EnM ENDOCRINOLOGY AND METABOLISM

Review Article

Endocrinol Metab 2024;39:669-677
https://doi.org/10.3803/EnM.2024.2073
pISSN 2093-596X · eISSN 2093-5978

Changes in the Epidemiological Landscape of Diabetes in South Korea: Trends in Prevalence, Incidence, and Healthcare Expenditures

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Diabetes is a serious public health concern that significantly contributes to the global burden of disease. In Korea, the prevalence of diabetes is 12.5% among individuals aged 19 and older, and 14.8% among individuals aged 30 and older as of 2022. The total number of people with diabetes among those aged 19 and older is estimated to be 5.4 million. The incidence of diabetes decreased from 8.1 per 1,000 persons in 2006 to 6.3 per 1,000 persons in 2014, before rising again to 7.5 per 1,000 persons in 2019. Meanwhile, the incidence of type 1 diabetes increased significantly, from 1.1 per 100,000 persons in 1995 to 4.8 per 100,000 persons in 2016, with the prevalence reaching 41.0 per 100,000 persons in 2017. Additionally, the prevalence of gestational diabetes saw a substantial rise from 4.1% in 2007 to 22.3% in 2023. These changes have resulted in increases in the total medical costs for diabetes, covering both outpatient and inpatient services. Therefore, effective diabetes prevention strategies are urgently needed.

Keywords: Diabetes mellitus; Diabetes, gestational; Diabetes mellitus, type 1; Diabetes mellitus, type 2; Epidemiology; Health expenditures

INTRODUCTION

Diabetes is a serious public health concern and a leading cause of disability and mortality, resulting in longstanding and significant impacts on the global burden of disease. The prevalence of diabetes continues to rise, driven by lifestyle changes associated with urbanization and an aging population. The International Diabetes Federation Diabetes Atlas 2021 reported that the global prevalence of diabetes among adults aged 20 to 79 years stood at 537 million in 2021, with projections suggesting an increase to 783 million by 2045 [1].

PREVALENCE OF DIABETES

According to the Korea National Health and Nutrition Examination Survey (KNHANES), the prevalence of diabetes is 12.5% among individuals aged 19 and older and 14.8% among individuals aged 30 and older as of 2022. The prevalence of diabetes is approximately 1.3 times higher in men than in women (Supplemental Table S1) [2]. The total number of people aged 19 and older with diabetes is estimated to be 5.4 million.

The age-standardized prevalence of diabetes among individuals aged 19 and older remained stable, with no significant change from 2011 (9.3%) to 2022 (9.1%). A similar pattern was observed in those aged 30 and older, with the prevalence chang-

Received: 27 June 2024, **Revised:** 25 July 2024, **Accepted:** 16 August 2024

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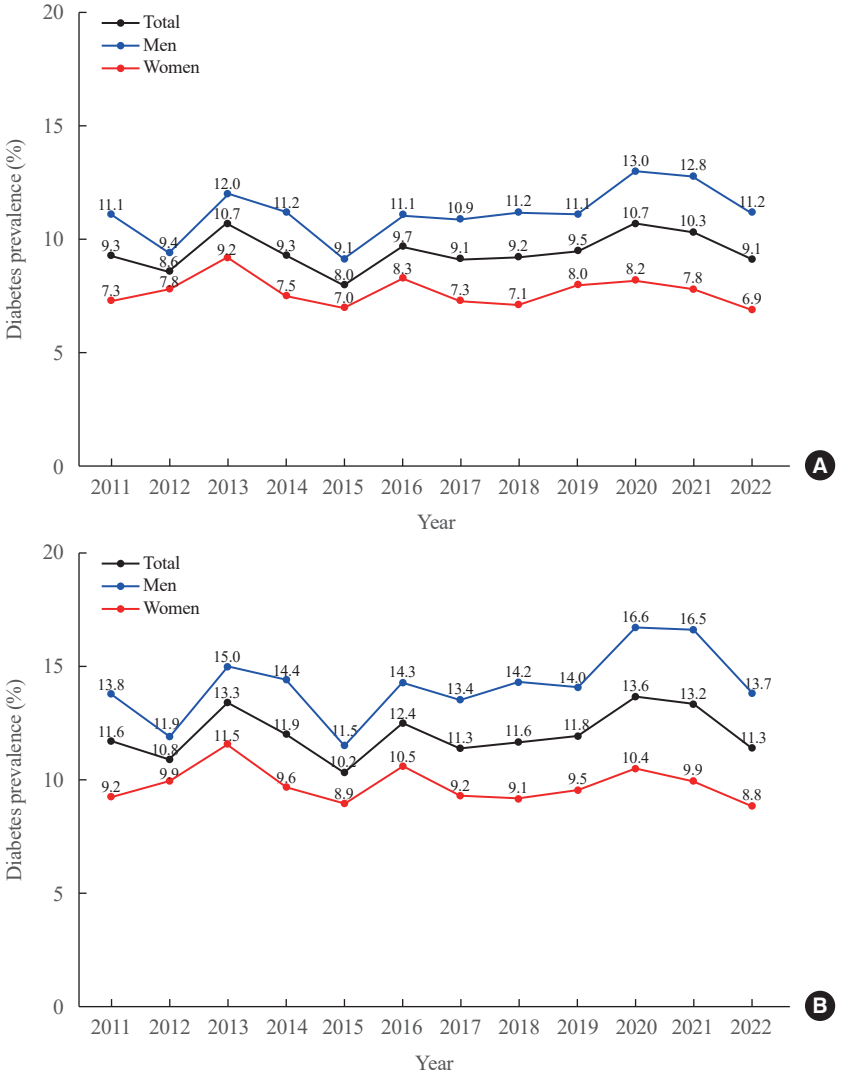

