



Prevalence and Current Status of Cardiometabolic Risk Factors in Korean Adults Based on Fact Sheets 2024

Eun-Jung Rhee

Department of Endocrinology and Metabolism, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, Seoul, Korea

Korea has entered ‘super-aged’ society in 2025 with the proportion of people 65 years or older exceeding 20% as of the end of the year 2024. The health burden of cardiovascular diseases increases with age, and the increasing prevalence of cardiovascular risk factors, such as obesity, hypertension, diabetes mellitus, and dyslipidemia, may be linked to increased population-level cardiovascular risk. According to data from 2022, the overall prevalence of obesity reached 38.4%, marking a continued upward trend, based on National Health Insurance medical checkup data. In the combined data of 2021 to 2022, the prevalence of diabetes was 15.5% in Koreans older than 30 years according to the Diabetes Fact Sheet 2024 published by the Korean Diabetes Association, based on data from the Korean National Health and Nutrition Examination Survey. The prevalence of hypertension in the total population of Korea in 2022 was 30% according to the Korean Hypertension Fact Sheet produced by the Korean Society of Hypertension. Lastly, the prevalence of dyslipidemia in 2022 was 40.9% according to the Dyslipidemia Fact Sheet published by the Korean Society of Lipid and Atherosclerosis. In this article, I would like to review the prevalence and current management of cardiovascular risk factors in Korea according to the fact sheets released by various associations in 2024.

Keywords: Risk factors; Diabetes mellitus; Dyslipidemias; Hypertension; Obesity; Fact sheet

INTRODUCTION

According to the Statistics Korea, Koreans 65 years or older will be 20.3% of the population in 2025, indicating that Korea is entering ‘super-aged’ society [1]. Korea is one of the mostly rapidly aging countries globally, and the increasing number of elderly people will be accompanied by a greater burden of mortality and morbidity related to cardiovascular and metabolic diseases [2]. This point is underscored by the importance of cardiovascular and metabolic diseases as causes of death; for instance, in 2023, heart disease, cerebrovascular disease, diabetes, and hypertension were the second, fourth, sixth, and seventh most common

causes of death in Korean men and women, respectively [3]. Therefore, interventions to prevent and/or reduce cardiovascular risk factors are warranted.

In Korea, numerous associations annually release fact sheets with information on the prevalence and current management of their diseases of interest based on analyses of national databases. Every year since 2015, the Korean Society for the Study of Obesity (KSSO) has released the Obesity Fact Sheet, which is based on an analysis of National Health Insurance Service (NHIS) and Korean National Health and Nutrition Examination Survey (KNHANES) data [4]. Almost every year since 2012, the Korean Diabetes Association (KDA) has released the Diabetes Fact Sheet, which is

Received: 31 March 2025, **Revised:** 3 April 2025, **Accepted:** 8 April 2025

Corresponding author: Eun-Jung Rhee

Department of Endocrinology and Metabolism, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, 29 Saemunan-ro, Jongno-gu, Seoul 03181, Korea

Tel: +82-2-2001-2485, **Fax:** +82-2-2001-1588, **E-mail:** hongisiri@hanmail.net

Copyright © 2025 Korean Endocrine Society

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

based on an analysis of KNHANES data and supplemented by NHIS data [5]. Furthermore, the Korean Society of Hypertension (KSH) released the first Hypertension Fact Sheet in 2018 using KNHANES and NHIS data and have been periodically updating it thereafter [6]. Lastly, since 2015, the Korean Society of Lipid and Atherosclerosis (KSoLA) has released the Dyslipidemia Fact Sheet, which is based on an analysis of KNHANES and NHIS data [7]. These fact sheets help clinicians and the public to recognize the current status of these diseases in Korea and to implement better strategies to promote health.

The NHIS and KNHANES provide two national-scale datasets, which are the main sources used to generate these fact sheets. The NHIS provides claims data for almost all beneficiaries of the NHIS, which covers the entire population of Korea, as well as data from a nationwide medical checkup program, in which biennial examinations are provided to all Koreans older than 20 years [8]. This database contains laboratory data for metabolic parameters, and claims codes for diseases and medications are also available. The KNHANES dataset is constructed as part of an ongoing cross-sectional study conducted by the Korea Centers for Disease Control and Prevention that has been assessing the health and nutritional status of Koreans since 1998 [9]. This nationally representative cross-sectional survey includes approximately 10,000 individuals each year as a survey sample and collects information on socioeconomic status, health-related behaviors, quality of life, healthcare utilization, anthropometric measures, biochemical and clinical profiles for non-communicable diseases, and dietary intake. It has three components: a health interview, a health examination, and a nutrition survey. The NHIS dataset has the advantage of containing data from the entire Korean population, while the KNHANES dataset furnishes well-sampled data representing the entire Korean population.

I have published the first summarized review of Korean Fact Sheets on cardiometabolic risk factors in 2019, using the fact sheets released in 2018 [10]. In this issue, I would like to publish the updated version of the summary of Korean Fact Sheets of cardiometabolic risk factors released from four Korean representative academic associations in 2024. This review will summarize the information contained in the four above mentioned fact sheets, focusing on the prevalence and current status of each disease in Korea to provide insights into the current status and management of cardiovascular risk factors in Korea.

OBESITY FACT SHEET 2024

The KSSO has released the Obesity Fact Sheet since 2015. This

edition of the Obesity Fact Sheet used data from the NHIS from 2012 to 2022 and the KNHANES from 2013 to 2022 [11]. This edition describes the trends in obesity and abdominal obesity prevalence as well as changes in the prevalence of obesity by obesity class over the last 10 years. It examines the risk of mortality and comorbidities. Such as type 2 diabetes, hypertension, and dyslipidemia by obesity class, as well as the risks of cardiovascular and cerebrovascular diseases and the top 10 cancers. For the first time, this edition of Obesity Fact Sheet includes the results of body fat and body fat percentage measurements obtained using bioelectrical impedance analysis (BIA) and trends in the prevalence of metabolic syndrome over the last 10 years.

