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REPUBLIC OF KOREA

Sustainability and Resilience in the Republic of Korea Health System

Minah Kang, Yong-Jun Choi, Yanghee Kim, Sooyeon You, Yeonsoo Kim, and Caroline Fried



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Authors

Minah Kang, Senior Fellow, Center for Asia-Pacific Resilience and Innovation; Department of Public Administration, Ewha Womans University

Yong-Jun Choi, Hallym University

Yanghee Kim, National Health Insurance Service

Sooyeon You, Health Insurance Review and Assessment Service

Yeonsoo Kim, Institute for Development and Human Security, Ewha Womans University

Caroline Fried, Center for Asia-Pacific Resilience and Innovation

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Center for Asia-Pacific Resilience and Innovation (CAPRI)

2/F, No. 2, Section 3, Chongqing South Road
NPO Hub Taipei, Taipei 100056, Taiwan

(T) (+886) 2 23036608

(E) info@caprifoundation.org

(W) <https://caprifoundation.org>

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Reviewers

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Interviewed experts

Young-Soo Joo	Chief, National Medical Center
Yoon Kim	Professor, Health Policy and Management, Seoul National University
Soo-Yong Shin	Director of Technological Lab, Kakao Healthcare Corporation
Sung-Hyun Cho	Professor, College of Nursing, Seoul National University
Hyoung-Sun Jeong	Professor, Division of Health Administration, Yonsei University
Dong-soo Shin	Professor and Founding Dean, School of Nursing, Hallym University

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Abbreviations



AI	Artificial intelligence
APN	Advanced Practice Nurses
CAPRI	Center for Asia-Pacific Resilience and Innovation
CTC	Community Residential Treatment Center
EMR	Electronic medical record
ESG	Environmental, social, and governance
GDP	Gross domestic product
HiAP	Health in All Policies
HIRA	Health Insurance Review and Assessment
HP2020	Health Plan 2020
HP2030	Health Plan 2030
ICT	Information and communication technology
KDCA	Korea Disease Control and Prevention Agency
KMA	Korean Medical Association
KOIHA	Korea Institute for Healthcare Accreditation
LTC	Long-term care
MERS	Middle East respiratory syndrome
MFDS	Ministry of Food and Drug Safety
MOHW	Ministry of Health and Welfare
NCD	Noncommunicable disease
NECA	National Evidence-based Healthcare Collaborating Agency
NHI	National Health Insurance
NHIS	National Health Insurance Service
NIH	National Institute of Health
OECD	Organization for Economic Co-operation and Development
OGD	Open government data
OOP	Out-of-pocket
OP	Operating period
PHSSR	Partnership for Health System Sustainability and Resilience
UHC	Universal health coverage
VBPS	Value-based payment system
WHO	World Health Organization

Executive summary



The Republic of Korea health system has clear strengths and weaknesses. Notably, Korea has robust and high National Health Insurance (NHI) coverage and positive health outcomes such as high life expectancy. However, the country has chronic problems including increasing healthcare expenditure, the lowest birth rate among the 38 member countries of the Organisation for Economic Co-operation and Development (OECD), and a super-aging society that poses challenges to the health system. Although Korea's management of the COVID-19 pandemic is commendable for the meticulous and aggressive quarantine measures (often dubbed "K-quarantine") as well as the hard work and dedication of healthcare professionals and the cooperation of Korean citizens, this triumph has revealed shortcomings within the Korean healthcare system. Deficiencies in long-term and primary care and a health system governance framework that accords insufficient weight to the professional advice of medical experts threaten the sustainability and resilience of the health system. To continue to deliver quality care to citizens and effectively anticipate and respond to future health crises, this report analyzes the sustainability and resilience of the Korean healthcare system and provides policy recommendations.

As part of the Partnership for Health System Sustainability and Resilience (PHSSR), this report contributes to an international research effort to enhance global health and facilitate regional dialogue by using a research framework originally developed by the London School of Economics and further adapted for the Asia-Pacific region by the Center for Asia-Pacific Resilience and Innovation (CAPRI), the Asia-Pacific research hub of PHSSR. This report identifies the strengths and weaknesses of the South Korean health system, investigates its sustainability and resilience, particularly through the COVID-19 pandemic, and proposes policy recommendations across seven domains of population health, environmental sustainability, workforce, medicines and technology, service delivery, financing, and governance.

Overview of the Republic of Korea health system by domain

Domain 1: Population health

Despite boasting a high life expectancy (83.6 years at birth in 2021) and demonstrating a commendable response to the COVID-19 pandemic by effectively utilizing data and technology, Korea faces persistent healthcare challenges. These include a high suicide rate, an aging population (individuals aged ≥ 65 years accounted for 17.5% of the population in 2022), and a declining birth rate (0.81 children per woman in 2021). The Ministry of Health and Welfare (MOHW) plays a vital role in setting the country's health policy agenda by publishing the National Health Plan, which outlines initiatives for health promotion and disease prevention, on a 5-year basis. For these initiatives to reach their full potential, collaborative and multisectoral approaches to achieve Health in All Policies are needed.

Domain 2: Environmental sustainability

Environmental health initiatives have primarily been led by the Ministry of Environment, which regularly releases a Comprehensive Environmental Health Plan. Although the Korea Disease Control and Prevention Agency, under the MOHW, monitors zoonotic diseases and conducts climate health assessments, the MOHW's overall interest in policies addressing environmental pollution and its health impacts remains low. Furthermore, Korea grapples with high antibiotic prescription rates, requiring substantial efforts to combat antimicrobial resistance. To address these concerns effectively, increased attention and collaboration between sectors are needed to promote eco-friendly healthcare practices and improve the understanding of the environmental impact on population health, particularly considering the surge of medical waste during the pandemic.

Domain 3: Health system workforce

Korea is facing a shortage of healthcare professionals due to several challenges. Key factors contributing to this issue include insufficient compensation for specialists in essential medical fields, weak enforcement of minimum staffing standards for essential personnel in healthcare institutions, underutilization of healthcare professionals such as advanced practice nurses, and a lack of appropriate measures to address high levels of psychological stress in vulnerable environments. Moreover, there is an imbalance in the distribution of healthcare workers across regions and specialties due to inadequate training environments and a historical lack of emphasis on primary and long-term care in rural areas. While efforts have been made to support workers through the establishment of psychological support centers and abuse reporting procedures, further efforts are needed to address these systemic issues and ensure a sustainable health workforce.

Domain 4: Medicines and technology

Korea employs a complex evaluation process to introduce new medical technologies and secure NHI coverage. To facilitate access to innovative medicines and technologies, the country has implemented a fast-track system and risk-sharing agreements, along with promoting biologically equivalent drugs. Despite the health system's robust data and technology infrastructure, widespread adoption of electronic medical record systems, and efforts to integrate big data and artificial intelligence into healthcare, challenges such as data standardization, privacy, security, and quality persist.

Domain 5: Health service delivery

Quality of care in Korea is overseen by the Korea Institute for Healthcare Accreditation and the Health Insurance Review and Assessment Service (HIRA). Notably, primary care in the country operates without gatekeeping, granting patients the ability to select healthcare providers and directly consult with specialists, and policy attempts to fortify primary care have yielded limited results. During the COVID-19 pandemic, the central policy focus was not on care coordination but rather on fostering collaboration between the public and private sectors. One strategy involved a division of responsibility, in which public hospitals and residential treatment centers handled COVID-19 cases while private hospitals cared for patients without COVID-19. However, inequalities persisted, particularly affecting vulnerable populations like low-income individuals, the homeless, and irregular workers, although the full extent of the pandemic's impact on healthcare disparities remains unclear.

Domain 6: Health system financing

The NHI system in Korea extends coverage to all citizens, primarily funded by premiums paid by employed beneficiaries, supplemented by taxes and government subsidies. This universal coverage system not only ensured that citizens had access to essential care during the COVID-19 pandemic but also created a vital resource pool to support healthcare institutions dealing with increased demand. Under this system, all healthcare providers are required to register with NHI and are remunerated in a fee-for-service model. However, the fee-for-service model has contributed to high healthcare utilization and expenditure, which is anticipated to increase as the population ages, while the NHI budget faces constraints due to declining GDP growth. Consequently, a reevaluation of the reimbursement approach and an expansion of the NHI budget to ensure the sustainability of the healthcare system may be necessary.

Domain 7: Health system governance

The governance of the Korean health system involves a diverse range of administrative structures, including the MOHW, local governments, public and private healthcare providers, patient groups, and medical supplier groups. While collaboration has been emphasized in health system governance and through active interministerial efforts to promote public health, such as projects related to

environmental health, physical activity, and nutrition, there is room for improvement in data sharing and integrating health considerations into other sectors. The COVID-19 pandemic led to significant governance changes, but challenges in balancing centralized policies with localized responses were evident, highlighting the need for increased community engagement in policymaking and execution.

Critical gaps in the Korean health system

Despite its strengths, the Korean health system has critical gaps that cut across the seven domains. The financial sustainability of the health system is under threat due to rapid demographic changes that are projected to increase the prevalence of chronic diseases requiring long-term and community-based primary care. As the working-age population shrinks due to low birth rates, Korea is already experiencing workforce shortages of healthcare and public health and a shrinking tax base that serves as the foundation of NHI's finances. These demographic changes are incompatible with Korea's current health system centered on acute care and input-centered NHI compensation system that creates incentives for overtreatment. Crucially, all these challenges relate to a significant gap in infrastructure for primary care. Finally, despite having an information and communication technology (ICT)-based administrative system, access to medical big data, and a high ICT dissemination rate, vulnerable groups will be more isolated due to an information gap and low digital literacy.

Policy recommendations

Korean society is already undergoing fundamental changes as the population ages and shrinks. Therefore, the health system also requires fundamental changes to meet projected needs and prepare the system to withstand future shocks. The policy recommendations outlined in this report are related to overarching themes of achieving equity and access to healthcare at the community level, building collaborative and participatory governance models that remove silos between departments and stakeholders in the health system, and building consensus on key values and priorities as actors work together to upgrade the health system to meet future challenges. The following table outlines all the recommendations identified in the report organized by domain.

Table 1: Policy recommendations by domain

DOMAIN 1 POPULATION HEALTH	
1A	Integrate cross-functional and multisector approaches to health promotion into Korea's National Health Plan
1B	Enhance key performance indicators (KPIs) within the National Health Plan and other health initiatives to measure their effectiveness in addressing public health issues
1C	Establish a robust system for the management of patients with rare and chronic diseases, particularly during health crises
1D	Revise existing policies to combat low birth rates by considering a broader spectrum of issues affecting family planning
DOMAIN 2 ENVIRONMENTAL SUSTAINABILITY	
2A	Establish a comprehensive system to assess the impact of environmental pollution on public health
2B	Promote policy coherence through integrated governance across ministries and enhance regional and international cooperation to effectively address environmental health issues

- 2C Assess the financial implications of environmental factors on the healthcare system
- 2D Evaluate the impact of healthcare on environmental sustainability
- 2E Evaluate environmentally friendly initiatives at healthcare institutions and consider setting higher health insurance reimbursements accordingly
- 2F Address the potential health risks faced by residents living near medical waste incineration facilities and establish appropriate monitoring and management measures
- 2G Establish more specific policies regarding antibiotic use

DOMAIN 3 HEALTH SYSTEM WORKFORCE

- 3A Develop a payment system that ensures appropriate compensation for highly skilled healthcare professionals in essential medical areas
- 3B Ensure the appropriate deployment of healthcare workers across different healthcare settings
- 3C Implement guidelines and regulations for the integration of APNs into the healthcare system
- 3D Revise healthcare education and licensure to incorporate additional training in primary care, geriatric care, and chronic disease management
- 3E Develop a comprehensive plan for the recruitment, training, and retention of LTC workers

