

Table S1 GI and GL values of food items in the FFQ

Food item	GI 1^a	GI 2^b	Serving(g)	GL 1^a/svg	GL 2^b/svg
Bread, white	95	95	30	15	15
Bread, brown	68	68	30	9	9
Traditional (markouk/tannour)	97	97	30	15	15
Breakfast cereals (regular, sugar coated, chocolate, bran)	66.6	66.6	30	16	16
Kaak	81	81	25	15	15
Rice, white, cooked	64	64	150	23	23
Pasta/noodles, plain, cooked	45.5	45.5	180	20	20
Wheat/bulgur, cooked	48	48	150	12	12
Whole grain rice/pasta/cereals	37	37	180	16	16
Milk, skim/low-fat (0-2%)	32	32	250	4	4
Milk, whole-fat	27	27	250	3	3
Yogurt, fat-free/low fat	27	27	200	7	7
Yogurt, whole-fat	36	36	200	3	3
Cheese, regular/yellow	x	27	250	x	3
Cheese, low fat, white	x	32	250	x	4
Labneh, regular	36	36	200	3	3
Labneh, low-fat	27	27	200	7	7
Citrus orange/ grapefruit	33.5	33.5	120	4	4
Peach, plum, prunes	40.5	40.5	120	5	5
Strawberries	40	40	120	1	1
Grapes	46	46	120	8	8
Banana, apples	45	45	120	9	9
Dried fruits	66	66	60	26	26
Fruit juice, fresh	45	45	250	13	13
Fruit juice canned/bottle	66	66	250	13	13
Fruits, canned	50.5	50.5	120	7	7
Salad green	x	32	138	x	0.5
Dark green or deep yellow	x	37	138	x	1.9
Tomatoes, fresh	x	38	123	x	1.2
Corn/green peas, fresh	51	51	80	6	6
Corn/green peas, canned	46	46	80	7	7
Potatoes, baked/boiled/mashed	50	50	150	14	14
Zucchini/eggplants cooked	28.3	44.3	65	1.9	2.5
Cauliflower, cabbage, broccoli	x	32	123	x	1
Other canned vegetables (mushroom, palmetto, asparagus)	x	32	123	x	3.3
Vegetable juice, fresh	40	40	250	7	7
Legumes: Lentils, beans, chickpeas dried, cooked	28	28	150	7	7
Legumes canned	52	52	150	9	9
Nuts and seeds	18	18	55	2	2
Red meat	x	x	x	x	x

Poultry	x	x	x	x	x
Fish/seafood	x	50	100	x	4
Fish (canned)	x	50	x	x	x
Eggs	x	50	44	x	0.3
Organ meats	x	50	100	x	3.2
Luncheon meats	x	50	30	x	0.3
Sausages, uncanned	28	28	100	1	1
Sausages, hotdogs, canned	x	28	100	x	0.1
Veg oil, corn/sunflower/soya	x	x	x	x	x
Olive Oil (including with thyme)	x	x	x	x	x
Olives	x	50	22	x	0.3
Butter	x	50	15	x	0.0045
Ghee	x	50	15	x	0.06
Mayonnaise	x	50	13.8	x	0.04
Tahini	x	x	x	x	x
Cakes/cookies/donuts/muffins/croissants/biscuits	66	66	51	16	16
Ice cream	61	61	50	8	8
Chocolate bar	50	50	60	18	18
Sugar, honey, jam, choc	44	44	22	7	7
Arabic sweets (baklava, maamoul, knefe)	59	59	x	x	21
Soft drink	63	63	250	16	16
Soft drink, diet	x	x	x	x	x
Turkish coffee	x	x	x	x	x
Instant coffee/ tea	x	50	240	x	0.4
Cocoa / hot chocolate	51	51	250	12	12
Beer	66	66	250	5	5
Wine	x	61	104	x	1.65
Liquor, whiskey, vodka, rum	x	61	45	x	x
Water	x	x	x	x	x
Manaeesh, zaatar/cheese	36	36	100	9	9
French fries	75	75	150	22	22
Potato chips/tortilla	57	57	150	26.5	26.5
Falafel, without bread	15.6	29.5	27	0.5	0.9
Shawarma	70	70	x	x	23.8
Burgers	66	66	95	17	17
Pizza	36	36	100	9	9
Canned/pre-packed soups	58	58	250	11	11
Ketchup	x	60	15	x	2.4
Mustard	x	x	x	x	x

Abbreviations: GI: Glycemic index; GL: Glycemic load; FFQ: Food frequency questionnaire; svg: Serving.

^a Values based on Approach 1(International table): considering only carbohydrate-rich foods [35].

^b Values based on Approach 2: same as Approach 1 in addition to GI and GL values proposed by studies (Schulz et al., 2005; van Bakel et al., 2009) [44,46] and USDA CSFII 94-96 food codes [47] with the help of NutritionistPro records at the American University of Beirut (AUB).

