

DYSLIPIDEMIA FACT SHEETS IN KOREA, 2020



KSoLA
The Korean Society of Lipid and Atherosclerosis



Dyslipidemia Fact Sheets in Korea from the Korean Society of Lipid and Atherosclerosis (KSoLA)

The rapid economic development in Korea has led to significant changes in lifestyle and dietary habits, resulting in marked increase in chronic disease prevalence including dyslipidemia, hypertension, and diabetes. The Korean Society of Lipid and Atherosclerosis (KSoLA) is a nonprofit organization founded in 2001 from merging the Korean Society of Lipidology with the Korean Association for the Study of Atherosclerosis. The mission of our society is to prevent and to treat atherosclerotic cardiovascular disease and to improve public awareness on the importance of its management. In order to accomplish our mission, the KSoLA has developed the 3rd dyslipidemia fact sheets on the prevalence and management of dyslipidemia in Korea. Data in our fact sheets were based on the 2007-2018 Korea National Health and Nutrition Examination Survey (KNHANES) of the Korea Centers for Disease Control and Prevention (KCDC) and the National Health Insurance Service. In this edition, we have extended the analysis from the previous 2012-2016 to 2007-2018, modified the definitions of hypercholesterolemia and hyper-LDL-cholesterolemia, and analyzed independent of the hypertension and diabetes societies. We hope our nationwide statistics will increase the public awareness of dyslipidemia. Our mission can only be accomplished by active collaboration with healthcare professionals, and we strongly believe that the dyslipidemia fact sheets can foster our mission in public education.

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Prevalence and Management of Hypercholesterolemia

Definitions

Hypercholesterolemia was defined as total cholesterol ≥ 240 mg/dL or taking lipid-lowering drugs.

Data source

The estimates were derived from the 2007-2018 Korea National Health and Nutrition Examination Survey (KNHANES) and the National Health Insurance Service.

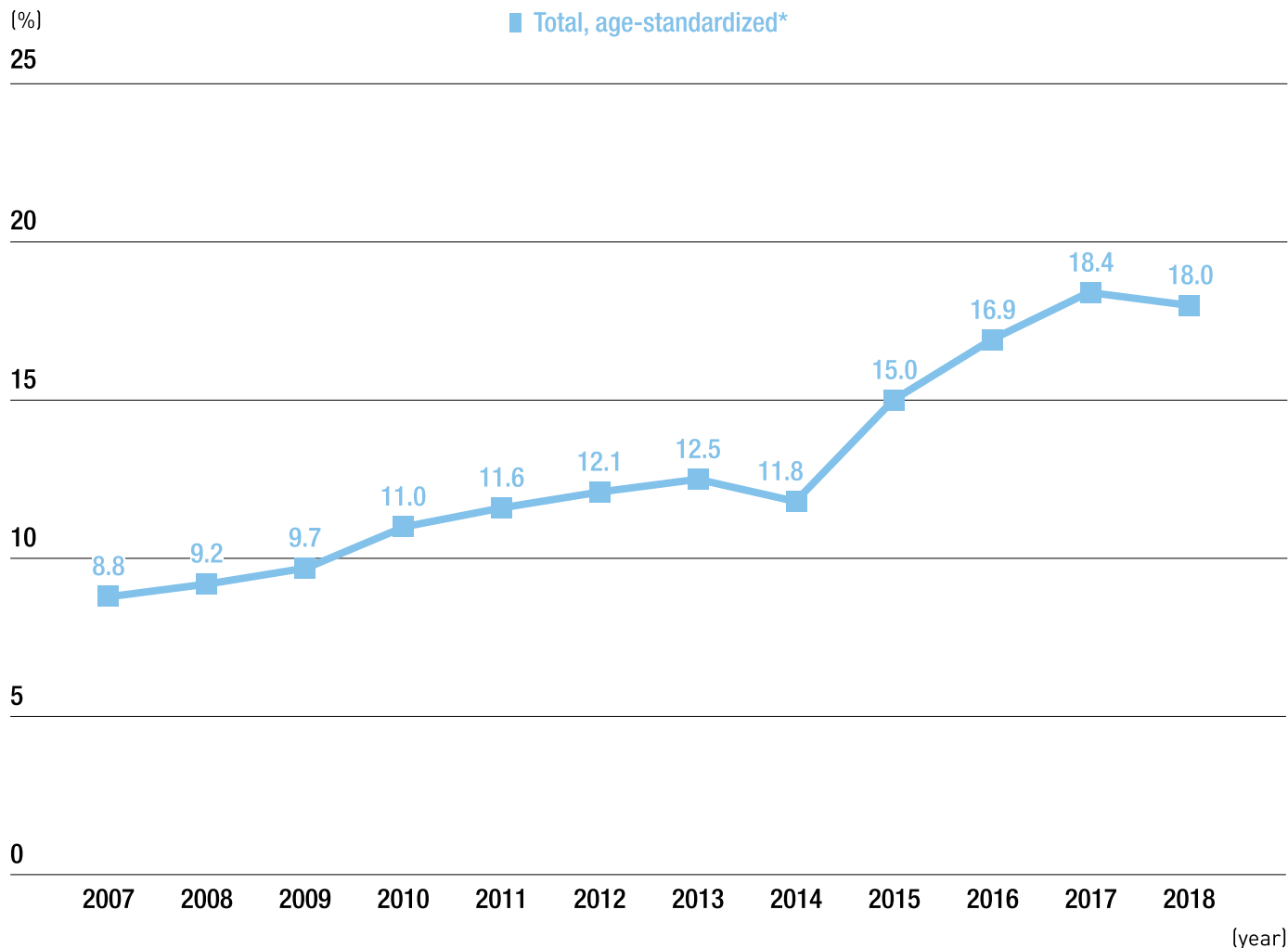
Subjects

Adults 20 years or older

1

Prevalence of Hypercholesterolemia

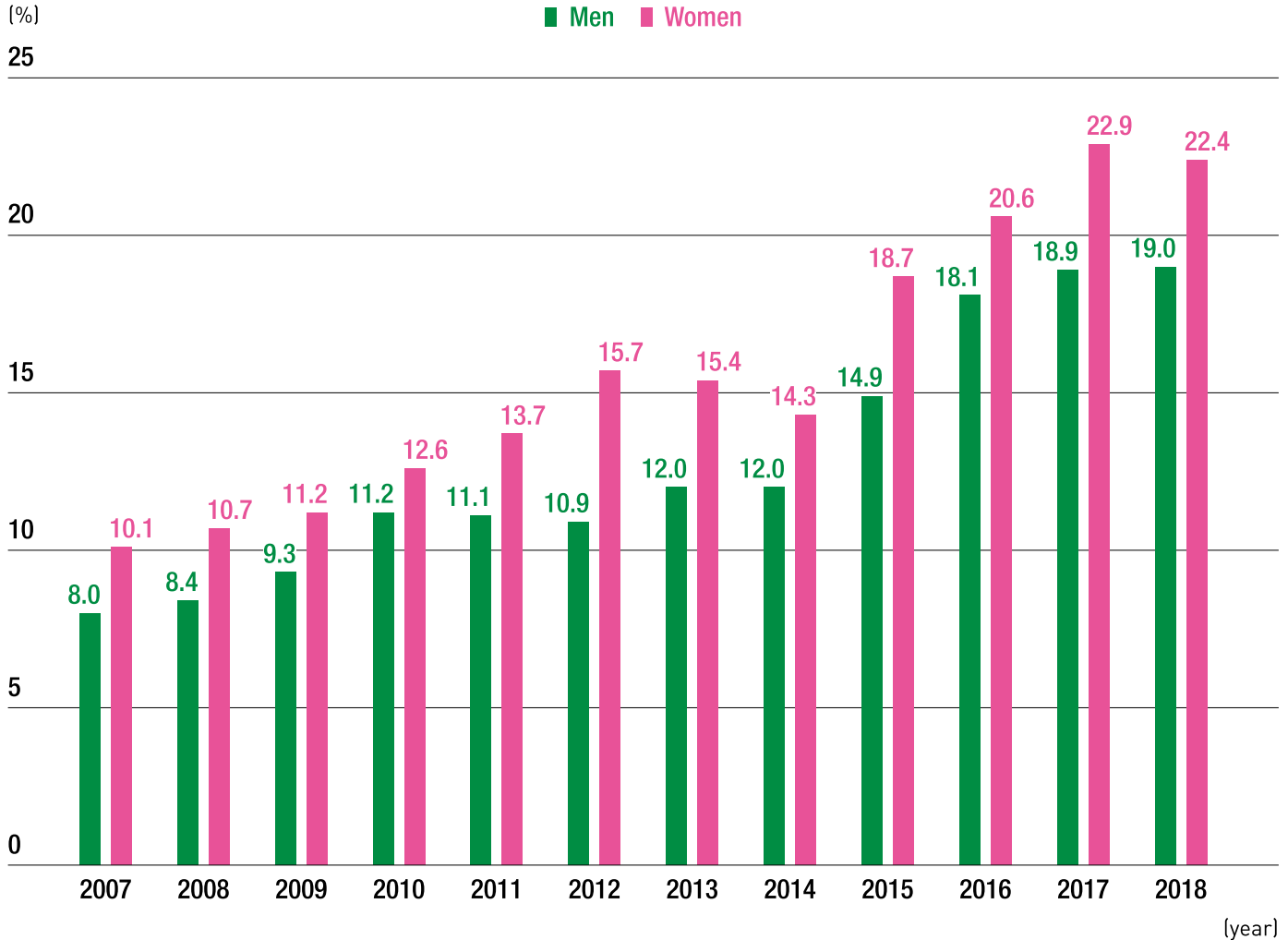
Hypercholesterolemia Prevalence (2007-2018, age-standardized)



* Age-standardized to 2005 population

Prevalence of Hypercholesterolemia

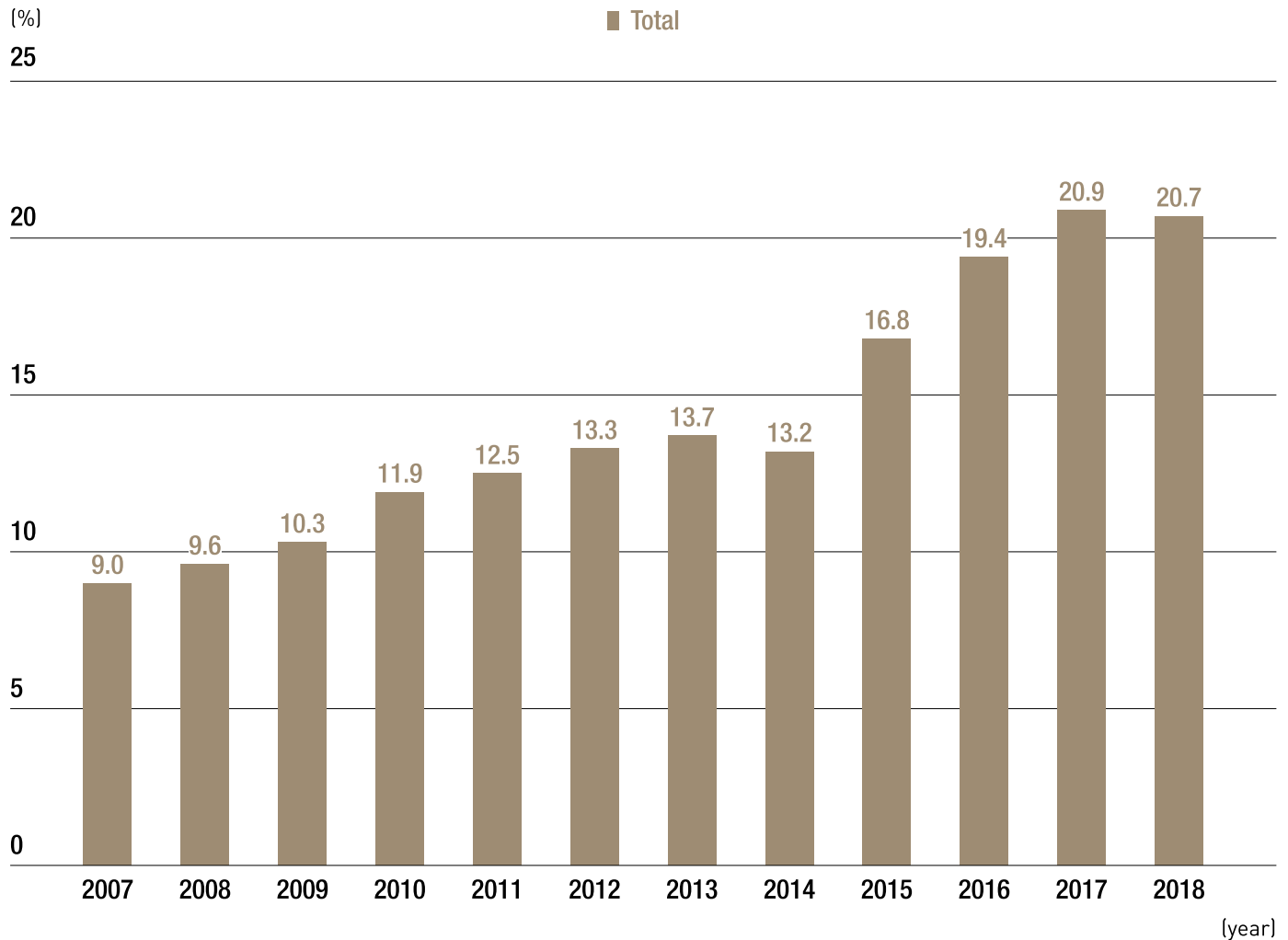
Hypercholesterolemia Prevalence (2007-2018, crude)



Data source: Korea National Health and Nutrition Examination Survey (KNHANES) 2007-2018 / Age 20+ years

In 2018, the prevalence of hypercholesterolemia in adults 20 years or older was 20.7%.
“Nearly 1 out of 5 adults has hypercholesterolemia.”