Obesity was defined as a body mass index (BMI, weight [kg]/height [m]²) of 25 kg/m² or higher, according to the Asia-Pacific criteria of the World Health Organization [12,13]. Obesity is categorized into three distinct classes based on BMI values. Class I obesity is defined as a BMI between 25.0 and 29.9 kg/m², class II obesity is a BMI between 30.0 and 34.9 kg/m², and class III obesity, often referred to as severe obesity, is defined as a BMI of 35 kg/m² or higher. Abdominal obesity was defined, according to the KSSO criteria for abdominal obesity for Koreans, as a waist circumference of 90 cm or more for men and 85 cm or more for women. Metabolic syndrome was defined as meeting three or more of the following criteria: (1) waist circumference: ≥ 90 cm for men, ≥ 85 cm for women; (2) fasting blood glucose: ≥ 100 mg/dL or current use of hypoglycemic medications; (3) blood pressure: $\geq 130/85$ mm Hg or current use of antihypertensive medications; (4) triglyceride ≥ 150 mg/dL or current use of dyslipidemia medications; and (5) high-density lipoprotein (HDL) cholesterol < 40 mg/dL for men, < 50 mg/dL for women or current use of dyslipidemia medications [14].

Prevalence of obesity and trends over the last decade

Over the past decade, the prevalence of obesity among South Korean adults has increased significantly (Fig. 1) [11]. According to data from 2022, the overall prevalence of obesity reached 38.4%, marking a continued upward trend (Fig. 2). Interestingly, while the total obesity rate has stabilized in recent years, sex-specific trends indicate a divergence. Among men, obesity rates have continued to climb, reaching 49.6% in 2022, while among women, a slight decline has been observed, with the prevalence reported at 27.7%. Similar patterns have been noted in abdominal obesity, where rates have increased among men (31.3%) but declined among women (18.0%).

When stratifying obesity by severity, it becomes evident that the prevalence of severe obesity has risen sharply. Between 2013

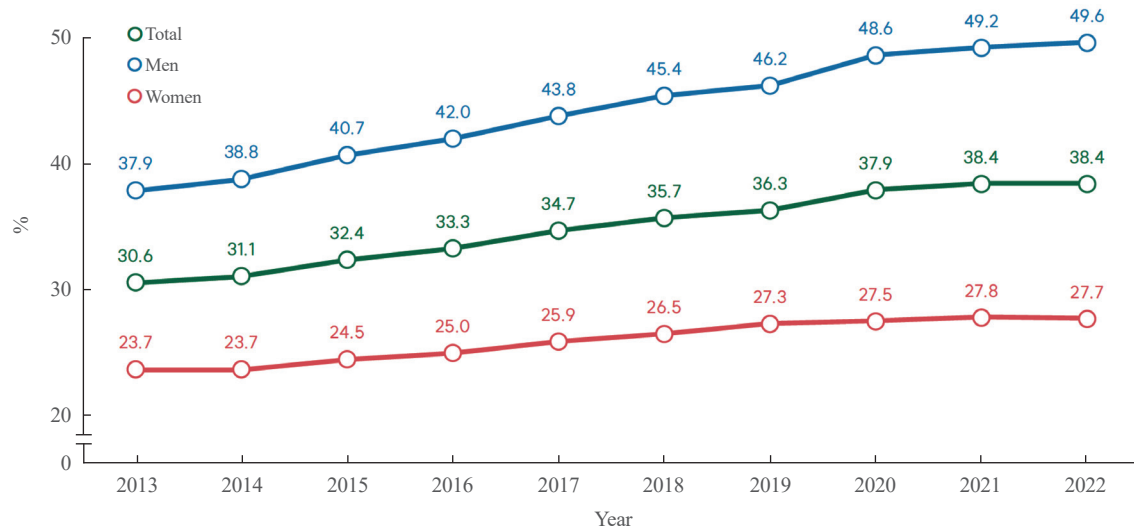


Fig. 1. Prevalence of obesity in the last 10 years (2013 to 2022). Modified from Korean Society for the Study of Obesity [4].

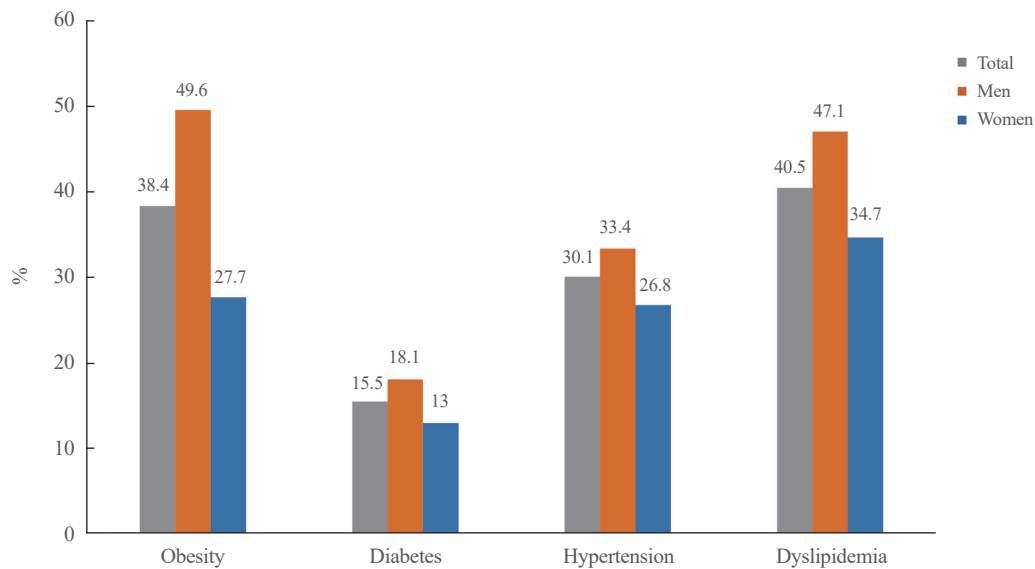


Fig. 2. Prevalence of cardiometabolic risk factors in Korean adults. Modified from Korean Society for the Study of Obesity [4], Korean Diabetes Association [5], Korean Society of Hypertension [6], and Korean Society of Lipid and Atherosclerosis [7].

and 2022, the prevalence of class II obesity increased by 1.6 times, while class III obesity surged by 2.6 times. The highest prevalence of class III obesity was observed in men aged 20 to 24 years (3.12%) and women aged 30 to 34 years (1.73%), highlighting a significant burden of obesity among younger individuals. This concerning trend calls for targeted intervention efforts to prevent obesity-related complications in this high-risk population.

