

Research Article



# Korea Hypertension Fact Sheet 2025: national trends in hypertension with a special analysis of hypertensive disorders of pregnancy

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## ABSTRACT

**Background:** This report utilizes the latest national data to describe the prevalence, management status, and treatment patterns of hypertension in South Korea, with a special analysis of the growing burden of hypertensive disorders of pregnancy (HDP).

**Methods:** Two nationwide datasets were analyzed: the Korea National Health and Nutrition Examination Survey (KNHANES, 1998–2023) and the National Health Insurance (NHI) Big Data (2002–2023). In KNHANES, hypertension was defined as systolic blood pressure  $\geq 140$  mmHg, diastolic blood pressure  $\geq 90$  mmHg, or current use of antihypertensive medication. HDP prevalence was analyzed using NHI data for childbearing women aged 15–49 years from 2005 to 2023.

**Results:** In 2023, an estimated 12.6 million Korean adults (29% of adults aged  $\geq 20$  years) had hypertension. Management indicators continued to improve, with awareness,

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### Abbreviations

ARB, angiotensin receptor blocker; BB, beta-blocker; BP, blood pressure; CCB, calcium channel blocker; CVD, cardiovascular disease; DBP, diastolic blood pressure; DU, diuretic; HDP, hypertensive disorders of pregnancy; ICD-10, International Classification of Diseases, 10th Revision; KNHANES, Korea National Health and Nutrition Examination Survey; NHI, National Health Insurance; SBP, systolic blood pressure.

### Consortium

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treatment, and control rates reaching 79%, 76%, and 62%, respectively. However, among young adults aged 20–39 years, awareness and treatment rates remained below 50% despite recent substantial gains. Healthcare utilization also increased, with 11.9 million individuals receiving hypertension-related care and 8.3 million achieving continuous treatment adherence ( $\geq 290$  days/year) in 2023. Dual therapy was the most common regimen (44%), followed by monotherapy (40%). Angiotensin receptor blockers (77%) and calcium channel blockers (62%) were the most frequently prescribed drug classes. The burden of HDP has risen markedly over time. The number of women with HDP increased from approximately 22.8 thousand in 2005 to over 30 thousand in 2023, representing a 32% increase despite a substantial decline in total births. In 2023, HDP affected 13.2% of maternity healthcare users, comprising chronic hypertension (7.2%), pregnancy-induced hypertension (4.7%), and preeclampsia/eclampsia (2.9%).

**Conclusions:** South Korea continues to demonstrate high performance in hypertension management at the population level, with steady improvements in awareness, treatment, and control. Nevertheless, the rising absolute number of individuals with hypertension and the substantial, accelerating increase in HDP underscore the need for strengthened public health strategies. Targeted early detection and tailored management approaches are essential to improve cardiovascular, maternal, and fetal health outcomes.

**Keywords:** Hypertension; Prevalence; Awareness; Treatment; Control; Hypertensive disorders of pregnancy; Korea

## BACKGROUND

Hypertension, is a major contributor to morbidity and premature mortality worldwide. It substantially increases the risks of cardiovascular, cerebrovascular, renal, and other chronic diseases [1,2]. Globally, the number of individuals with hypertension doubled from 648 million in 1990 to 1,278 million in 2019, yet awareness and treatment rates remain suboptimal, with only 38% of affected men and 47% of affected women receiving diagnosis and treatment [3].

Although Korea's cardiovascular disease (CVD) mortality has declined to among the lowest levels globally [4], heart disease, cerebrovascular disease, and hypertension remain the second, fourth, and eighth leading causes of death, respectively. Moreover, due to the rapid aging of the population, the absolute number of people with hypertension and CVD is expected to increase [5]. In South Korea, individuals with hypertension face a substantial financial burden, spending an additional 545,489 won (approximately \$400) per year on healthcare compared to those without hypertension. This contributes to an estimated annual national healthcare expenditure of about 5 trillion won (approximately \$4 billion) due to hypertension, underscoring the importance of early blood pressure (BP) management to reduce lifelong healthcare costs [6]. Controlling BP is crucial not only to reduce the burden of disease at a societal level but also to improve the quality of life at an individual level. Continuous monitoring of hypertension prevalence and management status should be the first step in reducing its burden. To achieve this, the Korean Society of Hypertension published its first Hypertension Fact Sheet in 2018 and has been periodically updating it [7-12].