Fig. 1. Age-standardized prevalence of diabetes (A) among individuals aged 19 and older and (B) among individuals aged 30 and older in Korea, based on 2011 to 2022 data from the Korea National Health and Nutrition Examination Survey. Diabetes was defined as fasting glucose ≥126 mg/dL, glycated hemoglobin ≥6.5%, physician diagnosis, or being under treatment. Data were directly age-standardized using the 2005 population projections for Korea [2].

ing from 11.6% to 11.3% (Fig. 1) [2]. It is also important to consider the changes in prevalence trends during and after the coronavirus disease 2019 (COVID-19) pandemic. In response to the sudden outbreak of COVID-19, governments worldwide swiftly implemented strict physical distancing measures to control the spread of the virus, resulting in major changes in society. These interventions also had unintended consequences on health. In Korea, the prevalence of three major chronic diseases—obesity, diabetes, and dyslipidemia—rose substantially in 2020 compared to the 3 preceding years [3]. Furthermore, individuals with COVID-19 were found to have an elevated risk of newly diagnosed type 2 diabetes compared to those without COVID-19 [4]. After 2019, the prevalence of diabetes among individuals aged 30 and older increased from 11.8% to 13.6%. By 2022, it returned to levels similar to those observed in 2019 (Fig. 1) [2]. However, due to a change in the clinical testing institution for glycated hemoglobin in the 2022 KNHANES, caution is needed when comparing trends with previous years. Therefore, it will be necessary to determine whether this declining trend will continue after 2022. Analyzing the prevalence data from 2011 to 2022, the projected prevalence of diabetes in 2051 is estimated to be 11.5% for those aged 19 and older, and 14.7% for those aged 30 and older (Fig. 2).

Globally, it is estimated that 136 million older adults aged 65

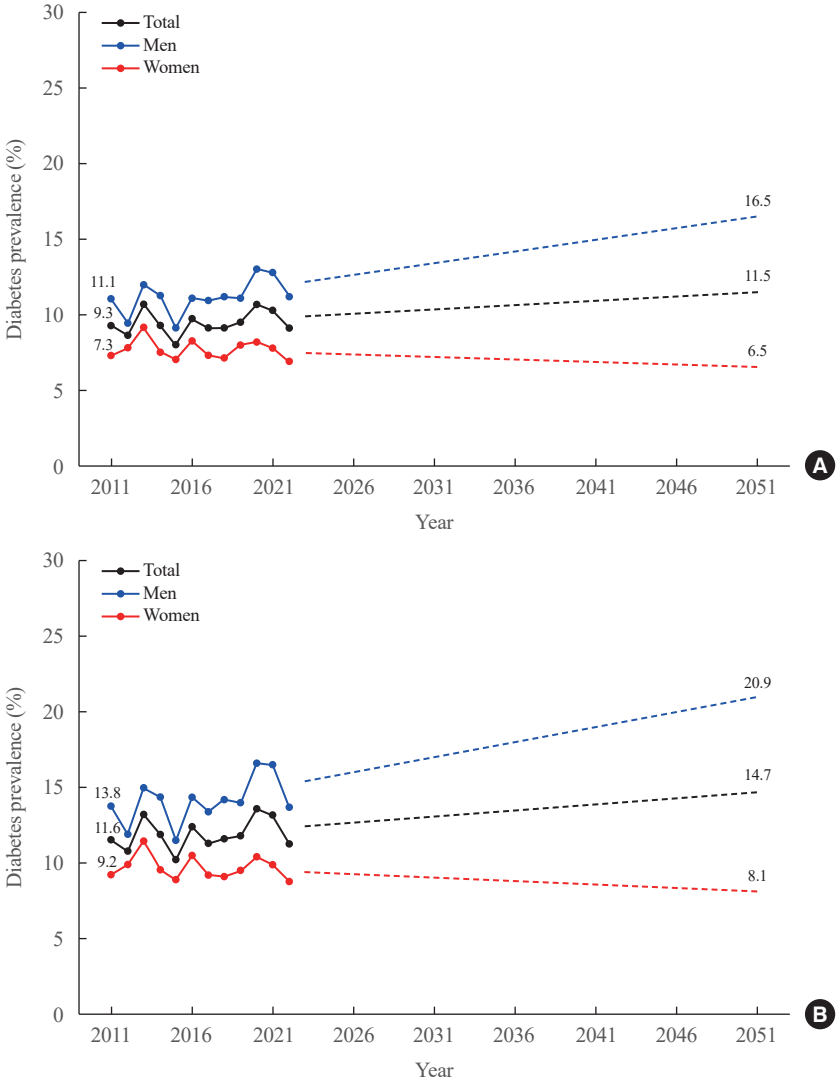

Fig. 2. Projected prevalence of diabetes (A) among individuals aged 19 and older and (B) among individuals aged 30 and older in Korea. Forecast estimates were derived using the autoregressive integrated moving average model.

to 99 have diabetes, comprising nearly one-fifth of this age group. This number is projected to rise to 195 million by 2030 and 276 million by 2045 [5]. In Korea, the prevalence of diabetes showed a noticeable increase from 2011 to 2022 in those aged 70 and older (25.9% in 2011, 29.4% in 2022) (Supplemental Table S1) [2]. In 2022, approximately 1.7 million individuals in this age group were estimated to have diabetes. The increasing prevalence in older adults is attributed to higher life expectancy and age-related factors such as changes in glucose metabolism and islet cell dysfunction. Managing diabetes in older adults is particularly challenging due to the prevalence of multiple comorbid conditions. In Korea, approximately 50% of older adults have hypertension, dyslipidemia, and obesity concurrently [6]. Furthermore, this population spans from robust to frail individuals, each presenting unique challenges in diabetes care. The risk of mortality was observed to increase in a stepwise manner across the glucose spectrum (normoglycemia, impaired fasting glucose, newly diagnosed diabetes, early diabetes, and advanced diabetes groups). This progression was also evident in cause-specific mortality, including deaths from cardiovascular diseases, cancers, genitourinary system disorders, and respiratory conditions [7]. Therefore, strategies tailored to the characteristics of older adults are needed for the prevention and management of diabetes.