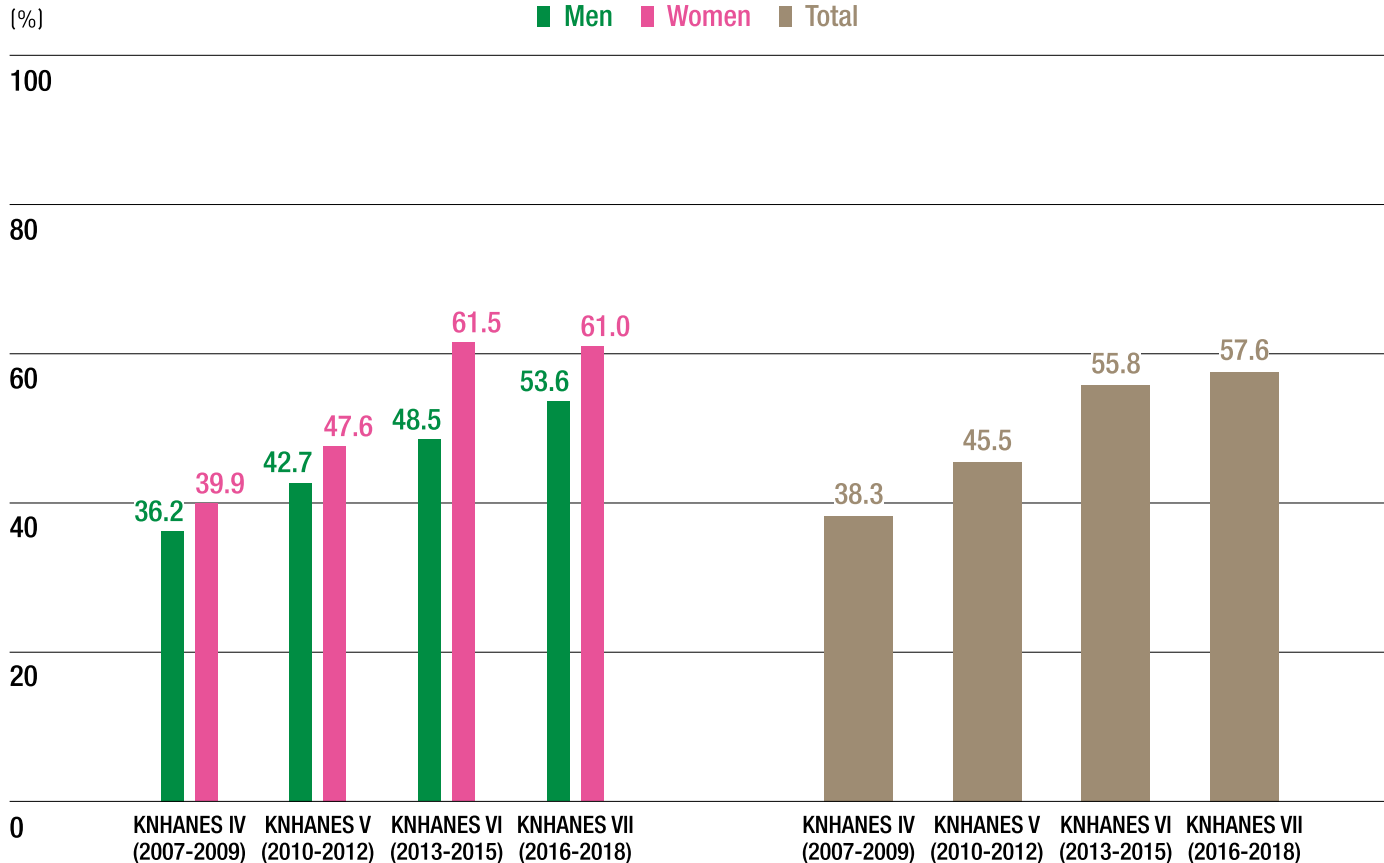
Hypercholesterolemia Prevalence (2007-2018, crude)



Data source: Korea National Health and Nutrition Examination Survey (KNHANES) 2007-2018 / Age 20+ years

Awareness Rate of Hypercholesterolemia

Awareness rate

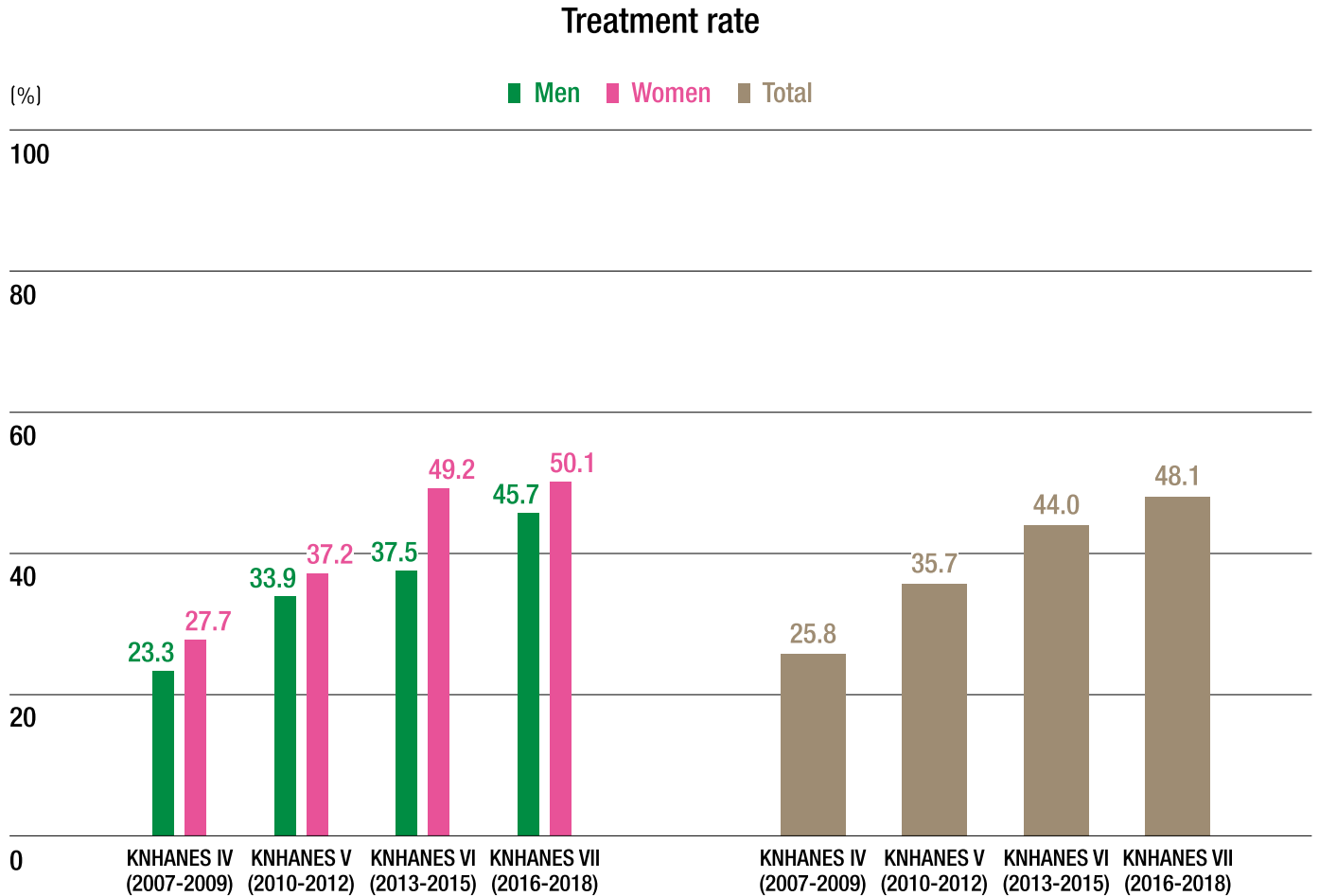


The awareness rate of hypercholesterolemia is 57.6%.

"Four out of 10 adults with hypercholesterolemia are unaware of their condition."

Data source: Korea National Health and Nutrition Examination Survey (KNHANES) 2007-2018 / Age 20+ years

Treatment Rate of Hypercholesterolemia

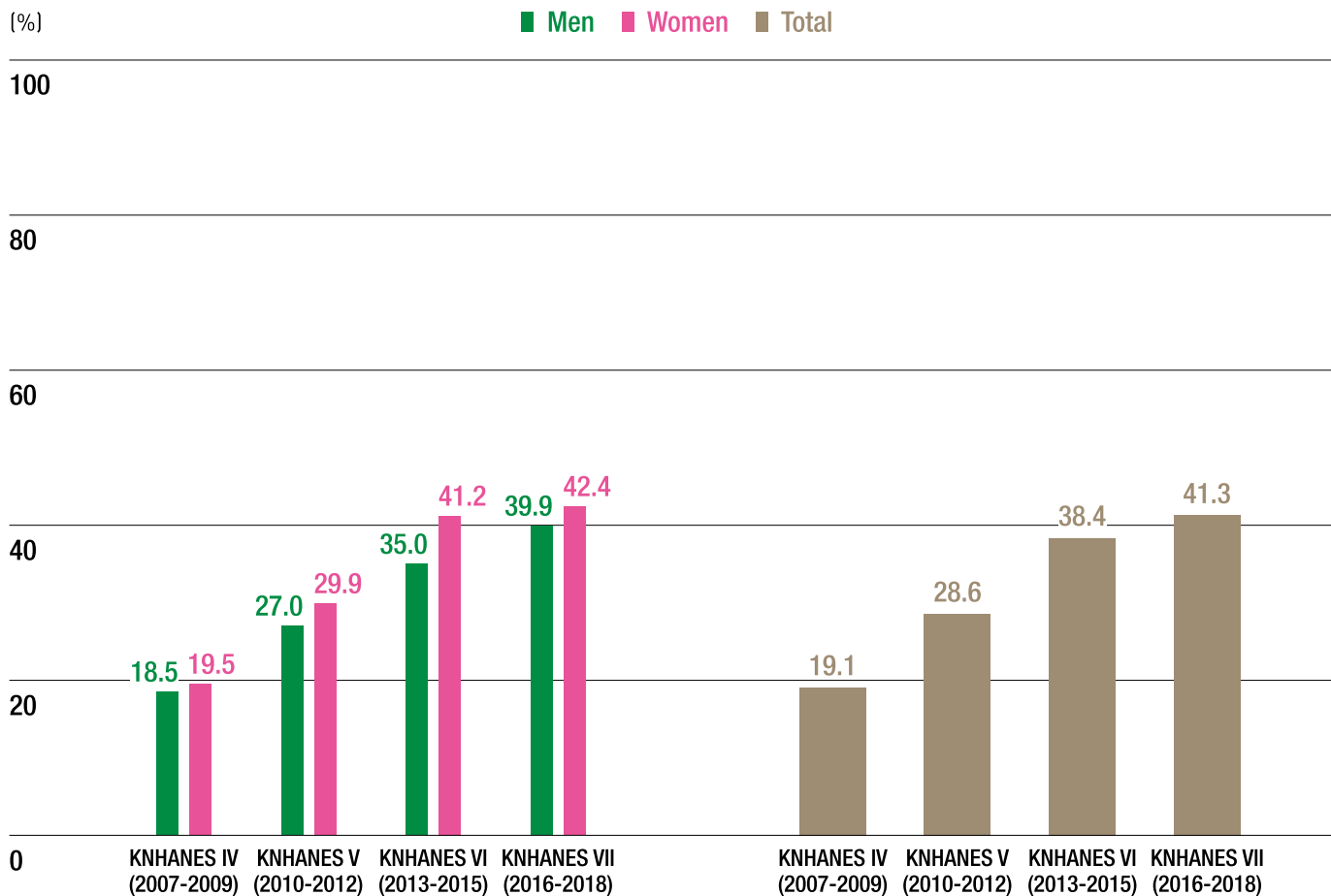


The treatment rate among adults with hypercholesterolemia is 48.1%.

“Less than half of adults with hypercholesterolemia take medications.”

Control Rates of Hypercholesterolemia

Control Rate among Adults with Hypercholesterolemia



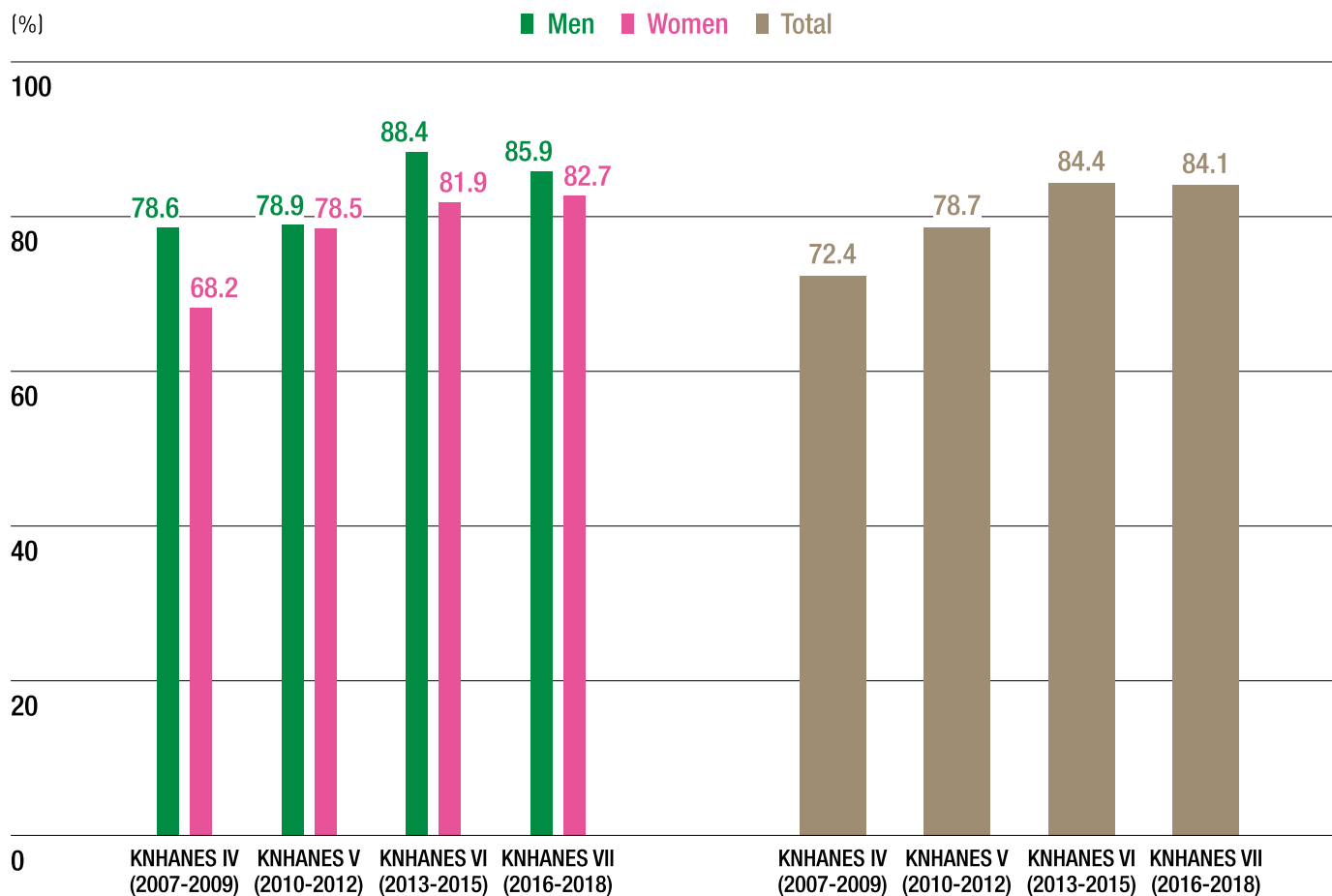
Data source: Korea National Health and Nutrition Examination Survey (KNHANES) 2007-2018 / Age 20+ years

The control rate among adults with hypercholesterolemia is 41.3% for target total cholesterol level <200 mg/dL.