DOMAIN 4 MEDICINES AND TECHNOLOGY

- 4A Simplify and expedite health technology assessment procedures to reduce the time to market for innovative technologies
- 4B Enhance digital health literacy among vulnerable populations to enable widespread adoption of digital health infrastructure
- 4C Establish a centralized governing authority for chronic disease management programs
- 4D Clarify and refine existing standards and guidelines pertaining to the use of telemedicine
- 4E Institute comprehensive data protection measures
- 4F Support and incentivize health data standardization and exchange among healthcare institutions

DOMAIN 5 HEALTH SERVICE DELIVERY

- 5A Strengthen and expand primary care infrastructure through increased funding, streamlined programs, and dedicated governance
- 5B Improve the LTC system

- 5C Promote health literacy across the population
- 5D Institutionalize the coordination of care between the public and private sectors, to prepare for future crises
- 5E Enhance preventive care services and align them with primary care and health promotion
- 5F Assess the efficacy of government measures to address health inequalities during the COVID-19 pandemic

DOMAIN 6 HEALTH SYSTEM FINANCING

- 6A Strengthen health economic data reporting by providing comprehensive national statistics at the subcategory level and developing health finance satellite accounts
- 6B Diversify health insurance funding sources through increased government subsidies
- 6C Reform provider payment systems away from the fee-for-service approach
- 6D Align the growth rate of health insurance expenditures with the total government expenditure growth rate or GDP growth rate
- 6E Broaden the scope of Medical Aid assistance to reach more individuals

DOMAIN 7 HEALTH SYSTEM GOVERNANCE

- 7A Restructure existing health system governance using a novel participatory governance framework
- 7B Develop community-centered health infrastructure and a collaborative primary care approach
- 7C Promote the harmonized use, sharing, and evaluation of medical technology and data
- 7D Establish a cross-institutional “control tower” for damage mitigation and prevention

Introduction



The Republic of Korea health system has clear strengths and weaknesses. Notably, Korea has robust and high coverage through National Health Insurance (NHI), playing a major role in achieving universal health coverage (UHC), and shows comparatively positive health outcomes such as high life expectancy. However, the country still has chronic problems, including increasing healthcare expenditure, the lowest birth rate among the 38 member countries of the Organisation for Economic Co-operation and Development (OECD), and a super-aging society. Although Korea achieved commendable success in managing the COVID-19 pandemic, through meticulous and aggressive quarantine measures (often dubbed “K-quarantine”) as well as the hard work and dedication of healthcare professionals and the cooperation of Korean citizens, this triumph has also shone a light on shortcomings within the Korean healthcare system. These deficiencies extend to areas such as long-term care (LTC), primary care, and a health system governance framework that accords insufficient weight to the professional advice of medical experts. To continue to deliver quality care to citizens and effectively anticipate and respond to future health crises, it is imperative to conduct a comprehensive analysis of the sustainability and resilience of the Korean healthcare system in relation to other Asian countries facing similar circumstances.

As part of the global Partnership for Health System Sustainability and Resilience (PHSSR), this report examines the Korean health system from a broad perspective using a research framework and definitions of “health system sustainability” and “health system resilience” developed by the London School of Economics for PHSSR (Table 2). In this framework, PHSSR adopts the definition of “health system” promulgated by the World Health Organization (WHO)’s World Health Report 2000, which defined a health system as “all the activities whose primary purpose is to promote, restore or maintain health.”¹

Table 2: Definitions of health system “sustainability” and “resilience” in the PHSSR framework

Health system sustainability	A health system’s ability to maintain and improve population health by continually delivering the key functions of providing services, generating resources, financing, and stewardship, incorporating principles of financial fairness, equity in access, responsiveness and efficiency of care, and doing so in an environmentally sustainable manner.
Health system resilience	A health system’s ability to prepare for, absorb, adapt to, learn, transform, and recover from crises born of short-term shocks and accumulated everyday stresses in order to minimize their negative impact on population health and disruption caused to health services.

The PHSSR framework consists of the following seven domains, moving from the contextual and locally based to the key components of the health system and finally to the national landscape that shapes and finances health policy:

1. Population health
2. Environmental sustainability
3. Health system workforce
4. Medicines and technology
5. Health service delivery
6. Health system financing
7. Health system governance

About the lead author: Minah Kang is a professor in the Department of Public Administration at Ewha Womans University in Seoul, Korea, President of the Korea Association of International Development and Cooperation (KAIDEC), and a Senior Fellow at the Center for Asia-Pacific Resilience and Innovation (CAPRI). She can be reached at minahkang@ewha.ac.kr.

The audience for this report is expected to span a wide spectrum, including health policymakers, the public, and academics. The authors expect that by examining the overall Korean health system from the relatively unexplored lenses of sustainability and resilience, this report and its policy recommendations will contribute to multilateral analysis and diagnostics regarding the current state of the Korean health system as it emerges from the pandemic.

1. DOMAIN 1

Population health

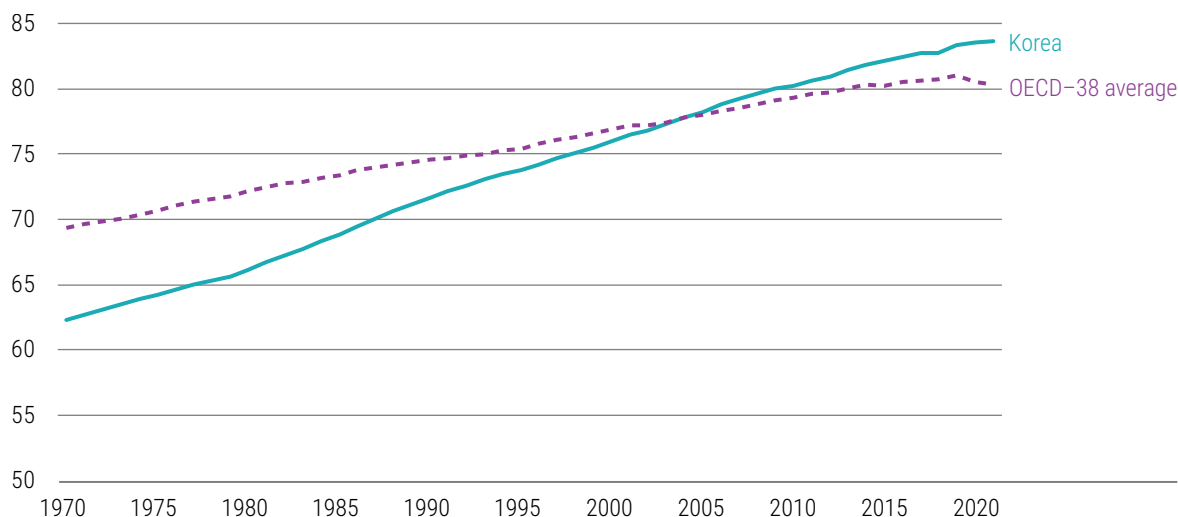


1.1 State of population health in Korea

1.1.1 Population health indicators

Health status in Korea has improved markedly over the past several decades. In 2021, life expectancy at birth was 83.6 years (80.5 for men, 86.6 for women), demonstrating a consistent year-over-year increase since the 1970s (Figure 1).² Since 2004, life expectancy at birth in Korea has exceeded the OECD average in both absolute number and the rate of increase.³

Figure 1: Life expectancy at birth over time in Korea and OECD average, 1970–2021



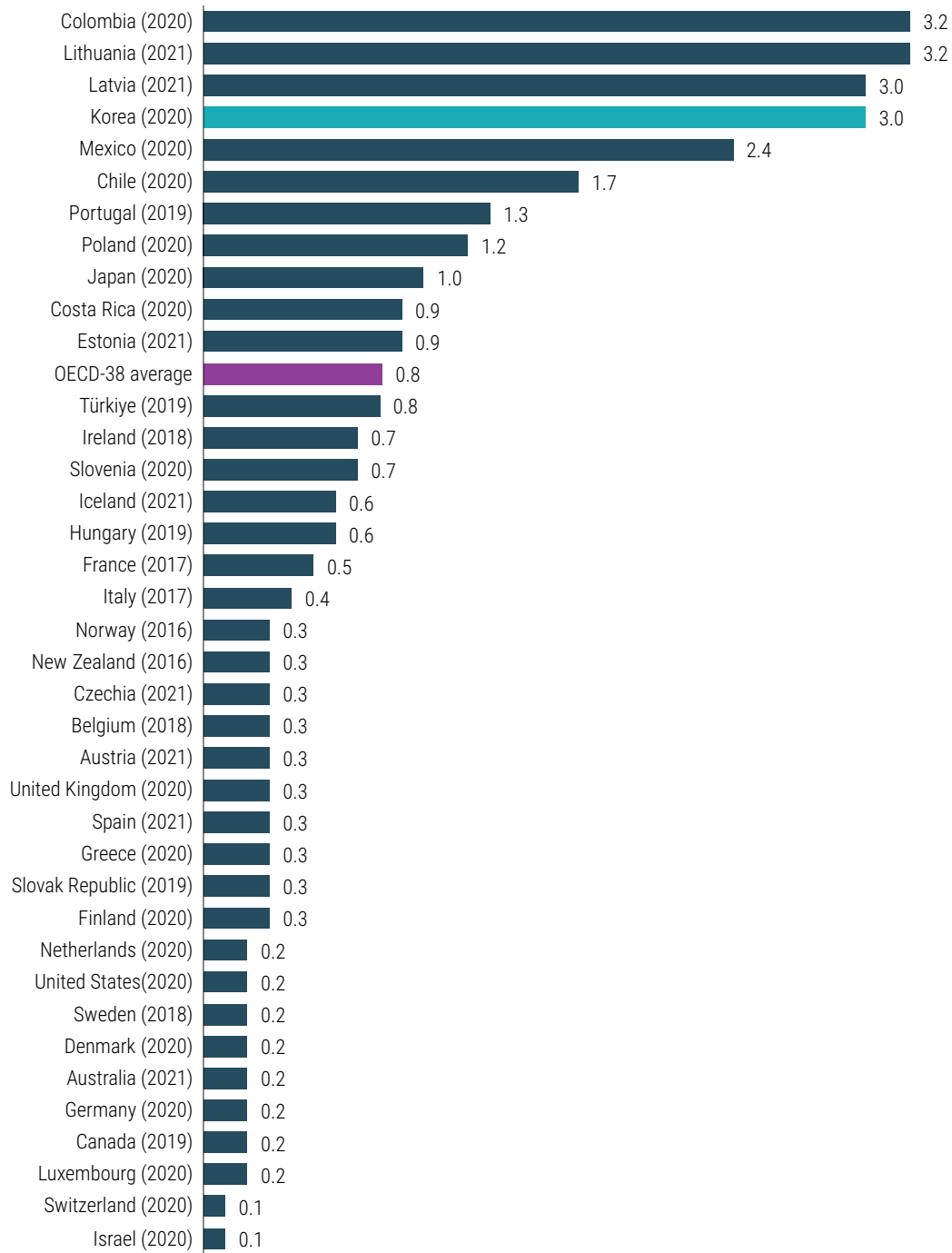
Source: "Health status – Life expectancy at birth – OECD data," OECD Data, accessed March 1, 2024, <https://data.oecd.org/healthstat/life-expectancy-at-birth.htm>.