An analysis of age-specific obesity trends over the past 10 years reveals that obesity has increased across all age groups.

However, the greatest relative increase has been observed among individuals in their 20s and those aged 80 years or older, indicating a bimodal distribution. Among men, the highest prevalence of obesity was seen in those aged 35 to 39 years (57.8%), whereas among women, the prevalence was highest in those aged 75 to 79 years (43.1%). These findings suggest that obesity prevention and management strategies should be tailored to both younger and the elderly, as both groups are experiencing significant increases in obesity prevalence.

Obesity-related risks of mortality, chronic disease, and metabolic syndrome

A U-shaped relationship has been identified between BMI and all-cause mortality [11]. Overweight individuals and those with class I obesity have a 0.7 times lower risk of all-cause mortality compared to individuals with a normal BMI. However, the mortality risk is significantly higher in both underweight individuals (2.0 times higher) and those with class III obesity (1.6 times higher). A similar U-shaped association has been observed for cancer-related and cardiovascular mortality, with class III obesity being linked to 1.5 times higher cancer mortality and 2.4 times higher cardiovascular mortality. These findings highlight the dual risks associated with both underweight and severe obesity, emphasizing the need for maintaining a healthy weight range.

The risks for chronic diseases show linear association with BMI. The risk for type 2 diabetes is 5.1 times higher in class II obesity and 9.5 times higher in class III obesity compared to normal weight individuals. These significant associations of obesity and chronic diseases were more prominent in men. Although this linear association of BMI with increased risk of chronic diseases was similarly observed in all age groups, the increased risk of diabetes in class II obesity was more prominent in 20s and 30s. In both men and women, BMI showed linear association with cardiovascular disease risk, with 1.9 times higher risk in class III obesity compared to normal weight individuals.

The prevalence of metabolic syndrome, a cluster of conditions that increase cardiovascular risk, has risen from 23.3% in 2013 to 28.6% in 2022. This increase has been particularly pronounced in men. The risk of metabolic syndrome and associated cardiovascular diseases escalates with increasing obesity severity. The prevalence of metabolic syndrome in those of 65 years or older gradually increased from 53% in 2013 to 62% in 2022, warranting the interventions for prevention of metabolic syndrome in the elderly.

Body composition analyses of bioelectrical impedance analysis

Body composition analyses was performed using BIA based on the KNHANES, 1st year of the 9th phase (2022). The body composition was assessed using impedance body fat analyzers (Inbody 970, Biospace, Seoul, Korea). The average body fat percentage was 24.8% for men and 32.9% for women, with body fat percentage showing an increasing trend with age while fat-free mass percentage showed a decreasing trend. Obesity prevalence according to body fat percentage (defined as a body

fat percentage of 25% or higher for men and 35% or higher for women) was 46.1% for men and 37.1% for women, with the prevalence increasing with age (young adults 36.4%, middle-aged adults 39.9%, and older adults 52.8%).

The prevalence of low muscle mass was 16.8% overall, and 11.4% in men, 22.1% in women. After the age of 40, the prevalence of low muscle mass increased with age, reaching 17.2% in individuals in their 60s, 28.9% in those in their 70s, and 56.2% in those aged 80 or older. In both men and women, the prevalence of low muscle was lowest in those in their 40s and increased with age. The prevalences of low muscle mass in individuals in their 20s and 30s were 21.5% and 12.3%, respectively, which were higher than those in middle-aged and older adults.

Obesity and cancer risk

Obesity has been strongly linked to an increased risk of developing several types of cancer [11]. Individuals classified as having class III obesity, exhibit a significantly elevated risk of multiple malignancies compared to those with a normal BMI range. Specifically, the risk of thyroid cancer is 1.8 times higher in individuals with class III obesity. Similarly, the likelihood of developing colorectal cancer increases by 1.3 times, while the risk of liver cancer is 2.2 times higher in this population. Pancreatic cancer also shows an elevated risk, with individuals with severe obesity experiencing a 1.2 times higher likelihood of developing the disease. Among these, kidney cancer demonstrates the strongest association, with a threefold increase in risk observed in individuals with class III obesity.

Interestingly, an inverse relationship has been noted between BMI and the risk of lung cancer. This unexpected finding may be attributed to confounding factors, particularly the higher prevalence of smoking among individuals with lower BMI, which could obscure the direct impact of obesity on lung cancer risk.

DIABETES FACT SHEET 2024

The KDA has released the Diabetes Fact Sheet at intervals of 1 to 2 years since 2012 until 2024 [5]. The KDA compiles this fact sheet, providing accurate statistics, insights into management, and information about comorbidities of diabetes, all derived from national healthcare big data through the KNHANES and NHIS. Through this fact sheet, the KDA aims to raise public awareness about diabetes and proposes policies while engaging in in-depth discussions with various government agencies.

In the Diabetes Fact Sheet 2024, not only information on the

prevalence of diabetes, management status, comorbidities and yearly trends of changes were described, but also particular emphasis was placed on two key topics: the growing importance of diabetes among the young and elderly and the current status of diabetes management in this rapidly aging Korean society [15,16]. Distinct differences have been observed in the characteristics of diabetes and its management between the younger and older populations in Korea.