Table S2 Energy and macronutrient intakes of study participants across quartiles of GI (1)

	Q1	Q2	Q3	Q4	Significance
Energy (kcal/d)	2772.8	3238.4	3322.5	3186.8	p= 0.056
Carbohydrates (g/d)	332.4	397	400	420.5	p= 0.006
% Kcal carbohydrates	48.5	49.7	49.5	53.6	p= 0.001
Total sugar (g/d)	109.4	114.8	115	80.3	p= 0.001
% Kcal total sugar	16.3	14.1	14.4	10.4	p= 0.000
Protein (g/d)	88.6	103	111	108	p= 0.125
% Kcal Protein	13	12.7	13	13.3	p= 0.876
Total Fat (g/d)	124.5	140.5	144.1	117.6	p= 0.042
% Kcal total fat	41.9	40.5	39.6	34.6	p= 0.000
SFA (g/d)	36.8	39.4	40.1	32	p= 0.073
% Kcal SFA	11.4	10.8	10.2	9	p= 0.000
MUFA (g/d)	45.7	51.4	53.5	44.3	p= 2.135
% Kcal MUFA	14.8	14.1	14.3	12.3	p= 5.272
PUFA (g/d)	32	38.1	39	31.4	p= 2.862
% Kcal PUFA	10.5	10.5	10.5	9	p= 2.641
Cholesterol (mg/d)	291.7	310.6	386	273.5	p= 2.901
Fiber (g/d)	28	29.7	27.7	26.8	p= 0.531

Abbreviations: GI: Glycemic index; Q: Quartile; SFA: Saturated Fatty Acids; MUFA: Monounsaturated Fatty Acids; PUFA: Polyunsaturated Fatty Acids.

Numbers in bold are statistically significant (p-value ≤ 0.05).

Table S3 Total dietary GI and GL intake of participants with and without MetS

	Participants without MetS (n=181)	Participants with MetS (n=102)	Significance
Glycemic Index 1			0.053
Q1	49 (27.1)	20 (19.6)	
Q2	48 (26.5)	24 (23.5)	
Q3	47 (26)	24 (23.5)	
Q4	37 (20.4)	34 (33.3)	
Glycemic Index 2			0.076
Q1	49 (27.1)	20 (19.6)	
Q2	49 (27.1)	23 (22.5)	
Q3	46 (25.4)	24 (24.5)	
Q4	37 (20.4)	34 (33.3)	
Glycemic Load 1			0.050
Q1	49 (27.1)	21 (20.6)	
Q2	44 (51.4)	27 (26.5)	
Q3	50 (27.6)	22 (21.6)	
Q4	38 (21)	32 (31.4)	
Glycemic Load 2			0.058
Q1	49 (27.1)	21 (20.6)	
Q2	44 (24.3)	27 (26.5)	
Q3	49 (27.1)	22 (21.6)	
Q4	39 (21.5)	32 (31.4)	

Abbreviations: GI: Glycemic index; GL: Glycemic load; MetS: Metabolic syndrome; Q: quartile.

Table S4 Multivariable logistic regression analyses of MetS components and adiposity indicators by dietary GI 1 quartiles

		Daily Glycemic Index 1			
		Quartile 1 (n=71)	Quartile 2 (n=72)	Quartile 3 (n=72)	Quartile 4 (n=71)
		OR (95% CI)			
Elevated triglycerides					
Crude model	1	1.338 (0.617-2.903)	1.364 (0.628-2.961)	2.157 (1.022-4.552)	
Model 1 ^a	1	1.193 (0.539-2.642)	1.251 (0.565-2.769)	1.788 (0.827-3.867)	
Model 2 ^b	1	1.340 (0.582-3.086)	1.297 (0.564-2.986)	1.672 (0.739-3.783)	
Model 3 ^c	1	1.340 (0.582-3.086)	1.297 (0.564-2.986)	1.672 (0.739-3.783)	
Elevated fasting blood glucose					
Crude model	1	0.464 (0.225-0.957)	0.673 (0.336-1.348)	1.098 (0.561-2.147)	
Model 1 ^a	1	0.377 (0.175-0.810)	0.572 (0.276-1.185)	0.655 (0.312-1.373)	
Model 2 ^b	1	0.380 (0.174-0.833)	0.550 (0.260-1.167)	0.598 (0.277-1.288)	
Model 3 ^c	1	0.380 (0.174-0.833)	0.550 (0.260-1.167)	0.598 (0.277-1.288)	
Elevated blood pressure					
Crude model	1	1.721 (0.808-3.665)	1.222 (0.560-2.670)	1.757 (0.824-3.745)	
Model 1 ^a	1	1.517 (0.672-3.423)	1.047 (0.452-2.421)	1.014 (0.437-2.351)	
Model 2 ^b	1	1.560 (0.659-3.690)	0.938 (0.387-2.272)	0.803 (0.328-1.961)	
Model 3 ^c	1	1.560 (0.659-3.690)	0.938 (0.387-2.272)	0.803 (0.328-1.961)	
Reduced HDL-C					
Crude model	1	0.868 (0.441-1.708)	0.887 (0.450-1.748)	1 (0.510-1.960)	
Model 1 ^a	1	0.868 (0.441-1.708)	0.887 (0.450-1.748)	1 (0.510-1.960)	
Model 2 ^b	1	0.894 (0.450-1.779)	0.880 (0.442-1.754)	0.938 (0.469-1.876)	
Model 3 ^c	1	0.894 (0.450-1.779)	0.880 (0.442-1.754)	0.938 (0.469-1.876)	
Elevated waist circumference					
Crude model	1	0.958 (0.477-1.926)	1.021 (0.506-2.059)	1.951 (0.906-4.202)	
Model 1 ^a	1	0.888 (0.430-1.833)	0.915 (0.442-1.893)	1.347 (0.599-3.028)	
Model 2 ^b	1	1.329 (0.452-3.907)	1.212 (0.416-3.526)	3.008 (0.835-10.841)	