Despite improving life expectancy, Korea has the poorest perceived health status among all OECD countries; only one-third of Koreans report that they are in good or very good health. Low perceived health status may be the result of low physical activity⁴ and high stress. Regarding the burden of disease, the main noncommunicable diseases (NCDs) are cerebrovascular disease, Alzheimer's disease, ischemic heart disease, lung cancer, and liver cancer.⁵ In addition, tuberculosis continues to pose a formidable health burden in Korea (Figure 2).⁶

In terms of health risk factors, the tobacco consumption rate among men – 31.6% of Korean men are daily smokers – is higher than the OECD average (22.5%), while the alcohol consumption rate among men is close to the OECD average.⁷ Although Korea has one of the lowest obesity rates in the OECD, overweight among boys has become a serious health issue in recent years.⁸

Figure 2: Deaths from tuberculosis in OECD countries, 2021 or latest available year

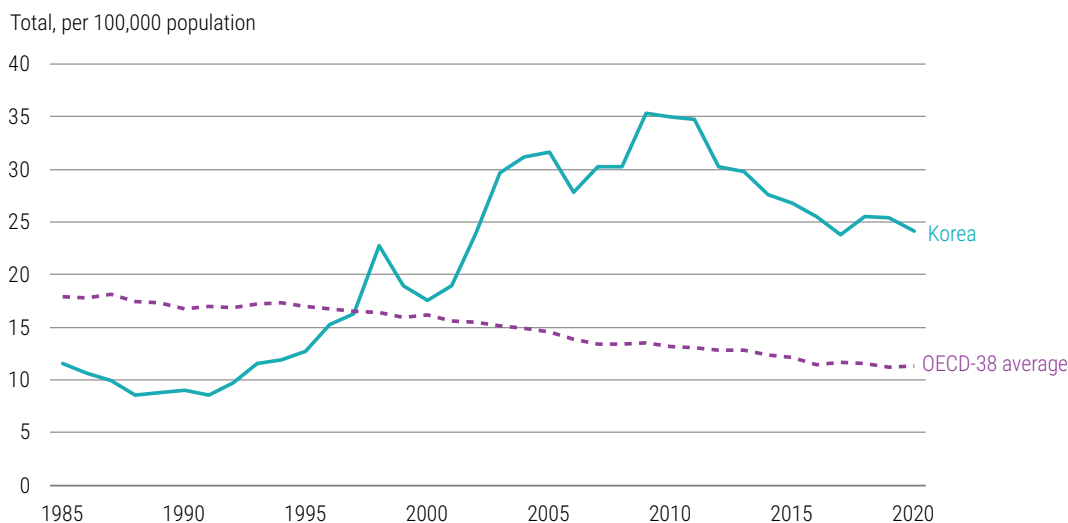
Deaths per 100,000 population (standardized rates)



Source: "Health status : Causes of mortality," OECD Statistics, accessed March 1, 2024, <https://stats.oecd.org/index.aspx?queryid=30115>.

Moreover, mental well-being is a critical issue in Korean society, as Korea has the highest suicide rate among OECD countries (Figure 3).⁹ Such a high rate of premature death has been attributed to intentional self-harm due to long working hours, unstable employment status, and other work-related stressors.¹⁰ While there have been efforts to address mental health challenges, including five-year National Mental Health Plans, cultural values and stigma surrounding mental health continue to be barriers to care.¹¹

Figure 3: Deaths by suicide in Korea and OECD average, 1985–2020



Source: "Health status – Suicide rates – OECD data," OECD Data, accessed March 1, 2024, <https://data.oecd.org/healthstat/suicide-rates.htm>.

1.1.2 Low birth rates and an aging society

Korea's demographic landscape is experiencing a profound evolution. The total birth rate dropped to 0.81 children per woman in 2021, making Korea the only OECD member country with a total birth rate of less than 1.¹² This is the result of several complex reasons, including changing culture and values, increasing participation of women in the labor market, and increasing costs of housing, childcare, and education.¹³ In addition to falling birth rates, Korea officially became an aged society in 2017, with more than 14% of citizens aged ≥65 years. By 2050, the number of senior citizens is expected to exceed 38.1%, which will make Korea's population one of the oldest and fastest aging.

Although Korea's demographic challenges are not merely a healthcare issue, recognizing and addressing them within the framework of healthcare policies represents a pivotal and foundational step toward a sustainable healthcare system.¹⁴ In 2021, to address the low birth rate, the Korean government implemented the Fourth Basic Plan for Low Fertility and Aging Society, alongside a diverse mix of cash, in-kind, voucher, service, and education support. However, these initiatives have been ineffective in combating the decreasing birth rate. Policies may be failing because of their focus on marriage and couples, overemphasis on monetary incentives, failure to account for regional differences, and a lack of consideration for the myriad of factors influencing the decision to have children.¹⁵

The combination of a low fertility rate, projected high life expectancy, and high degree of urbanization is leading to unprecedented "super-aging." Notably, rural areas have predominantly elderly populations and relatively few women of childbearing age. Consequently, policies to encourage family planning have been ineffective in rural areas.¹⁶

1.2 Measures to address public health challenges

1.2.1 National Health Plan

As mandated by the National Health Promotion Act of 1995, Korea's Ministry of Health and Welfare (MOHW) publishes a National Health Plan outlining the promotion of public health and disease prevention every 10 years.¹⁷ Guided by the principles outlined in the National Health Plan, public healthcare institutions under the jurisdiction of local governments must formulate health promotion policies and programs tailored to specific communities.

In 2021, the government promulgated the fifth iteration of the plan, commonly referred to as Health Plan 2030 (HP2030), with two primary objectives: increasing healthy life expectancy and promoting health equity. To accomplish these goals, the plan focuses on six key areas: promoting healthy lifestyle practices, managing mental health, preventing and managing NCDs, addressing the impact of infectious diseases and climate change on health, managing health needs specific to different population groups, and creating a health-supportive environment. As implementation of HP2030 remains ongoing, this report will primarily analyze the outcomes of the fourth National Health Plan, HP2020. Both HP2020 and HP2030 represent major policy initiatives to promote population health by encouraging healthy lifestyle habits, including smoking cessation, decreased alcohol consumption, increased physical activity, and improved nutrition. Health strategies were designed to reduce alcohol consumption through guidelines for depicting alcohol in media, providing classroom education on sugar reduction and requiring the disclosure of sodium content in school lunches and snacks, increasing health and nutrition literacy among vulnerable and minority communities, and encouraging physical activity by promoting the use of public staircases, or "health stairs." Starting from HP2020, Korean health policy has also been more consistent with international standards for promoting smoking cessation by building international partnerships based on the Framework Convention on Tobacco Control established by the WHO.

The MOHW also developed a comprehensive strategy for the continuous monitoring of Health Plan performance and outcomes. Based on the Bangkok Charter for Health Promotion, HP2020 included plans to establish a system for the continual evaluation of health plans and outcomes. This endeavor is entrusted to an expert group of academics, medical professionals, the Korea Disease Control and Prevention Agency (KDCA), and the MOHW. Table 3 displays the 2018 status and 2030 target of representative indicators outlined in HP2030.¹⁸

Table 3: Representative indicators in HP2030

Category	Representative indicator	Current status (2018)		Target value (2030)	
Non smoking	Current smoking rate among adult men	36.7%		25.0%	
	Current male smoking rate in middle and high school	14.1% (11.9% 2015)		13.2%	
Moderation in drink	High-risk drinking rate among adult drinkers	Male	20.8%	Male	17.8%
		Female	8.4%	Female	7.3%
Physical activity	Percentage of population with sufficient aerobic physical activity	51.0%		56.5%	
Nutrition	Percentage of households that secure food stability	96.9%		97.0%	
Cancer	Prevalence of cancer (per 100,000)	Male	338.0	Male	313.9
		Female	358.5	Female	330.0
Cardiovascular diseases	Prevalence of hypertension	Male	33.2%	Male	32.2%
		Female	23.1%	Female	22.1%
	Prevalence of diabetes	Male	14.2%	Male	13.2%
		Female	9.1%	Female	8.1%
Obesity	Prevalence of adult obesity	Male	42.8%	Male	≤42.8%
		Female	25.5%	Female	≤25.5%
Mental health	Suicide mortality rate (per 100,000)	Male	38.5	Male	27.5
		Female	14.8	Female	12.8
Oral health	Percentage of children and teenagers experiencing permanent tooth decay	56.4% (2012)		45.0%	
Tuberculosis (TB)	Rate of new patients with reported TB (per 100,000)	51.5		10.0	
Injury prevention	Injury mortality rate (per 100,000)	54.7		38.0	
Maternal health	Maternal mortality rate (per 100,000 births)	11.3		7.0	
Infant health	Infant mortality (per 1,000)	2.8		2.3	
Elderly health	Subjective health recognition rate of elderly	Male	28.7%	Male	34.7%
		Female	7.6%	Female	23.6%

Note: among National Health Insurance beneficiaries.

Source: "세부 성과지표 < 지표분석 - 국민건강증진종합계획2030 [Health Plan 2030]," Korea Health Promotion Institute (KHEPI), accessed January 30, 2024, www.khepi.or.kr/board?menuId=MENU01292&siteId=null.

1.2.2 Limitations of the National Health Plans

Although the National Health Plans make considerable efforts to improve population health, some shortcomings have reduced their effectiveness. For one, the Health Plans primarily focus on public health facilities, thereby limiting their target population. Moreover, most health initiatives and interventions in Korea continue to prioritize traditional health education objectives, such as modifying individual health behaviors and prioritizing capacity-building strategies, rather than addressing broader social or community-level factors. This tendency differs from the prevailing worldwide pattern in health promotion, as exemplified by the Ottawa Charter of Health Promotion. Despite its best efforts in interministerial governance (further detailed in Domain 7), the Korean health system also falls short of adopting a “Health in All Policies” (HiAP) approach in formulating

and executing health policies, enhancing relevant legislation and systems, and overseeing and administering related programs and projects. Most efforts have focused exclusively on the health sector, thereby impeding collaboration with other sectors. This has limited the exploration of social determinants of health, hindered progress in enhancing health equity, and restricted the ability to hold policymakers accountable for the health outcomes of their policies.¹⁹ Relatedly, overlapping policies aimed at addressing nutrition issues within various ministries have resulted in redundancy, competition lacking interconnection, and overall inefficiency.

A limitation of HP2020 pertains to the management of chronic diseases. According to Kim,²⁰ out of the 27 indicators associated with cardiovascular diseases and recommended by HP2020, only six were verifiable, whereas the remaining indicators were not amenable to calculation or monitoring. This limitation hinders the development of effective strategies and interventions.

These and related challenges have reduced the effectiveness of the National Health Plan. For example, despite the inclusion of an outcome indicator aiming to address equity issues in nutrition, the goal of achieving an appropriate level of nutrient intake across different income levels was not effectively achieved. Consequently, health equity became one of the major targets of HP2030, in which the target gap in healthy life expectancy between the top and bottom 20% of earners is set to 7.6 years or less.

1.3 Korea's experience during the COVID-19 pandemic

1.3.1 Actions to control the spread of COVID-19

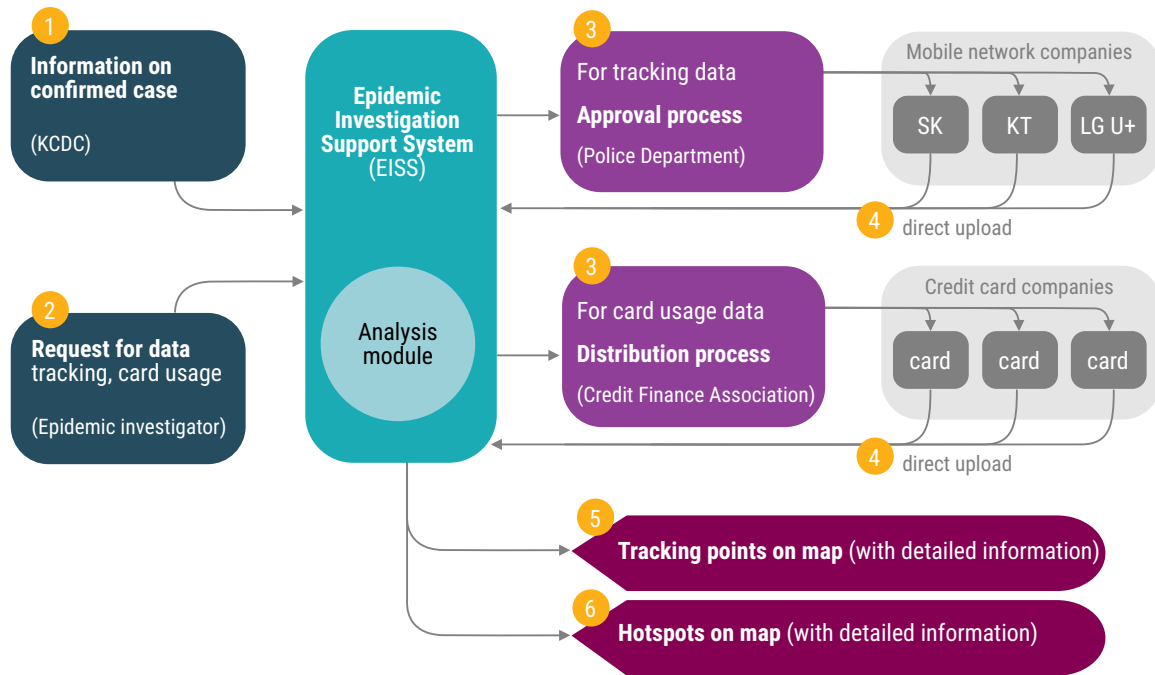
The Korean health system demonstrated extraordinary resilience during the COVID-19 pandemic, and various studies have hailed the Korean public health response as highly successful.²¹ According to global data on confirmed cases and deaths from COVID-19 as of February 2022, Korea ranked 57th and 75th in confirmed cases and deaths, respectively.²² This can be attributed to the effective implementation of aggressive interventions during the first few waves of the pandemic.