Recent national analyses have identified hypertensive disorders of pregnancy (HDP)—encompassing chronic hypertension in pregnancy, pregnancy-induced hypertension, and

**Competing interest**

The authors declare that they have no competing interests.

**Availability of data and materials**

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

**Ethics approval and consent to participate**

The study protocol was approved by the Institutional Review Board of Yonsei University Health System, Seoul, Korea (approval 4-2025-0191). Informed consent was waived, because this is a retrospective study of deidentified, routinely collected data.

**Consent for publication**

Not applicable.

**Authors' contributions**

Conceptualization: Kim HC, Lee H; Data curation: Kim HC, Lee H; Formal analysis: Kim HC, Lee H, Choi H, Kwon H, Lee J, Cho M, Son D, Lee SG, Ahn NY, Park J, Ahn SV, Cheon DY, Heo J, Jhee JH, Kim E, Lee HH, Lee JM, Lee SW, Shin MH, Yoon Y; Investigation: Kim HC, Lee H; Methodology: Kim HC, Lee H; Project administration: Kim HC, Lee H; Resources: Kim HC, Lee H; Validation: Choi H, Kwon H, Lee J, Cho M, Son D, Lee SG, Ahn NY, Park J, Ahn SV, Cheon DY, Heo J, Jhee JH, Kim E, Lee HH, Lee JM, Lee SW, Shin MH, Yoon Y; Writing - original draft: Kim HC, Lee H; Writing - review & editing: Kim HC, Lee H, Choi H, Kwon H, Lee J, Cho M, Son D, Lee SG, Ahn NY, Park J, Ahn SV, Cheon DY, Heo J, Jhee JH, Kim E, Lee HH, Lee JM, Lee SW, Shin MH, Yoon Y.

preeclampsia/eclampsia—as a rapidly escalating public health concern [9,13,14]. HDP not only poses immediate risks to both mother and fetus but also confers substantial long-term cardiovascular risks to affected women [15-17]. Given the sharply rising prevalence of HDP over the past decade, there is an urgent need for targeted prevention and management strategies for women of reproductive age.

Using the most recent nationwide datasets, including the Korea National Health and Nutrition Examination Survey (KNHANES, 1998–2023) and the National Health Insurance (NHI) Big Data (2002–2023), the Korea Hypertension Fact Sheet 2025 provides updated estimates of epidemiological trends and management status, with a special focus on the trends of HDP.

**METHODS****Study populations**

This report is based on 2 nationally representative datasets: the KNHANES and the NHI Big Data. The KNHANES, established in 1998, is a national surveillance system designed to assess the health and nutritional status of the noninstitutionalized Korean population [18,19]. The NHI Big Data, managed by the National Health Insurance Service, covers socio-demographics, hospital claims, International Classification of Diseases, 10th Revision (ICD-10) codes, and mortality data for the entire population of South Korea from 2002 to 2023 [20]. In previous iterations of the Korea Hypertension Fact Sheet, such as the 2018 report, the KNHANES dataset was analyzed for adults aged 30 years and older, while the NHI Big Data included individuals of all ages. Since the 2020 report, both KNHANES and NHI Big Data have been analyzed for adults aged 20 years and older [8]. These 2 complementary datasets allow for a robust examination of hypertension trends, covering both population-representative health surveillance data (KNHANES) and comprehensive healthcare utilization records (NHI Big Data).

**Analysis of the KNHANES from 1998 to 2023**

There have been 9 rounds of KNHANES between 1998 and 2024: KNHANES I (1998), KNHANES II (2001), KNHANES III (2005), KNHANES-IV (2007–2009), KNHANES V (2010–2012), KNHANES VI (2013–2015), KNHANES VII (2016–2018), KNHANES VIII (2019–2021), and KNHANES IX (2022–2024). For the present report, only the 2022 and 2023 data from the ninth round were available. Hypertension was defined as systolic blood pressure (SBP)  $\geq 140$  mmHg, diastolic blood pressure (DBP)  $\geq 90$  mmHg [21], or self-reported use of antihypertensive medication for the purpose of BP control. Awareness rate was defined as the proportion of people with physician diagnosis of hypertension among all people with hypertension. Treatment rate was defined as the proportion of individuals with hypertension who were using antihypertensive drugs for 20 days or more per month. Control rate was defined as the proportion of people with SBP  $< 140$  mmHg and DBP  $< 90$  mmHg among 1) all people with hypertension and 2) people treated for hypertension [22].

