Prevalence of dyslipidemia in Korean youth over 10 years: data from the Korea National Health and Nutritioin Examination Survey 2008-2017

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Introduction

Dyslipidemia begins and continues in youth and is a major risk factor for adult-onset cardiovascular disease. The aim of this study was to investigate the prevalence and trend of dyslipidemia in Korean youth and its trends for 10 years.

Materials and Methods

Study subjects were Korean youth aged 10-18 years who participated in the Korea National Health and Nutrition Examination Survey (KNHANES). A total of 7,466 eligible participants (3,962 boys, 53.2%) with available fasting lipid profile were enrolled. The KNHANES data for 10 years from 2008 to 2017 were divided into five groups at two-year intervals (2008-09, 2010-11, 2012-13, 2014-15, 2016-17). Dyslipidemia was defined using the 2011 National Heart, Lung and Blood Institute (NHLBI) criteria: hypercholesterolemia, total cholesterol ≥ 200 mg/dL; hypertriglyceridemia, triglyceride ≥ 130 mg/dL; hypo-HDL-cholesterolemia, HDL cholesterol < 40 mg/dL; hyper-LDL-cholesterolemia, LDL cholesterol ≥ 130 mg/dL; and hyper-non-HDL-cholesterolemia, non-HDL cholesterol ≥ 145 mg/dL.

Results

The prevalence of hypercholesterolemia was 6.7% in 2008-09, 6.5% in 2010-11, 6.6% in 2012-13, 7.8% in 2014-15 and 10.7% in 2016-17 (P for trend <0.001). The prevalence of hypertriglyceridemia was 14.7% in 2008-09 and 13.0% in 2016-17 (P for trend = 0.389). The prevalence of hypo-HDL-cholesterolemia was 16.4% in 2008-09 and 10.2% in 2016-17 (P for trend <0.001). The prevalence of hyper-LDL-cholesterolemia was 5.4% in 2008-09 and 7.6% in 2016-17 (P for trend = 0.080). The prevalence of dyslipidemia defined by non-HDL level was 9.0% in 2008-09 and 10.9% in 2016-17 (P for trend = 0.105). In logistic regression analyses, the prevalence of hypercholesterolemia was increasing after adjusting age, sex and body mass index (OR 1.14, 95% CI 1.05-1.22, P <0.001). In contrast, the prevalence of hypo-HDL-cholesterolemia was decreasing tendency after adjusting age, sex, and body mass index (OR 0.82, 95% CI 0.78-0.87, P <0.001). Except for hypo-HDL-cholesterolemia, female predominance was observed.

Table 1. Prevalence of dyslipidemia in Korean youth

Criteria of Dyslipidemia	Sex	2008-2009	2010-2011	2012-2013	2014-2015	2016-2017	P value	P for trend
Total cholesterol ≥200 (mg/dL)	M	70 (6.1%)	51 (5.6%)	33 (3.6%)	37 (5.8%)	60 (8.9%)	0.007	0.093
	F	73 (7.5%)	59 (7.5%)	66 (9.9%)	46 (10.2%)	78 (12.7%)	0.018	<0.001
	Total	143 (6.7%)	110 (6.5%)	99 (6.6%)	83 (7.8%)	138 (10.7%)	<0.001	<0.001
Triglyceride ≥130(mg/dL)	M	161 (15.0%)	106 (12.8%)	89 (12.6%)	83 (14.6%)	83 (12.1%)	0.574	0.366
	F	145 (14.4%)	91 (12.5%)	74 (10.8%)	57 (12.0%)	86 (14.0%)	0.454	0.733
	Total	306 (14.7%)	197 (12.7%)	163 (11.8%)	140 (13.4%)	169 (13.0%)	0.424	0.389
HDL cholesterol <40 (mg/dL)	M	217 (19.8%)	136 (17.1%)	104 (14.0%)	64 (10.4%)	88 (12.7%)	<0.001	<0.001
	F	128 (12.6%)	78 (10.4%)	49 (7.1%)	42 (8.4%)	45 (7.2%)	0.014	0.002
	Total	345 (16.4%)	214 (14.0%)	153 (10.8%)	106 (9.4%)	133 (10.2%)	<0.001	<0.001
LDL cholesterol ≥130 (mg/dL)	M	55 (4.7%)	41 (4.8%)	23 (2.3%)	26 (3.8%)	42 (6.1%)	0.025	0.576
	F	57 (6.1%)	45 (5.6%)	42 (6.3%)	27 (6.0%)	55 (9.2%)	0.153	0.06
	Total	112 (5.4%)	86 (5.1%)	65 (4.2%)	53 (4.8%)	97 (7.6%)	0.013	0.08
Non-HDL cholesterol ≥145 (mg/dL)	M	98 (9.2%)	56 (6.3%)	35 (3.9%)	41 (6.6%)	58 (8.7%)	0.002	0.711
	F	87 (8.9%)	60 (7.0%)	59 (8.7%)	41 (9.3%)	85 (13.3%)	0.014	0.008
	Total	185 (9.0%)	116 (6.7%)	94 (6.2%)	82 (7.8%)	143 (10.9%)	<0.001	0.105

Data were described as n, (%)

Table 2. Prevalence of dyslipidemia by various diagnostic criteria: trend by year (2008-2017)

Criteria of Dyslipidemia	Unadjusted			Adjusted*		
	OR	95% CI	P value	OR	95% CI	P value
Total cholesterol ≥200 (mg/dL)	1.14	1.06, 1.22	<0.001	1.14	1.05, 1.22	<0.001
Triglyceride ≥130 (mg/dL)	0.97	0.92, 1.03	0.389	0.96	0.90, 1.02	0.199
HDL cholesterol <40 (mg/dL)	0.85	0.80, 0.90	<0.001	0.82	0.78, 0.87	<0.001
LDL cholesterol ≥130 (mg/dL)	1.08	0.99, 1.17	0.08	1.07	0.98, 1.16	0.142
Non-HDL cholesterol ≥145 (mg/dL)	1.06	0.99, 1.14	0.105	1.05	0.97, 1.13	0.228

*Adjusted for age, sex, and body mass index

Conclusions

In Korean youth, the prevalence of hypercholesterolemia showed increasing tendency over the last 10 years. It was obvious especially in female population. However, the prevalence of hypo-HDL-cholesterolemia showed decreasing tendency over the last 10 years. Further research is needed to investigate associated factors with this trend.

Conflicts of Interest

Nothing to declare.