They used three national datasets from KNHANES and NHIS as follows: (1) KNHANES 2021 to 2022, (2) KNHANES 2019 to 2022 (merged 3 years of data), and (3) NHIS data. Data from KNHANES 2021 to 2022 were used to evaluate the overall prevalence of diabetes and prediabetes, the management status of diabetes and comorbidities in diabetes and energy intake in Korean. Data for KNHANES 2019 to 2022 were used to analyze and compare the diabetes status in young and older adults. In addition, we examined the use of antidiabetic medications among adults with diabetes mellitus using the Korean NHIS.

In analyses using the KNHANES database, diabetes mellitus was defined as fasting plasma glucose (FPG) ≥ 126 mg/dL, glycosylated hemoglobin (HbA1c) $\geq 6.5\%$, a previous diagnosis of diabetes mellitus, or current use of antidiabetic medications. Prediabetes was defined as an FPG of 100–125 mg/dL or HbA1c of 5.7%–6.4% [17]. In the NHIS Korean data, diabetes mellitus was defined according to the tenth revision of the International Statistical Classification of Diseases (ICD) codes E11–E14, and at least one prescription for antidiabetic medications.

Prevalence of diabetes and prediabetes in Korea

The prevalence of diabetes among adults aged 30 years and old-

er was 15.5% (2021 to 2022), indicating that approximately one in seven adults in Korea has diabetes (Figs. 2, 3) [15]. In those aged 65 years and older, the prevalence was 29.3%, demonstrating that nearly one in three elderly individuals has been diagnosed with diabetes (Fig. 3). The proportion of individuals diagnosed with diabetes increases with age, with higher rates among men compared to women in younger age groups, while the trend reverses in older populations.

Prediabetes, defined by impaired fasting glucose, continues to show a rising trend, with the prevalence reaching 41.1% (2021 to 2022) among adults aged 30 years and older. This marks a significant increase compared to previous reports, suggesting that a growing number of individuals are at high risk of developing diabetes in the near future. Among those aged 65 years and older, nearly half (47.7%) of the population is classified as having prediabetes. This highlights the urgent need for early intervention programs that can effectively prevent the progression from prediabetes to overt diabetes through lifestyle modifications and targeted pharmacological strategies.

Diabetes awareness, treatment, and glycemic control

The awareness rate of diabetes, defined as the proportion of individuals diagnosed with diabetes who are aware of their condition, was 74.7% [15]. This represents an improvement from previous years, reflecting increased public health efforts in diabetes screening and education. Among diagnosed individuals, 70.9% were receiving treatment, either through oral hypoglycemic agents or insulin therapy, indicating that a significant proportion of patients are being managed with pharmacotherapy. However, glycemic control remains suboptimal, with only

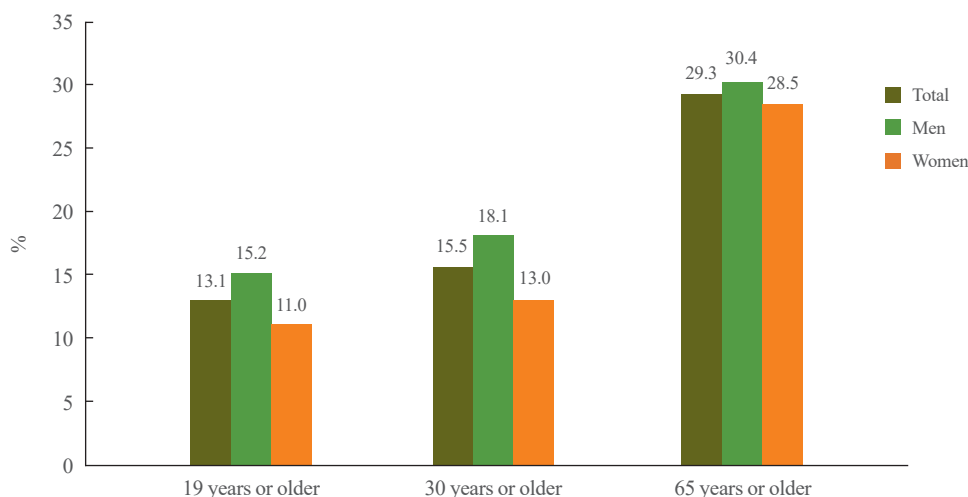


Fig. 3. Prevalence of diabetes according to age and sex (2021 to 2022). Modified from Korean Diabetes Association [5].

32.4% of diabetic individuals achieving an HbA1c level below 6.5%. When the target HbA1c level is relaxed to below 7.0%, 60.6% of patients achieve moderate glycemic control, but a substantial 16% still have an HbA1c level of 8.0% or higher, indicating poor glycemic management and an elevated risk for diabetes-related complications.

Comorbidities associated with diabetes

Among diabetic individuals, 53.8% were classified as obese, with a BMI of 25 kg/m² or higher. Furthermore, abdominal obesity, defined by a waist circumference of at least 90 cm in men and 85 cm in women, was present in 61.2% of diabetic individuals. In individuals with diabetes, with 59.6% of diabetic patients meeting the criteria for hypertension, defined as a blood pressure of 140/90 mm Hg or higher, or the use of antihypertensive medications. Despite the availability of effective antihypertensive treatments, only 60.8% of diabetic individuals with hypertension had achieved blood pressure control, defined as a blood pressure below 140/85 mm Hg. Given the well-established link between hypertension and cardiovascular complications in diabetes, greater emphasis should be placed on optimizing blood pressure control in this population. For dyslipidemia, 74.2% of patients had an low-density lipoprotein cholesterol (LDL-C) level of 100 mg/dL or higher, or receiving lipid-lowering therapy. Although statin use is widespread, only 65.3% of patients successfully achieved LDL-C levels below 100 mg/dL.

Given that dyslipidemia is a key contributor to atherosclerotic cardiovascular disease in diabetes, there is a need for more aggressive lipid management strategies, including the use of high-intensity statins or combination lipid-lowering therapy in high-risk individuals.

