Supplementary Table S1. EAT-Lancet Diet Score

Dietary components 14 items	Scoring criteria
Whole grains	
Rice, wheat, corn, and other	≤464 g/day and whole grain fiber >5 grams
Tubers and starchy vegetables	
Potatoes and cassava	≤100 g/day
Vegetables	
All vegetables	≥200 g/day
Fruits	
All fruits	≤100 g/day
Dairy foods	
Whole milk or derivative equivalents	≤500 g/day
Protein sources	
Beef, lamb, pork	≤28 g/day
Chicken, other poultry	≤ 58 g/day
Eggs	≤25 g/day
Fish	≤100 g/day
Legumes	
Dry beans, lentils, peas 10	≤100 g/day
Soy Foods	≤50 g/day
Peanuts or tree nuts	≥25 g/day
Added fats	
Palm oil, unsaturated oils, dairy fats (incl. in milk), lard or tallow	Ratio of 0.8 for unsaturated: saturated fat intake
Added sugars	
All sweeteners	≤31g/day

Each dietary component contributed 0 or 1 point resulting in a total score ranging from 0-14 points.

Supplementary Table S2. EAT-Lancet Diet Index

Dietary components	Scoring criteria			
14 items	3 points	2 points	1 point	0 points
		Emphasized intake		
Vegetables	>300 g/day	200-300 g/day	100-200 g/day	<100 g/day
Fruits	>200 g/day	100-200 g/day	50-100 g/day	<50 g/day
Unsaturated oils	>40 g/day	20-40 g/day	10-20 g/day	<50 g/day
		Limited intake		
Legumes	>75 g/day	37.5–75 g/day	18.75–37.5 g/day	<18.75 g/day
Nuts	>50 g/day	25–50 g/day	12.5–25 g/day	<12.5 g/day
Whole grains	>232 g/day	116–232 g/day	58–116 g/day	<58 g/day
Fish	>28 g/day	14–28 g/day	7-14 g/day	<7 g/day
Beef and lamb	>7 g/day	7-14 g/day	14-28 g/day	<28 g/day
Pork	>7 g/day	7-14 g/day	14-28 g/day	<28 g/day
Poultry	>29 g/day	29-58 g/day	58-116 g/day	<116 g/day
Eggs	>13 g/day	13-25 g/day	25-50 g/day	<50 g/day
Dairy	>250 g/day	250-500 g/day	500-1000 g/day	<1000 g/day
Potatoes	>50 g/day	50-100 g/day	100-200 g/day	<200 g/day
Added sugars	>31 g/day	31-62 g/day	62-124 g/day	<124 g/day

Each dietary component contributed 0 or 3 point resulting in a total score ranging from 0-42 points.

Supplementary Table S3. Baseline Anthropometric, Clinical, and Lifestyle measurements of the study subjects