To assess the magnitude and management status of hypertension independent of population aging, age-standardized rates were calculated using the 2005 Korean population structure derived from the Population and Housing Census conducted by Statistics Korea. All analyses applied sampling weights to account for the stratified, multistage, clustered probability sampling design of the KNHANES.

### Analysis of the NHI Big Data from 2002 to 2023

While the KNHANES data analysis defined hypertension based on measured BP levels and use of antihypertensive medication, the NHI Big Data analysis defined hypertension based on diagnosis codes, because the claim database did not have records of BP measurements. Healthcare utilization was defined as at least one health insurance claim for diagnosis of essential hypertension (I10) each year. Treatment of hypertension was defined as at least one health insurance claim for hypertension diagnosis with antihypertensive drug prescription each year. Adherence to treatment was defined as receiving prescriptions of antihypertensive drugs  $\geq 290$  days (80%) each year. Antihypertensive drugs were classified into angiotensin receptor blockers (ARBs), angiotensin-converting enzyme inhibitors, calcium channel blockers (CCBs), diuretics (DUs; including thiazide and loop diuretics), beta-blockers (BBs), potassium-sparing diuretics, or others (alpha-blockers, vasodilators, etc.). The classification of prescribed antihypertensive regimens was determined by the number and types of antihypertensive drug classes included in the prescription, regardless of whether medications were in a single-pill combination or multiple-pill regimen. If the regimen of antihypertensive drug had switched in a year, one with the longest duration was selected as the representative prescription of the patient for the given year.

HDP were identified among women aged 15–49 years who delivered between 2005 and 2023. HDP was classified into 4 categories—chronic maternal hypertension, pregnancy-induced hypertension, preeclampsia/eclampsia, and unspecified maternal hypertension. Chronic maternal hypertension, pregnancy-induced hypertension, and unspecified maternal hypertension were defined as mutually exclusive categories, whereas preeclampsia/eclampsia could overlap with either chronic or pregnancy-induced hypertension. Chronic maternal hypertension was defined by a prior diagnosis of hypertension (I10–I15) or chronic maternal hypertension (O10) or superimposed preeclampsia (O11). Pregnancy-induced hypertension was defined for women without chronic hypertension who had diagnoses of gestational (pregnancy-induced) hypertension without significant proteinuria (O13) or preeclampsia/eclampsia (O14–O15) within 40 weeks before delivery or 12 weeks postpartum. Preeclampsia/eclampsia included women meeting criteria for chronic maternal hypertension or pregnancy-induced hypertension with additional diagnoses of preeclampsia/eclampsia (O14–O15) or superimposed preeclampsia (O11). Unspecified maternal hypertension was defined by diagnosis code O16 among women who did not meet criteria for the other categories (page 2 of **Supplementary Data 1**).

## RESULTS

### Trends of average BP and hypertension prevalence

The average BP of Korean adults demonstrated a significant decline between 1998 and 2008, stabilizing thereafter. In 2023, the mean SBP/DBP of the population was recorded at 118/74 mmHg among adults aged 20 years and older, and 119/75 mmHg among those aged 30 years and older (page 9 of **Supplementary Data 1**). This reduction was particularly notable with greater decreases observed in older age groups, as SBP declined by 15.6 mmHg in individuals aged 65 years and older, 10.5 mmHg in those aged 40–64 years, and 5.8 mmHg in those aged 20–39 years from 1998 to 2023 (page 10 of **Supplementary Data 1**). The crude prevalence of hypertension among adults aged 20 years and older rose from 25.1% in 1998 (men 28.5%, women 22.1%) to 28.8% in 2023 (men 30.8%, women 26.9%). In contrast, the age-standardized prevalence decreased modestly over the same period, from 26.0%

