

Effect of a walnut-based low carbohydrate diet on fat redistribution and visceral fat accumulation in people with central obesity: A randomized controlled trial

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Supplementary Table 1. Comparison of demographic, clinical, nutrition and body composition data between the completed and uncompleted follow-up groups

Variables	Completed follow-up group (n = 64) mean $\pm$ SD / n (%)	Uncompleted follow-up group (n = 16) Mean $\pm$ SD / n (%)	<i>t</i> / χ^2	<i>p</i>
Demographic data				
Age (years)	37.3 $\pm$ 9.80	33.1 $\pm$ 6.50	1.619	0.110
Sex				
Male	29.0 (45.3)	6.00 (37.5)	0.317	0.573
Education				
$\leq$ Middle school	2.00 (3.10)	0.00 (0.00)	0.513	0.474
Marital status				
Married	50.0 (78.1)	10.0 (62.5)	1.667	0.197
Occupation				
On the job	54.0 (84.4)	13.0 (81.3)	0.092	>0.999
Medical insurance				
Yes	63.0 (98.4)	15.0 (93.8)	1.154	0.283
Monthly personal income (yuan)				
$\leq$ 5000	10.0 (15.6)	4.00 (25.0)	0.779	0.337
Smoking				
Yes	7.00 (10.9)	1.00 (6.30)	0.313	0.576
Drinking				
Yes	17.0 (26.6)	2.00 (12.5)	1.398	0.237
Quality of sleep			1.676	0.398
Poor	25.0 (39.1)	5.00 (31.3)		
Moderate	36.0 (56.3)	9.00 (56.3)		
Good	3.00 (4.70)	2.00 (12.5)		
Clinical data				
Sleeping time (h/d)	6.90 $\pm$ 0.75	7.30 $\pm$ 1.12	-1.444	0.153
Other diseases				
Yes	7.00 (10.9)	2.00 (12.5)	0.031	>0.999
SBP (mmHg)	121 $\pm$ 11.5	121 $\pm$ 12.6	0.157	0.875
DBP (mmHg)	76.2 $\pm$ 10.2	72.6 $\pm$ 9.10	1.305	0.196
Heart rate (bpm)	77.5 $\pm$ 2.40	28.7 $\pm$ 2.30	-1.623	0.109
Exercise time (min/weeks)	78.9 $\pm$ 92.6	60.0 $\pm$ 64.5	0.769	0.444
Exercise intensity			0.140	>0.999
Low	46.0 (71.9)	12.0 (75.0)		
Moderate	13.0 (20.3)	3.00 (18.8)		
High	5.00 (7.80)	1.00 (6.30)		
Energy at baseline (kcal/d)	1806 $\pm$ 458	1786 $\pm$ 512	0.146	0.884
TC (mmol/L)	5.00 $\pm$ 1.10	4.50 $\pm$ 1.20	1.772	0.080
TG (mmol/L)	2.17 $\pm$ 3.44	1.53 $\pm$ 0.97	0.736	0.464
HDL-C (mmol/L)	1.28 $\pm$ 0.33	1.13 $\pm$ 0.32	1.664	>0.999
LDL-C (mmol/L)	3.06 $\pm$ 0.85	2.76 $\pm$ 0.70	1.290	0.201
Nutrition data				
Carbohydrate (g/d)	248 $\pm$ 75.5	239 $\pm$ 75.0	0.382	0.703
Fat (g/d)	53.1 $\pm$ 19.5	56.4 $\pm$ 22.8	-0.546	0.587
Protein (g/d)	84.7 $\pm$ 28.6	80.7 $\pm$ 27.9	0.477	0.635
DF (g/d)	18.6 $\pm$ 12.9	17.5 $\pm$ 10.7	0.299	0.766
Body composition				
TLR	1.80 $\pm$ 0.17	1.81 $\pm$ 0.22	-1.121	0.904
WHR	0.92 $\pm$ 0.49	0.93 $\pm$ 0.35	0.047	0.962
VFA (cm ²)	114 $\pm$ 33.7	116 $\pm$ 33.7	-0.208	0.836
BMI (kg/m ²)	27.4 $\pm$ 2.46	28.7 $\pm$ 2.26	-1.896	0.062
BF%	35.3 $\pm$ 11.5	33.3 $\pm$ 6.90	0.670	0.505
BF (kg)	26.2 $\pm$ 5.43	27.8 $\pm$ 5.56	-1.099	0.275

w-LCD, walnut-based low carbohydrate diet; HCD, high-carbohydrate low-fat diet; SBP, systolic blood pressure; DBP, diastolic blood pressure; TC, Total cholesterol; TG, Triglyceride; HDL-C, High density lipoprotein cholesterol; LDL-C, Low-density Lipoprotein Cholesterol; TLR, Trunk to leg fat ratio; WHR, Waist-to-hip ratio; VFA, Visceral fat area; BMI, body mass index; BF%, body fat percentage; BF, body fat.