Adhering to the Infectious Disease Control and Prevention Act, the KDCA rapidly tracked people suspected to have COVID-19 and effectively isolated those confirmed to have infections. This endeavor made strategic use of digital technology and public records to contact people potentially exposed, incorporating public transportation usage data, credit card usage histories, mobile phone Global Positioning System (GPS) data, and security camera recordings to track people's movements (Figure 4, also see Case Study 1).

To isolate patients with confirmed COVID-19, patient status was classified into five stages by symptom severity: asymptomatic, weak, moderate, serious, and very serious. These details were then reported to public medical centers and patient management centers organized by city and province. Depending on the patient's condition, following hospitalization or home isolation, symptom monitoring was performed twice daily by health center staff.²³ Those who may have had contact with a patient were notified through an emergency text message and recommended to voluntarily report or self-test. COVID-19-designated hospitals were also separated from hospitals for other medical services to increase accessibility to health services.²⁴

Additional measures including restrictions on large-scale gatherings, mask-wearing in public places, regular testing and handwashing, and voluntarily reporting overseas travel were implemented. As was the case for many other countries, subsequent waves and variants of COVID-19 continued to result in the spread of disease. This was primarily attributed to increasing social activity starting in mid-2020, during which public health authorities responded more slowly with social distancing protocols compared with prior waves.²⁵

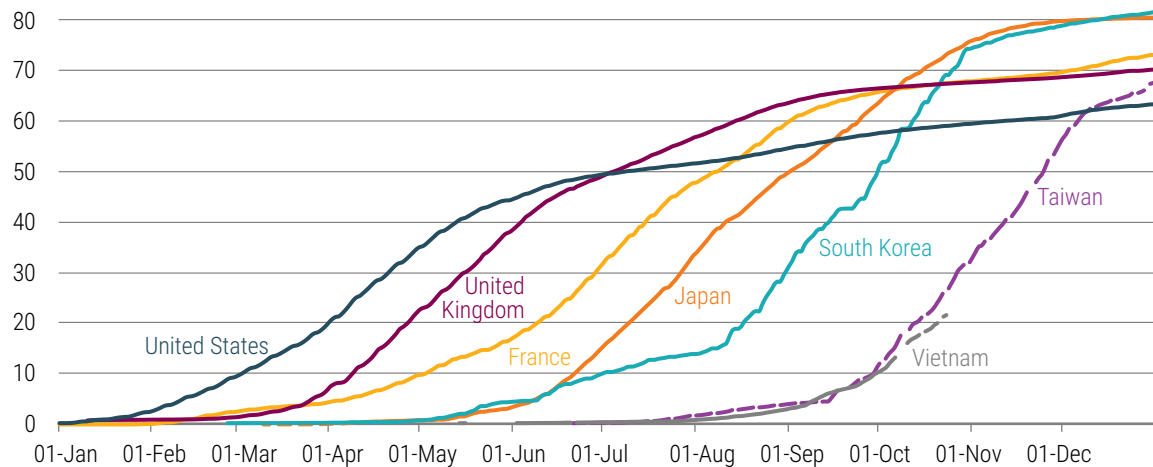
Figure 4: Korea's epidemiological investigation support system



Adapted from: Junic Kim and Kelly Ashihara, "National Disaster Management System: COVID-19 Case in Korea," *International Journal of Environmental Research and Public Health* 17, no. 18 (September 2020): 6691.

Regarding vaccination efforts, although initial vaccine procurement was criticized for its lack of speed, vaccine distribution to the population was relatively efficient (Figure 5). More than 250 vaccination centers were set up in large auditoriums or sports facilities across the country while accommodating the unique cold-storage requirements of mRNA vaccines. Hospital staff including doctors and nurses as well as patients could be vaccinated at their respective medical facilities. To reach vulnerable populations, especially people with disabilities, mobile teams visited welfare facilities to administer vaccines. In addition, major online platforms such as Naver allowed individuals to book appointments and check the real-time availability of vaccines at individual hospitals. This approach helped to increase vaccination rates and minimized discarded doses.²⁶

Figure 5: Rates of full vaccination by country and month, January–December 2021



Source: Hannah Ritchie et al., "Coronavirus Pandemic (COVID-19)," Our World in Data, accessed March 1, 2024, <https://ourworldindata.org/coronavirus>.

1.3.2 Unmet medical needs during the COVID-19 pandemic

Despite the resilience demonstrated by the Korean health system during the COVID-19 pandemic, a surge in workload at public health centers resulted in unmet medical needs. This phenomenon has been especially pronounced among vulnerable groups, such as low-income populations and those with chronic conditions or rare diseases.²⁷ Patients with chronic conditions such as high blood pressure and diabetes require continued access to medical care to reduce the risk of complications such as heart disease and stroke.²⁸ However, the COVID-19 pandemic made access to medical facilities difficult. In a survey of Korean patients with hypertension and diabetes, approximately 18% reported that they were unable to effectively obtain medical care during the pandemic. Approximately 5% cited economic burdens as the cause of this shortfall in healthcare access. These patients face increased risk of contracting infections within medical settings and are more prone to worse health outcomes if they do contract the virus.²⁹

1.3.3 Isolation of patients with rare diseases during the COVID-19 pandemic

Not only patients with chronic diseases but also those with rare diseases are vulnerable to infectious diseases such as COVID-19. Rare diseases vary widely and affect a small number of patients, making them prone to being overlooked. These patients can be vulnerable to infectious diseases because they require intensive treatment for a specific duration and tend to have weakened immune systems. As such, patients with rare diseases experienced delays in their examinations, surgeries, and treatments during the COVID-19 pandemic. This led to exacerbation of diseases, emergency situations, and even deaths. Restricted economic activities due to the COVID-19 pandemic also worsened the economic difficulties of these patients' households. According to an exploratory analysis of the unmet medical needs of patients with rare diseases and their caregivers based on data from the KDCA's 2021 policy research, 49.1% of patients with rare diseases requiring economic support earned less than an average monthly income of KRW 2.49 million.³⁰

1.4 Recommendations

Korea boasts a robust healthcare system, exemplified by its adoption of UHC and adept response to the COVID-19 pandemic. To proactively address the potential challenges posed by emerging healthcare issues, such as low fertility rates and an aging population, the following recommendations should be embraced:

RECOMMENDATION 1A

Integrate cross-functional and multisector approaches to health promotion into Korea's National Health Plan

The principles of the Ottawa Charter for Health Promotion and HiAP must be more rigorously adopted to consider health and the health system across sectors. The target group of the National Health Plans should expand from public healthcare services to include various stakeholders, such as private hospitals and other ministries and organizations, to have the greatest impact.

RECOMMENDATION 1B

Enhance key performance indicators (KPIs) within the National Health Plan and other health initiatives to measure their effectiveness in addressing public health issues

Among the limitations of HP2020 was the lack of appropriate indicators to monitor progress toward addressing chronic diseases, resulting in ineffective strategies and interventions. Developing a more comprehensive and measurable set of KPIs involves engaging a diverse group of stakeholders to define the most relevant indicators, ensuring that robust data sources are available and accessible to accurately measure them, and establishing clear protocols for data collection, analysis, and reporting to guarantee the consistency and reliability of KPI measurements.

RECOMMENDATION 1C

Establish a robust system for the management of patients with rare and chronic diseases, particularly during health crises

During the COVID-19 pandemic, patients with rare and chronic diseases had considerable unmet needs and were unable to effectively access care. In future crises when health system is overwhelmed, a well-structured system should be in place to ensure uninterrupted care for these patients. This system should involve clear protocols for the transfer of patients with chronic conditions to dedicated facilities, including nursing homes, where they can receive specialized care. Moreover, expanding social safety nets, strengthening coverage for patients with rare diseases, and revisiting current policies regarding rare diseases are needed to provide sustainable solutions.

RECOMMENDATION 1D

Revise existing policies to combat low birth rates by considering a broader spectrum of issues affecting family planning

Monetary incentives, such as cash or vouchers, have proven ineffective and insufficient in addressing declining birth rates. A more comprehensive approach is warranted to foster a conducive environment for family planning. For example, environmental conditions that enable parents to care for their babies should be identified and integrated into policymaking. This can include providing sufficient parental leave and vacation days and actively promoting the utilization of paternity leave.

2. DOMAIN 2

Environmental sustainability



2.1 Institutional efforts for environmental health

Similar to many countries in Northeast Asia, South Korea is experiencing extreme temperatures and more frequent floods, droughts, and typhoons connected to climate change. The country has ambitious goals to reduce carbon use by 40% by 2030 (compared with 2018 levels) and reach carbon neutrality by 2050. Addressing environmental health issues requires the contribution of multiple government agencies. The Ministry of Environment and the KDCA are implementing various policies to manage environmental factors that impact health.

The Ministry of Environment regularly publishes a Comprehensive Environmental Health Plan and ensures that environmental and health impact assessments are conducted before projects that may affect community health are initiated. These assessments monitor factors such as air and water quality, soil pollution, waste management, noise, and vibrations. Efforts to establish governance practices involving relevant experts and citizen participation during the assessments have been made, but challenges persist, such as illegal waste disposal and unlawful environmental activities that lead to health problems such as cancer. These problems are often characterized by difficulties in establishing clear causation, resulting in prolonged suffering for affected residents.

The KDCA has policies related to the environment's impact on public health, particularly through a climate-related disease emergency surveillance system. The system reports the number of patients with and deaths from heat-related illnesses during summer (May–September, Table 4) and cold-related illnesses during winter (December–February). Additionally, the KDCA manages the Climate Change Health Risk Assessment, which evaluates how climate change affects disease types, characteristics, and trends and their overall impact on public health. Introduced in 2017, the assessment is conducted every five years under the leadership of the Korean Society of Preventive Medicine. It assesses 31 indicators across three domains (extreme temperatures, air quality, and climate-related infectious diseases) and includes metrics such as emergency room visits and excess mortality rates.

Table 4: Results of the emergency department surveillance system for heat-related illness, 2013–2022

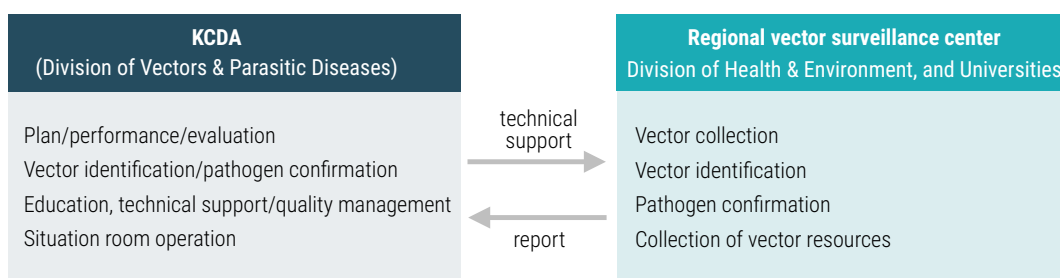
Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
OP	Jun 2– Sep 7	Jun 1– Sep 6	May 24– Sep 5	May 23– Sep 21	May 29– Sep 8	May 20– Sep 10	May 20– Sep 20	May 20– Sep 13	May 20– Sep 30	May 20– Sep 30
Pt. (d.)	1,189 (14)	556 (1)	1,056 (11)	2,125 (17)	1,574 (11)	4,526 (48)	1,841 (11)	1,078 (9)	1,376 (20)	1,564 (9)
HWD	16.6	6.6	9.6	22	13.5	31	12.9	7.7	11.8	10.6

Notes: OP = operating period; Pt. = heatstroke cases; d. = deaths; HWD = heatwave days.