Characteristics of young and older adults with diabetes

Among adults aged 19 to 39, the prevalence of diabetes was 2.2%, affecting approximately 307,000 individuals (Fig. 4) [15]. Prediabetes was much more common, with a prevalence of 21.8% (around 3.03 million people), and was notably higher in men than in women (26.5% vs. 16.7%). The prevalence of diabetes was also significantly higher in the 30 to 39 age group (3.4%) compared to those aged 19 to 29 (1.1%), showing a threefold increase. In adults aged 65 and older, the diabetes prevalence reached 29.4%, increasing to 31.4% among those aged 75 and above, with 30.0% in men and 32.3% in women.

Regarding comorbidities, 26.9% of young adults with diabetes had both hypertension and hypercholesterolemia. However, only 9.2% of them successfully met the integrated targets for glycemic, blood pressure, and lipid control. In older adults with diabetes, 72.6% had coexisting hypertension, and 70.5% had hypercholesterolemia. Obesity was highly prevalent among young adults with diabetes, with 87.1% classified as obese and 84.0% having abdominal obesity. In contrast, the rates in older adults were 43.5% for obesity and 62.9% for abdominal obesity.

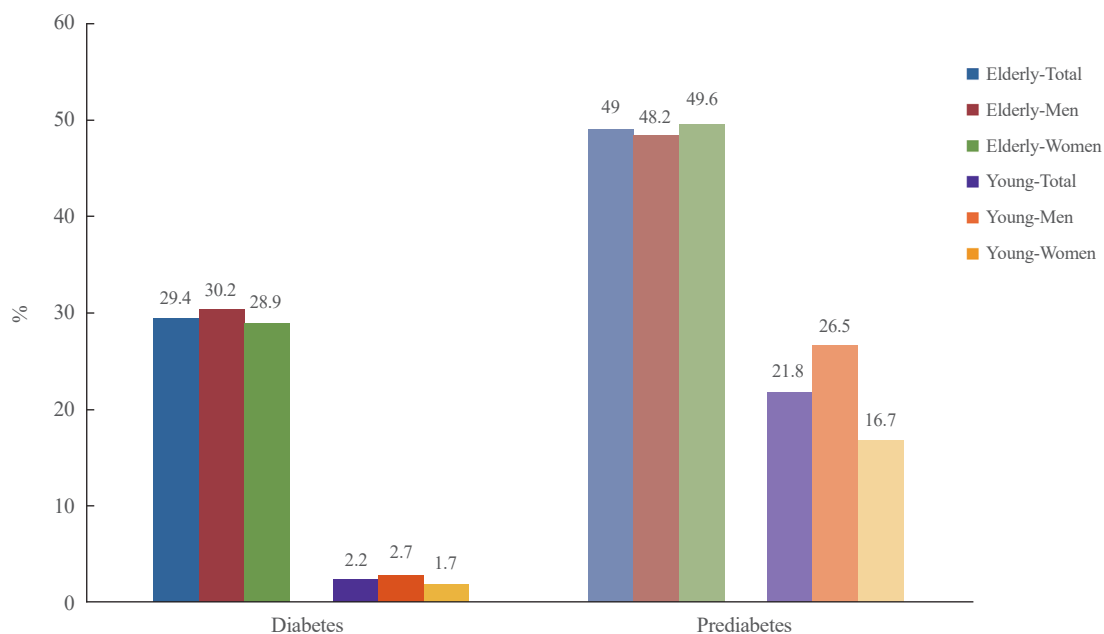


Fig. 4. Prevalence of diabetes and prediabetes in the elderly (≥65 years) and younger (19 to 39 years) age groups. Modified from Korean Diabetes Association [5].

In terms of disease awareness and management, 43.3% of young adults with diabetes were aware of their condition, 34.6% were receiving antidiabetic treatment, and only 29.6% achieved HbA1c levels below 6.5%. Among older adults with diabetes, the rates of awareness, treatment, and glycemic control (HbA1c <6.5%) were 78.8%, 75.7%, and 31.2%, respectively. When using an HbA1c target of <7.5%, the control rate rose to 79.8%.

For both age groups, metformin remained the most commonly prescribed antidiabetic medication. There was a consistent decline in the use of sulfonylureas/glinides and α -glucosidase inhibitors, alongside a rise in dipeptidyl peptidase-4 inhibitor prescriptions. The use of sodium-glucose cotransporter 2 inhibitors has steadily increased among young adults since 2015, although this upward trend was less pronounced in older adults.

HYPERTENSION FACT SHEET 2024

While the cardiovascular disease mortality rate has been decreasing in Korea, heart disease, cerebrovascular disease, and hypertension were the second, fourth, seventh most common causes of death in Korean men and women, respectively [3]. Moreover, due to the rapid aging of the population, the absolute number of people with hypertension and cardiovascular disease is expected to increase. The KSH released its first fact sheet for hypertension epidemiology in 2018, based on an analysis of NHIS and KNHANES data and have been periodically updating it thereafter [6].

Hypertension was defined as systolic blood pressure (SBP) ≥ 140 mm Hg, diastolic blood pressure (DBP) ≥ 90 mm Hg [15], or self-reported use of antihypertensive medication for the purpose of BP control. Individuals with an SBP ranging from 130 to 139 mm Hg or a DBP between 80 and 89 mm Hg are classified as having prehypertension [18].

Prevalence of hypertension in the Korean population

According to the 2024 Korea Hypertension Fact Sheet, approximately 13 million adults aged 20 years and older in South Korea are estimated to have hypertension, representing 30% of the adult population (Fig. 2) [19]. This condition is more prevalent among men, with 7.2 million males affected compared to 5.8 million females. Additionally, the data highlights that the elderly population is particularly burdened by hypertension, as 5.8 million individuals aged 65 and older are estimated to have the disease. These figures demonstrate that hypertension remains a major public health concern in Korea, particularly among aging adults.