“Only 2 out of 5 adults with hypercholesterolemia achieve target cholesterol level.”

However, the control rate among adults treated for hypercholesterolemia is 84.1%.

Control Rate among Adults Treated for Hypercholesterolemia



Data source: Korea National Health and Nutrition Examination Survey (KNHANES) 2007-2018 / Age 20+ years

Dyslipidemia in Korea, 2020

Definitions

Hyper-low-density lipoprotein (LDL)-cholesterolemia was defined as serum LDL-cholesterol ≥ 160 mg/dL or taking lipid-lowering drug.

Hypo-high-density lipoprotein (HDL)-cholesterolemia was defined as serum HDL-cholesterol < 40 mg/dL.

Hypertriglyceridemia was defined as serum triglyceride ≥ 200 mg/dL.

Dyslipidemia was defined as satisfying one of the definitions stated above.

Data source

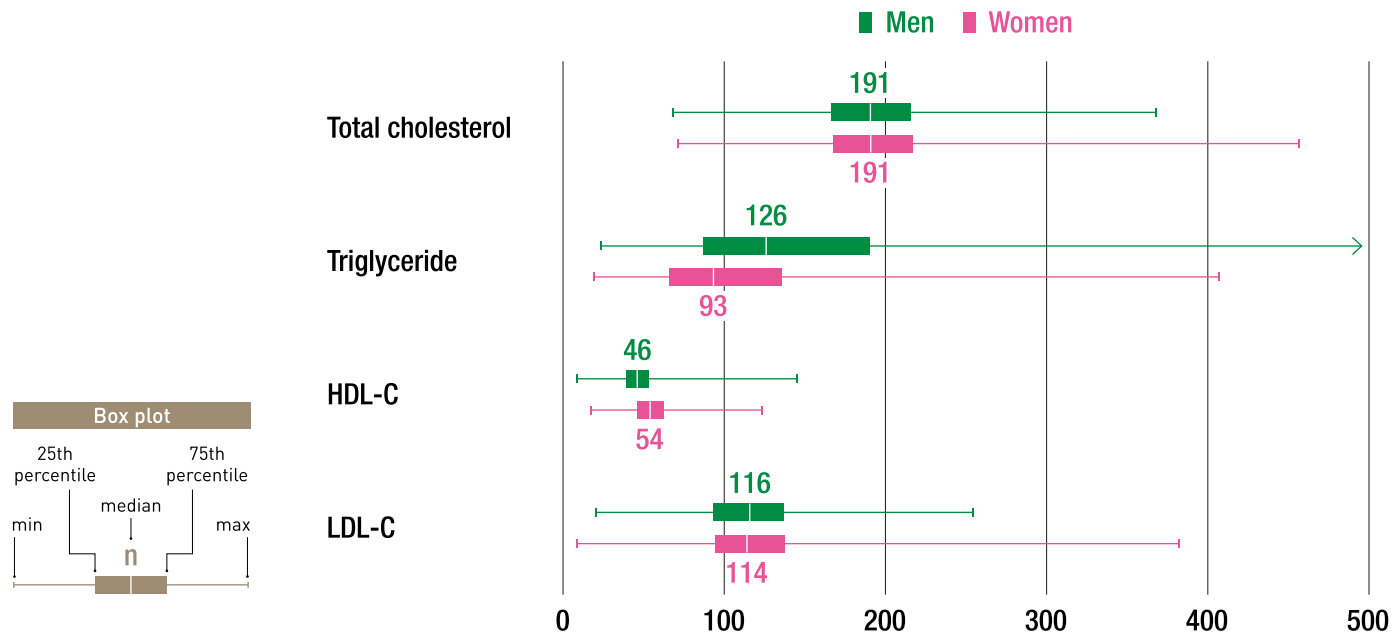
The estimates were derived from the 2007-2018 Korea National Health and Nutrition Examination Survey (KNHANES) and the National Health Insurance Service.

Subjects

Adults 20 years or older

2

Lipid Profile in Korean Adults



Lipid (mg/dL)	Mean	Standard Deviation	Percentile						
			5	10	25	50	75	90	95
Men									
Total cholesterol	192	47	134	145	166	191	216	239	253
Triglyceride	162	188	52	62	87	126	190	280	367
HDL-C	47	14	32	34	39	46	53	62	67
LDL-C	116	39	64	74	93	116	137	158	169
Women									
Total cholesterol	194	45	138	149	168	191	217	241	258
Triglyceride	114	106	42	49	66	93	136	197	247
HDL-C	55	17	36	40	46	54	63	72	78
LDL-C	117	40	69	78	95	114	138	160	176

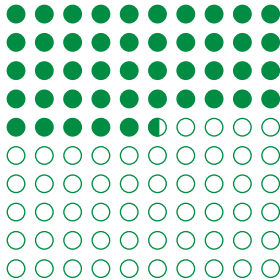
The mean serum total cholesterol levels in adults aged 20 years or older are 192 mg/dL in men and 194 mg/dL in women.

Data source: Korea National Health and Nutrition Examination Survey (KNHANES) 2007-2018 / Age 20+ years / The range (min-max) does not exclude outliers.

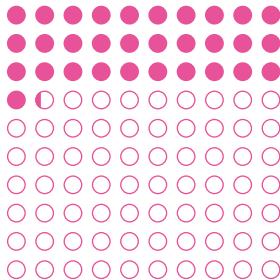
Prevalence of Dyslipidemia

Prevalence by Sex

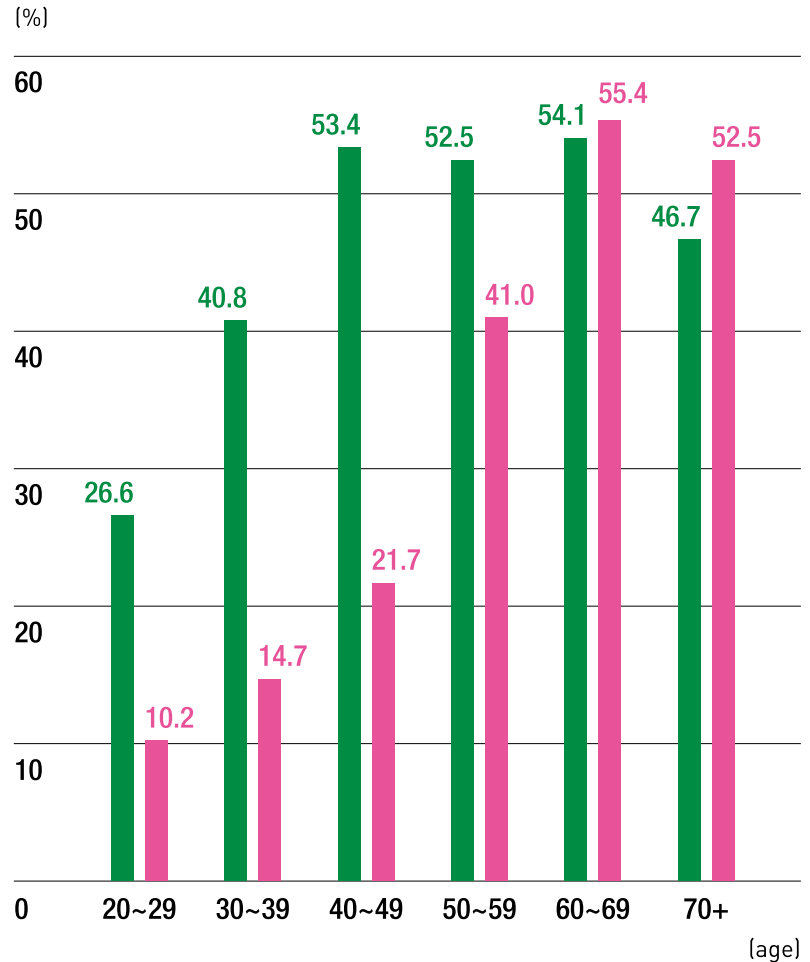
Men
45.6%



Women
31.3%



Prevalence by Sex and Age



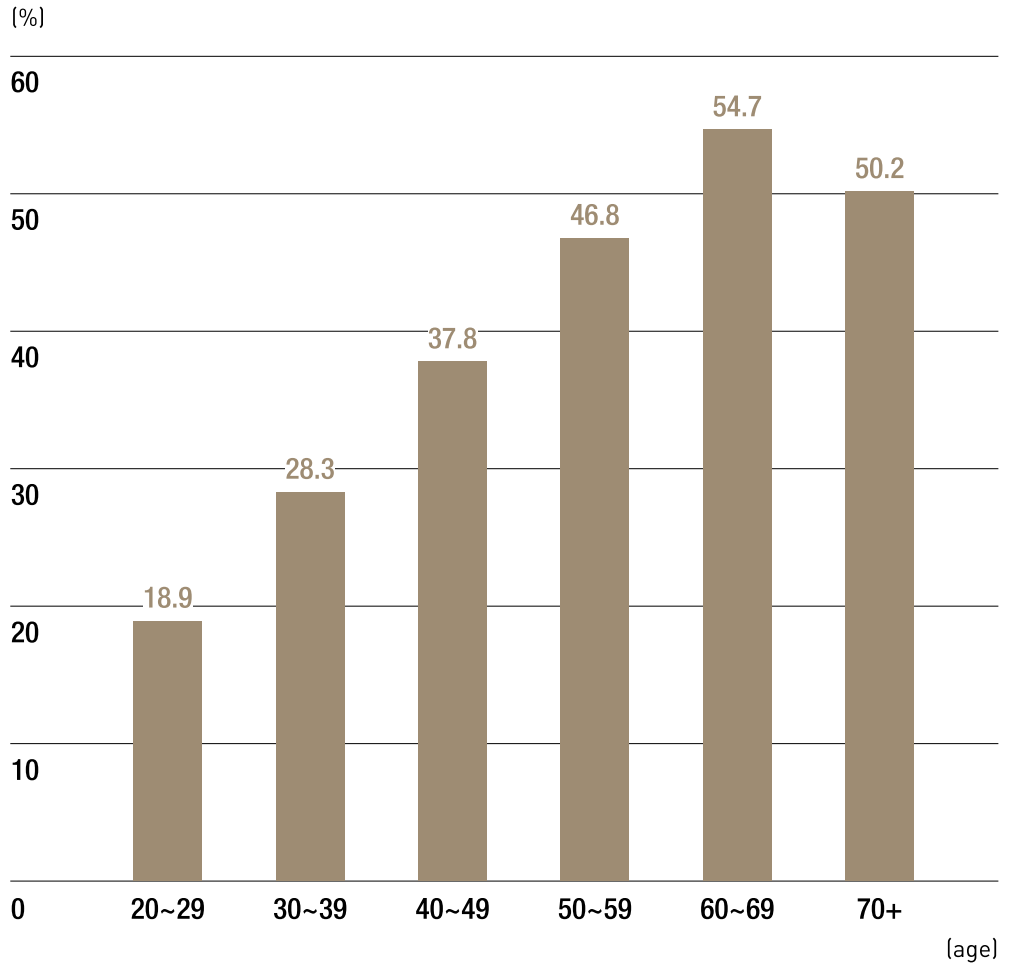
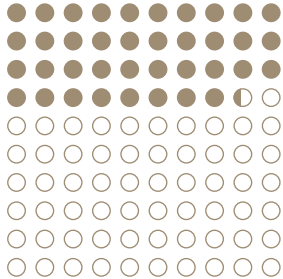
Data source: Korea National Health and Nutrition Examination Survey (KNHANES) 2007-2018

Four out of 10 adults aged 20 years or older have dyslipidemia.
“About 5 out of 10 men and 3 out of 10 women have dyslipidemia.”