Source: “감시체계 개요: 폭염: 기후변화: 건강위해: 정책정보 [Emergency room surveillance system for heat-related illnesses, number of patients with heat-related illnesses by gender and age],” Korea Disease Control and Prevention Agency (KDCA), updated August 30, 2023, www.kdca.go.kr/contents.es?mid=a20308040101.

The KDCA operates the Infectious Disease Vector Surveillance Network (Figure 6) in collaboration with universities and regional departments of health and environment. The Infectious Disease Vector Surveillance Network operates 16 regional centers nationwide to investigate and analyze the density of disease vectors and the presence of pathogens transmitted by vectors. Thirteen universities, two public health and environment research institutes, and the Disease Control and Prevention Agency participate in this network.³¹

Figure 6: Infectious Disease Vector Surveillance Network (VectorNet)



Source: "Infectious Disease Vector Surveillance Network," KDCA, accessed April 14, 2024, www.kdca.go.kr/contents.es?mid=a20301090601.

Outside of government-affiliated institutions, a multidisciplinary approach is being adopted by university environmental health science departments, academic organizations, and professional societies such as the Korean Society of Environmental Health, the Institute for Environmental Safety and Health, and the Korean Society of Preventive Medicine to address the interconnected issues of environment and health. However, they mainly work to identify and prevent potential hazards originating from occupational and environmental sources, aligning with policies established by the Ministry of Environment. Consequently, more academic endeavors are needed to gain a comprehensive understanding of the impact of environmental pollution on the sustainability of the healthcare system.

Despite these efforts, the MOHW shows a low level of interest in issues related to the environment's impact on health. To ensure the sustainability and resilience of the healthcare system in the face of health issues caused by environmental factors, comprehensive insights into the long-term effects and the potential burden on national healthcare expenses are needed. The engagement of MOHW, which is responsible for planning and expenditure in healthcare policy, is essential.

2.2 Limited attention on environmental sustainability and resilience

The healthcare sector is a substantial emitter of carbon, with its health carbon footprint amounting to 5.3% of Korea's total carbon footprint in 2014.³² The level of attention on environmental sustainability remains low within the healthcare sector. Medical waste management regulations have historically focused on disposal methods rather than long-term environmental planning. Nevertheless, governmental focus is growing on environmental issues, with a concurrent effort to solicit perspectives on the potential incorporation of environmental, social, and governance (ESG) criteria into the assessment of hospitals. The healthcare sector remains in a nascent phase of embracing ESG management. Major hospitals have begun to incorporate strategies aimed at reducing the utilization of potential pollutants in the provision of patient care.

These efforts are needed, especially considering the pandemic's role in exacerbating waste production due to the disposal of both highly infectious medical waste and non-medical waste at residential treatment centers. In 2022, policy changes began to allow for the unrestricted disposal of non-medical waste, which triggered a negative public response regarding the possible hazards of contagions. The accumulation of medical waste remains a persistent issue even beyond the pandemic, leading to discussions within communities on the need for additional incineration facilities. Therefore, concerted efforts are needed to reduce medical waste and explore alternative disposal methods.

2.3 One Health and disease surveillance

The introduction of One Health as a new paradigm in health policy by the MOHW in 2018 is regarded as a positive advancement. However, the incorporation of the One Health concept into policies varies across fields.

2.3.1 Zoonotic diseases

The KDCA is proactively working to identify and manage 11 designated zoonotic diseases through targeted educational programs, contact management in cases of animal infections, and epidemiological investigations with corresponding disease control measures upon patient identification.ⁱ While these efforts are ongoing, a gap remains in the basic research and early preparedness for new and emerging zoonotic diseases, as well as in the development of vital technologies for timely detection and response. The current surveillance system excels in monitoring well-established diseases but requires enhancements to adequately address emerging zoonotic threats. Acknowledging these shortcomings, the second phase of the Zoonotic Disease Management Plan (2023–2027) aims to transition from a theoretical One Health framework to the practical application of its principles. This transition includes enhancing hands-on research and development, improving diagnostic capacities, fostering interdisciplinary and interagency collaboration, and strengthening international cooperation. Proactive and continuous monitoring of the plan's implementation is essential to ensure the sustainability and resilience of the healthcare system against the evolving landscape of zoonotic risks.

2.3.2 Antibiotic resistance

Among OECD countries, Korea has consistently had a high volume and rate of antibiotic prescription.³³ Consequently, efforts to address antibiotic resistance are more established and systematic compared with other One Health policies.

In 2003, the National Antimicrobial Stewardship Program was launched, marking the first efforts to monitor antimicrobial-resistant bacteria. In 2016, the First National Action Plan for Antimicrobial Resistance Management was introduced, bringing together various professional institutions from different ministries under the One Health Antimicrobial Resistance Joint Response Project.^{34,ii} In collaboration with the WHO Global Antimicrobial Resistance Surveillance System, the Joint Response Project has achieved a consistent reduction in antimicrobial prescription volume. Furthermore, the NIH started operating the Specialized Bank for Multidrug-Resistant Pathogens in October 2022 to support research and development across fields by collecting reliable pathogen strains, standardizing information on collected resources, facilitating donations and inclusions, and implementing systematic management of these pathogens.³⁵ Researchers can obtain multidrug-resistant pathogens from the bank for their studies.

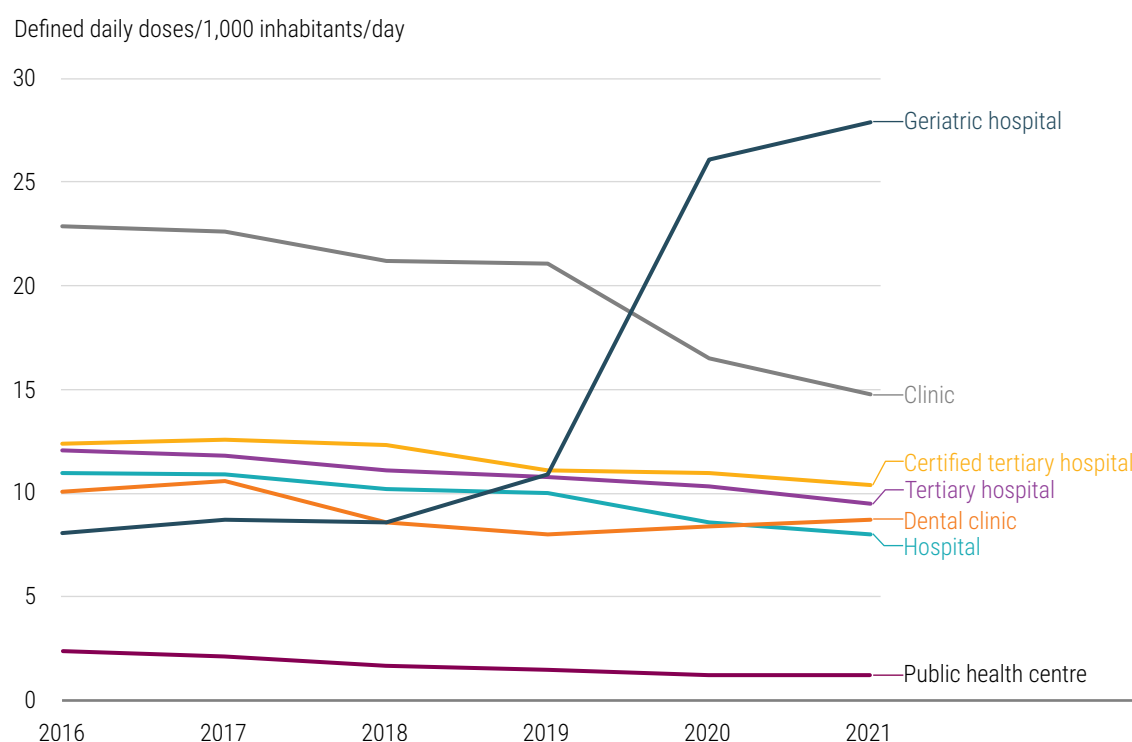
ⁱ The 11 diseases are tetanus, severe acute respiratory syndrome, avian influenza A in humans, tuberculosis (only applicable to *M. bovis*), enterohemorrhagic *Escherichia coli*, Japanese encephalitis, brucellosis, rabies, variant Creutzfeldt–Jakob disease, Q-fever, and severe fever with thrombocytopenia syndrome.

ⁱⁱ The institutions are NIH (KDCA), Animal and Plant Quarantine Agency (Ministry of Agriculture, Food and Rural Affairs), National Institute of Environmental Research (Ministry of Environment), National Institute of Fisheries Science (Ministry of Oceans and Fisheries), National Institute of Food and Drug Safety Evaluation (Ministry of Food and Drug Safety), Health Insurance Review and Assessment Service (MOHW), Ministry of Science and ICT, and academic societies such as the Korean Society of Infectious Diseases, Korean Animal Health Products Association, Korean Veterinary Medical Association, Korean Society for Microbiology, Korean Society for Healthcare-associated Infection Control, and Korean Society of Clinical Microbiology.

Although efforts to foster international academic exchange and collaboration are underway, systematic coordination is insufficient both regionally and globally. South Korea can lead these efforts, drawing upon its experience in interdepartmental cooperation within the One Health framework, to facilitate the creation of a practical forum for Asian countries to discuss and collectively address these challenges.

Managing antibiotic usage for the older population and patients in LTC is also an important concern. Because of recommendations and evaluation initiatives for antibiotic usage, numerous healthcare institutions have effectively reduced their antibiotic use (Figure 7). However, geriatric hospitals, where the number of elderly patients has increased, have not been able to reduce their antibiotic usage. Meanwhile, clinics, which saw a decline in pediatric respiratory cases during the COVID-19 pandemic, have notably reduced antibiotic prescriptions.

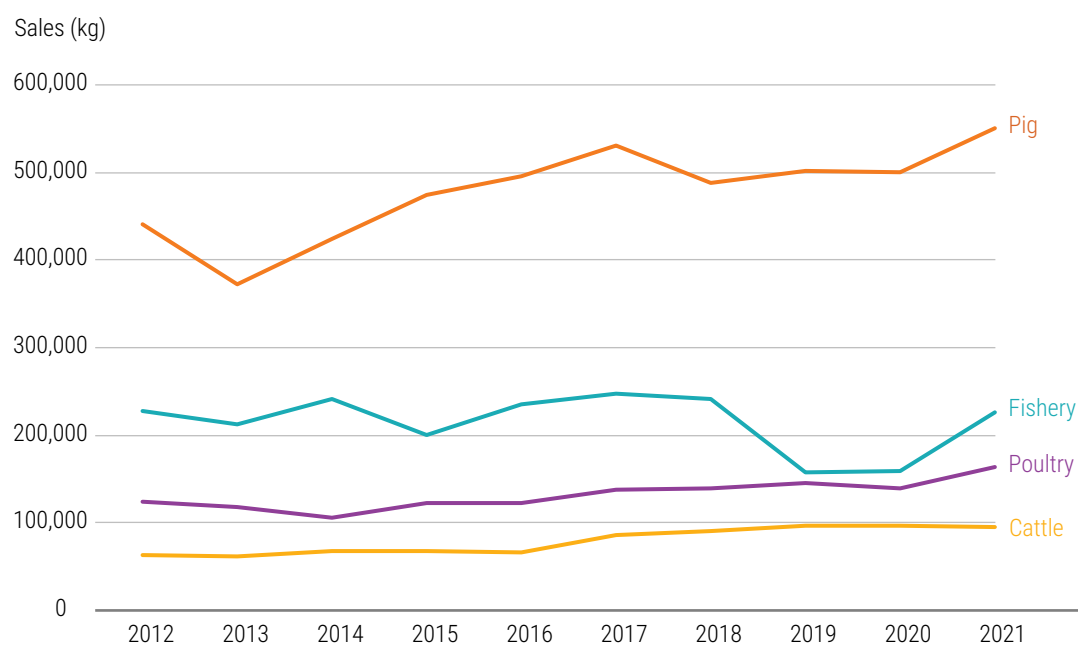
Figure 7: Human antimicrobial usage by hospital type in Korea³⁶



Source: "AMR Info > Antimicrobial Resistance in Human > Antimicrobial Usage | One Health AMR," KDCA, accessed November 22, 2023, www.kdca.go.kr/nohas/en/statistics/selectAUSstatisticsMainTab.do?codeId=A.