Rates of awareness, treatment, and blood pressure control

Among Korean adults diagnosed with hypertension, the awareness rate stands at 77%, meaning more than three-quarters of patients are aware of their condition [19,20]. Furthermore, 74% of hypertensive individuals are receiving antihypertensive treatment, reflecting relatively good access to medical care. However, only 59% of patients have achieved adequate blood pressure control, defined as maintaining SBP below 140 mm Hg and DBP below 90 mm Hg. Interestingly, these rates of awareness, treatment, and control tend to increase with age, suggesting that older adults are more likely to seek care and adhere to treatment compared to younger individuals.

Healthcare utilization and treatment patterns

The number of people utilizing healthcare services for hypertension management has grown consistently over the years. As of 2022, 11.5 million individuals with hypertension had accessed healthcare services at least once for their condition, while 10.9 million patients had received prescriptions for antihypertensive medications. Despite these positive figures, only 8.1 million patients maintained consistent treatment, which indicates that a significant proportion of hypertensive patients may not adhere to their prescribed treatment plans. This inconsistency in treatment poses a potential risk for complications such as heart disease, stroke, and kidney problems.

Among those receiving treatment, 40% are managed with a single antihypertensive medication, while 44% are prescribed two-drug combination therapy, and 16.5% require three or more medications to control their blood pressure effectively. This reflects the increasing complexity of treatment as the severity of hypertension or the presence of comorbidities increases.

In terms of specific medications, 76% of patients are prescribed angiotensin receptor blockers (ARBs), making it the most commonly used class of drugs. Calcium channel blockers (CCBs) follow closely, prescribed to 62% of patients, while 23% receive diuretics, and 15% are treated with beta-blockers. These figures suggest that ARBs and CCBs form the backbone of hypertension treatment regimens in Korea.

Hypertension among younger adults (20s and 30s): a growing concern

The fact sheet places a particular emphasis on hypertension among younger adults, specifically those in their 20s and 30s [19]. Based on the 2022 KNHANES data, it is estimated that approximately 894,000 young adults aged 20–39 and 1.6 million adults aged 40–49 in Korea have hypertension. These

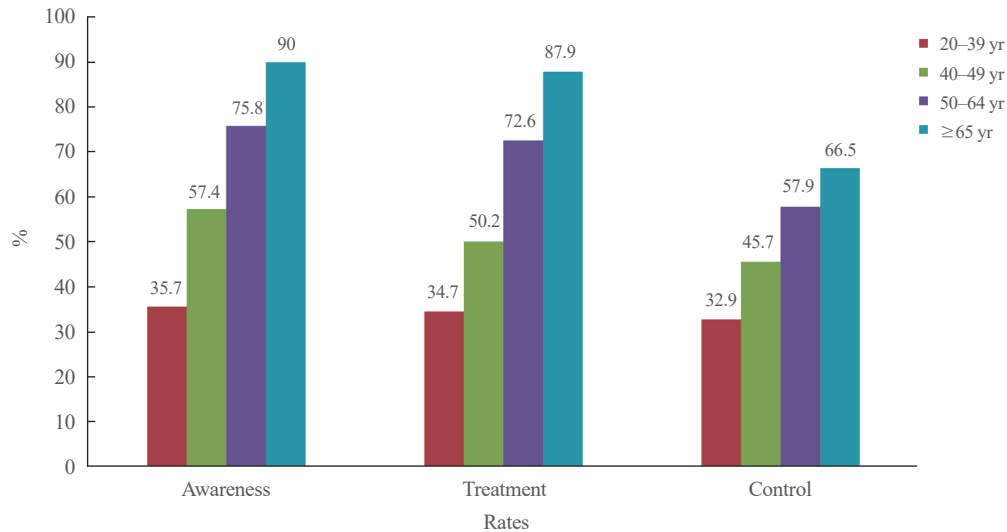


Fig. 5. Treatment status of hypertension according to age groups. Modified from Korean Society of Hypertension [6].

groups represent approximately 6.9% and 12.5% of the total 13 million adults with hypertension, respectively. Prehypertension is more prevalent in younger adults, with an estimated 1.6 million individuals aged 20–39 (accounting for 24.2%) and 1.5 million individuals aged 40–49 (accounting for 22.9%) of the prehypertensive population.

The rates of awareness, treatment, and control remain significantly lower compared to older age groups (Fig. 5). Only 36% of young adults are aware of their hypertensive status, 35% are undergoing treatment, and 33% have successfully controlled their blood pressure. Moreover, the rate of consistent and continuous treatment is alarmingly low in this group. Among those in their 20s, only 24% continue treatment consistently, while the rate is slightly better at 40% for those in their 30s. These numbers reflect a critical gap in hypertension management for younger populations, who may not perceive themselves at risk or may face barriers to long-term adherence.

DYSLIPIDEMIA FACT SHEET 2024

Since 2015, the KSoLA has regularly released the Dyslipidemia Fact Sheet based on national survey data to uphold its mission of preventing and treating atherosclerosis and to improve public awareness of atherosclerosis and its risk factors [7]. Dyslipidemia Fact Sheet 2024 present an analysis of using data from the KNHANES from 2007 to 2022, revealing evolving patterns in cardiovascular health [21]. Additionally, this fact sheet provide new insights on cardiovascular disease among dyslipidemia patients, based on NHIS data.

Dyslipidemia is broadly categorized based on abnormalities in different lipid components. Hypercholesterolemia is defined as a total cholesterol level of 240 mg/dL or higher, or the current use of lipid-lowering medications. Hyper-LDL-cholesterolemia refers to LDL-C levels of 160 mg/dL or higher, or the use of lipid-lowering drugs. Hypertriglyceridemia is diagnosed when triglyceride levels reach 200 mg/dL or more. Hypo-HDL-cholesterolemia is identified when HDL-cholesterol levels fall below 40 mg/dL in men and 50 mg/dL in women. Comprehensive dyslipidemia is diagnosed when any of these abnormalities are present, highlighting the widespread nature of lipid imbalances in the population.

