95)</b>	<b>0.001</b>
Fully adjusted OR (95%CI) <sup>1</sup>	1	1.11 (0.66-1.88)	1.64 (1.00-2.70)	<b>1.93 (1.17-3.17)</b>	<b>0.003</b>
<b>Unprocessed red meat</b>					
Age and sex adjusted OR (95%CI)	1	1.41 (0.85-2.33)	1.31 (0.80-2.14)	<b>1.72 (1.09-2.73)</b>	<b>0.02</b>
Fully adjusted OR (95%CI) <sup>1</sup>	1	1.56 (0.90-2.68)	1.51 (0.88-2.60)	<b>1.86 (1.10-3.15)</b>	<b>0.04</b>
<b>Processed meat</b>					
Age and sex adjusted OR (95%CI)	1	1	0.91 (0.65-1.28)	1.18 (0.84-1.64)	0.24
Fully adjusted OR (95%CI) <sup>1</sup>	1	1	0.94 (0.65-1.35)	1.09 (0.76-1.57)	0.48
<b>Organ meat</b>					
Age and sex adjusted OR (95%CI)	1	1.07 (0.74-1.55)	1.05 (0.71-1.57)	<b>1.83 (1.22-2.72)</b>	<b>0.002</b>
Fully adjusted OR (95%CI) <sup>1</sup>	1	1.06 (0.71-1.57)	1.05 (0.68-1.60)	<b>1.73 (1.11-2.71)</b>	<b>0.007</b>
<b>Total white meat</b>					
Case/participant, n	64/278	68/281	68/260	81/292	
Age and sex adjusted OR (95%CI)	1	1.09 (0.73-1.62)	1.23 (0.82-1.83)	1.28 (0.87-1.88)	0.20
Fully adjusted OR (95%CI) <sup>1</sup>	1	1.01 (0.66-1.59)	1.07 (0.69-1.66)	1.05 (0.68-1.63)	0.29
<b>Chicken</b>					
Age and sex adjusted OR (95%CI)	1	1.11 (0.77-1.62)	1.44 (0.97-2.14)	1.09 (0.73-1.62)	0.57
Fully adjusted OR (95%CI) <sup>1</sup>	1	1.01 (0.68-1.51)	1.24 (0.80-1.92)	0.85 (0.54-1.32)	0.76
<b>Fish</b>					
Age and sex adjusted OR (95%CI)	1	0.79 (0.47-1.32)	<b>0.55 (0.33-0.91)</b>	0.82 (0.51-1.31)	0.60
Fully adjusted OR (95%CI) <sup>1</sup>	1	0.83 (0.48-1.45)	<b>0.54 (0.31-0.95)</b>	0.78 (0.45-1.34)	0.73

<sup>1</sup> Adjusted for age (years), sex (male, female), waist (<88, ≥88 for females and <102, ≥102 for males), formal education (yes, no), smoking status (never, former, current), opium use (never, ever), physical activity (tertile, MET), ethnicity (Turkman, non-Turkman), wealth score (tertile), alcohol drinker (ever, never), total energy intake (kcal/d); In red meat models we also adjusted for white meat consumption (and vice versa), and in each meat subtype model (e.g. organ meat) we adjusted for other subtypes (e.g. processed and unprocessed meat).

**Supplemental Table 4.** Consumption of food groups (grams/1000 kcal/day) based on quartiles of total red meat intake

	Red meat			
	Q1	Q2	Q3	Q4
Consumption of food groups (grams/1000 kcal/day)				
Fruits	68±52	95±70	97±59	110±63
Vegeatbles	77±50	82±51	80±42	91±47
Legumes and nuts	9±7	9±6	9±6	10±10
Refine Grains	204±56	193±48	182±46	178±43
Fiber	11±2	11±2	11±2	11±2
Fish	4±8	6±12	6±8	6±8