Prevalence by Age (Total)

Total

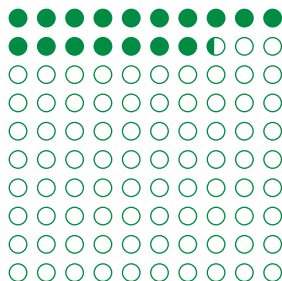
38.4%



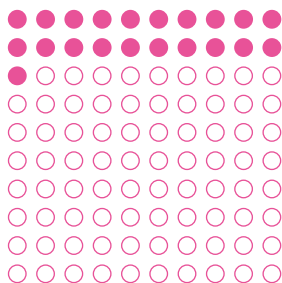
Prevalence of Hyper-LDL-cholesterolemia

Prevalence by Sex

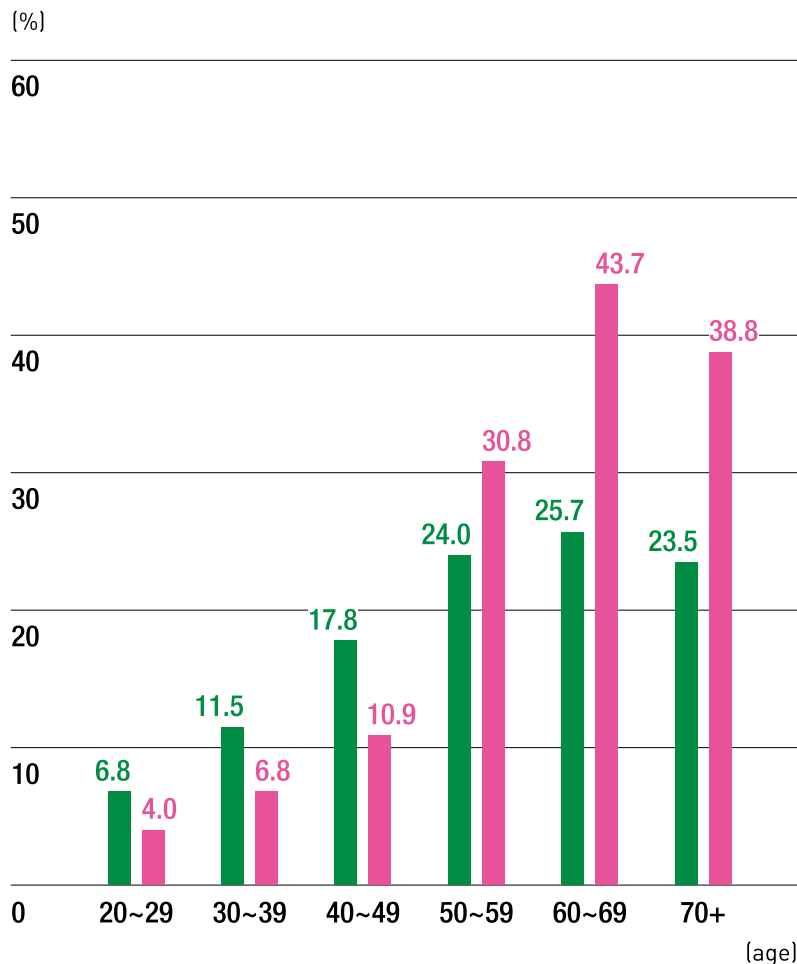
Men
17.4%



Women
21.0%



Prevalence by Sex and Age



Data source: Korea National Health and Nutrition Examination Survey (KNHANES) 2007-2018

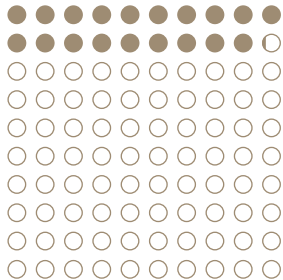
The prevalence of hyper-LDL-cholesterolemia among adults aged 20 years or older is 19.2%. It increases with age, where 1 out of 4 men and 2 out of 5 women aged 60 years or older have hyper-LDL-cholesterolemia.

“The prevalence of hyper-LDL-cholesterolemia is 3 times higher in women in their 50s than in their 40s.”

Prevalence by Age (Total)

Total

19.2%



(%)

60

50

40

30

20

10

0

20~29

30~39

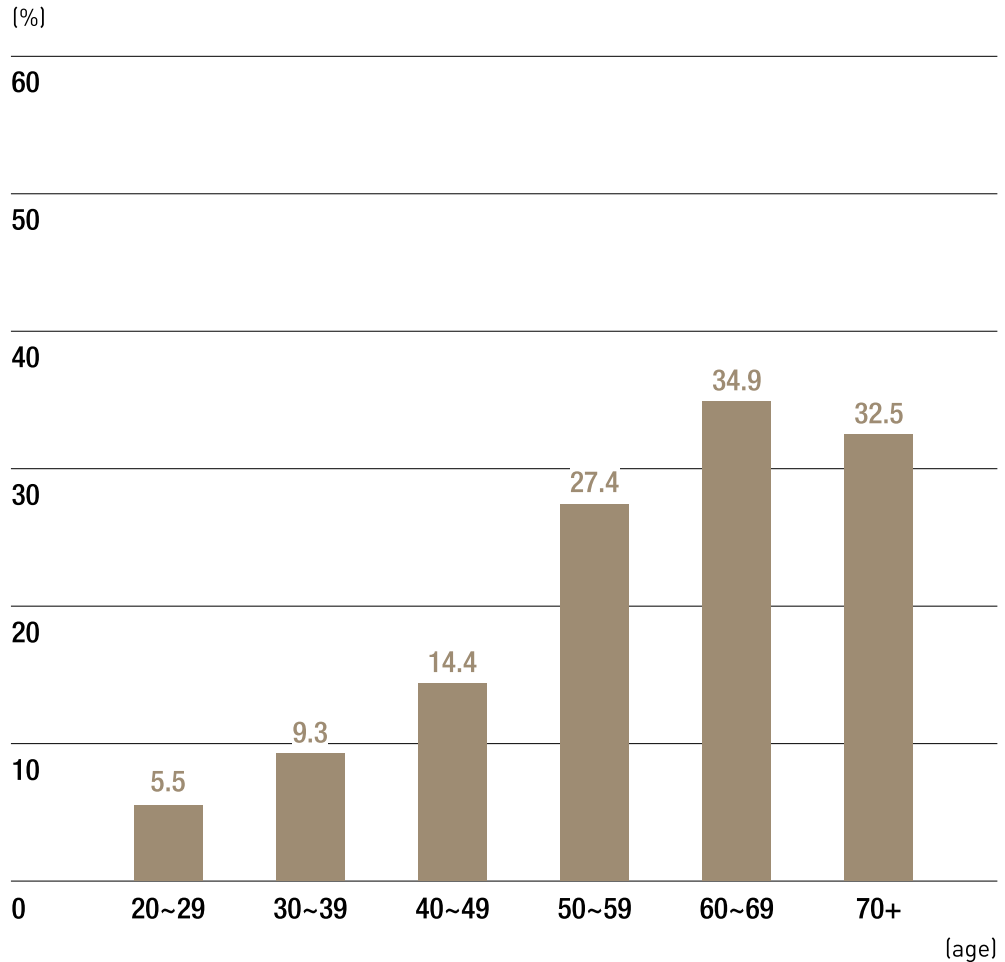
40~49

50~59

60~69

70+

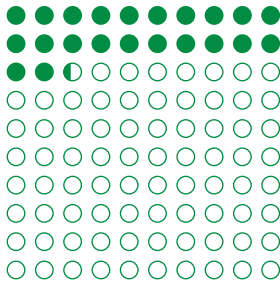
(age)



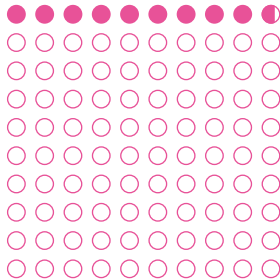
Prevalence of Hypertriglyceridemia

Prevalence by Sex

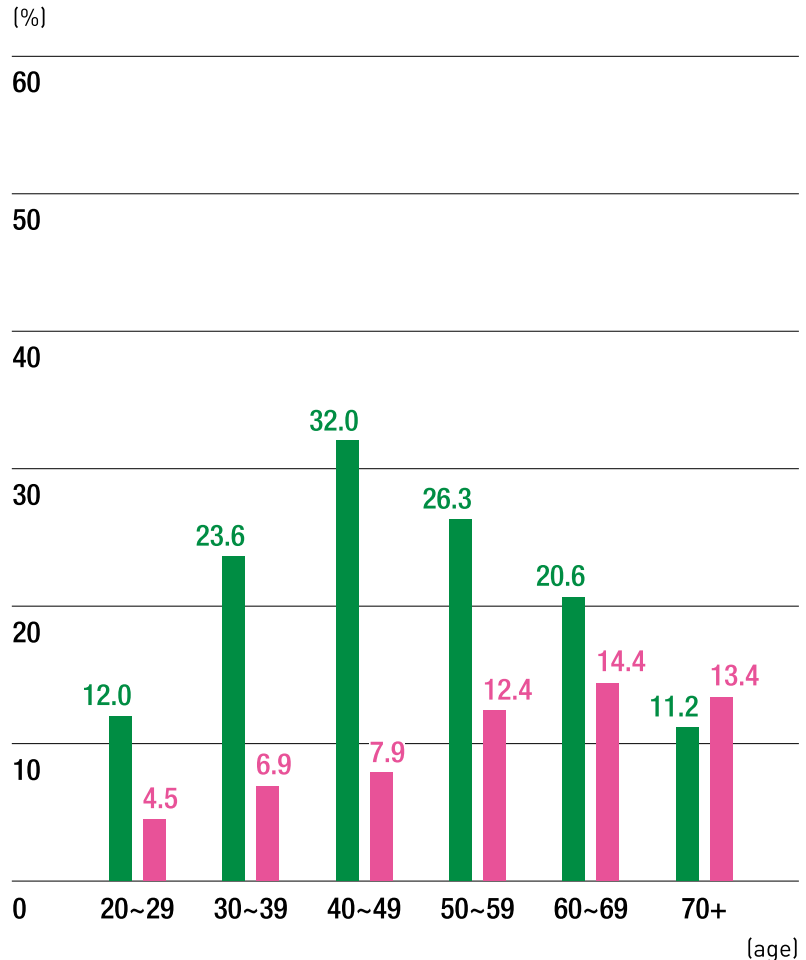
Men
22.4%



Women
9.7%



Prevalence by Sex and Age



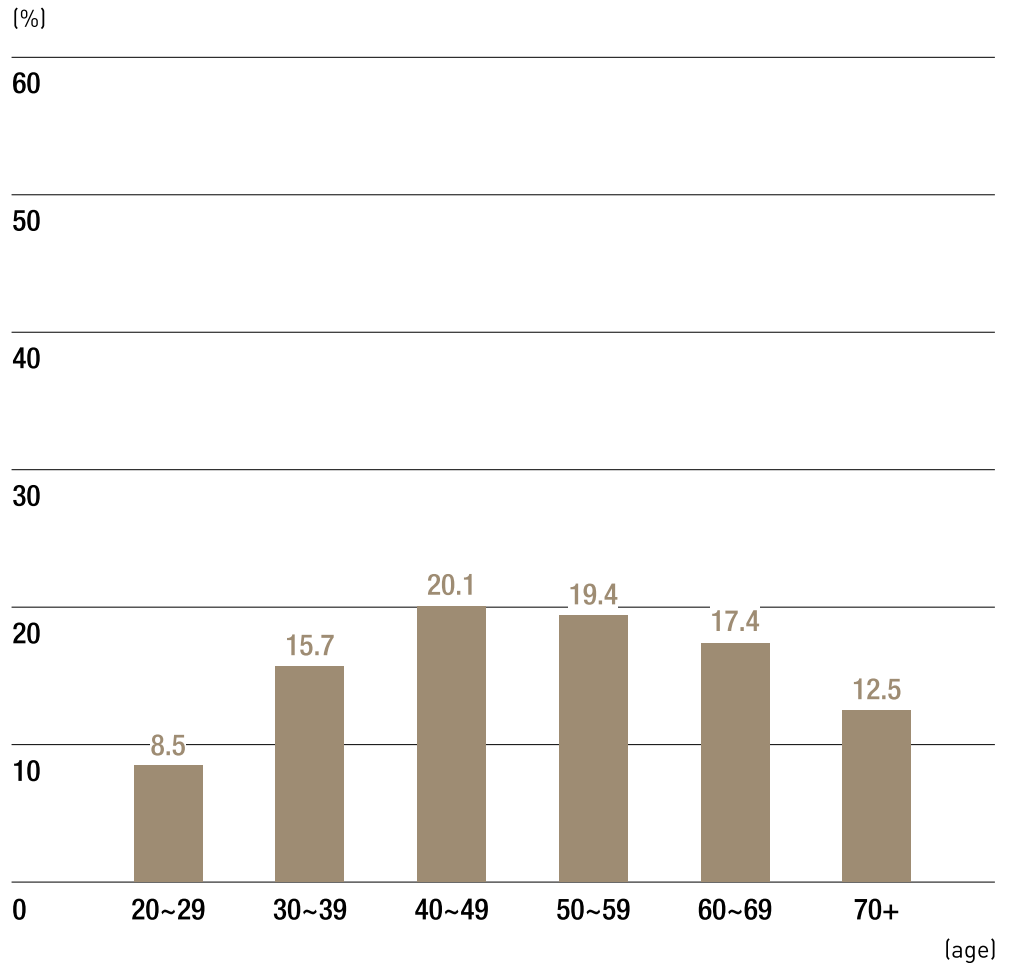
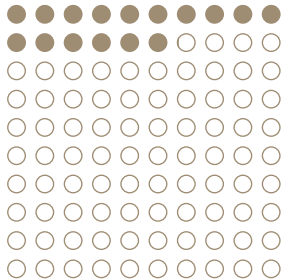
Data source: Korea National Health and Nutrition Examination Survey (KNHANES) 2007-2018

The prevalence of hypertriglyceridemia among adults aged 20 years or older is 16.1%.
“Among adults 40-49 years, the prevalence of hypertriglyceridemia is 4 times higher in men than in women.”

Prevalence by Age (Total)

Total

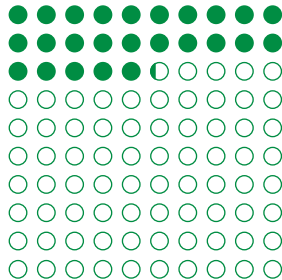
16.1%



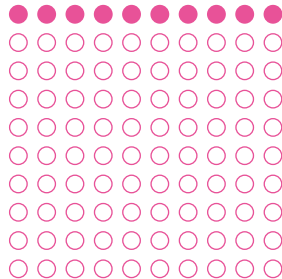
Prevalence of Hypo-HDL-cholesterolemia

Prevalence by Sex

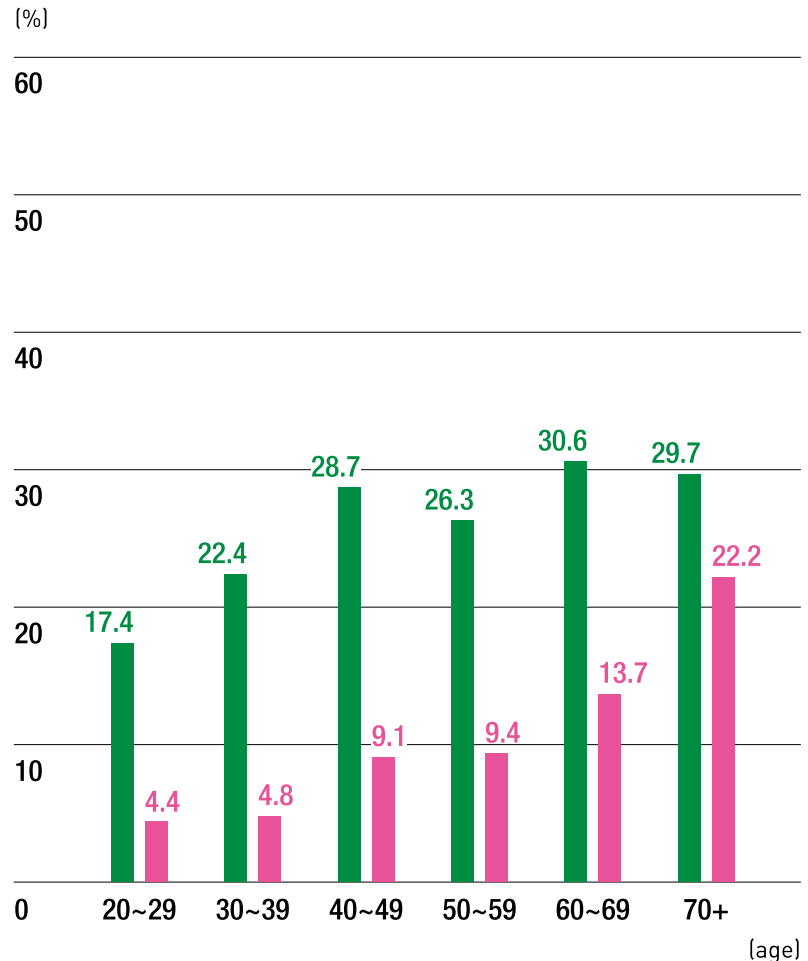
Men
25.3%



Women
10.0%



Prevalence by Sex and Age



Data source: Korea National Health and Nutrition Examination Survey (KNHANES) 2007-2018

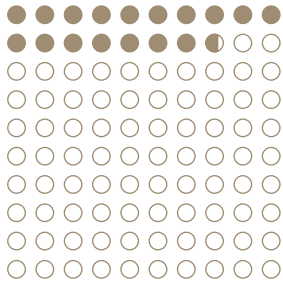
The prevalence of hypo-HDL-cholesterolemia among adults aged 20 years or older is 17.7%.