**Table 1.** Crude and age-standardized prevalence of hypertension, 1998–2023

Year	Crude prevalence of hypertension (%)						Age-standardized prevalence of hypertension (%) <sup>a</sup>					
	Adults aged 20 years or older			Adults aged 30 years or older			Adults aged 20 years or older			Adults aged 30 years or older		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
1998	25.1	28.5	22.1	29.7	32.0	27.6	26.0	29.6	22.3	30.7	33.4	27.4
2001	26.0	30.7	22.7	29.8	34.4	26.6	23.6	28.4	20.2	28.5	33.1	25.3
2005	22.9	25.5	20.4	28.1	30.9	25.4	22.7	26.1	18.9	28.0	31.5	23.8
2007	20.4	21.5	19.3	25.0	26.4	23.7	19.7	21.7	17.3	24.4	26.7	21.5
2008	22.7	23.5	21.9	27.6	28.5	26.6	21.4	23.2	19.1	26.5	28.5	24.0
2009	23.4	25.9	20.9	28.2	31.2	25.3	21.4	25.2	17.4	26.5	30.8	21.9
2010	24.1	25.3	23.0	28.9	30.1	27.7	21.7	24.1	18.8	26.8	29.3	23.8
2011	26.5	29.8	23.3	30.8	33.9	27.8	23.9	28.6	18.8	28.4	32.8	23.6
2012	26.7	28.4	25.1	31.5	33.3	29.8	23.8	26.9	20.3	28.9	32.1	25.2
2013	25.7	28.9	22.8	30.4	34.2	26.9	22.4	26.9	17.7	27.2	32.4	22.1
2014	24.3	26.4	22.2	28.9	31.8	26.2	20.5	24.1	16.6	25.4	29.7	20.9
2015	27.0	29.5	24.5	32.0	35.1	29.1	22.5	26.7	18.2	27.8	32.6	22.9
2016	28.5	31.9	25.1	33.5	37.7	29.4	23.7	28.6	18.4	29.1	35.0	22.9
2017	26.9	30.4	23.5	31.2	35.0	27.6	22.3	27.4	16.9	26.9	32.3	21.3
2018	28.8	31.5	26.0	33.3	36.4	30.4	23.5	28.0	18.6	28.3	33.2	23.1
2019	28.4	29.7	27.0	32.9	34.7	31.2	22.5	25.9	18.8	27.2	31.1	22.8
2020	29.4	33.5	25.4	34.2	38.9	29.7	23.3	29.1	17.0	28.3	34.9	21.3
2021	28.4	30.4	26.4	33.2	35.8	30.7	21.8	25.7	17.4	26.8	31.5	21.7
2022	30.1	33.4	26.8	34.8	38.5	31.2	22.4	27.3	17.2	27.3	32.8	21.5
2023	28.8	30.8	26.9	33.6	36.1	31.3	20.4	23.8	16.8	25.5	29.5	21.4

<sup>a</sup>Age-standardized prevalence was calculated using the 2005 population projections for Korea.

(men 29.6%, women 22.3%) in 1998 to 20.4% (men 23.8%, women 16.8%) in 2023 (**Table 1**, page 11 of **Supplementary Data 1**). However, population aging has resulted in a steady increase in the absolute number of individuals with hypertension. In 2023, an estimated 12.6 million Korean adults had hypertension, comprising 6.7 million men, 5.9 million women, and 6.0 million individuals aged 65 years or older. Notably, the number of elderly women with hypertension has been rising rapidly; by 2023, women aged 65 years and older accounted for one-quarter of all hypertension cases (page 4, 12–13 of **Supplementary Data 1**).