INCIDENCE OF DIABETES

In many high-income countries, the incidence of diagnosed cases is either stabilizing or declining despite a rising prevalence of

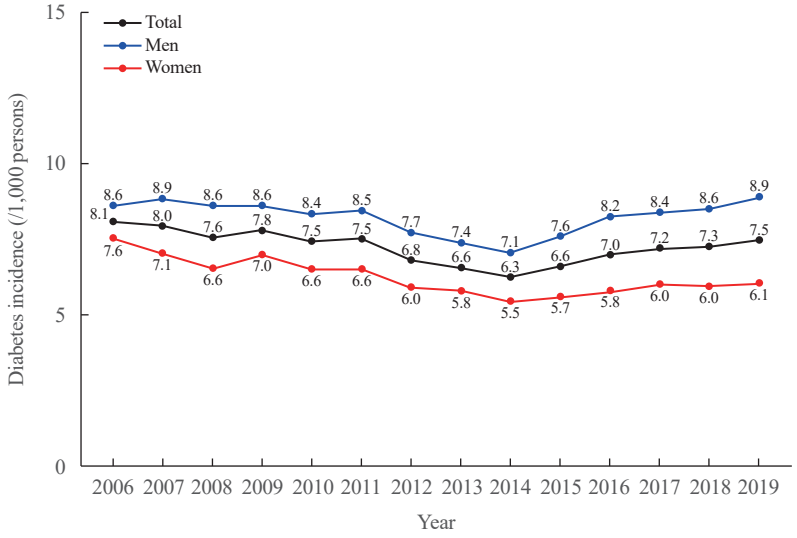

Fig. 3. Incidence of diabetes in Korea, based on 2006 to 2019 data from the National Health Insurance Service-National Sample Cohort. Diabetes was defined as a diabetes diagnosis accompanied by a prescription of glucose-lowering medications. Data were directly age-standardized using the 2012 cohort population.

diabetes [8]. In Korea, the incidence of diabetes decreased from 8.1 per 1,000 persons in 2006 to 6.3 per 1,000 persons in 2014, but then increased to 7.5 per 1,000 persons in 2019 (Fig. 3). From 2006 to 2019, there was a slight increase in diabetes incidence in men (from 8.6 to 8.9 per 1,000 persons) and young adults (20s, from 0.5 to 1.0; 30s, from 2.0 to 3.4; 40s, from 6.2 to 7.3 per 1,000 persons) (Fig. 3, Supplemental Table S2). This rise in incidence among men and younger age groups is likely linked to increasing obesity rates within these populations. From 1998 to 2022, the prevalence of obesity among women has decreased, whereas it has significantly increased among men (men, from 25.1% to 47.7%; women, from 26.2% to 25.7%). The prevalence of obesity in 2022 showed a significant increase compared to 1998: from 15.2% to 31.1% in individuals in their 20s, from 24.6% to 39.8% in those in their 30s, and from 31.6% to 40.7% in those in their 40s (Supplemental Table S3) [2]. Additionally, the prevalence of obesity among young adults aged 20 to 40 with diabetes rose significantly from 51.4% in 2006 to 72.4% in 2015. Notably, the proportion of individuals with severe obesity (body mass index [BMI] ≥35.0 kg/m^2) reached 10.2% in 2015 [9]. The increasing incidence of diabetes among younger age groups leads to a greater disease burden than when diabetes develops later in life, due to the longer duration of the disease [10]. Furthermore, in Korea, young adults with diabetes tend to have the highest BMI and exhibit severe insulin resistance along with defects in insulin secretion; furthermore, they often do not recognize their condition until symptoms manifest [11]. Therefore, to mitigate the risk of developing diabetes, screening for the disease may be necessary in young adults with obesity [12,13].

PREVALENCE AND INCIDENCE OF TYPE 1 DIABETES

Type 1 diabetes is a chronic disease caused by autoimmune destruction of the insulin-producing beta cells in the pancreatic islets. It accounts for approximately 5% to 10% of all cases of diabetes [14]. Type 1 diabetes has distinguishing characteristics from type 2 diabetes. It primarily occurs in younger individuals under the age of 35, with a BMI of less than 25 kg/m^2 at diagnosis. Additional features include weight loss, ketoacidosis, and glucose levels of 360 mg/dL or higher. Furthermore, rapid progression to insulin treatment within 3 years of diagnosis is indicative of type 1 diabetes [15]. Traditionally, type 1 diabetes has primarily affected children and adolescents. Globally, the number of new type 1 diabetes cases in the 0 to 14 age group increased from 98,200 to 108,300 in 2021 [16]. However, the incidence of type 1 diabetes varies significantly worldwide. The highest age-standardized incidence rates have been observed in populations of northern European origin and in several countries in the Middle Eastern and North African regions. Finland, Sweden, and Kuwait had the highest rates, with incidences of 52.2, 44.1, and 41.7 per 100,000 persons, respectively [16]. In Korea, the incidence rate was 4.8 per 100,000 persons in 2016, consti-