“In women, the prevalence of hypo-HDL-cholesterolemia is twice as high in their 50s than in their 30s.”

Prevalence by Age (Total)

Total

17.7%



(%)

60

50

40

30

20

10

0

20~29

30~39

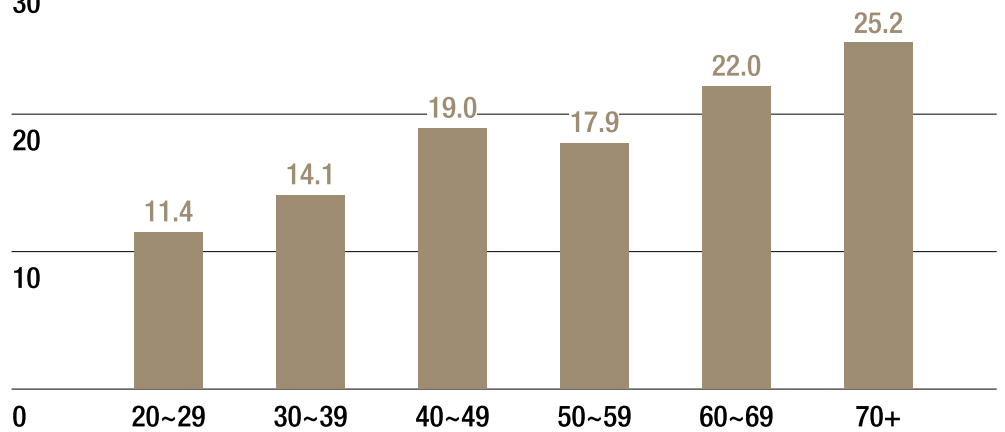
40~49

50~59

60~69

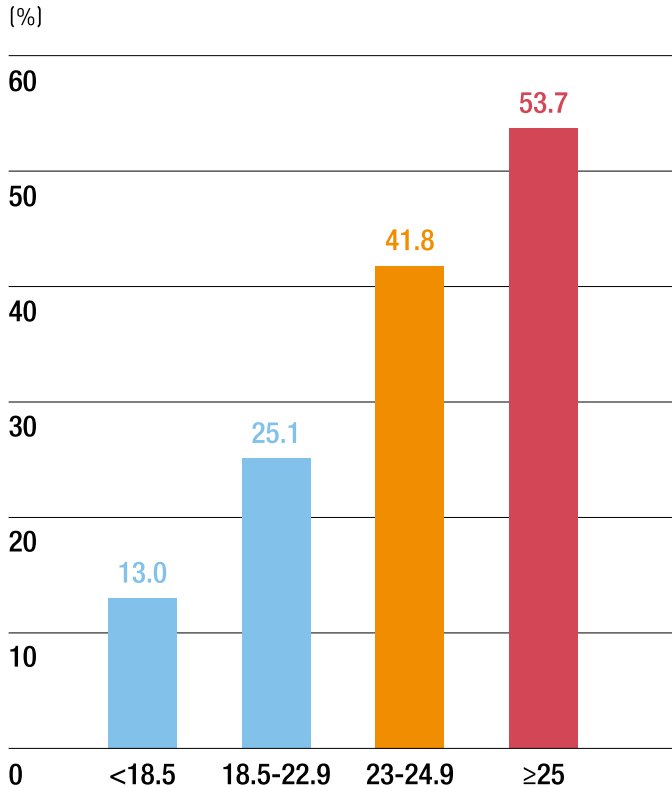
70+

(age)

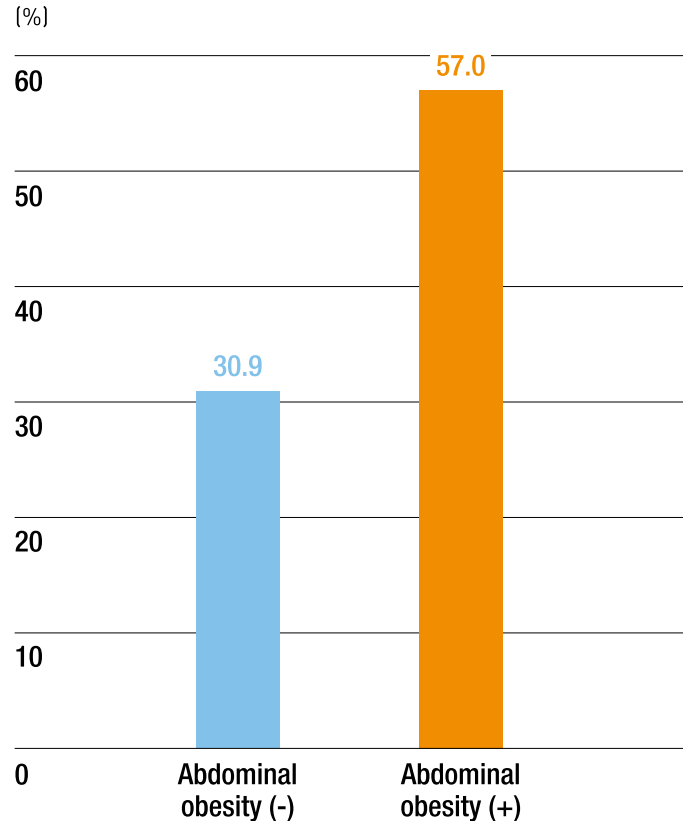


Dyslipidemia in Adults with Obesity

Prevalence of Dyslipidemia by Body Mass Index



Prevalence by Abdominal Obesity



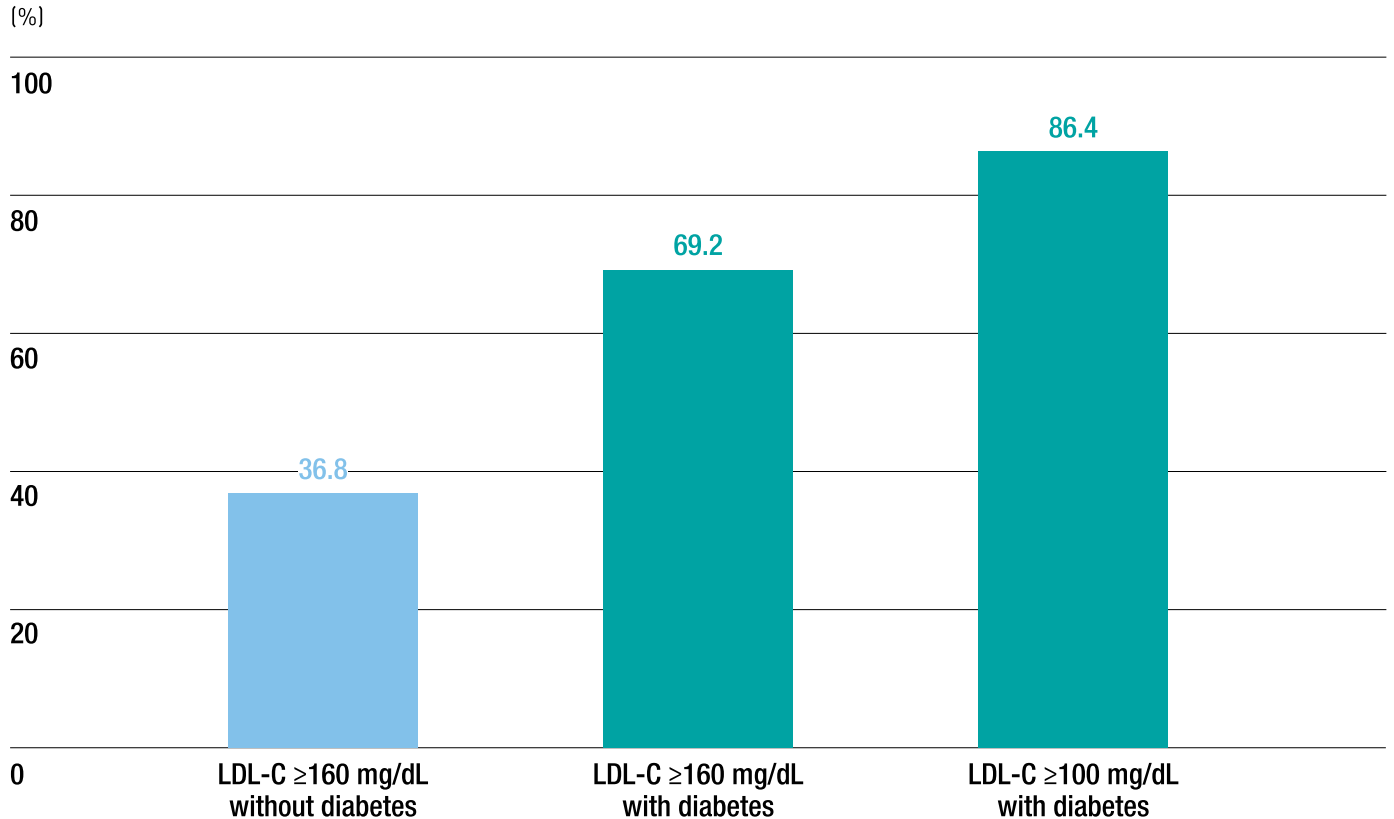
Even within normal body mass index (18.5-22.9 kg/m²), 1 out of 4 adults has dyslipidemia.

Three out of 5 adults with abdominal obesity have dyslipidemia.

“About half of overweight or obese adults have dyslipidemia.”

Abdominal obesity is defined as waist circumference ≥90 cm for men and ≥85 cm for women.

Dyslipidemia in Adults with Diabetes

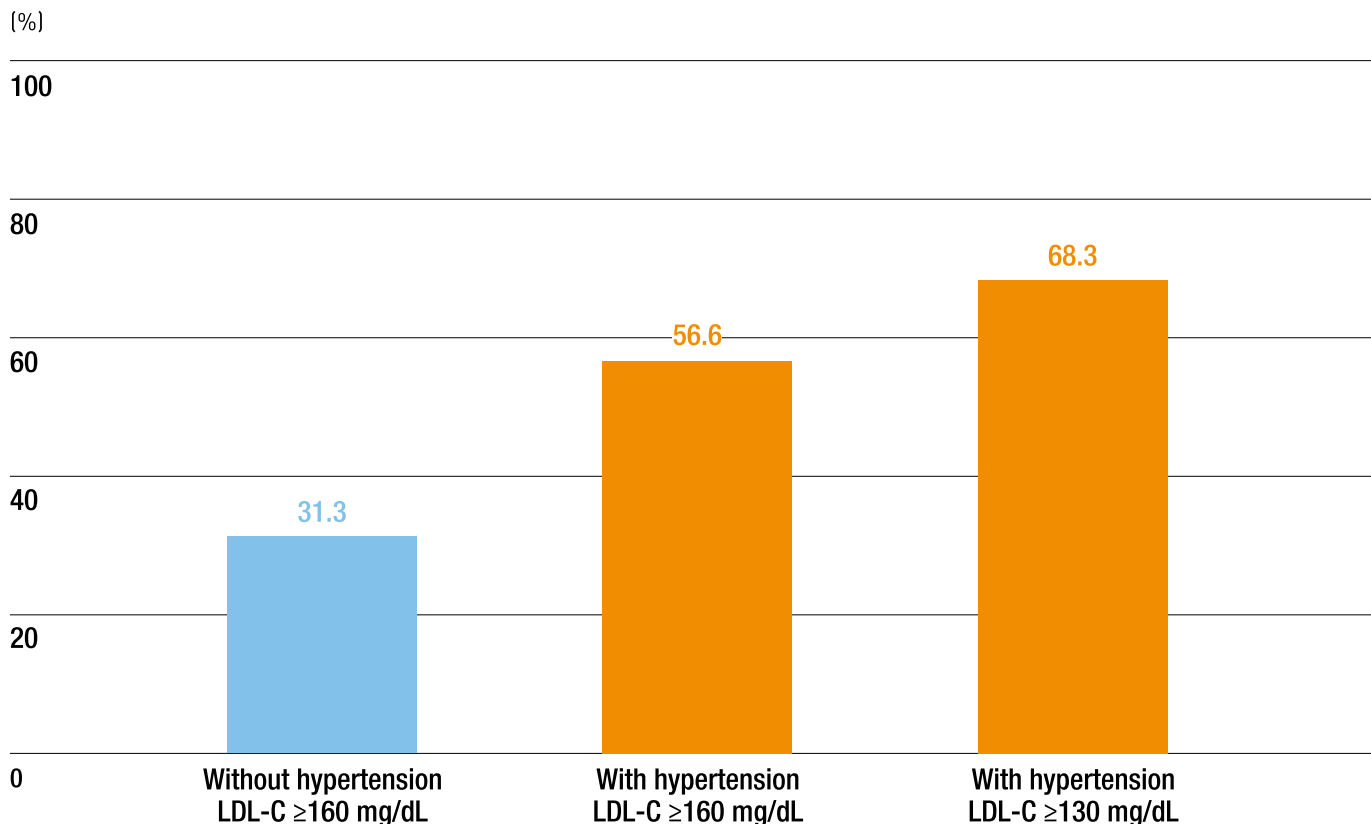


“The prevalence of dyslipidemia in adults with diabetes is 2 times higher than that of the adults without diabetes.”

