

A comparison of lipid parameters in Emirati children with international standards: a ten-year retrospective UAE study

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Introduction: Diabetes and obesity are common in Middle Eastern populations and are associated with atherosclerosis and cardiac disease. Several studies have indicated the onset of obesity and diabetes complications starting early in life. International guidelines on dyslipidemias in children are mainly based on Western populations.

Aim: To establish and compare lipid profiles of normal weight non-diabetic Emirati children and adolescent patients attending ICLDC, to lipid international percentiles for children and adolescents as quoted in international pediatric guidelines.

Methods: A total of 11,116 children and adolescents (age ≤ 18 years) ICLDC patients were included in this 10-year retrospective study (2009-2019). Relevant information and data on lipid profiles were retrieved from the patient database. Exclusion criteria included patients who were underweight, with nephrotic syndrome, hypothyroidism and familial hypercholesterolemia, or if prescribed statins or steroids. After exclusion, the included 10,264 study cohort (SC) patients were grouped per age group (5-9, 10-14 and 15-18 years old), sex (female and male) and BMI percentile (50th, 75th, 90th and 95th) as per international (AAP/NHANES) percentile guidelines. Lipid (mg/dL) profile percentiles (50th, 75th, 90th and 95th) for total cholesterol (TC), low density lipoprotein cholesterol (LDL-c) and high-density lipoprotein cholesterol (HDL) were determined. Statistical analysis was carried out using a Chi-squared (χ^2) test on SPSS (v25) with statistical significance at p-value ≤ 0.05 .

Results: Of the 10,264 patients: (1) 4,909 (47.8%) were normal weight, (2) 7,479 (72.9%) were non-diabetic and (3) 3,766 (33.8%) were both normal weight and normoglycemic; the latter group (excluding patients under 5 years old) constituted the normal-normal (NN) population (n=3,750) used for comparison with international percentile figures. Following statistical analysis (**Table 1**), no significant differences were found between the study cohort and international percentile figures, for all the lipid parameters measured. This held true for all the age groups.

Conclusion: The lipid profiles in the investigated normal weight non-diabetic Emirati children and adolescent ICLDC patient cohort, were comparable to the international percentile figures. This suggests that AAP/NHANES guidelines for lipid management in this age group are suitable and can be used in the Emirati population.

References

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Table 1: Comparison of lipid percentiles in normal weight non-diabetic Emirati children and adolescent ICLDC patients, to international guidelines

Category Parameter		5-9 years old (n=211)						10-14 years old (n=1791)						15-18 years old (n=1728)					
		SC (F)	AAP (F)	P-value (F)	SC (M)	AAP (M)	P-value (M)	SC (F)	AAP (F)	P-value (F)	SC (M)	AAP (M)	P-value (M)	SC (F)	AAP (F)	P-value (F)	SC (M)	AAP (M)	P-value (M)
TC	50th	149.65	164.00	NS	148.88	153.00	NS	151.59	159.00	NS	150.04	161.00	NS	148.11	157.00	NS	137.47	152.00	NS
	75th	164.44	177.00		163.77	168.00		169.37	171.00		168.31	173.00		164.73	176.00		154.68	168.00	
	90th	183.91	189.00		182.52	183.00		186.00	191.00		184.88	191.00		182.14	191.00		172.47	183.00	
	95th	196.66	197.00		192.27	186.00		194.90	205.00		194.92	201.00		195.42	208.00		186.91	191.00	
LDL-c	50th	101.90	98.00	NS	87.20	90.00	NS	91.26	94.00	NS	91.65	94.00	NS	90.10	93.00	NS	86.62	93.00	NS
	75th	106.05	115.00		103.83	103.00		106.34	110.00		107.21	109.00		105.09	110.00		102.48	109.00	
	90th	122.43	125.00		115.86	117.00		123.74	126.00		120.65	123.00		124.01	129.00		118.33	123.00	
	95th	130.03	140.00		124.83	129.00		133.22	136.00		131.86	133.00		134.96	137.00		132.00	130.00	
HDL-c	50th	40.60	36.00	NS	37.97	38.00	NS	41.38	37.00	NS	39.85	37.00	NS	42.15	35.00	NS	34.80	30.00	NS
	25th	44.82	38.00		43.23	43.00		44.86	40.00		43.31	40.00		45.63	38.00		38.67	34.00	
	10th	49.88	48.00		50.66	49.00		51.04	45.00		50.27	46.00		51.43	43.00		44.47	39.00	
	5th	56.84	52.00		59.55	55.00		57.62	52.00		57.62	55.00		58.39	51.00		50.66	46.00	

Table 1. Comparison of lipid percentiles, in normal weight non-diabetic Emirati children and adolescent ICLDC patients, to international guidelines. A total of 11,116 children and adolescents (age ≤ 18 years) from the ICLDC patient database (2009-2019) were considered for the study. After exclusion, the included 10,264 study cohort (SC) patients were grouped per age group (5-9, 10-14 and 15-18 years old), sex (female and male) and BMI percentile (50th, 75th, 90th and 95th) as per international (AAP) guidelines. 3,766 (33.8%) were both normal weight normoglycemic; after excluding patients under 5 year old, the 3,750 remaining patients constituted the normal-normal (NN) population used for comparison with international (AAP/NHANES) percentile guidelines for lipid (mg/dL) percentiles. Total cholesterol (TC), low density lipoprotein cholesterol (LDL-c) and high-density lipoprotein cholesterol (HDL) were assessed. Statistical analysis using chi-square test utilizing SPSS (v25) software was carried out with statistical significance at p-value ≤ 0.05.