The increasing use of antibiotics in food-producing animals (Figure 8) is also a matter of concern. While ongoing monitoring efforts are in place, practical actions are necessary to reduce antibiotic usage.

Figure 8: Non-human antimicrobial sales by livestock type in Korea³⁷



Source: "AMR Info > Antimicrobial Resistance in Non-human [Livestock] > Antimicrobial Sales | One Health AMR," KDCA, accessed November 22, 2023, www.kdca.go.kr/nohas/en/statistics/selectIARStatisticsBySPECMainTab.do?codeld=A.

2.4 Recommendations

While the Ministry of Environment plays a key role in monitoring environmental health, the MOHW should take a more proactive role to better understand the potential burdens of environmental factors on the healthcare system and better preparedness for future challenges. The MOHW can adopt the following recommendations:

RECOMMENDATION 2A

Establish a comprehensive system to assess the impact of environmental pollution on public health

Such a system should include thorough evaluations of various environmental factors affecting health, including air quality, water contamination, and exposure to hazardous substances. Interdisciplinary collaboration among ministries, environmental scientists, health professionals, and policy experts is crucial for identifying potential health risks, developing preventive measures, and monitoring the effectiveness of interventions. Encouraging long-term studies and research on emerging environmental health issues is also vital to enhance our understanding and response to evolving challenges.

RECOMMENDATION 2B

Promote policy coherence through integrated governance across ministries and enhance regional and international cooperation to effectively address environmental health issues

This entails close collaboration and information sharing between government ministries responsible for health, environment, agriculture, transportation, and other relevant sectors. Such synergy can help harmonize policies, streamline efforts, and maximize the collective impact on environmental health. Furthermore, by working collaboratively with neighboring countries and participating in international agreements and initiatives, nations can pool resources and collectively address shared environmental health concerns.

RECOMMENDATION 2C

Assess the financial implications of environmental factors on the healthcare system

Recognizing the potential fiscal challenges posed by environmentally related diseases to the healthcare system is of utmost importance. An accurate assessment of their scale and severity should inform long-term healthcare strategies, enabling the implementation of appropriate measures to mitigate the repercussions of climate change and ensure a sustainable healthcare sector. This includes developing plans for premium collection or proactively establishing funds to address potential financial implications of climate change on health.

RECOMMENDATION 2D

Evaluate the impact of healthcare on environmental sustainability

Considering the characteristics of medical waste, such as the need for single-use items and their disposal by incineration due to infection risks, efforts to develop and adopt materials with reduced environmental impact and less harmful incineration methods should not be overlooked. Additional strategies such as adopting renewable energy sources and optimizing transportation for medical services can also be explored to mitigate the ecological footprint of healthcare delivery.

RECOMMENDATION 2E

Evaluate environmentally friendly initiatives at healthcare institutions and consider setting higher health insurance reimbursements accordingly

An incentive system can be established by incorporating waste reduction and safe reuse efforts into evaluation and accreditation criteria for hospitals. For newly established healthcare institutions, the additional evaluation of eco-friendly waste management and the creation of a sustainable healthcare environment should be considered as part of accreditation.

RECOMMENDATION 2F

Address the potential health risks faced by residents living near medical waste incineration facilities and establish appropriate monitoring and management measures

As medical waste production and its potential hazards to human health increase, understanding these hazards and establishing comprehensive monitoring and management measures will be crucial. This includes the implementation of regular environmental assessments in affected areas, stringent adherence to regulations, and active engagement with communities to ensure transparency, awareness, and prompt response to emerging concerns. Additionally, a collaborative framework involving relevant authorities, healthcare experts, and residents can facilitate the development and implementation of targeted interventions and mitigation strategies to safeguard public health in these areas.

RECOMMENDATION 2G

Establish more specific policies regarding antibiotic use

While the KDCA encourages Antimicrobial Stewardship Program activities in small and geriatric hospitals, an expansion of management scope and the development of more detailed policies are necessary to address the increasing use of antibiotics in these facilities. In addition, beyond monitoring, specific plans are required to reduce antibiotic usage in food-producing animals. Initiatives such as mandatory regulations or incentive systems in animal agriculture that can induce behavioral changes in policy targets are needed.

3. DOMAIN 3

Workforce



3.1 Management of the healthcare workforce

The MOHW is responsible for forecasting the long-term supply and demand of healthcare workers and developing the Comprehensive Healthcare Workforce Plan. Despite ongoing policy formulation efforts, including projection studies, the ministry faces significant challenges in policy development and implementation for the physician workforce due to stakeholder conflicts.ⁱⁱⁱ

The issue of healthcare worker shortages gained prominence during the COVID-19 pandemic. In response, the government established the Healthcare Workforce Policy Review Committee in 2021, comprising experts, providers, and consumers. Nevertheless, substantive discussions did not occur, and in 2023, the committee was restructured as the Healthcare Policy Review Committee to promote constructive dialogue on these critical matters.

The MOHW also plays a crucial role in managing licensure and continuing education for healthcare professionals. In parallel, the Ministry of Education is responsible for determining the capacity of medical and nursing schools and overseeing their curricula.

Because most clinics and hospitals in Korea are privately operated, the management departments of individual hospitals make decisions on health worker recruitment and compensation, with consideration for the hospitals' profitability. To ensure compliance and proper oversight, hospitals must report their workforce status to local authorities to obtain permits for operation. Additionally, they must report to the Health Insurance Review and Assessment Service (HIRA) for NHI reimbursement. HIRA verifies the workforce status and determines appropriate fees and supplementary rates, and the NHI Service provides payments to hospitals.

In policy discussions related to the healthcare workforce, professional associations representing different healthcare occupations are among the key stakeholders. In particular, the Korean Medical Association (KMA), representing physicians, and the Korean Hospital Association, representing private hospitals, have considerable influence. For example, major doctor strikes in 1999–2000 due to disputes over changes in medical specialization policy were enabled by the KMA.³⁸ The substantial influence held by private healthcare providers, who constitute the majority, shapes the responses of medical associations to critical policies, such as physician numbers. These associations engage in formal policy decision-making committees to express their viewpoints. However, the threat of collective action or refusal to participate in these committees can wield even greater influence over policy.

3.2 Shortage of healthcare professionals

Key data including the numbers of doctors and nurses per 1,000 population and the rates of practicing doctors and nurses out of the total licensed, average monthly wages in the sector, and numbers of physicians by specialty, are listed in Appendix 1.

Korea is facing challenges in ensuring health workforce sustainability. Several critical specialties, including cardiothoracic surgery and obstetrics and gynecology, are experiencing chronic shortages of doctors. Rural areas have significant deficits of essential medical professionals due to the concentration of doctors in metropolitan areas. Local public health centers rely on other medical personnel, especially interns fulfilling their mandatory military service. However, this solution is unsustainable. Moreover, nursing shortage can be attributed to inadequate compensation and lax enforcement of staffing regulations.

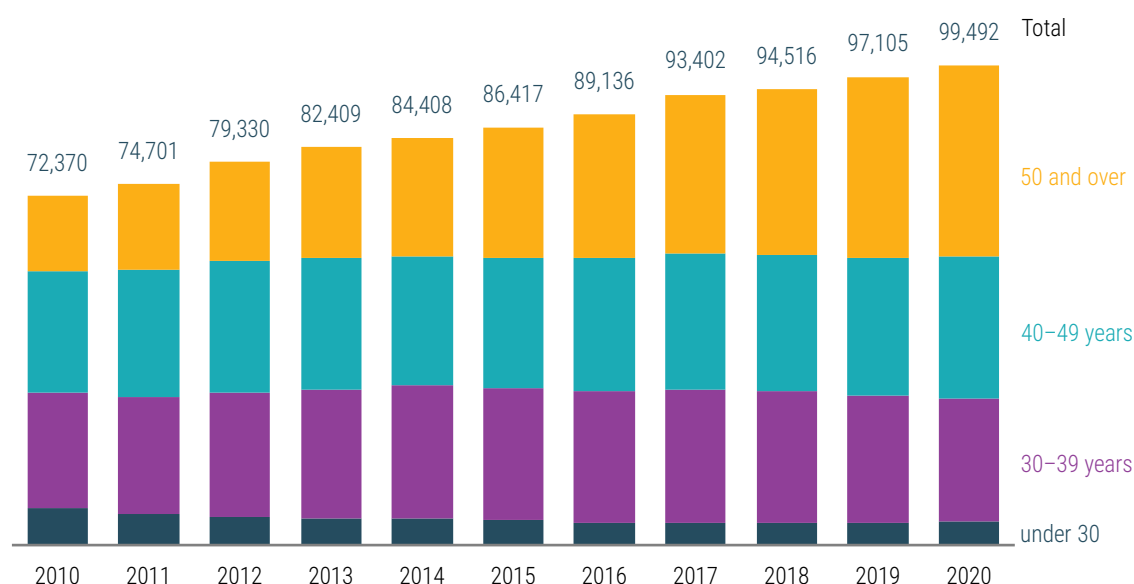
ⁱⁱⁱ Pursuant to the Basic Act on Health and Medical Care, since 2006 the NHI under the MOHW has conducted the National Health Care Survey, which includes an assessment of healthcare workforce as a part of the medical resources supply status. Following the 2019 enactment of the Healthcare Workforce Support Act, the MOHW must conduct a survey every 3 years to understand the status and characteristics of the healthcare workforce, leading to the execution of both online and offline surveys in 2021. See MOHW and KIHASA, 보건의료 인력 실태조사 [Survey on the status of health and medical personnel] (2022), www.prism.go.kr/homepage/entire/researchDetail.do?researchId=1351000-202200328.

3.2.1 Physicians

Ensuring a sustainable physician workforce in Korea presents challenges on multiple fronts. In the absence of objective criteria for determining an appropriate workforce level, there is a strong divide between those who support and those who oppose expanding the workforce.³⁹ While the shortage of resources, including personnel, in the public health sector during the pandemic has been widely acknowledged, it is uncertain whether the expansion of medical school capacity will directly translate into an increase in the number of essential and public health workers. Given the dominant role of private hospitals in the health care system, it is difficult to invest in areas such as cardiothoracic surgery, which requires substantial resources and yields relatively low profits, thus hindering the expansion of physician recruitment in these areas.⁴⁰

In addition, as healthy life expectancy increases, physicians are able to practice for longer periods of time, contributing to the overall increase in the number of active physicians. However, the overall age of physicians is rising. In 2020, 40.0% of physicians working in health care facilities were 50 years or older, a proportion that has increased over the past decade (Figure 9).

Figure 9: Number of physicians working in healthcare institutions by age group, 2010–2020



Source: "성별, 연령별 의료기관 근무의사 수 [Number of doctors working in healthcare institutions by gender and age]," Korean Statistical Information Service (KOSIS), August 25, 2022, https://kosis.kr/statHtml/statHtml.do?orgId=117&tblId=DT_117110_E004&vw_cd=MT_OTITLE&list_id=117_006_005.