Diabetes is defined as fasting plasma glucose \geq 126 mg/dL, previously diagnosed, or taking glucose-lowering drugs.

Data source: Korea National Health and Nutrition Examination Survey (KNHANES) 2007-2018 / Age 20+ years

Dyslipidemia in Adults with Hypertension



“The prevalence of dyslipidemia in adults with hypertension is 1.8 times higher than that of the adults without hypertension.”

Hypertension is defined as systolic/diastolic blood pressure \geq 140/90 mmHg or taking antihypertensive medication.

Treatment for Dyslipidemia

Definitions

Diagnosis of dyslipidemia is defined as ≥ 1 health insurance claim for dyslipidemia diagnosis (ICD-10 code E78) each year.

Treatment is defined as ≥ 1 health insurance claim for dyslipidemia diagnosis and lipid-lowering drug prescription each year.

Adherence to treatment is defined as the condition wherein lipid-lowering drugs were prescribed more than 290 days (80%) each year.

Data source

National Health Insurance Big Data 2002-2018

Subjects

Adults 20 years or older

3

Treatment for Dyslipidemia

Estimated Number of People Diagnosed, Treated,
and Adherent to Treatment for Dyslipidemia

(×1000 persons)

12,000

10,000

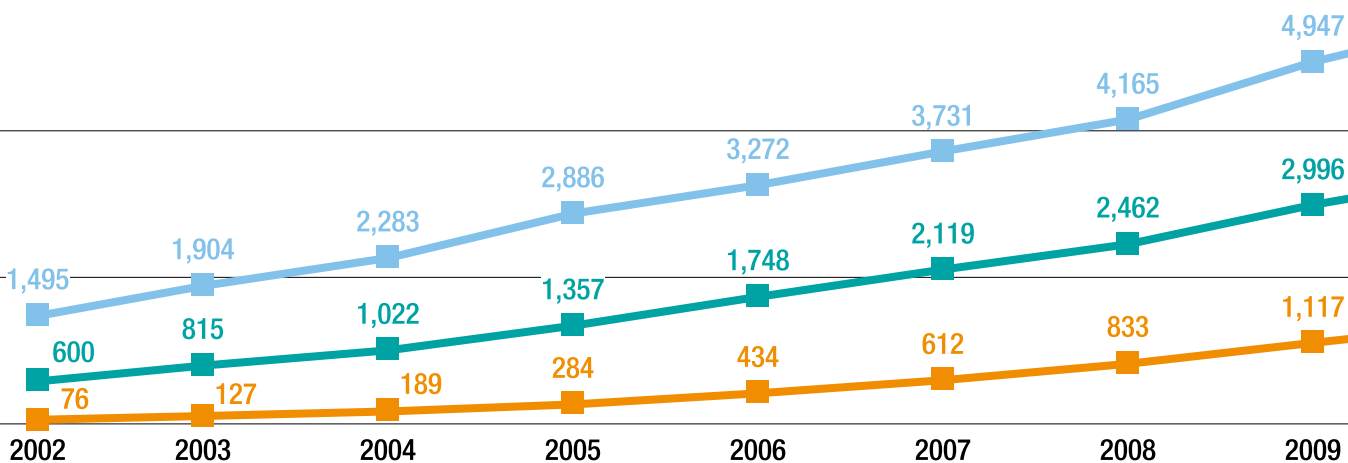
8,000

6,000

4,000

2,000

0



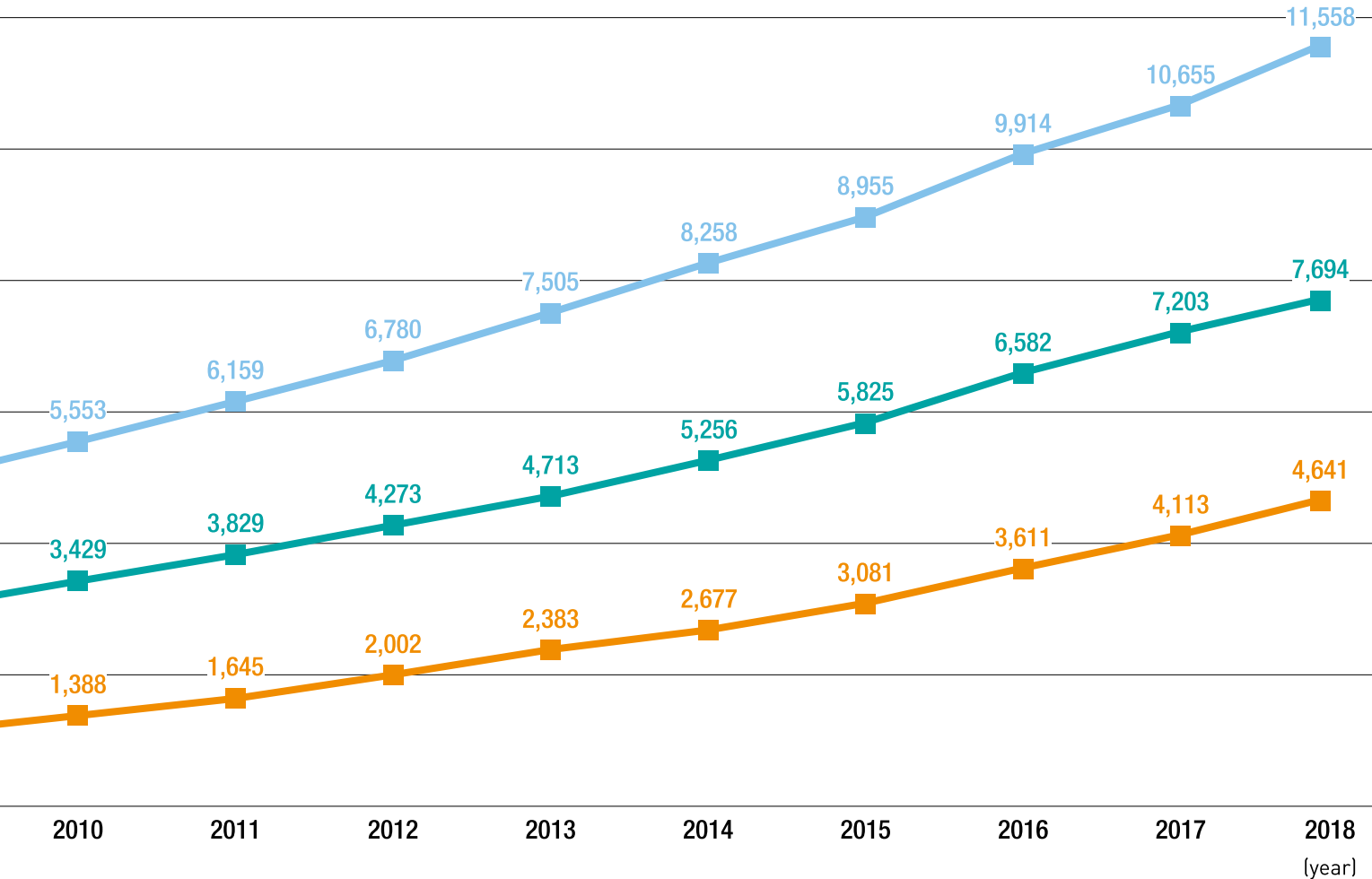
Data source: National Health Insurance Big Data 2002-2018

- Diagnosed
- Treated
- Adherent to treatment

About 11.5 million Korean adults had dyslipidemia in 2018.

The number of people adherent to treatment has markedly increased (60 times) over the last 16 years.

“Two out of 5 people with dyslipidemia adhere to lipid-lowering drugs.”



Age 20+ years

Treatment for Hypertension and Diabetes Among Persons Treated for Dyslipidemia

Estimated Number of People Treated for Dyslipidemia plus Hypertension and/or Diabetes

(×1000 persons)

8,000

7,000

6,000

5,000

4,000

3,000

2,000

1,000

0

2002

2003

2004

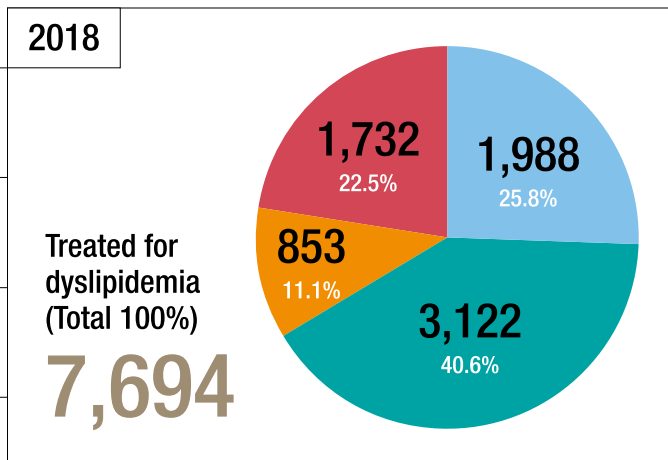
2005

2006

2007

2008

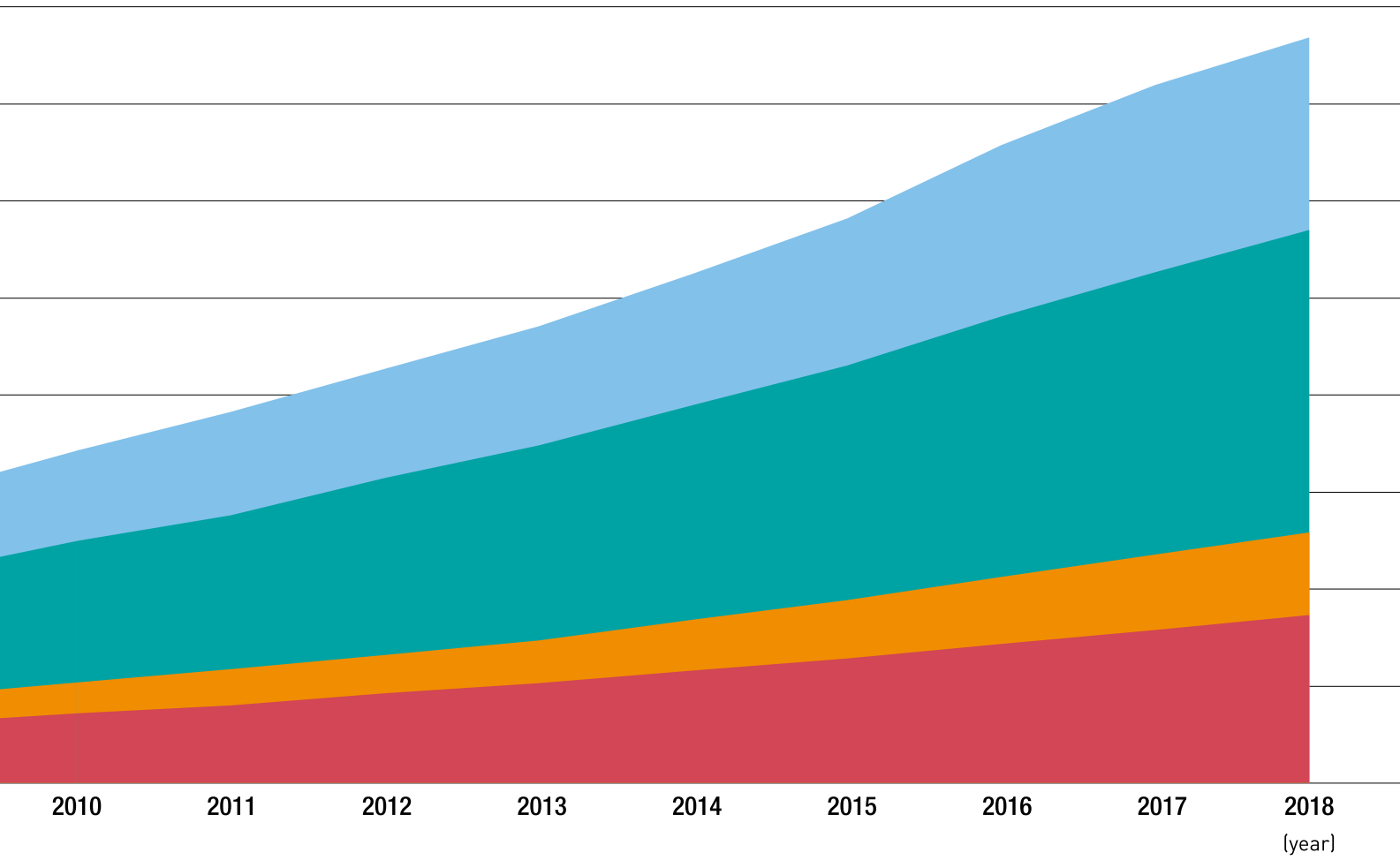
2009



Data source: National Health Insurance Big Data 2002-2018

- Dyslipidemia alone
- Dyslipidemia + Hypertension
- Dyslipidemia + Diabetes
- Dyslipidemia + Hypertension + Diabetes

Three out of 5 people treated for dyslipidemia take antihypertensive medications. One third of the people treated for dyslipidemia also take glucose-lowering drugs. **“Three out of 4 people treated for dyslipidemia are concurrently treated for hypertension or diabetes.”**



Age 20+ years

Changes in Prescriptions of Lipid-Lowering Drugs

Estimated Number of People With Dyslipidemia by Lipid-Lowering Drugs

(×1000 persons)