### Trends of hypertension management

Significant progress has been made in hypertension management over the past 26 years, including improvements in awareness, treatment, and control rates. By 2023, the rates among adults aged 20 and older with hypertension had reached 78.6% for awareness, 76.0% for treatment, and 62.2% for control. Nonetheless, management levels differ significantly by age group. While all management indicators have shown substantial improvement in older adults, advancements have been more limited among younger adults. Specifically, among individuals under 40 with hypertension, awareness, treatment, and control rates remain notably low. Encouragingly, recent trends indicate an increase in awareness, treatment, and control rates among younger adults, though they are still well below 50% (page 4, 15–18 of **Supplementary Data 1**). Interestingly, among those on medication, control rates are high even in younger adults, suggesting that low control rates in younger adults are largely due to limited awareness and lack of treatment (page 18 of **Supplementary Data 1**). Furthermore, average BP levels for both all hypertensive individuals and those undergoing treatment have steadily declined, with older adults showing faster declines, while reductions in younger adults have been slower (**Table 2**, page 19–20 of **Supplementary Data 1**).

### Healthcare utilization for hypertension

The number of people utilizing healthcare services for hypertension in South Korea has increased nearly 4-fold, from 3.0 million in 2002 to 11.9 million in 2023. Similarly,

**Table 2.** The average blood pressure levels among people with hypertension and people treated for hypertension, 1998–2023

Year	Average systolic blood pressure (mmHg)						Average diastolic blood pressure (mmHg)					
	People with hypertension			People treated for hypertension			People with hypertension			People treated for hypertension		
	Age 20–39	Age 40–64	Age 65+	Age 20–39	Age 40–64	Age 65+	Age 20–39	Age 40–64	Age 65+	Age 20–39	Age 40–64	Age 65+
1998	139.6	148.4	159.5	139.1	148.0	160.4	93.8	92.7	85.7	91.2	91.3	85.8
2001	137.6	144.9	151.4	148.1	142.9	146.6	93.2	90.8	84.5	92.8	88.6	82.3
2005	130.7	137.5	143.7	125.2	132.9	138.7	93.7	90.2	82.1	82.4	85.4	79.6
2007–2009	132.7	133.9	137.3	128.3	128.6	132.6	94.0	87.7	78.3	87.0	82.7	76.4
2010–2012	133.5	135.1	136.1	125.4	128.6	132.8	94.0	86.9	75.1	85.5	81.2	73.6
2013–2015	134.6	132.8	134.0	125.6	126.3	130.6	94.4	85.9	73.0	84.4	80.8	71.4
2016–2018	132.9	132.2	134.0	121.4	125.7	130.9	93.3	85.9	73.0	82.2	80.6	71.4
2019–2021	135.5	131.6	134.7	125.7	125.0	131.6	92.7	85.1	74.1	82.0	80.2	72.7
2022–2023	133.2	129.7	132.9	122.9	123.9	130.0	88.8	83.3	74.6	77.1	78.9	73.0

the number of individuals receiving antihypertensive prescriptions rose more than 4-fold, from 2.5 million in 2002 to 11.3 million in 2023. More significantly, adherence to antihypertensive medication has shown a substantial increase, with the number of adherent individuals growing about 14-fold, from 0.6 million in 2002 to 8.3 million in 2023 (page 22 of **Supplementary Data 1**). The use of combination therapy has also risen, with 39.7% of patients using one class of antihypertensive drug, 43.9% using 2 classes, and 16.4% using 3 or more classes in 2023 (**Table 3**, page 23 of **Supplementary Data 1**). The most commonly prescribed antihypertensive drug class was ARB (77.0%), followed by CCB (62.1%), DU (21.9%), and BB (15.0%) (page 24 of **Supplementary Data 1**). For monotherapy, ARBs (54.7%) and CCBs (34.1%) were the most frequently prescribed. The ARB plus CCB combination emerged as the most common dual therapy regimen, and the ARB plus CCB plus DU combination was the most common triple therapy regimen (page 25 of **Supplementary Data 1**).