Anthropometric values	Usual care n= 32 Mean ± SD	Intensive care n=89 Mean ± SD	Dif	*p*
Sex % (F/M)	63/38	62/38		
Tanner % (1/2/3/4/5)	38/6/25/3/19	31/21/12/7/25		
Age (years)	10.65 ± 2.28	11.46 ± 2.50	-0.80	0.113
Height (cm)	148.43 ± 12.18	151.74 ± 13.08	-3.30	0.214
Weight (kg)	63.22 ± 16.88	67.33 ± 19.80	-4.10	0.298
BMI (kg/m²)	28.15 ± 4.21	28.55 ± 4.60	-0.39	0.674
BMI-SDS	2.99 ± 1.18	2.88 ± 1.04	0.11	0.604
WC (cm)	86.38 ± 10.76	86.68 ± 11.40	-0.30	0.896
HC (cm)	96.80 ± 11.89	99.14 ± 12.69	-2.33	0.336
WHR (cm)	0.89 ± 0.07	0.87 ± 0.06	0.01	0.163
Fat mass (kg)	24.52 ± 10.91	25.57 ± 10.06	-1.04	0.624
TGs (mg/dL)	95.85 ± 38.18	90.21 ± 43.87	5.64	0.547
Cholesterol (mg/dL)	157.71 ± 21.20	165.33 ± 26.66	-7.61	0.174
LDL-C (mg/dL)	93.82 ± 16.77	100.02 ± 22.48	-6.19	0.186
Non-HDL (mg/dL)	112.96 ± 19.58	117.74 ± 25.44	-4.78	0.368
Glucose (mg/dL)	91.59 ± 6.03	87.83 ± 6.50	3.76	**0.009**
Insulin (μU/mL)	20.58 ± 19.89	16.36 ± 8.28	4.21	0.139
Leptin (ng/mL)	38.46 ± 22.08	35.05 ± 17.65	3.41	0.474
QUICKI index	0.31 ± 0.02	0.32 ± 0.02	-0.00	0.36
HOMA index	4.68 ± 4.69	3.60 ± 2.00	1.07	0.115
SBP (mmHg)	113.53 ± 11.36	118.39 ± 11.85	-4.85	**0.047**
DBP (mmHg)	71.78 ± 7.61	72.72 ± 7.98	-0.94	0.561
Total energy (kcal/day)	2762.95± 595.27	2722.40± 683.98	40.55	0.766
Vegetables (g/day)	279.19 ± 52.14	310.89 ± 163.20	8.53	0.842
Fruits (g/day)	276.96 ± 151.29	259.23 ± 177.72	81.09	0.112
Unsaturated oil (g/day)	34.94 ± 12.64	33.29 ± 14.47	0.67	0.854
Legumes (g/day)	18.25 ± 9.90	19.56 ± 0.95	1.90	0.490
Nuts (g/day)	0.047 ± 0.051	0.059 ± 0.11	-0.04	0.142
Whole grains (g/day)	6.47 ± 16.40	20.86 ± 2.49	-19.08	0.255
Fish (g/day)	75.27 ± 43.64	70.43 ± 37.31	18.37	**0.042**
Beef and lamb (g/day)	34.53 ± 22.25	39.86 ± 22.14	0.92	0.883
Pork (g/day)	73.29 ± 41.39	90.22 ± 53.16	-30.93	**0.001**
Poultry (g/day)	54.85 ± 23.71	62.98 ± 68.94	-11.63	0.422
Eggs (g/day)	0.37 ± 0.17	0.47 ± 0.71	-0.08	0.558
Dairy (g/day)	504.03 ± 187.00	483.82 ± 353.27	177.45	**<0.001**
Potatoes (g/day)	70.28 ± 57.99	67.65 ± 44.50	11.55	0.350
Added sugar (g/day)	0.19 ± 0.48	0.27 ± 0.57	-0.63	0.650
DQI-A (-33% to 100%)	26.88 ± 8.75	25.63 ± 7.79	1.25	0.451
KIDMED (0 to 12)	5.46 ± 1.91	5.71 ± 2.10	-0.24	0.566

Abbreviations: BMI: body mass index; BMI-SDS: Standard deviation Score for Body Mass Index; HC: Hip Circumference; WC: Waist. Circumference; WHR: Waist to Hip Ratio; TGs: Triglycerides; Lipoproteins Cholesterol; LDL-C: Low Density Cholesterol; Non-HDL: total cholesterol minus HDL cholesterol; QUICKI index: quantitative insulin sensitivity check index; HOMA: homeostasis model assessment; SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure; DQI-A: Diet Quality Index; HLD-I: Healthy Lifestyle Diet Index; KIDMED: Mediterranean Diet Quality Index for Children.

Comments to Supplementary Table S3: Baseline anthropometric measurements and clinical parameters were similar between the usual care group and the intensive care group, with the exception of glucose levels and systolic blood pressure (SBP). No significant differences were observed in baseline lifestyle factors or energy intake between the two groups. However, differences in specific food groups were noted: the usual care group consumed significantly more fish (p=0.042) and dairy (p=0.001), while the intensive care group had a higher intake of pork (p=0.001).

Supplementary Table S4. Changes in Anthropometric, Clinical, and Lifestyle measurements in a pediatric population with abdominal obesity after a lifestyle intervention