8,000

7,000

6,000

5,000

4,000

3,000

2,000

1,000

0

2002

2003

2004

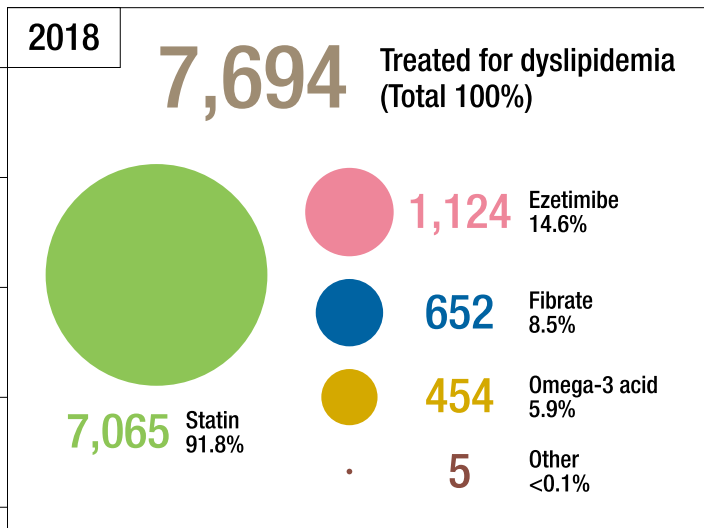
2005

2006

2007

2008

2009

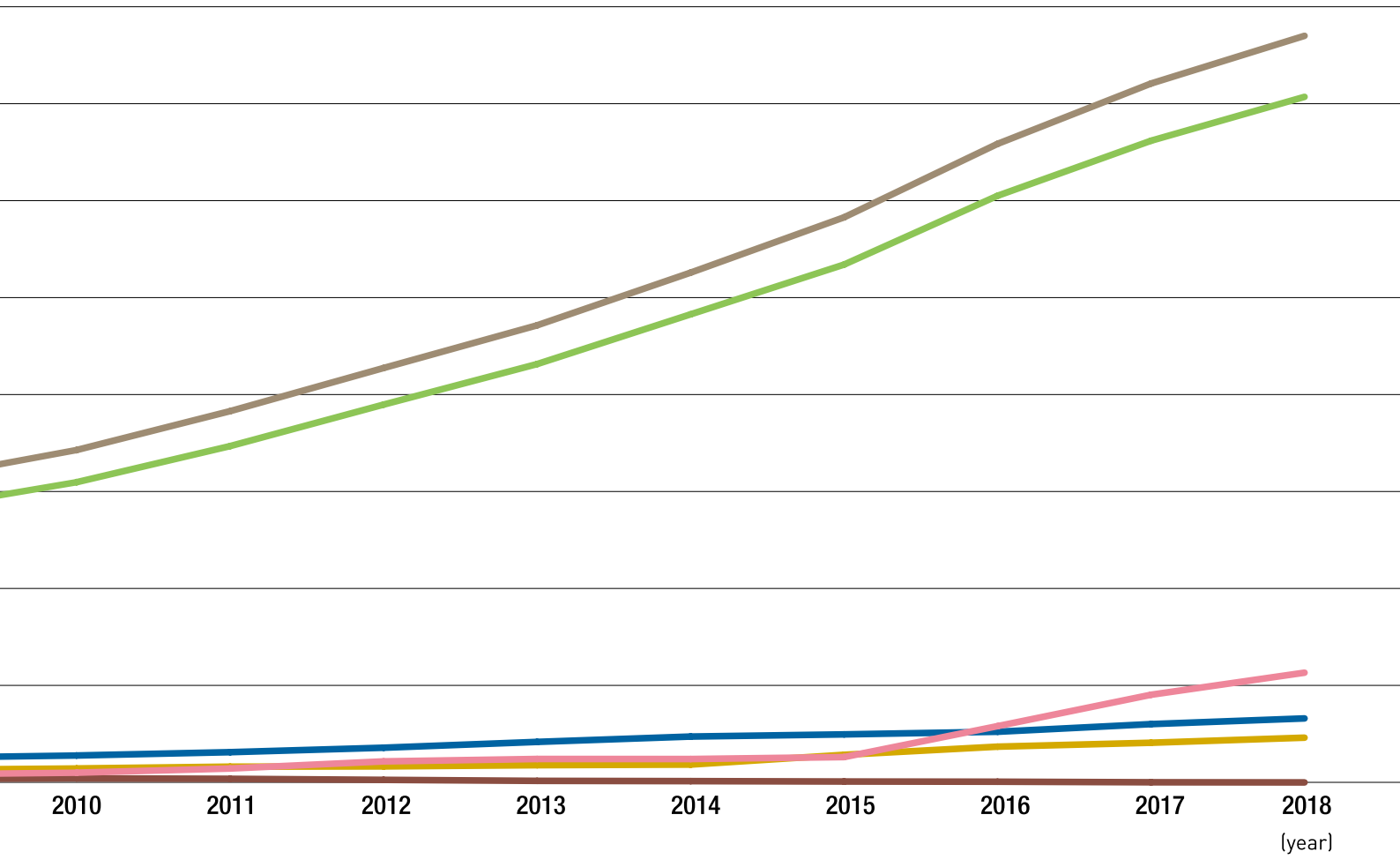


Data source: National Health Insurance Big Data 2002-2018

- Treated for dyslipidemia
- Statin
- Ezetimibe
- Fibrate
- Omega-3 acid
- Other (Niacin or Cholestyramine)

Statins constitute 90% of pharmacological treatment for dyslipidemia. Number of people taking ezetimibe has been increasing since 2015 up to 14.6% in 2018.

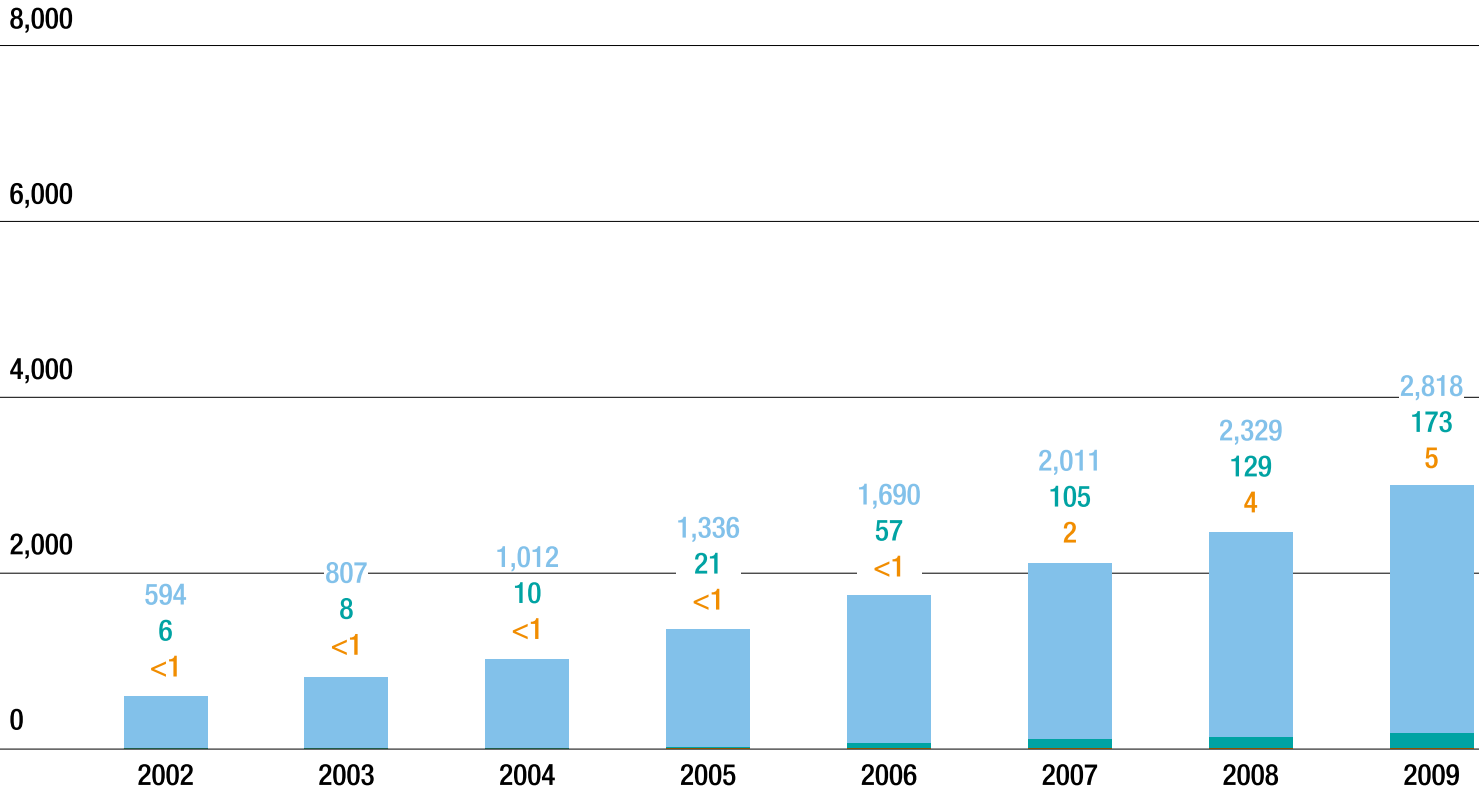
“Nine out of 10 people treated for dyslipidemia take statins.”



Changes in Prescriptions of Lipid-Lowering Drugs

Estimated Number of People With Dyslipidemia
by Treatment Strategy

(×1000 persons)
10,000

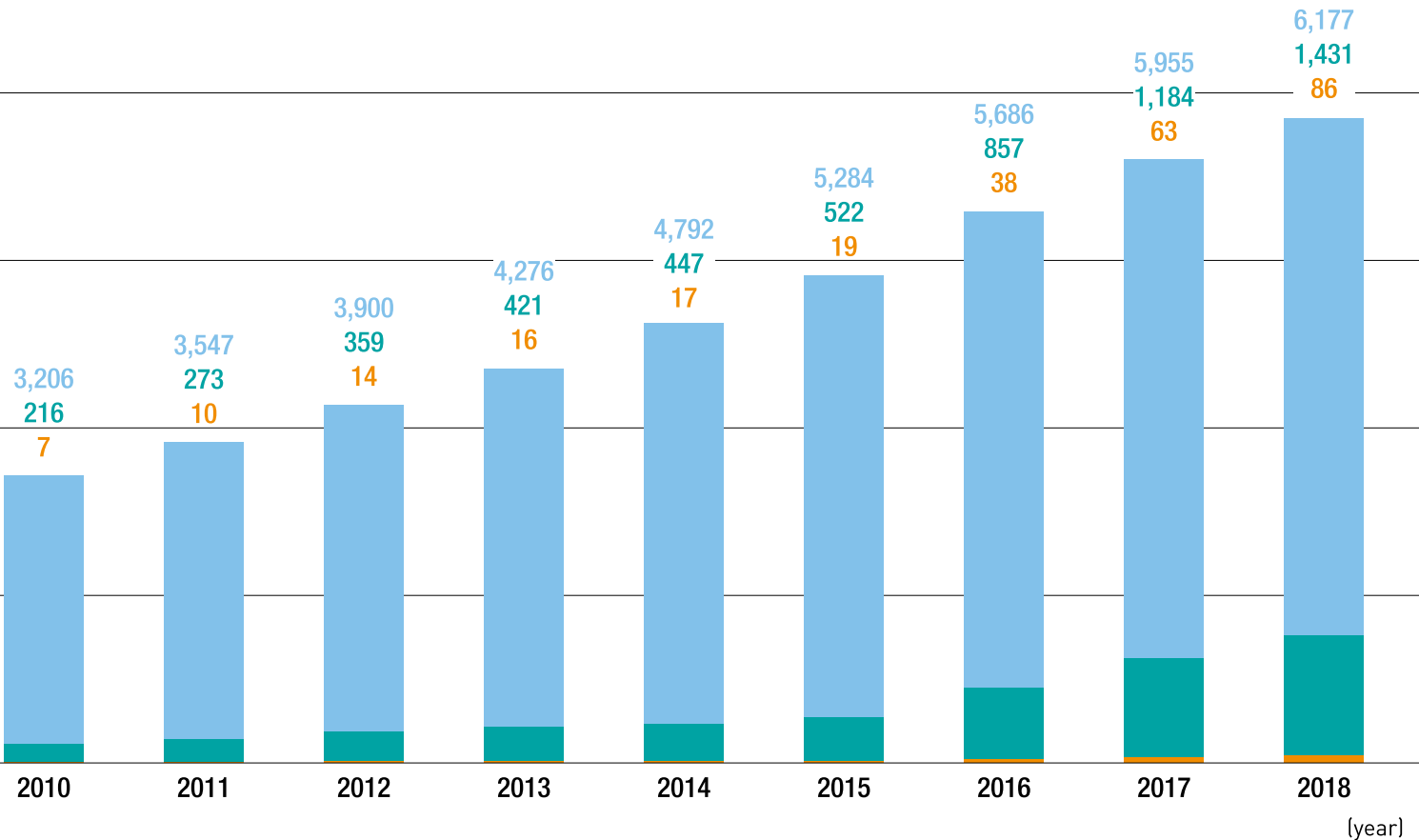


Data source: National Health Insurance Big Data 2002-2018

- Monotherapy
- Dual therapy
- Triple therapy or higher

Four out of 5 people treated for dyslipidemia take one lipid-lowering drug. Use of dual therapy is steadily increasing up to 18.6% in 2018. Proportion of triple therapy was only 1.1% in 2018.