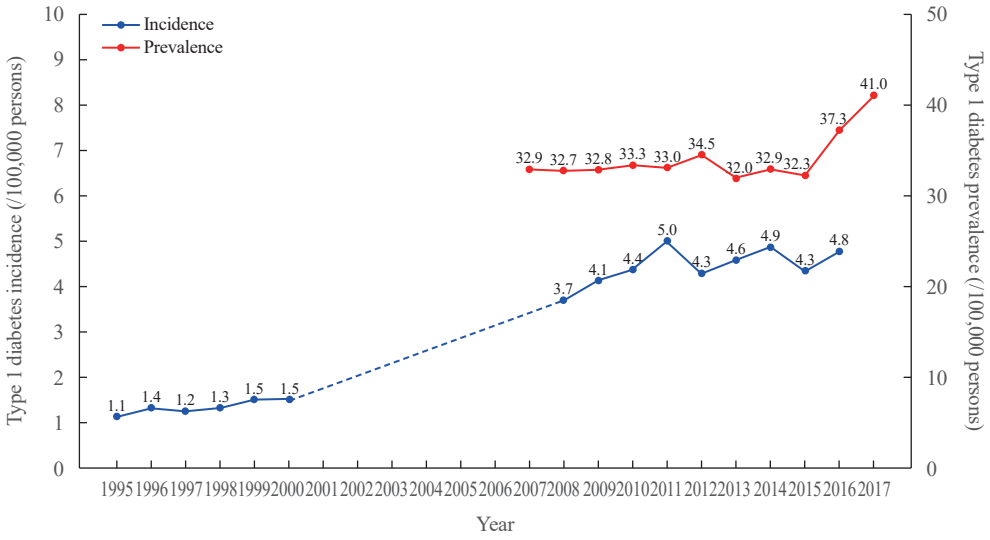

Fig. 4. Prevalence and incidence of type 1 diabetes among children under the age of 15 in Korea [17,18]. In the study by Shin [17], type 1 diabetes was defined based on the diagnosis provided in the questionnaire, which included the following criteria: continuous insulin therapy required for more than 2 years after the onset of diabetes, history of ketoacidosis, low blood levels of C-peptide (fasting <0.6 ng/mL, stimulated at 90 minutes <1.5 ng/mL), and positive autoantibodies against pancreatic islets and insulin. In the study by Chae et al. [18], type 1 diabetes was defined as a diagnosis of E10 before the age of 15 and ongoing insulin therapy.

tuting a significant increase from 1.1 per 100,000 persons in 1995 (Fig. 4) [17,18]. This rate is higher than in other Asian countries, such as China (1.9 per 100,000 persons per year) and Japan (2.2 per 100,000 persons per year) [16]. Alongside the increase in incidence, the prevalence of type 1 diabetes in Korea also rose to 41.0 per 100,000 persons in 2017 (Fig. 4) [18]. Since November 2015, the Korean government has expanded its reimbursement policy for insulin consumables. This policy change led to an increase in registrations among individuals with type 1 diabetes who had not previously registered. Therefore, the number of reimbursements for diabetes consumable materials among these individuals rose significantly to 36,422 in 2016, marking an 83.2% increase from the previous year [19]. Additionally, the number of individuals prescribed insulin rose by 15.5%, from 153,467 in 2015 to 177,188 in 2016 (annual percent change: 3.0% in 2014, 7.2% in 2015) [20]. Chae et al. [18] defined type 1 diabetes as a condition diagnosed in individuals who use insulin. Following this definition, it is estimated that the prevalence of diabetes in children increased sharply after 2015.

Although the incidence of type 1 diabetes peaks during adolescence and early adulthood, new cases can occur at any age. Moreover, individuals with type 1 diabetes often live for many decades following their diagnosis, leading to a higher overall prevalence of the condition in adults than in children. In 2022, of the total global population with type 1 diabetes, 1.52 million (17.0%) were under 20 years old, 5.56 million (64.0%) were between 20 and 59 years old, and 1.67 million (19.9%) were 60 years or older [21]. In Korea, data from the National Health Insurance Service database showed that in 2022, there were 1,775 individuals (3.9%) with type 1 diabetes under the age of 15 years, 1,777 (3.9%) aged 15 to 19 years, 23,174 (51.4%) aged 20 to 59 years, and 18,331 (40.7%) aged 60 years or older [19].

However, the epidemiological data from Korea on type 1 diabetes are outdated, as they only extend through 2017, and there is a lack of data concerning type 1 diabetes in adults. Thus, it is essential to collect comprehensive epidemiological data on type 1 diabetes in all age groups.

PREVALENCE OF GESTATIONAL DIABETES

Gestational diabetes is a disorder characterized by the onset of glucose intolerance during pregnancy [22]. Exposure to maternal hyperglycemia from 24 to 28 weeks of gestation results in various short- and long-term adverse outcomes for both mothers and their offspring [23]. The global prevalence of gestational diabetes is 14.0%, with increasing trends observed across all racial and ethnic groups [24-29]. In Korea, the prevalence of gestational diabetes increased from 4.1% in 2007 to 14.9% in 2016 (Fig. 5) [30-32]. According to the medical statistics information

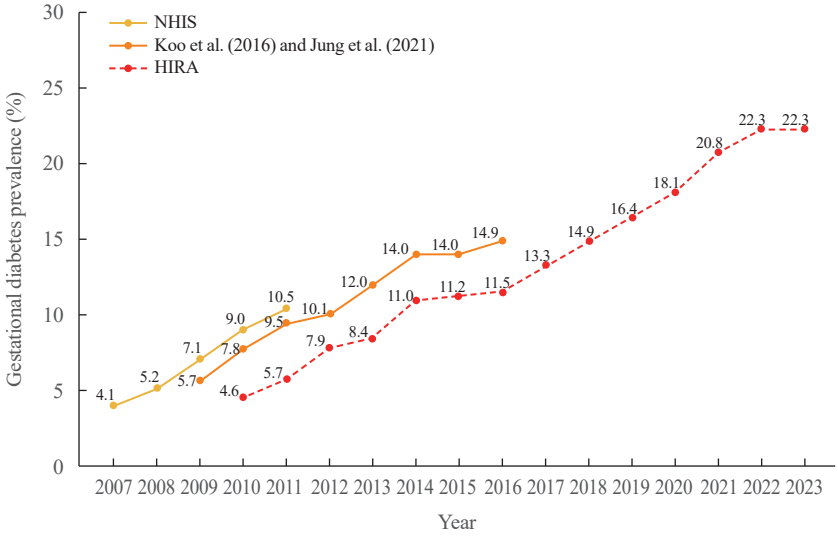

Fig. 5. Prevalence of gestational diabetes in Korea [30-33]. Gestational diabetes was defined based on the diagnosis of O244 during pregnancy. NHIS, National Health Insurance Service; HIRA, Health Insurance Review and Assessment Service.

from the Health Insurance Review and Assessment Service (HIRA), the annual prevalence of gestational diabetes increased 4.8-fold from 2010 to 2023, with a significant and continuous upward trend (from 4.6% to 22.3%) (Fig. 5) [33].