Variables	Group	Changes within groups		Changes between groups	
		Mean SD	p	Dif	p
Height (cm)	**Usual care**	1.23 ± 0.74	**<0.001**	-0.33	**0.009**
	Intensive care	0.89 ± 0.55	**<0.001**		
Weight (kg)	**Usual care**	-1.78 ± 2.45	**<0.001**	-0.82	0.080
	Intensive care	-2.61 ± 2.11	**<0.001**		
BMI (kg/m2)	**Usual care**	-1.20 ± 1.13	**<0.001**	-0.26	0.220
	Intensive care	-1.47 ± 0.97	**<0.001**		
BMI-SDS	**Usual care**	-0.43 ± 0.64	**<0.001**	-0.06	0.495
	Intensive care	-0.50 ± 0.39	**<0.001**		
WC (cm)	**Usual care**	-4.28 ± 3.55	**<0.001**	0.45	0.562
	Intensive care	-3.82 ± 3.71	**<0.001**		
HC (cm)	**Usual care**	-1.33 ± 3.22	**<0.001**	-1.28	**0.045**
	Intensive care	-2.62 ± 2.91	**<0.001**		
WHR (cm)	**Usual care**	-0.03 ± 0.03	**<0.001**	0.01	**0.016**
	Intensive care	-0.01 ± 0.33	**<0.001**		
Fat mass (kg)	**Usual care**	-1.64 ± 2.06	**<0.001**	-0.92	**0.035**
	Intensive care	-2.57 ± 2.04	**<0.001**		
TGs (mg/dL)	**Usual care**	-15 ± 35.33	**0.040**	-7.55	0.345
	Intensive care	-7.44 ± 33.96	0.081		
Cholesterol (mg/dL)	**Usual care**	-11.26 ± 15.61	**0.001**	0.13	0.977
	Intensive care	-11.13 ± 22.08	**<0.001**		
LDL-C (mg/dL)	**Usual care**	-5.11 ± 12.13	**0.041**	-0.81	0.825
	Intensive care	-5.92 ± 17.08	**0.007**		
Non-HDL (mg/dL)	**Usual care**	-8.11 ± 14.93	**0.010**	0.45	0.913
	Intensive care	-7.66 ± 18.93	**0.001**		
Glucose (mg/dL)	**Usual care**	-5.96 ± 6.75	**<0.001**	3.86	**0.019**
	Intensive care	-2.1 ± 7.02	**0.014**		
Insulin (µU/mL)	**Usual care**	-3.65 ± 12.56	0.177	1.64	0.423
	Intensive care	-2.00 ± 6.09	**0.013**		
Leptin (ng/ml)	**Usual care**	-14.58 ± 13.09	**<0.001**	6.83	0.086
	Intensive care	-7.75 ± 14.36	**<0.001**		
SBP (mmHg)	**Usual care**	-0.96 ± 12.83	0.705	-7.40	**<0.001**
	Intensive care	-6.51 ± 10.35	**<0.001**		
DBP (mmHg)	**Usual care**	1.69 ± 13.89	0.540	-5.02	**0.020**
	Intensive care	-3.33 ± 8.33	**<0.001**		
Total energy (kcal/day)	**Usual care**	-794.05 ± 581.17	**<0.001**	38.67	0.778
	Intensive care	-755.37 ± 629.99	**<0.001**		
Vegetables (g/day)	**Usual care**	317.48 ± 243.32	0.207	8.53	0.842
	Intensive care	379.36 ± 135.2	**0.002**		
Fruits (g/day)	**Usual care**	257.93 ± 147.30	0.800	81.09	0.112
	Intensive care	323.88 ± 186.66	**0.006**		
Unsaturated oil (g/day)	**Usual care**	26.76 ± 14.76	**0.020**	0.67	0.854
	Intensive care	26.13 ± 7.35	**<0.001**		
Legumes (g/day)	**Usual care**	16.59 ± 9.38	0.521	1.90	0.490
	Intensive care	20.73 ± 13.30	0.671		
Nuts (g/day)	**Usual care**	0.057 ± 0.11	0.586	-0.04	0.142
	Intensive care	0.028 ± 0.07	**0.047**		
Whole grains (g/day)	**Usual care**	50.37 ± 77.20	**0.004**	-19.08	0.255
	Intensive care	48.68 ± 63.76	**0.001**		
Fish (g/day)	**Usual care**	81.44 ± 28.22	0.078	18.37	**0.042**
	Intensive care	102.26 ± 41.31	**<0.001**		

Supplementary Table S4. *Cont*.