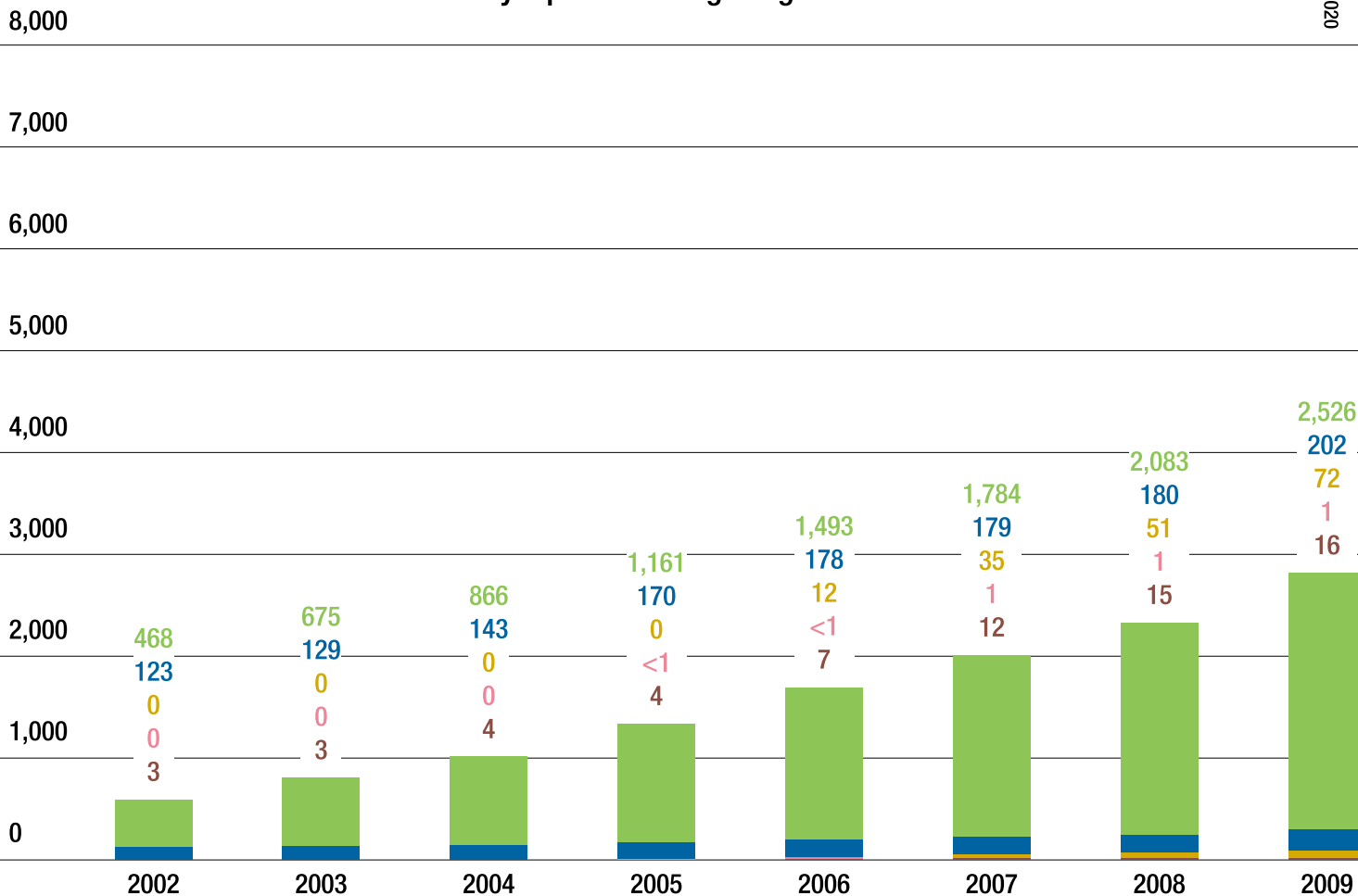
“In 2018, the proportion of monotherapy, dual therapy and triple therapy, respectively, was 80.3%, 18.6% and 1.1%.”



Changes in Monotherapy Regimen

Estimated Number of People Receiving Monotherapy
by Lipid-Lowering Drugs

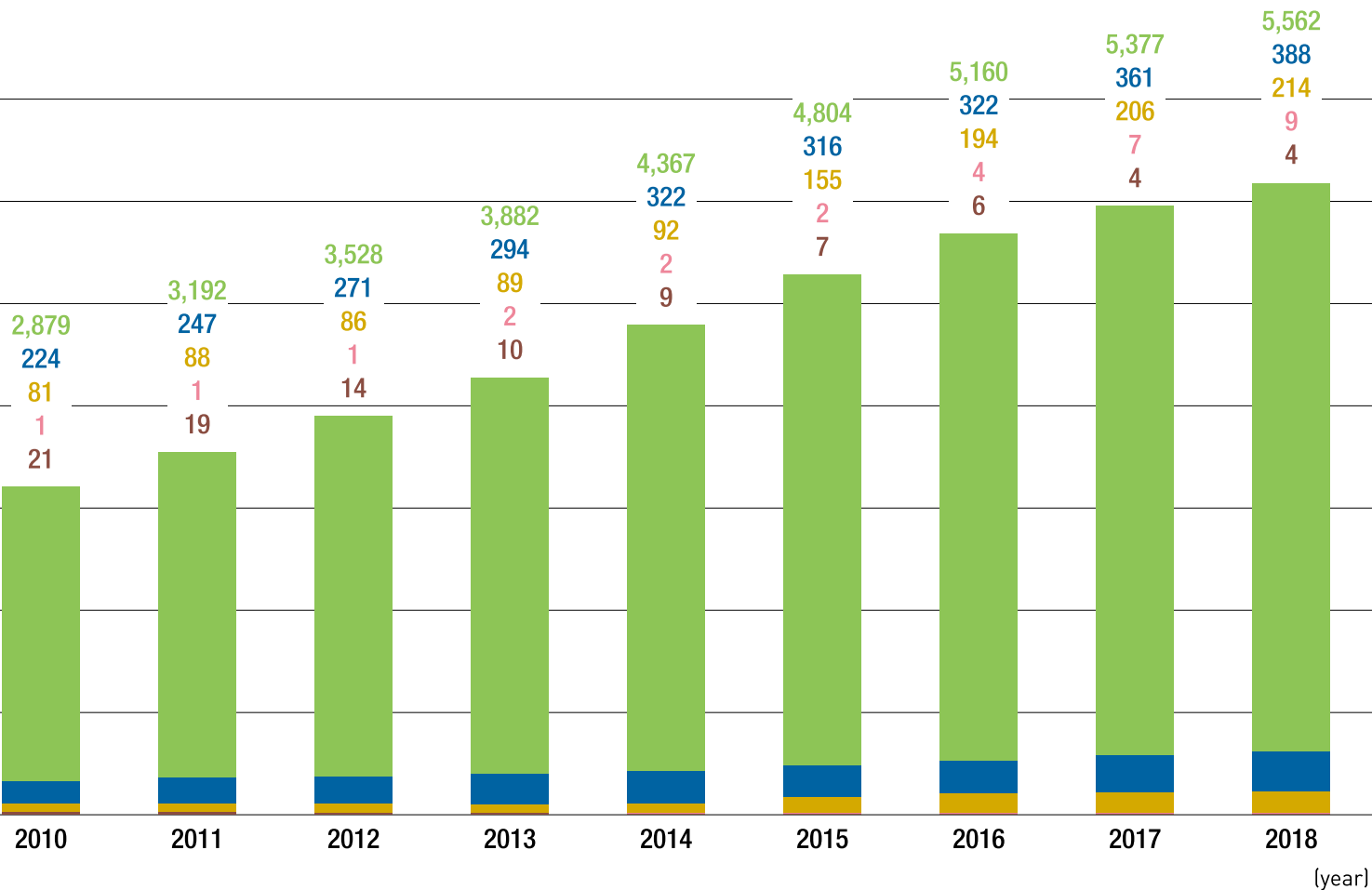
(×1000 persons)



Data source: National Health Insurance Big Data 2002-2018

- Statin
- Fibrate
- Omega-3-acid
- Ezetimibe
- Other (Niacin or Cholestyramine)

Most people (90%) receiving monotherapy took statins in 2018.



Changes in Dual Therapy Regimen

Estimated Number of People Receiving Dual Therapy
by Lipid-Lowering Drugs

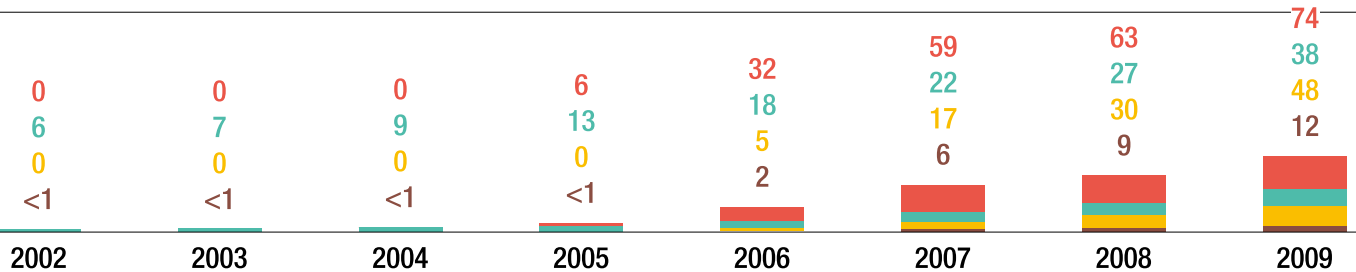
(×1000 persons)
2,000

1,500

1,000

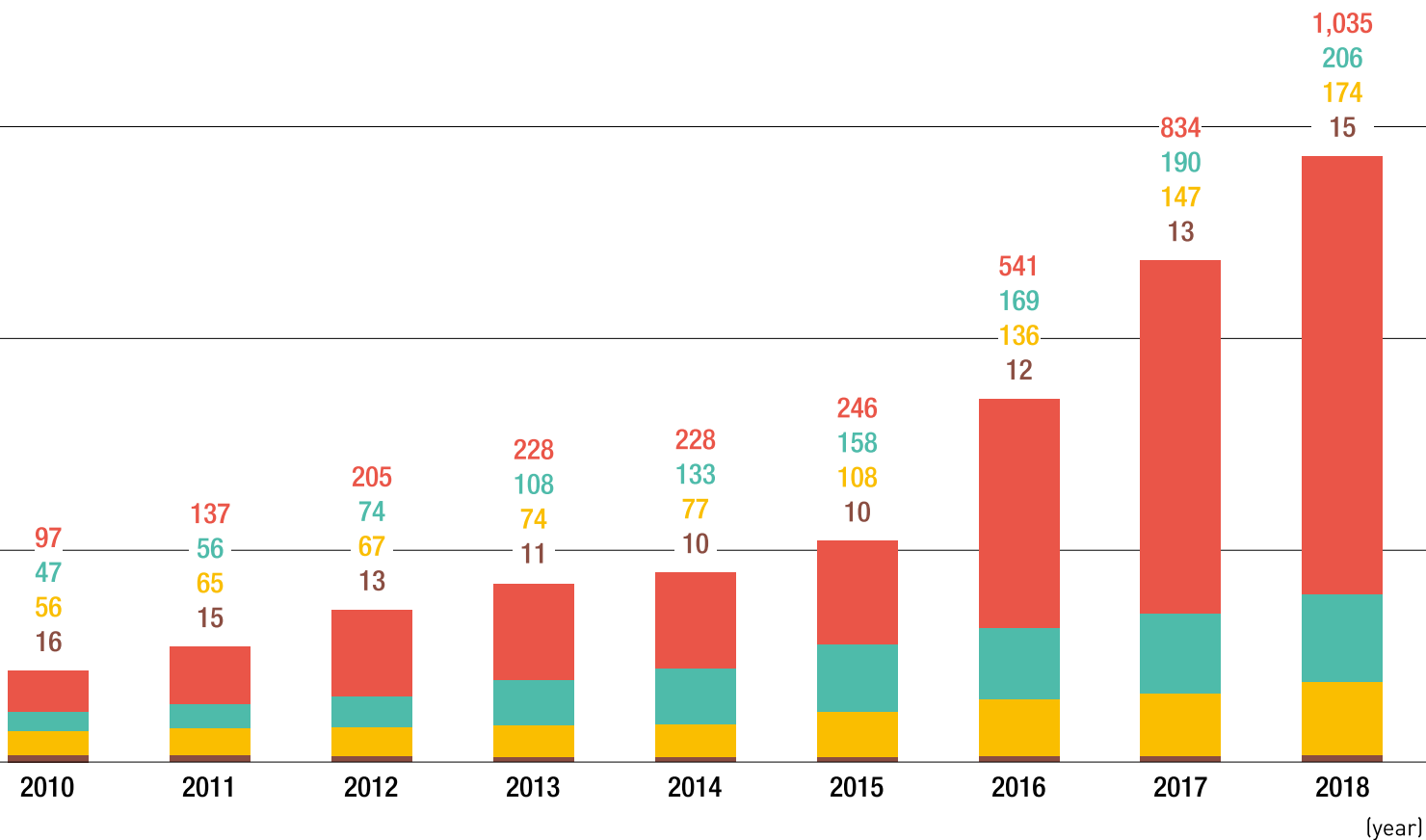
500

0



- Statin + Ezetimibe
- Statin + Fibrate
- Statin + Omega-3-acid
- Other combinations

Statins are included in 99% of dual therapy regimens. Statin plus ezetimibe was the most frequently used combination, accounting for 72% of dual therapy in 2018.



Age 20+ years

Summary and Conclusion

- In Korea, 2 out of 5 Korean adults aged 20 years or older have dyslipidemia. About 5 out of 10 men and 3 out of 10 women have dyslipidemia. The prevalence of dyslipidemia has increased with age in both sexes but more prominently in men aged 40 years or older and in women aged 50 years or older.
- The number of people adherent to lipid-lowering drugs has markedly increased (60 times) over the last 16 years. However, only 2 out of 5 people with dyslipidemia adhere to lipid-lowering drugs.
- One out of 5 adults aged 20 years or older has hyper-LDL-cholesterolemia, affecting more women than men. The prevalence has increased with age in both sexes. The proportion of women with hyper-LDL-cholesterolemia in their 50s is 3 times higher than that in their 40s
- The prevalence of hypertriglyceridemia and hypo-HDL-cholesterolemia in men is approximately twice as high as that in women. Especially, the proportion of men with hypertriglyceridemia in their 40s is 4 times higher than that of women in the same age group.
- One out of 4 adults with normal body weight (BMI 18.5-22.9 kg/m²) has dyslipidemia. Three out of 5 adults with abdominal obesity and about half of overweight or obese adults have dyslipidemia.
- Two out of 3 people with diabetes have dyslipidemia, being twice as more common among people with diabetes than among non-diabetic adults. Nearly 9 out of 10 people with diabetes have dyslipidemia using a lower LDL-C cutoff of 100 mg/dL.
- Half of people with hypertension have dyslipidemia. The prevalence is 1.8 times higher among people with hypertension than among normotensive adults. Using a LDL-C cutoff of 130 mg/dL, the prevalence of dyslipidemia among people with hypertension is approximately 70%.
- Three out of 5 people treated for dyslipidemia take antihypertensive medications. One third of people treated for dyslipidemia takes glucose-lowering drugs. Taken together, 3 out of 4 people treated for dyslipidemia are concurrently treated for hypertension or diabetes.
- Statins constitute 90% of pharmacological treatment for dyslipidemia. Use of dual therapy for dyslipidemia steadily increased up to 18.6% in 2018. Statin plus ezetimibe was the most frequently used combination, accounting for 72% of dual therapy in 2018.

DYSLIPIDEMIA FACT SHEETS IN KOREA, 2020



Updated version of 'Dyslipidemia Fact Sheets in Korea, 2020' is available
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