Advanced maternal age is a well-known risk factor for gestational diabetes. A meta-analysis revealed that with each 1-year increase in maternal age from 18 years onward, the risk of gestational diabetes increased by 7.9% in the overall population, 12.7% in Asians, and 6.5% in Europeans [34]. In Korea, the average age of childbearing has steadily risen over the past 30 years, from 27.6 years in 1993 to 33.5 years in 2022 [2]. Furthermore, data from the Korea National Health Insurance Claims Database of the HIRA indicated that the prevalence of gestational diabetes increased across all age groups. The annual increase in the prevalence of gestational diabetes was particularly significant in women over 30 years old. Furthermore, women aged 35 and above had a risk ratio of 2.8 for gestational diabetes compared to women under 35 years of age [35]. Gestational diabetes has been found to increase the risk of postpartum type 2 diabetes, and this risk is further elevated in the presence of comorbidities such as obesity [36]. Therefore, comprehensive management of blood glucose and obesity following gestational diabetes is necessary to prevent the onset of diabetes.

INCREASES IN HEALTHCARE EXPENDITURES

The estimated global health expenditure on diabetes was 966 billion United States dollar (USD) in 2021, and it is expected to reach 1,054 billion USD by 2045, representing a 9.1% increase compared to 2021 [1]. In Korea, the total medical cost for diabetes in 2022 was 3.4 trillion Korean won (KRW) (2.5 billion USD). The total medical cost for diabetes has risen for both outpatients and inpatients. For outpatients, the total medical cost increased from 1.2 trillion KRW in 2010 to 3.1 trillion KRW in 2022. The total medical cost for inpatients rose from 171 billion KRW to 276 billion KRW during the same period. On average, the cost per person with diabetes increased from 590,000 KRW to 856,000 KRW for outpatients, and from 2.0 million KRW to 2.9 million KRW for inpatients. The highest inpatient cost per person was 3.2 million KRW in 2020, but it decreased to 2.9 million KRW in 2022. This decrease is likely due to restricted healthcare utilization during the COVID-19 pandemic (Fig. 6). This trend remained similar even when considering the consumer price index (Supplemental Fig. S1) [37].

CONCLUSIONS

In Korea, the prevalence of diabetes was 12.5% among individuals aged 19 and older, and 14.8% among individuals aged 30 and older in 2022. The age-adjusted prevalence of diabetes has remained relatively stable over the past decade; however, the projected prevalence of diabetes is expected to increase by 2051. Although the overall incidence of diabetes appears to be on the decline, recent data indicate a slight uptick among men and younger demographics. Furthermore, the incidence of type

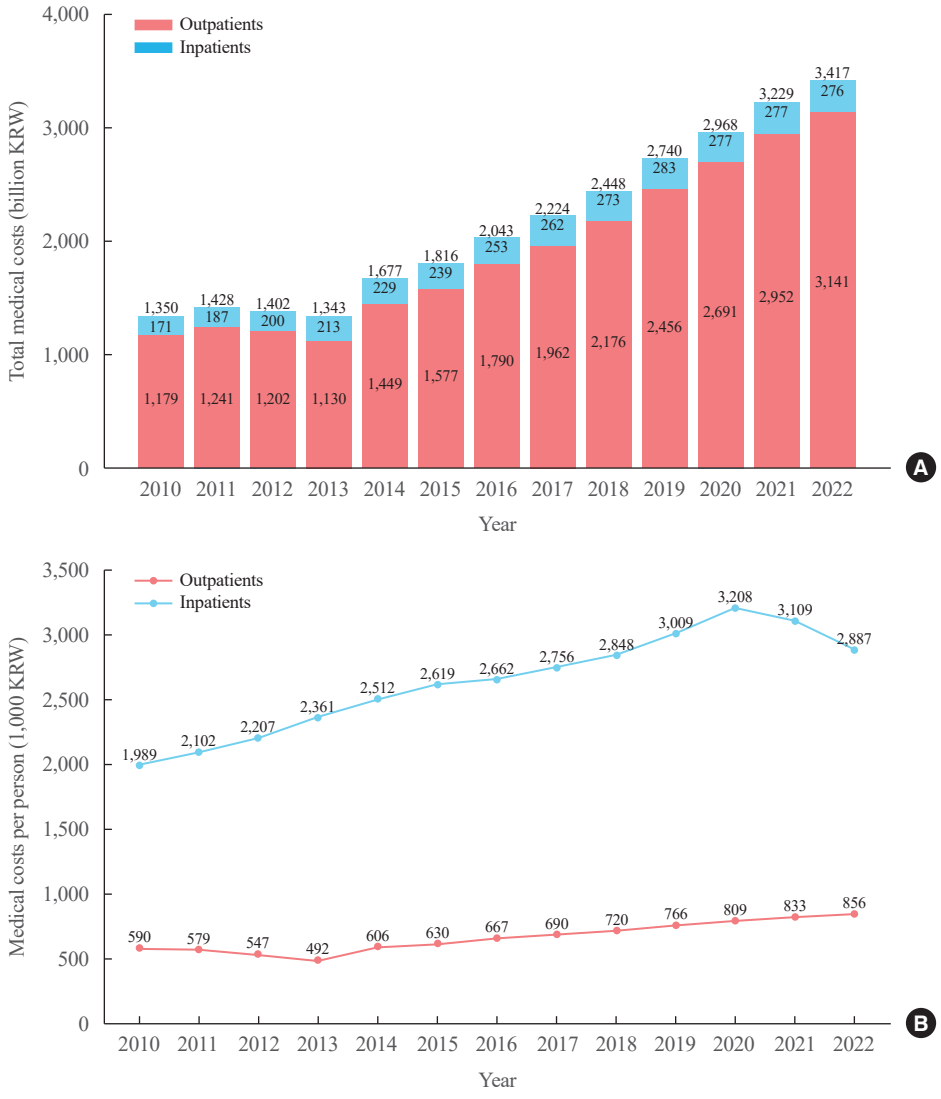

Fig. 6. Diabetes-related health expenditures in Korea, 2010 to 2022: (A) total medical costs and (B) medical costs per person [37]. KRW, Korean won.