The debate over the physician workforce is also reflected in the imbalance in regional and specialty distribution and the lack of preparedness for future health care demands. Alignment between the required number of physicians by region and specialty and the capacity of medical schools is not guaranteed. Even if medical school capacities increase, adequately distributing the healthcare workforce among areas and specialties where they are most needed would remain a challenge. In 2022, the number of active physicians per 1,000 population was highest in Seoul at 3.47, whereas the ratios in some rural areas were nearly half of that, such as Gyeongsangbuk-do (1.39), Chungchungnam-do (1.53), and Chungchungbuk-do (1.59) (Table 5).

Table 5: Changes in the number of active physicians by region, 2013–2022

	2013		2022		Change from 2013 to 2022	
	Number	Number per 1,000 population	Number	Number per 1,000 population	Number	Number per 1,000 population
Nationwide	90,710	1.77	112,321	2.18	21,611	0.41
Seoul	27,055	2.67	32,704	3.47	5,649	0.80
Daegu	5,114	2.04	6,192	2.62	1,078	0.58
Gwangju	3,112	2.11	3,751	2.62	639	0.51
Sejong	96	0.79	496	1.29	400	0.50
Daejeon	3,246	2.12	3,773	2.61	527	0.49
Busan	7,152	2.03	8,356	2.52	1,204	0.49
Incheon	3,936	1.37	5,375	1.81	1,439	0.44
Gyeongsangnam-do	4,614	1.38	5,716	1.74	1,102	0.36
Gyeonggi-do	17,089	1.40	23,893	1.76	6,804	0.36
Jeollabuk-do	3,279	1.75	3,694	2.09	415	0.34
Ulsan	1,499	1.3	1,808	1.63	309	0.33
Gangwon-do	2,403	1.56	2,778	1.81	375	0.25
Jeollanam-do	2,861	1.50	3,172	1.75	311	0.25
Jeju-do	940	1.58	1,214	1.79	274	0.21
Chungcheongbuk-do	2,186	1.39	2,542	1.59	356	0.20
Chungcheongnam-do	2,766	1.35	3,242	1.53	476	0.18
Gyeongsangbuk-do	3,362	1.25	3,615	1.39	253	0.14

Source: "신현영 의원, 의사 많은 지역에 의사 계속 몰린다," 신현영 의원, 의사 많은 지역에 의사 계속 몰린다: 네이버 블로그 [Representative Shin Hyun-young, doctors continue to flock to areas with many doctors: Naver Blog], Naver Blog, June 9, 2023, <https://blog.naver.com/PostView.naver?blogId=shydeborah&logNo=223123703915&parentCategoryNo=&categoryNo=42&viewDate=&isShowPopularPosts=false&from=postList>.

In addition to the overall increase in capacity, there is a need to look more closely at areas where additional manpower is needed. As the elderly population grows and the need for chronic disease management increases, the demand for primary care physicians will increase. In 2020, 80% of physicians in Korea were specialists (Appendix 1, Table 4). However, there is insufficient emphasis on quality primary care education during medical training, and there are limited opportunities for general practitioners to retrain. The cost of training to become a specialist has increased, and there are few training opportunities for primary care professionals. These factors hinder the long-term sustainability of the health system.

3.2.2 Nurses

Despite efforts to expand and specialize the nursing workforce, their effective utilization remains a challenge. One key issue is in the training environment. Although nursing schools in rural areas have increased their capacity to alleviate overcrowding in urban schools, these regions continue to have shortages of hospitals for clinical training, resulting in inadequate learning environments.

The expansion of nursing school capacity was based on projected future demand for nurses. However, hospital staffing regulations, originally intended to establish minimum standards, have been treated as maximum capacity guidelines due to concerns over operating costs. Consequently, the gap between estimated nursing needs and the actual deployment of nursing professionals is substantial.

Even when hiring is needed, qualified nurses are in short supply. Approximately 25%–30% of nursing graduates do not enter the healthcare field; this value is much higher than the proportion of inactive physicians (Table 6). A 2022 survey revealed that 52.8% of nurses have changed jobs, with an average of 1.47 job changes over their careers when they participated in the survey. The primary reasons cited for these job changes were low compensation (41.4%) and excessive workload (40.8%). Among active nurses, only 51.8% work as clinical nurses, with the remaining active nurses in public agencies or other areas of healthcare.

Table 6: Licensed physicians and nurses – numbers and percentage inactive

Status	2016	2017	2018	2019	2020	
Physicians	Active	95,664	98,197	100,996	103,378	106,204
	Inactive	7,574	8,038	8,307	8,807	8,981
	Percentage of total	7.3%	7.6%	7.6%	7.9%	7.8%
Nurses	Active	220,716	235,346	249,727	266,520	285,097
	Inactive	95,550	97,988	102,420	104,970	106,396
	Percentage of total	30.2%	29.4%	29.1%	28.3%	27.2%

Note: Active healthcare personnel include both clinical and nonclinical fields. The MOHW reviews workforce levels and gathers expert opinions through the Projection Study on Healthcare Workforce Supply and Demand. It does not set specific numerical targets for policy formulation. Based on a survey conducted from March 2 to April 15, 2022, involving 9,185 healthcare professionals working in 516 medical institutions, a set of recommended nurse-to-patient ratios was 1:7.3 for tertiary general hospitals, 1:8.8 for general hospitals, and 1:9.2 for hospitals.

Source: "활동 유형별 간호사 수 [Number of nurses by activity type]," KOSIS, August 25, 2022, https://kosis.kr/statHtml/statHtml.do?orgId=117&tblId=DT_117110_E004&vw_cd=MT_OTITLE&list_id=117_006_005.

The introduction of the Advanced Practice Nurses (APNs) qualification in 2000 had potential to alleviate the physician shortage by offering advanced healthcare services delivered by nurses in a supportive capacity. However, the lack of clarity in regulations and guidelines defining their role and how they can be staffed has resulted in their inefficient utilization.⁴¹

3.2.3 Other care workers

The demand for LTC workers is rapidly increasing due to the growing elderly population. Despite this increasing demand, sufficient planning and infrastructure are still needed. The state's estimation of the medical workforce does not consider the LTC workforce, which includes nursing care and social workers. This oversight creates a significant gap between the projected demand for LTC services and the availability of skilled professionals to meet that demand. Available care workers often face low wages and poor working conditions. Moreover, the absence of proper infrastructure to support their training and licensure creates an unskilled LTC workforce. This not only compromises quality of care but patient safety, increasing the risk of unreported patient abuse or inadequate care. To alleviate the burden of acute care and establish transitional care, such as postoperative recovery and community-based care, skilled professional care workers must be trained.

3.3 Healthcare workforce during the COVID-19 pandemic

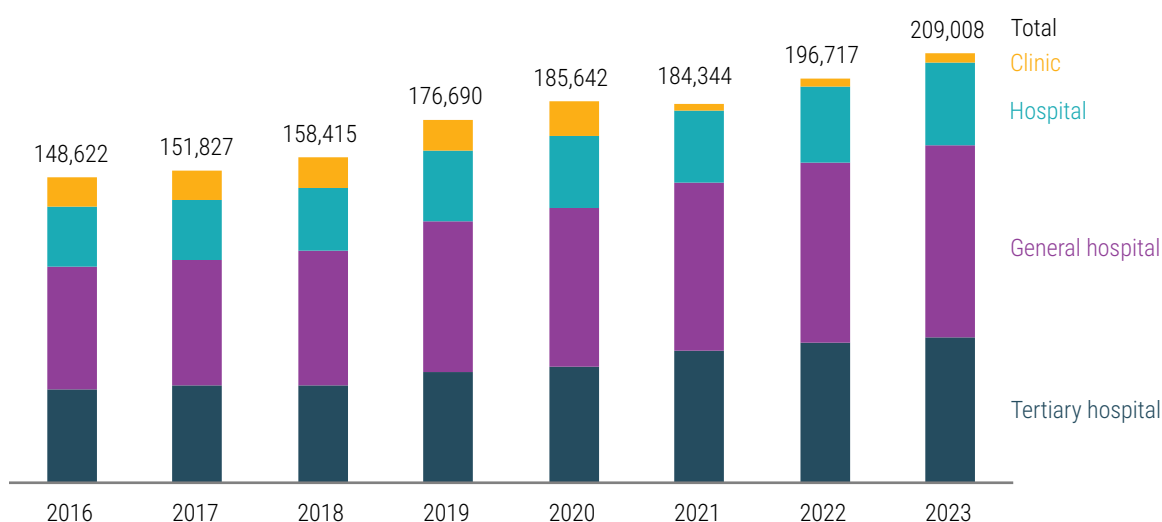
3.3.1 Effective deployment of healthcare workers

Within the framework of private healthcare institutions prioritizing profitability, most medical facilities recruit staff to meet regulatory minimum standards, indicating a lack of reserve workforce to swiftly respond to health crises. During the COVID-19 era, the NHI provided additional payments for negative-pressure beds and support for patients with severe COVID-19, incentivizing hospitals to secure extra medical personnel. This system aided in promptly deploying nurses to isolation wards amid the pandemic.

Furthermore, before COVID-19, designs to integrate nursing and care services by securing additional staff allowed a rapid transition of these extra resources to COVID-19 response teams when the outbreak began.⁴² Applying the insights gained from these experiences to future healthcare preparedness and response is crucial.

Figure 10 shows that the number of nurses working in the field increased in 2019, when incentives started to be given according to the integrated nursing and care service evaluation. In addition, during the pandemic period, the number of nurses at general hospitals and higher-level general hospitals, which mainly treated patients with COVID-19, increased faster than in other institutions.

Figure 10: Number of active nurses by hospital type (at year end)



Source: NHIS and HIRA, National Health Insurance Statistics Yearbook (2022), www.hira.or.kr/bbsDummy.do?pgmid=HIRAJ030000007001&brdScnBltno=4&brdBltno=7&pageIndex=1&pageIndex2=1#none.

Furthermore, to facilitate the recruitment and management of idle medical personnel, high wages were provided to doctors and nurses volunteering to work at community treatment centers. Additionally, a system was established to identify and manage available medical personnel at the national level by connecting the Central Disaster and Safety Countermeasures Headquarters with local governments and the HIRA (see Case Study 1).

3.3.2 Challenges in remuneration and support exacerbated by the COVID-19 pandemic

Individuals who have made substantial contributions to treatment and prevention efforts in response to the COVID-19 pandemic while being at risk of infection themselves have been provided financial assistance by health insurance providers. Medical personnel deployed to community treatment centers were directly compensated, whereas at medical institutions, payments were

made through the existing health insurance system by creating COVID-19 response fees and providing surcharges, as well as compensating for losses incurred by medical institutions due to isolation. Nevertheless, an assessment of the efficacy of the existing system, wherein funds are allocated to hospitals instead of directly to healthcare professionals, is needed.

The health crisis placed mental strain on healthcare professionals. During the first year of the pandemic in Korea, psychological stress was caused by fear of infection and the social stigma associated with infection, heavy workloads, insufficient support or remuneration, pressure to make professional decisions about a little-known disease, and hopelessness that the pandemic would be endless.⁴³ In December 2020, the NHIS was designated a specialized institution to support the healthcare workforce, enhance working environments, and improve welfare conditions. In August 2021, the NHIS established a consultation center dedicated to addressing human rights violations within the healthcare workforce. The center offers complimentary psychological counseling and professional guidance, encompassing labor and legal consultations, to healthcare professionals and practitioners who have encountered human rights infringements. In addition, the center is actively engaged in promoting education in preventing human rights violations as well as developing and disseminating guidelines for effectively addressing such incidents. The goal of these endeavors is to establish a secure and conducive working environment for healthcare professionals.