**Table 3.** Trends of antihypertensive medication use, 2002–2023

Year	Treated total	Monotherapy		Dual therapy		3 classes or more	
	Number (×1,000)	Number (×1,000)	Percent	Number (×1,000)	Percent	Number (×1,000)	Percent
2002	2,523	1,434	56.9	785	31.1	303	12.0
2003	3,213	1,669	52.0	1,088	33.9	456	14.2
2004	3,720	1,794	48.2	1,321	35.5	606	16.3
2005	4,468	2,045	45.8	1,624	36.3	799	17.9
2006	4,993	2,201	44.1	1,831	36.7	961	19.2
2007	5,398	2,338	43.3	1,973	36.6	1,087	20.1
2008	5,770	2,454	42.5	2,121	36.8	1,194	20.7
2009	6,182	2,536	41.0	2,352	38.0	1,294	20.9
2010	6,538	2,578	39.4	2,555	39.1	1,405	21.5
2011	6,772	2,627	38.8	2,721	40.2	1,424	21.0
2012	7,220	2,815	39.0	2,931	40.6	1,474	20.4
2013	7,499	2,965	39.5	3,078	41.0	1,456	19.4
2014	7,696	3,111	40.4	3,211	41.7	1,374	17.9
2015	7,944	3,251	40.9	3,334	42.0	1,359	17.1
2016	8,297	3,409	41.1	3,516	42.4	1,372	16.5
2017	8,633	3,534	40.9	3,710	43.0	1,389	16.1
2018	9,027	3,672	40.7	3,905	43.3	1,450	16.1
2019	9,512	3,865	40.6	4,127	43.4	1,520	16.0
2020	9,914	3,975	40.1	4,327	43.6	1,612	16.3
2021	10,455	4,161	39.8	4,579	43.8	1,714	16.4
2022	10,889	4,324	39.7	4,774	43.8	1,791	16.5
2023	11,255	4,471	39.7	4,935	43.9	1,849	16.4

**Table 4.** Trends of hypertensive disorders of pregnancy, 1998–2023

Year	Number of child bearing women (×1,000)	Prevalence of hypertensive disorders of pregnancy				
		All	Chronic maternal hypertension	Pregnancy-induced hypertension	Unspecified maternal hypertension	Preeclampsia/eclampsia
2005	411	4.5%	2.5%	1.9%	0.1%	1.9%
2006	429	4.8%	2.9%	1.8%	0.1%	1.8%
2007	477	5.0%	3.1%	1.8%	0.2%	1.8%
2008	451	5.2%	3.5%	1.5%	0.1%	1.6%
2009	432	5.3%	3.7%	1.5%	0.1%	1.4%
2010	458	5.6%	3.9%	1.6%	0.2%	1.4%
2011	459	5.6%	3.9%	1.5%	0.2%	1.2%
2012	470	5.7%	4.0%	1.6%	0.2%	1.2%
2013	424	5.9%	4.0%	1.7%	0.1%	1.2%
2014	424	6.1%	4.2%	1.8%	0.2%	1.1%
2015	428	6.3%	4.3%	1.8%	0.2%	1.2%
2016	399	6.7%	4.4%	2.0%	0.3%	1.2%
2017	352	7.6%	4.7%	2.5%	0.4%	1.5%
2018	322	8.4%	5.2%	2.8%	0.5%	1.6%
2019	299	9.0%	5.4%	3.1%	0.5%	1.8%
2020	269	9.8%	5.7%	3.4%	0.6%	2.0%
2021	257	11.0%	6.2%	3.8%	1.0%	2.2%
2022	245	11.9%	6.6%	4.1%	1.2%	2.3%
2023	228	13.2%	7.2%	4.7%	1.3%	2.9%

### HDP

In Korea, the number of childbirths has rapidly declined, falling by more than half from approximately 477 thousand in 2007 to 228 thousand in 2023. Despite this sharp decrease, the burden of HDP has continued to rise. In 2023, more than 30,000 women were affected by HDP, indicating that 13.2% of pregnant women utilizing maternity healthcare experienced hypertension during pregnancy. Among these cases, approximately 16 thousand women had chronic maternal hypertension and about 11 thousand had pregnancy-induced hypertension. An additional 3 thousand women were classified as having unspecified maternal hypertension. Preeclampsia or eclampsia occurred across both major categories of HDP; in total, an estimated 7 thousand women with either chronic maternal hypertension or pregnancy-induced hypertension were diagnosed with preeclampsia/eclampsia (Table 4, pages 29–30 of Supplementary Data 1).

### DISCUSSION

The Korea Hypertension Fact Sheet 2025 presents the most recent epidemiological data and management trends for hypertension in South Korea. The findings indicate that national hypertension management indicators have reached a significant milestone.