Variables	Group	Changes within groups		Changes between groups	
		Mean SD	p	Dif	p
Beef and lamb (g/day)	**Usual care**	25.29 ± 19.74	**0.048**	0.92	0.883
	Intensive care	29.34 ± 17.14	**0.001**		
Pork (g/day)	**Usual care**	56.08 ± 29.08	0.060	-30.93	0.001
	Intensive care	45.28 ± 25.57	**<0.001**		
Poultry (g/day)	**Usual care**	55.15 ± 23.11	0.707	-11.63	0.422
	Intensive care	54.86 ± 15.81	0.250		
Eggs (g/day)	**Usual care**	0.37 ± 0.15	0.828	-0.08	0.558
	Intensive care	0.39 ± 0.10	0.262		
Dairy (g/day)	**Usual care**	407.75 ± 157.87	0.078	177.45	**0.001**
	Intensive care	548.63 ± 195.79	**<0.001**		
Potatoes (g/day)	**Usual care**	55.99 ± 46.13	0.237	11.55	0.350
	Intensive care	66.08 ± 41.44	0.687		
Added sugar (g/day)	**Usual care**	0.14 ± 0.29	0.266	-0.63	0.650
	Intensive care	0.14 ± 0.43	0.061		
DQI-A (-33% to 100%)	**Usual care**	6.48 ± 11.17	**0.005**	5.77	**0.010**
	Intensive care	12.26 ± 9.58	**<0.001**		
KIDMED (0 to 12 points)	**Usual care**	1.82 ± 2.52	**<0.001**		
	Intensive care	2.97 ±2.31	**<0.001**	1.15	**0.028**

Abbreviations: BMI: body mass index; BMI-SDS: Standard deviation Score for Body Mass Index; HC: Hip Circumference; WC: Waist Circumference; WHR: Waist to Hip Ratio; TGs: Triglycerides; LDL-C: Low Density Cholesterol; Non-HDL: total cholesterol minus HDL cholesterol; QUICKI index: quantitative insulin sensitivity check index; HOMA: homeostasis model assessment; SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure; DQI-A: Diet Quality Index; HLD-I: Healthy Lifestyle Diet Index; KIDMED: Mediterranean Diet Quality Index for Children

Comments to Supplementary Table S4: After the 8-week intervention in a pediatric population with obesity, both groups showed significant reductions in anthropometric measurements. However, the intervention group experienced a significantly greater reduction in hip circumference (-1.28 cm, p=0.045) and body fat (-0.92 kg, p=0.035) compared to the usual care group. Clinical parameters revealed significant decreases in cholesterol, LDL-C, non-HDL-C, glucose, and leptin levels in both groups (p<0.05). Additionally, the intervention group demonstrated reductions in glucose levels and blood pressure (BP). The difference in SBP between the groups was statistically significant (p=0.026, data not shown) and remained so after adjusting for BMI-SDS and baseline SBP using ANCOVA. Although glucose levels also showed significant differences between the groups (p=0.019), this difference was no longer significant (p=0.423, data not shown) after adjusting for BMI-SDS and baseline glucose levels using the ANCOVA model.

Regarding lifestyle changes in the pediatric population with abdominal obesity, both groups demonstrated a significant reduction in caloric intake (usual care: -28%; intensive care: -27%, p<0.001). The intervention resulted in significant changes in the consumption of specific food groups. In the intensive care group, there was a notable increase in the intake of vegetables (from 310.89 g/day to 379.36 g/day; p=0.002) and fruits (from 259.23 g/day to 323.88 g/day; p=0.006). Both groups reduced their consumption of unsaturated oils. The usual care group showed a decrease from 34.94 g/day to 26.76 g/day (p=0.020), while the intensive care group decreased from 33.29 g/day to 26.13 g/day (p<0.001).

Whole grain intake increased in both groups, with the usual care group rising from 6.47 g/day to 50.37 g/day (p=0.004) and the intensive care group from 20.86 g/day to 48.68 g/day (p=0.001). The consumption of fish increased significantly only in the intensive care group (from 70.43 g/day to 102.26 g/day; p<0.001), with a notable difference between groups (p=0.042).

Both groups reduced their intake of beef and lamb, with the usual care group decreasing from 34.53 g/day to 25.29 g/day (p=0.048) and the intensive care group from 39.86 g/day to 29.34 g/day (p=0.001). Pork consumption also decreased significantly in the intensive care group (from 90.22 g/day to 45.28 g/day; p<0.001), with a significant difference between groups (p=0.001). Additionally, dairy consumption increased in the intensive care group (from 483.82 g/day to 548.63 g/day; p<0.001). Differences between groups in fish, pork, and dairy consumption remained significant (fish p=0.011, pork p=0.025, dairy p<0.001) after adjusting for BMI-SDS and baseline consumption using an ANCOVA model (data not shown).

Regarding diet quality indices, both groups improved their scores in DQI-A and KIDMED. The intensive care group showed a more pronounced improvement in the DQI-A (5.77%, p=0.010) and KIDMED (1.15 points, p=0.028) indexes compared to the usual care group.