1 diabetes and gestational diabetes has substantially risen. Notably, there have been increases in cases of type 1 diabetes, obesity-related type 2 diabetes, and gestational diabetes among adolescents and young adults. Therefore, it is imperative to focus on the prevention and management of these conditions to mitigate their impact.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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Supplemental Table S1. Prevalence of Diabetes by Age Groups in Korea, Based on 2011 to 2022 Data from the Korea National Health and Nutrition Examination Survey [2]

Age groups, yr	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total												
≥19	10.3	9.7	11.9	10.6	9.4	11.9	11.3	11.5	12.2	13.9	13.6	12.5
≥30	12.4	11.8	14.5	13.0	11.4	14.4	13.4	13.8	14.5	16.7	16.3	14.8
19–29	1.4	0.9	1.7	0.3	0.6	0.6	1.5	0.8	1.8	0.7	0.5	1.6
30–39	2.9	3.1	2.7	2.5	3.1	3.0	2.3	3.2	2.7	4.4	3.6	3.0
40–49	8.4	5.8	8.3	9.5	7.1	8.7	7.3	8.3	8.1	9.0	10.6	6.2
50–59	15.6	14.2	15.6	14.1	10.3	16.0	16.4	14.6	14.4	19.1	15.9	17.6
60–69	23.2	24.6	31.1	25.6	21.5	24.2	21.0	22.3	24.2	25.1	24.8	20.6
≥70	25.9	26.5	34.8	27.0	27.1	31.8	30.4	29.2	31.0	31.5	31.8	29.4
Men												
≥19	11.9	10.1	12.9	12.3	10.1	12.9	12.7	13.1	13.4	15.8	15.9	14.4
≥30	14.5	12.4	16.0	15.4	12.5	15.8	15.1	15.9	16.3	19.2	19.4	16.9
19–29	1.9	0.9	1.9	0.5	0.7	0.5	2.3	1.2	1.1	0.6	0.4	2.8
30–39	4.2	3.3	3.9	2.2	2.8	4.0	3.5	3.7	3.1	5.9	5.0	3.1
40–49	11.0	5.3	11.4	12.9	9.7	10.9	9.3	13.0	11.5	14.1	14.3	8.9
50–59	20.7	17.0	20.0	17.5	12.9	19.6	20.6	17.9	18.9	23.8	21.7	24.1
60–69	26.3	29.2	33.6	32.6	24.4	27.9	23.7	25.7	27.2	28.8	28.8	25.1
≥70	23.6	26.5	27.1	27.3	25.4	29.1	30.2	28.8	30.0	28.7	33.8	27.8
Women												
≥19	8.7	9.3	11.0	8.8	8.6	10.9	9.9	10.0	11.0	12.1	11.3	10.7
≥30	10.4	11.1	13.1	10.7	10.4	13.0	11.7	11.8	12.7	14.3	13.4	12.6
19–29	0.8	0.8	1.4	0.2	0.5	0.8	0.6	0.3	2.5	0.8	0.6	0.2
30–39	1.6	2.9	1.4	2.8	3.4	1.8	0.9	2.7	2.3	2.7	2.0	2.9
40–49	5.7	6.3	5.2	6.2	4.6	6.4	5.2	3.5	4.7	3.7	6.8	3.3
50–59	10.6	11.4	11.5	10.8	7.8	12.4	12.1	11.3	9.7	14.3	10.1	11.1
60–69	20.4	20.3	28.7	19.5	18.9	20.6	18.4	19.0	21.4	21.6	20.9	16.3
≥70	27.5	26.4	40.4	26.8	28.3	33.6	30.6	29.4	31.6	33.5	30.4	30.6

Values are expressed as percentage. Diabetes was defined as fasting glucose ≥126 mg/dL, glycated hemoglobin ≥6.5%, physician diagnosis, or being under treatment.

Supplemental Table S2. Incidence of Diabetes by Age Groups in Korea, Based on 2006 to 2019 Data from the National Health Insurance Service-National Sample Cohort