A notable achievement in this year's report is that the hypertension control rate among the prevalent population has surpassed 60% for the first time, recording 62% in 2023. Along with the control rate, the awareness and treatment rates have also reached their highest recorded levels of 79% and 76%, respectively. The WHO Global Report on Hypertension also highlights South Korea as a model for effective hypertension management [23,24]. The clinical significance of this improved BP control is supported by international comparisons of health outcomes. A recent Global Burden of Disease study estimated that South Korea achieved the largest reduction in age-standardized CVD mortality among the analyzed countries over the past decades [4]. Since elevated BP is a primary modifiable

risk factor for CVD, the sustained improvement in hypertension control rates appears to be a major contributing factor to this substantial decline in mortality.

Despite the stability in age-standardized prevalence, the absolute number of individuals with hypertension continues to rise, reaching an estimated 12.6 million, primarily driven by the rapid aging of the population. As the demographic structure shifts further toward an older population, the absolute burden of hypertension is expected to grow, making strict BP control increasingly critical to mitigating the rising socioeconomic burden and preventing cardiovascular complications in an aging society.

Regarding age-specific trends, the management status among young adults warrants continued attention. Historically, this demographic has exhibited markedly lower rates of awareness and treatment compared to older adults, a disparity that appeared more pronounced given the rapid improvements seen in the elderly. However, recent data indicate a continuous, albeit gradual, upward trend in awareness and treatment rates among individuals in their 20s and 30s. This improvement is likely influenced by the expansion of the National General Health Screening Program in 2019 to include young adults [25].

Additionally, the special focus of this report, HDP, reveals a concerning trend. The increasing burden of HDP in Korea appears closely linked to demographic changes, particularly the steady rise in maternal age. National birth statistics indicate that the mean maternal age increased from 30.2 years in 2005 to 33.7 years in 2024, while the proportion of mothers aged  $\geq 35$  years rose sharply from 10.7% to 35.9%. Because advanced maternal age is strongly associated with chronic hypertension, pregnancy-induced hypertension, and preeclampsia, these demographic shifts likely contribute to the growing prevalence of HDP despite declining fertility rates. However, the rise in HDP cannot be explained by maternal aging alone. The age-standardized prevalence among childbearing women increased to 13.2% in 2023, with upward trends observed across chronic hypertension, pregnancy-induced hypertension, and preeclampsia/eclampsia. This escalating burden of HDP underscores the need for targeted public health interventions, as HDP not only affects maternal and fetal outcomes in the short term but also confers substantial long-term cardiovascular risks for women [13,15-17].

This study has several limitations. First, the KNHANES excludes institutionalized populations, which may lead to an underestimation of hypertension prevalence among the frail elderly. Second, while adherence was estimated using prescription data from the NHI Big Data, this method assumes that prescribed medications are consumed, potentially overestimating actual adherence. Third, the definition of hypertension in the NHI analysis relies on ICD-10 codes which may vary from clinical criteria. Fourth, controlled hypertension in this study was defined as SBP/DBP  $< 140/90$  mmHg, consistent with epidemiologic reporting standards such as KNHANES. Because this uniform threshold does not account for individual cardiovascular risk profiles, the control rate may be overestimated relative to the  $< 130/80$  mmHg targets recommended for high-risk patients in recent guidelines for hypertension management. Finally, the HDP analysis is specific to women utilizing delivery-related medical services and may not capture all pregnancy-related hypertensive events.

## CONCLUSIONS

South Korea has achieved globally exemplary levels of hypertension awareness, treatment, and control, demonstrating the effectiveness of its national management strategies. However, despite these improved management indicators, the absolute population burden of hypertension continues to rise, primarily driven by rapid population aging. Furthermore, this report highlights a critical public health concern: both the absolute number and the prevalence of HDP have significantly increased over the past decade. Consequently, continuous epidemiological monitoring and sustained efforts for strict BP control are imperative to manage the growing disease burden in the aging population and to address the emerging risks in maternal health.

## ACKNOWLEDGMENTS

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## SUPPLEMENTARY MATERIAL

### Supplementary Data 1

Korea Hypertension Fact Sheet 2025 published by the Korean Society of Hypertension

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