Supplementary Table 2. The ITT analyses of total energy, macronutrient, and DF between the two groups

Variables	LCD group (n=40) mean±SD	HCD group (n=40) mean±SD	Repeated Measures ANOVA			Post-hoc testing	
			Time effect	Group effect	Time × group interaction effect	Simple effects analyses	
			$\eta^2(p)$			η^2	p
Energy (kcal/d)							
Baseline	1740 ± 455	1981 ± 475	0.557 (<0.001 ^{***})	0.049 (0.061)	<0.001 (0.972)		
12weeks	1205 ± 249	1359 ± 460					
Carbohydrate (g/d)							
Baseline	234 ± 73.5	264 ± 75.6	0.132 (0.001 ^{**})	<0.001 (0.849)	0.056 (0.037 [*])	0.040	0.090
12weeks	124 ± 50.2	192 ± 68.7				0.249	<0.001 ^{***}
η^2	0.516	0.275					
p	<0.001 ^{***}	<0.001 ^{***}					
Fat (g/d)							
Baseline	53.3 ± 19.5	54.3 ± 21.3	0.317 (<0.001 ^{***})	0.029 (0.081)	0.099 (0.005 ^{**})	0.001	0.838
12weeks	53.6 ± 11.2	37.7 ± 18.5				0.222	<0.001
η^2	<0.001	0.194					
p	0.934	<0.001 ^{***}					
Protein (g/d)							
Baseline	81.9 ± 27.7	87.3 ± 29.4	0.465 (<0.001 ^{***})	0.008 (0.313)	0.203 (<0.001 ^{***})		
12weeks	56.3 ± 11.3	63.1 ± 21.6					
DF (g/d)							
Baseline	17.9 ± 11.5	19.3 ± 13.7	0.106 (0.003)	<0.001 (0.993)	0.043 (0.065)		
12weeks	19.9 ± 6.07	21.5 ± 7.07					

LCD, low carbohydrate diet; HCD, High carbohydrate diet. DF, dietary fiber.

*** p <0.001; ** p <0.01; * p <0.05

Supplementary Table 3. The ITT analyses of body composition between the two groups

Variables	LCD group (n=40) mean±SD	HCD group (n=40) mean±SD	Repeated Measures ANOVA			Post-hoc testing	
			Time effect	Group effect	Time × group interaction effect	Simple effects analyses	
			$\eta^2(p)$			η^2	p
TLR							
Baseline	1.80 ± 0.18	1.83 ± 0.17	0.096 (0.006**)	0.022 (0.346)	0.072 (0.018*)	0.005	0.542
12weeks	1.74 ± 0.19	1.82 ± 0.17				0.045	0.063
η^2	0.157	0.001					
p	<0.001***	0.773					
WHR							
Baseline	0.92 ± 0.05	0.92 ± 0.04	0.132 (0.001**)	<0.001 (0.849)	0.056 (0.037*)	0.007	0.483
12weeks	0.90 ± 0.03	0.91 ± 0.04				0.021	0.201
η^2	0.171	0.010					
p	<0.001***	0.372					
VFA (cm ²)							
Baseline	112 ± 32.7	119 ± 35.3	0.317 (<0.001***)	0.029 (0.081)	0.099 (0.005**)	0.009	0.402
12weeks	98.5 ± 31.2	114 ± 33.8				0.057	0.034*
η^2	0.342	0.057					
p	<0.001***	0.034*					
BMI (kg/m ²)							
Baseline	27.9 ± 2.61	28.1 ± 3.56	0.465 (<0.001***)	0.008 (0.313)	0.203 (<0.001***)	0.001	0.797
12weeks	26.6 ± 2.96	27.9 ± 3.82				0.023	0.098
η^2	0.508	0.084					
p	<0.001***	0.337					
BF (kg)							
Baseline	29.1 ± 15.7	27.2 ± 6.90	0.106 (0.003)	<0.001 (0.993)	0.043 (0.065)		
12weeks	23.8 ± 6.73	26.0 ± 7.67					
BF%							
Baseline	36.0 ± 13.8	34.5 ± 7.17	0.098 (0.005**)	<0.001 (0.990)	0.029 (0.128)		
12weeks	31.4 ± 7.50	33.0 ± 7.95					

LCD, low carbohydrate diet; HCD, High carbohydrate diet; TLR, Trunk to leg fat ratio; WHR: Waist-to-hip ratio; VFA, Visceral fat area; BMI, body mass index; BF, body fat; BF%, body fat percentage.

*** p <0.001; ** p <0.01; * p <0.05