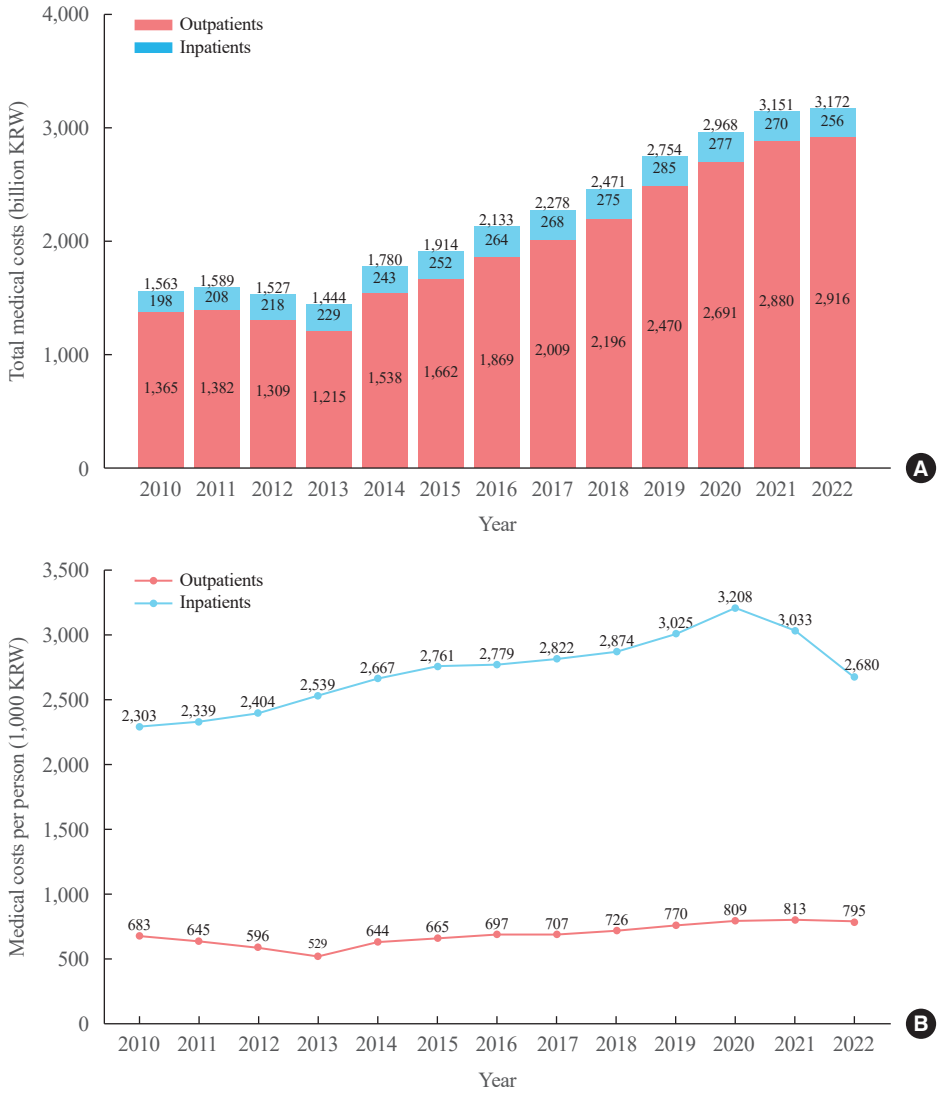
Age groups, yr	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total														
≥20[a]	8.1	8.0	7.6	7.8	7.5	7.5	6.8	6.6	6.3	6.6	7.0	7.2	7.3	7.5
20–29	0.5	0.5	0.5	0.7	0.5	0.6	0.5	0.7	0.5	0.7	0.6	0.7	1.0	1.0
30–39	2.0	2.1	2.1	2.2	2.0	2.1	2.0	2.1	2.5	2.6	2.9	3.2	3.0	3.4
40–49	6.2	6.3	5.5	6.0	5.6	5.8	5.6	5.1	5.2	5.6	6.3	6.2	6.5	7.3
50–59	12.1	11.2	11.6	11.2	11.2	11.0	10.1	9.8	8.9	9.7	10.9	10.8	10.9	10.8
60–69	16.6	16.6	15.4	16.5	15.2	15.8	13.4	12.9	12.3	12.3	13.4	13.2	13.4	13.8
70–79	20.2	18.7	17.3	17.8	17.3	16.4	15.3	14.6	13.6	13.7	13.0	15.3	14.3	13.7
≥80	15.0	18.4	17.8	16.6	16.5	16.5	14.1	14.4	12.6	13.5	11.3	11.6	11.0	12.3
Men														
≥20[a]	8.6	8.9	8.6	8.6	8.4	8.5	7.7	7.4	7.1	7.6	8.2	8.4	8.6	8.9
20–29	0.6	0.5	0.4	0.6	0.5	0.6	0.6	0.6	0.5	0.9	0.8	0.8	1.2	1.0
30–39	2.6	2.6	2.9	3.0	2.7	2.9	2.7	2.8	3.3	3.5	4.0	4.4	4.3	4.8
40–49	8.6	8.8	7.9	7.8	7.9	8.0	7.8	7.0	7.0	7.7	8.9	8.6	9.2	10.2
50–59	14.1	13.2	14.2	13.6	13.1	12.9	12.1	11.7	10.7	11.7	12.8	12.7	12.9	13.1
60–69	16.9	18.1	16.3	17.6	16.7	17.6	14.1	13.7	12.9	13.3	15.0	14.5	14.7	16.0
70–79	18.0	19.5	17.8	17.6	17.0	16.6	15.6	15.1	14.4	13.6	13.4	17.0	15.2	13.6
≥80	9.7	18.2	21.2	18.0	20.2	19.4	16.2	16.0	12.8	16.8	12.5	12.8	12.1	13.9
Women														
≥20[a]	7.6	7.1	6.6	7.0	6.6	6.6	6.0	5.8	5.5	5.7	5.8	6.0	6.0	6.1
20–29	0.5	0.6	0.5	0.8	0.6	0.5	0.4	0.7	0.5	0.6	0.5	0.6	0.9	1.0
30–39	1.4	1.7	1.4	1.4	1.2	1.3	1.4	1.4	1.6	1.7	1.7	1.9	1.6	1.9
40–49	3.8	3.6	3.0	4.1	3.2	3.6	3.3	3.2	3.4	3.4	3.7	3.8	3.7	4.2
50–59	10.0	9.1	9.1	8.9	9.3	9.0	8.1	7.9	7.1	7.7	9.0	8.9	8.9	8.6
60–69	16.3	15.2	14.5	15.4	13.9	14.1	12.7	12.2	11.6	11.4	12.0	12.0	12.2	11.6
70–79	21.6	18.2	16.9	17.9	17.5	16.2	15.1	14.3	13.0	13.8	12.6	13.8	13.6	13.8
≥80	17.2	18.5	16.5	16.0	15.0	15.3	13.2	13.7	12.5	12.0	10.7	11.1	10.4	11.5

Values are expressed as per 1,000 persons. Diabetes was defined as a diabetes diagnosis accompanied by a prescription of glucose-lowering medications.
[a]Data were directly age-standardized using the 2012 cohort population.