Prevalence and trends of dyslipidemia

The prevalence of dyslipidemia has increased significantly over the past decade, reflecting shifts in dietary habits, physical activity levels, and metabolic health in the Korean population. In 2022, an estimated 40.9% of Korean adults were affected by dyslipidemia based on the standard definition (Fig. 2) [21]. However, when the cutoff for hypo-HDL-cholesterolemia in women was adjusted from 40 to 50 mg/dL, the prevalence increased to 47.4%. This highlights how classification criteria can influence epidemiological assessments and underscores the need for standardized diagnostic thresholds.

Hypercholesterolemia, a key component of dyslipidemia, has shown a dramatic increase over time. In 2007, the prevalence of hypercholesterolemia was 9.0%, but by 2022, it had risen to 27.4%. Among men, the prevalence reached 23.8%, while among women, it was slightly higher at 31.0%. This increase is

mirrored in hyper-LDL-cholesterolemia, which rose from 8.8% in 2007 to 23.4% in 2022. These trends suggest a growing need for enhanced lipid management and preventive measures to mitigate cardiovascular risks.

Hypertriglyceridemia remains a significant concern, affecting 14.2% of Korean adults. The burden of hypertriglyceridemia is particularly high among men, who are nearly four times more likely than women to have elevated triglyceride levels in certain age groups. Meanwhile, hypo-HDL-cholesterolemia, although showing a decline in recent years, still affects a substantial portion of the population and requires ongoing attention in public health strategies.

Dyslipidemia in high-risk populations

Certain population groups are at a significantly higher risk of developing dyslipidemia. Among adults diagnosed with diabetes, 87% also have dyslipidemia, with nearly 44% exhibiting LDL-C levels above 100 mg/dL [21]. This strong association between diabetes and dyslipidemia underscores the importance of lipid monitoring in diabetic patients. Similarly, hypertension is closely linked to dyslipidemia, with 72% of individuals with hypertension also meeting the criteria for dyslipidemia. Additionally, 26% of hypertensive patients have LDL-C levels exceeding 130 mg/dL, further elevating their cardiovascular risk.

Obesity is another major factor influencing dyslipidemia prevalence. Among individuals classified as obese, 55.2% have dyslipidemia, whereas the prevalence rises to 59.0% among those with abdominal obesity. These findings highlight the strong relationship between metabolic disorders and lipid abnormalities, emphasizing the need for integrated management approaches that address multiple risk factors simultaneously.

Treatment and management of dyslipidemia

Despite improvements in dyslipidemia awareness and treatment rates, a significant proportion of affected individuals remain untreated or inadequately controlled. In 2022, 68.0% of individuals with hypercholesterolemia were aware of their condition, indicating that nearly one-third of those with high cholesterol levels were still unaware of their elevated cardiovascular risk [21]. Among diagnosed individuals, 61.2% were receiving lipid-lowering treatment, while 54.1% had successfully reduced their cholesterol levels below 200 mg/dL. These figures demonstrate progress in lipid management but also point to the need for further improvements in screening and treatment adherence.

For individuals who were actively receiving lipid-lowering therapy, the control rate was significantly higher, with 87.4%

achieving cholesterol levels below the recommended threshold. This finding suggests that when properly managed, pharmacological interventions can be highly effective in controlling dyslipidemia.

Prescription patterns of lipid-lowering drugs

Statin therapy remains the predominant treatment approach for dyslipidemia, with 95.3% of patients receiving statins as part of their lipid-lowering regimen. In recent years, the use of ezetimibe has increased, with 20.3% of patients being prescribed this drug as an adjunct therapy to further reduce LDL-C levels. Additionally, fenofibrate, primarily used for managing hypertriglyceridemia, was prescribed in 10.4% of cases.

The intensity of statin therapy varies depending on individual risk factors and comorbid conditions. Among all patients receiving statins, 92.4% were prescribed intermediate-intensity statins, while 4.7% received high-intensity statins, and 2.9% were prescribed low-intensity statins. In patients with established cardiovascular disease, such as ischemic heart disease, ischemic stroke, or heart failure, a greater proportion (17.4% to 22.9%) were prescribed high-intensity statins to achieve more aggressive lipid control.

CONCLUSIONS

In summary, the updated Korean Fact Sheets on obesity, diabetes, hypertension, and dyslipidemia provide a comprehensive snapshot of the current status and trends of cardiometabolic risk factors in Korea. These fact sheets, based on extensive national datasets, underscore the increasing burden of metabolic diseases, driven by Korea's rapidly aging population, urbanization, and lifestyle changes.

The steady rise in obesity prevalence, particularly the sharp increase in severe obesity among younger adults, is a concerning trend that is closely linked to higher risks of type 2 diabetes, hypertension, dyslipidemia, and various cancers. Similarly, the increasing prevalence of diabetes and prediabetes, affecting nearly half of the elderly population and an alarming number of younger adults, highlights the urgent need for early detection and intervention.

Hypertension remains highly prevalent, affecting nearly one-third of the adult population, with especially poor awareness and control rates among younger adults. Despite relatively good overall treatment rates, a significant proportion of patients fail to achieve adequate blood pressure control, leaving them vulnerable to cardiovascular complications. Dyslipidemia has also

emerged as a major public health concern, with prevalence rates nearing 50% in some subgroups depending on diagnostic criteria. The strong association of dyslipidemia with other metabolic disorders such as diabetes, hypertension, and obesity further amplifies cardiovascular risk. While treatment rates have improved and statin use is widespread, lipid control remains suboptimal in many patients, particularly those with established cardiovascular disease, indicating a need for more aggressive and tailored lipid-lowering strategies.

Looking forward, future efforts must focus on enhancing early identification and intervention strategies, especially targeting high-risk populations such as younger adults and the elderly. Preventive measures should be strengthened to halt disease progression and reduce long-term cardiovascular morbidity and mortality. In addition, integrated management approaches that simultaneously address obesity, diabetes, hypertension, and dyslipidemia are essential, considering the strong interrelationships among these conditions. Lastly, continuous research and surveillance are needed to monitor evolving trends, identify emerging risk factors, and evaluate the effectiveness of public health interventions. Such efforts will be critical for developing evidence-based strategies to mitigate the growing burden of cardiometabolic diseases and to improve the overall health and quality of life of the Korean population as the country transitions into a super-aged society.