Model 3 ^c	1	1.329 (0.452-3.907)	1.212 (0.416-3.526)	3.008 (0.835-10.841)
Elevated percent body fat				
Crude model	1	1.019 (0.472-2.200)	1.019 (0.472-2.200)	1.082 (0.497-2.359)
Model 1 ^a	1	1.184 (0.510-2.751)	1.102 (0.475-2.558)	0.983 (0.401-2.409)
Model 2 ^b	1	1.807 (0.513-6.369)	1.039 (0.297-3.640)	0.889 (0.217-3.640)
Model 3 ^c	1	1.665 (0.459-6.037)	0.906 (0.242-3.391)	0.718 (0.153-3.378)

Abbreviations: MetS: Metabolic syndrome; GI: Glycemic index; OR: Odds ratio; CI: Confidence interval; HDL-C: High Density Lipoprotein-Cholesterol.

^aModel 1: adjusted for age and gender.

^bModel 2: adjusted for age, gender, BMI, smoking status, alcohol intake, energy intake, total fiber intake, sedentary behavior and education level.

^cModel 3: adjusted for age, gender, BMI, smoking status, alcohol intake, energy intake, total fiber intake, sedentary behavior and education level and percentage of energy from protein and fat.

Significant results are shown in bold.

Table S5 Multivariable logistic regression analyses of MetS components and adiposity indicators by dietary GL 1 quartiles

Daily Glycemic Load 1				
	Quartile 1 (n=71)	Quartile 2 (n=72)	Quartile 3 (n=72)	Quartile 4 (n=71)
	OR (95% CI)			
Elevated triglycerides				
Crude model	1	0.671 (0.311-1.447)	0.788 (0.372-1.669)	1.601 (0.790-3.245)
Model 1 ^a	1	0.579 (0.263-1.276)	0.532 (0.237-1.192)	0.869 (0.389-1.938)
Model 2 ^b	1	0.425 (0.181-0.995)	0.460 (0.198-1.067)	0.810 (0.351-1.871)
Elevated fasting blood glucose				
Crude model	1	1.233 (0.614-2.476)	1.091 (0.540-2.204)	1.212 (0.600-2.447)
Model 1 ^a	1	1.159 (0.561-2.397)	0.763 (0.354-1.645)	0.974 (0.438-2.168)
Model 2 ^b	1	1.025 (0.484-2.169)	0.755 (0.344-1.657)	0.973 (0.430-2.201)
Elevated blood pressure				
Crude model	1	1.488 (0.678-3.265)	1.460 (0.666-3.200)	2.498 (1.173-5.320)
Model 1 ^a	1	1.285 (0.559-2.956)	0.779 (0.321-1.890)	1.392 (0.578-3.351)
Model 2 ^b	1	1.116 (0.464-2.686)	0.773 (0.305-1.956)	1.441 (0.574-3.618)
Reduced HDL-C*				
Crude model	1	0.815 (0.411-1.617)	1.099 (0.561-2.152)	1.086 (0.552-2.138)
Model 1 ^a	1	0.815 (0.411-1.617)	1.099 (0.561-2.152)	1.086 (0.552-2.138)
Model 2 ^b	1	0.729 (0.360-1.477)	1.112 (0.563-2.195)	1.122 (0.565-2.226)
Elevated waist circumference				
Crude model	1	1.279 (0.595-2.747)	0.731 (0.356-1.499)	0.672 (0.328-1.376)
Model 1 ^a	1	1.307 (0.594-2.877)	0.653 (0.309-1.380)	0.842 (0.398-1.779)
Model 2 ^b	1	1.559 (0.481-5.058)	0.525 (0.187-1.477)	0.831 (0.278-2.486)

Elevated percent body fat				
Crude model	1	1.390 (0.566-3.414)	0.672 (0.301-1.502)	0.388 (0.179-0.839)
Model 1 ^a	1	1.753 (0.677-4.540)	0.899 (0.373-2.168)	0.984 (0.393-2.460)
Model 2 ^b	1	4.472 (1.023-19.548)	2.703 (0.590-12.389)	2.260 (0.345-14.806)

Abbreviations: MetS: Metabolic syndrome; GL: Glycemic load; OR: Odds ratio; CI: Confidence interval; HDL-C: High Density Lipoprotein-Cholesterol.

^aModel 1: adjusted for age and gender.

^bModel 2: adjusted for age, gender, BMI, smoking status, alcohol intake, energy intake, total fiber intake, sedentary behavior and education level.

Significant results are shown in bold.