Supplemental Table S3. Prevalence of Obesity by Age Groups in Korea, Based on 1998 to 2022 Data from the Korea National Health and Nutrition Examination Survey [2]

Age groups, yr	1998	2001	2005	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total																			
≥19[a]	26.0	29.2	31.3	31.7	30.7	31.3	30.9	31.4	32.4	31.8	30.9	33.2	34.8	34.1	34.6	33.8	38.3	37.1	37.2
≥30[a]	29.1	32.7	34.8	34.6	32.9	34.0	33.9	34.2	35.4	34.6	32.9	36.0	37.0	35.5	36.9	35.6	40.0	39.5	39.0
19–29	15.2	17.3	19.3	22.0	23.0	22.1	20.5	21.7	22.4	22.4	23.9	23.5	27.2	29.4	26.9	27.6	32.6	28.6	31.1
30–39	24.6	25.6	29.0	27.8	28.0	29.5	31.0	31.5	32.5	33.2	31.8	32.9	34.2	33.4	37.8	34.9	41.6	39.4	39.8
40–49	31.6	35.8	35.2	32.5	34.4	34.7	34.1	35.4	39.2	33.7	31.1	35.6	39.0	35.3	36.8	35.6	39.0	42.9	40.7
50–59	35.6	37.2	42.1	42.4	37.4	40.0	35.3	35.7	34.0	37.3	35.4	38.3	36.1	38.0	35.2	36.5	40.2	36.8	39.2
60–69	30.2	38.3	39.6	46.2	37.2	37.0	40.7	38.8	38.5	36.3	36.8	40.1	40.2	38.0	36.8	37.3	41.1	40.6	36.1
≥70	22.2	29.5	31.5	31.7	29.3	31.1	30.6	29.7	31.1	33.8	32.1	37.4	37.5	34.7	38.0	34.3	35.3	33.5	35.0
Men																			
≥19[a]	25.1	31.8	34.7	36.2	35.3	35.8	36.4	35.1	36.3	37.7	37.8	39.7	42.2	41.6	42.8	41.8	48.0	46.3	47.7
≥30[a]	26.8	33.6	37.6	37.8	36.6	37.8	38.7	37.7	38.0	40.1	39.5	41.8	43.3	42.4	44.7	43.1	49.9	48.1	49.1
19–29	19.3	25.5	24.8	31.0	31.0	29.0	28.3	26.2	30.5	29.3	32.0	32.4	38.8	39.0	36.1	37.3	41.5	40.0	42.8
30–39	28.4	35.0	38.1	41.7	38.2	38.5	42.3	40.7	40.6	47.1	43.9	43.6	45.3	46.7	51.3	46.4	58.2	51.4	55.7
40–49	33.3	39.0	41.1	37.9	41.1	41.9	41.3	42.6	45.0	41.5	39.6	45.6	49.0	44.7	47.5	45.0	50.7	57.7	53.6
50–59	28.3	32.4	41.0	41.7	39.6	43.4	36.8	34.7	33.2	40.8	41.5	40.3	39.7	44.3	40.9	43.4	48.1	41.9	49.7
60–69	20.0	28.0	31.0	34.6	29.8	32.2	37.8	34.1	33.5	29.3	36.9	38.3	39.7	36.7	38.1	39.9	44.0	41.0	36.8
≥70	8.0	23.0	27.4	21.4	21.0	19.9	24.5	23.7	23.0	26.2	24.0	32.1	30.3	25.3	30.6	30.4	31.9	29.2	29.8
Women																			
≥19[a]	26.2	27.4	27.3	26.3	25.2	26.0	24.8	27.1	28.0	25.1	23.3	25.9	26.4	25.6	25.5	25.0	27.7	26.9	25.7
≥30[a]	30.5	32.1	31.3	30.3	28.4	29.5	28.5	30.1	32.2	28.2	25.7	29.6	30.0	27.7	28.3	27.4	29.1	30.1	27.9
19–29	11.6	11.0	13.4	12.6	14.1	14.3	12.1	16.9	13.6	14.4	15.0	13.4	13.8	18.3	16.2	16.5	22.8	15.9	18.2
30–39	20.9	19.1	19.0	12.8	17.0	19.6	19.0	21.7	23.7	17.9	18.6	21.1	21.7	18.3	22.6	21.6	22.7	25.7	21.8
40–49	29.8	33.6	29.0	26.6	27.5	27.2	26.7	27.9	33.2	25.7	22.3	25.4	28.7	25.6	25.7	25.8	26.8	27.2	27.2
50–59	42.7	40.8	43.1	43.1	35.3	36.7	33.8	36.7	34.9	33.7	29.3	36.2	32.5	31.7	29.3	29.6	32.4	31.6	28.6
60–69	38.6	46.6	47.1	56.4	43.8	41.4	43.3	43.0	43.1	42.7	36.6	41.7	40.7	39.3	35.5	34.9	38.4	40.3	35.4
≥70	29.4	33.4	34.0	37.9	34.3	38.1	34.4	33.5	36.1	38.6	37.3	40.8	42.2	41.0	43.0	37.0	37.8	36.6	38.8

Values are expressed as percentages. Obesity was defined as body mass index ≥25 kg/m^2.
[a]Data were directly age-standardized using the 2005 population projections for Korea.



Supplemental Fig. S1. Inflation-adjusted diabetes-related health expenditures in Korea, 2010 to 2022: (A) total medical costs, (B) medical costs per person. Costs are adjusted for inflation based on the 2020 consumer price index for Korea. The consumer price index measures the average change in prices over time that consumers pay for a basket of goods and services, reflecting inflation and cost of living changes [37]. KRW, Korean won.