CONFLICTS OF INTEREST

Eun-Jung Rhee is a deputy editor of the journal. But she was not involved in the peer reviewer selection, evaluation, or decision process of this article. No other potential conflicts of interest relevant to this article were reported.

ORCID

Eun-Jung Rhee <https://orcid.org/0000-0002-6108-7758>

REFERENCES

1. Statistics Korea. Population projections for Korea: 2022–2052 [Internet]. Daejeon: Statistics Korea; 2022 [cited 2025 Apr 8]. Available from: https://kostat.go.kr/board.es?mid=a20108080000&bid=11748&act=view&list_no=433322.
2. Kontis V, Bennett JE, Mathers CD, Li G, Foreman K, Ezzati M. Future life expectancy in 35 industrialised countries: projections with a Bayesian model ensemble. *Lancet* 2017; 389:1323–35.
3. Statistics Korea. Causes of death statistics in 2023 [Internet]. Daejeon: Statistics Korea; 2024 [cited 2025 Apr 8]. Available from: https://kostat.go.kr/board.es?act=view&bid=218&list_no=433106&mid=a10301010000.
4. Korean Society for the Study of Obesity. Obesity Fact Sheet [Internet]. Seoul: Korean Society for the Study of Obesity; 2025 [cited 2025 Apr 8]. Available from: <https://eng.kosso.or.kr/resources/factsheets.php>.
5. Korean Diabetes Association. Diabetes Fact Sheet [Internet]. Seoul: Korean Diabetes Association; 2025 [cited 2025 Apr 8]. Available from: https://www.diabetes.or.kr/bbs/?code=eng_fact_sheet.
6. Korean Society of Hypertension. Fact Sheet [Internet]. Seoul: Korean Society of Hypertension; 2025 [cited 2025 Apr 8]. Available from: <https://www.koreanhypertension.org/reference/guide>.
7. Korean Society of Lipid and Atherosclerosis. Dyslipidemia Fact Sheet [Internet]. Seoul: Korean Society of Lipid and Atherosclerosis; 2025 [cited 2025 Apr 8]. Available from: <https://lipid.or.kr/eng/page/publications.php>.
8. Cho SW, Kim JH, Choi HS, Ahn HY, Kim MK, Rhee EJ. Big data research in the field of endocrine diseases using the Korean National Health Information Database. *Endocrinol Metab* (Seoul) 2023;38:10–24.
9. Kweon S, Kim Y, Jang MJ, Kim Y, Kim K, Choi S, et al. Data resource profile: the Korea National Health and Nutrition Examination Survey (KNHANES). *Int J Epidemiol* 2014;43:69–77.
10. Rhee EJ. Prevalence and current management of cardiovascular risk factors in Korean adults based on fact sheets. *Endocrinol Metab* (Seoul) 2020;35:85–94.
11. Korean Society for the Study of Obesity. 2024 Obesity Fact Sheet [Internet]. Seoul: Korean Society for the Study of Obesity; 2024 [cited 2025 Apr 8]. Available from: https://general.kosso.or.kr/html/user/core/view/reaction/main/kosso/inc/data/2024_Obesity_Fact_sheet_web_eng1223.pdf.
12. WHO Expert Consultation. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. *Lancet* 2004;363:157–63.
13. Kim KK, Haam JH, Kim BT, Kim EM, Park JH, Rhee SY, et al. Evaluation and treatment of obesity and its comorbidities: 2022 update of clinical practice guidelines for obesity by the Korean Society for the Study of Obesity. *J Obes Metab Syndr* 2023;32:1–24.
14. Alberti KG, Eckel RH, Grundy SM, Zimmet PZ, Cleeman

- Ji, Donato KA, et al. Harmonizing the metabolic syndrome: a joint interim statement of the International Diabetes Federation Task Force on Epidemiology and Prevention; National Heart, Lung, and Blood Institute; American Heart Association; World Heart Federation; International Atherosclerosis Society; and International Association for the Study of Obesity. *Circulation* 2009;120:1640-5.
15. Korean Diabetes Association. Diabetes Fact Sheet in Korea 2024 [Internet]. Seoul: KDA; 2024 [cited 2025 Apr 10]. Available from: https://www.diabetes.or.kr/bbs/?code=fact_sheet&mode=view&number=2792&page=1&code=fact_sheet.
16. Park SE, Ko SH, Kim JY, Kim K, Moon JH, Kim NH, et al. Diabetes fact sheets in Korea 2024. *Diabetes Metab J* 2025; 49:24-33.
17. Choi JH, Lee KA, Moon JH, Chon S, Kim DJ, Kim HJ, et al. 2023 Clinical practice guidelines for diabetes mellitus of the Korean Diabetes Association. *Diabetes Metab J* 2023; 47:575-94.
18. Kim HL, Lee EM, Ahn SY, Kim KI, Kim HC, Kim JH, et al. The 2022 focused update of the 2018 Korean Hypertension Society Guidelines for the management of hypertension. *Clin Hypertens* 2023;29:11.
19. Korean Society of Hypertension. Korea Hypertension Fact Sheet 2024 [Internet]. Seoul: Korean Society of Hypertension; 2024 [cited 2025 Apr 8]. Available from: https://drive.google.com/file/d/1bCuaVFuQpq6R4XoNyG_OcJIRlpj-8fIMd/view.
20. Kim HC, Lee H, Lee HH, Ahn SV, Lee JM, Cheon DY, et al. Korea hypertension fact sheet 2024: nationwide population-based analysis with a focus on young adults. *Clin Hypertens* 2025;31:e11.
21. Korean Society of Lipid and Atherosclerosis. Dyslipidemia Fact Sheet in Korea 2024 [Internet]. Seoul: Korean Society of Lipid and Atherosclerosis; 2024 [cited 2025 Apr 8]. Available from: https://lipid.or.kr/uploaded/board/factsheet/_b3aa3d28386a0e850be4626b3afc7e2a2.pdf.