3.4 Recommendations

Training and acquiring the necessary workforce to care for patients is a critical factor of sustaining and promoting health system resilience. Yet, Korea continues to face challenges in retaining healthcare professionals and equipping them to address a range of healthcare challenges. Reaching the right number, mix, and distribution of physicians, nurses, and other healthcare workers will require the following actions:

RECOMMENDATION 3A

Develop a payment system that ensures appropriate compensation for highly skilled healthcare professionals in essential medical areas

This approach is aimed not merely at increasing monetary benefits but at creating a structure that appropriately rewards expertise, particularly within the essential sectors of healthcare. Such an approach would address the operational challenges linked to Korea's healthcare workforce sustainability and improve working conditions for all healthcare workers. The expansion and strategic deployment of the physician workforce under the NHI's fee system will enhance the healthcare system's resilience and its capacity to meet future healthcare demands.

RECOMMENDATION 3B

Ensure the appropriate deployment of healthcare workers across different healthcare settings

In remote or rural areas, deficiencies in healthcare workers can severely hinder access to timely care. Addressing this issue necessitates strategic workforce planning, training, incentives, and regulatory frameworks to distribute healthcare expertise where it is most needed.

RECOMMENDATION 3C

Implement guidelines and regulations for the integration of APNs into the healthcare system

APNs can play a vital role in treating patients, and effectively leveraging their skill sets can help address the physician shortage in the short term. To maximize the potential of APNs to provide care and support, especially in primary care settings, it is essential to establish and implement guidelines and regulations for their seamless integration into the healthcare system. Legislation that clearly defines their scope of practice, reimbursement schemes, and staffing guidelines can help APNs be better utilized to fill gaps in health services.

RECOMMENDATION 3D

Revise healthcare education and licensure to incorporate additional training in primary care, geriatric care, and chronic disease management

The current education and licensure systems for physicians and nurses primarily emphasize acute care, with limited opportunities for continual training in primary care and chronic disease management. Revising the curriculum standards and accreditation processes to incorporate training in primary care and chronic disease management is necessary to ensure that healthcare professionals are well equipped to provide patient-centered care and promote a holistic perspective in healthcare delivery. In addition, a multidisciplinary approach and comprehensive education programs focusing on geriatric healthcare should be introduced to better address the specific needs of the aging population. Efforts are underway in the primary care community to introduce the concept of meta-competency, which encompasses the core competencies required for any professional working in primary care. Policy support is needed to facilitate this transition.

RECOMMENDATION 3E

Develop a comprehensive plan for the recruitment, training, and retention of LTC workers

A comprehensive plan to attract, train, and retain qualified LTC professionals, including nursing care workers, social workers, and caregivers, should consider the unique requirements of the field and incorporate their needs and expertise into workforce planning and policymaking processes. Doing so will help to bridge the projected demand–supply gap and enhance the ability of the LTC system to respond to various challenges, such as infection control and health crisis management.

4. DOMAIN 4

Medicines and technology



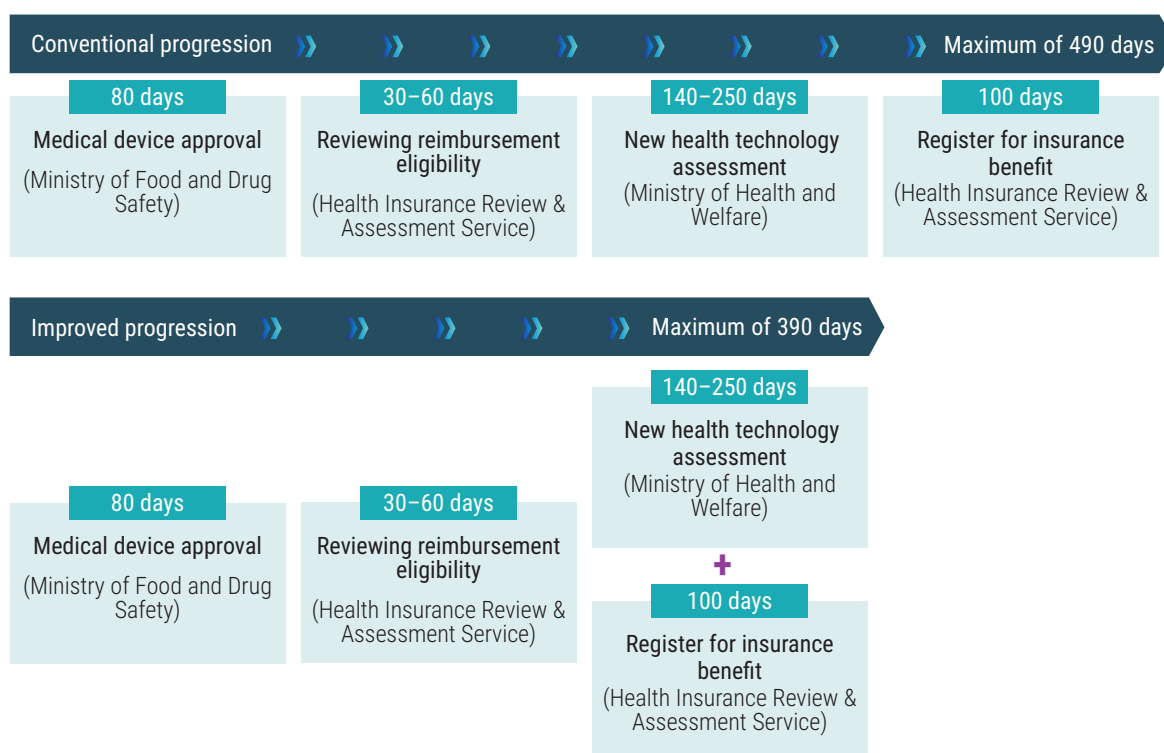
4.1 Evaluation and coverage for new medicines and technology

4.1.1 Research and approval of new health technology

The process of introducing a new medical technology for use and securing NHI coverage comprises four steps (“Conventional progression” in Figure 11). First, the device must be approved for use by the Ministry of Food and Drug Safety (MFDS) based on its safety and efficacy profile. Second, HIRA categorizes the medical device as either an “existing technology,” meaning that practices involving the device align with practices already covered by the NHI, or a “new medical technology” requiring evaluation. For new medical technologies, a new health technology assessment (nHTA) is conducted by the MOHW’s National Evidence-based Healthcare Collaborating Agency (NECA), and its results inform decisions about the device’s adoption and coverage under NHI. Finally, after approval by the MOHW’s Health Insurance Deliberation Committee, the device is registered for public use and NHI coverage.

To expedite market entry for new healthcare technology, Korea has revised the listing process to permit the nHTA and insurance registration to occur simultaneously, reducing review time by up to 100 days (“Improved progression” in Figure 11). Additional measures include a “one-stop service system” of concurrent MFDS approval, nHTA evaluation, and HIRA reimbursement/non-benefit status (Figure 12), an evaluation deferment system, and a pre-entry/post-assessment pilot project similar to that used for COVID-19 tests.

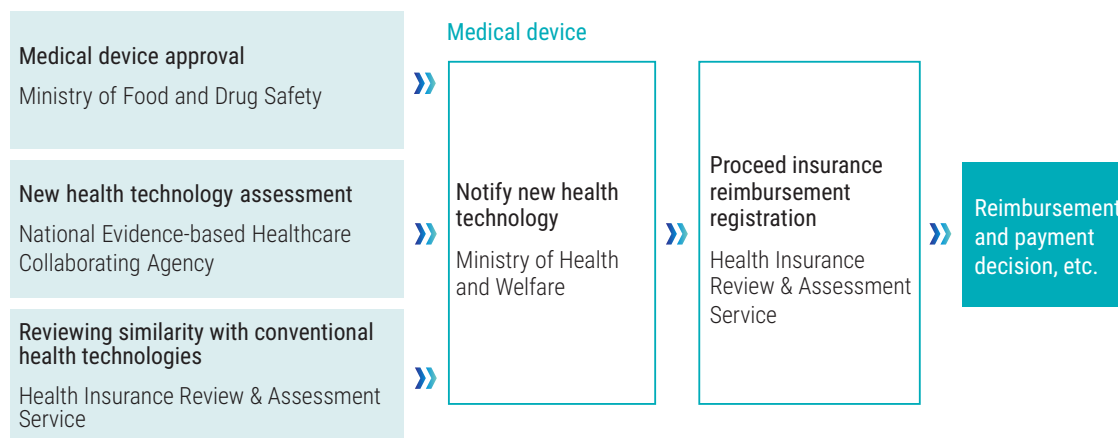
Figure 11: Comparison of the conventional and improved approval processes for new medical technology



Adapted from: New Health Technology Assessment System of South Korea (National Evidence-based Healthcare Collaborating Agency, [accessed June 1, 2023]), www.neca.re.kr/download.do?jsessionid=4F9E2EA3F83BA1585890B03E6C443343?uuiid=3ca0ad0f-900e-4449-b61f-b3f30ddb70c.pdf.

Figure 12: “One-stop service” system for expedited evaluation and approval of new medical technology and devices

Parallel reviews



Adapted from: New Health Technology Assessment System of South Korea (National Evidence-based Healthcare Collaborating Agency, [accessed June 1, 2023]), www.neca.re.kr/download.do;jsessionid=4F9E2EA3F83BA1585890B03E6C443343?uuid=3ca0ad0f-900e-4449-b61f-b3f30ddb70c.pdf.

To evaluate innovative and advanced medical technologies prior to MFDS approval, Korea has established the “innovative medical technology assessment system.” In this system, even without sufficient clinical evidence, a technology with high potential value can be designated as “conditionally approved” and covered by the NHI for a specific period, granting patients early access. Additionally, through the “limited medical technology assessment system,” technologies in the research stage can be used in specific medical institutions for a certain period, provided they are safe. This system benefits patients with rare and severe diseases and facilitates early clinical adoption of promising medical technologies. Hospitals using these technologies for a certain period can collect and analyze treatment outcomes, generating clinical evidence. During this period, patients pay the full cost of the medical technology.

4.1.2 Approval and access to new medicines

HIRA’s Pharmaceutical Benefit Evaluation Committee assesses the eligibility of new MFDS-approved drugs for reimbursement based on comparative effectiveness and cost effectiveness. The committee reviews clinical utility, benefit standard, cost effectiveness, and benefit appropriateness. Companies setting higher prices for their drugs, devices, or treatments must submit an economic evaluation analysis. Other factors related to social value, such as the severity and rarity of the disease treated and therapeutic effectiveness, as well as the availability of alternative treatments, are also considered. For anticancer drugs, more detailed considerations are included such as target patient group, urgency, therapeutic necessity, and cancer type and stage. Guidelines for these procedures are regularly updated. Subsequently, the National Health Insurance Service (NHIS) determines the reimbursement ceiling through price negotiations. For generic pharmaceuticals, the reimbursement ceiling is determined based on HIRA criteria for drug price calculation. As of January 2021, 25,798 pharmaceuticals were covered by the NHI.

To expedite the inclusion of new drugs in the NHI, the MOHW introduced a fast-track system in 2015 that shortens the insurance inclusion period by bypassing drug price negotiation. If alternative drugs with comparable effects already exist, the new drug can be listed for reimbursement at the weighted average price of its alternatives. Pharmaceutical companies in Korea can also implement a “risk-sharing agreement” for new drugs when efficacy or cost effectiveness is uncertain. Introduced in 2013, this approach aims to enhance new drug accessibility for patients with severe disease and applies to anticancer and orphan drugs.

Since the MOHW introduced a policy in 2000 to permit only doctors to prescribe and pharmacists to dispense medications, referred to as “medicine–medication separation,” healthcare expenditure has increased considerably, driven by increased prescription of costly medications by doctors and the need to visit pharmacies to obtain medication. To address this, the MOHW began implementing policies to encourage the prescription of low-cost biologically equivalent drugs in July 2001. Pharmacists receive incentives for substituting prescriptions with such medications. Since 2007, the MFDS has published a list of products with recognized biological equivalence, surpassing 10,000 items as of 2021.

4.2 Digital health technology

4.2.1 Adoption of electronic medical record systems

Electronic medical record (EMR) systems have gained attention for their administrative convenience and potential to support medical decision-making and improve service quality. Nearly all healthcare institutions in Korea have adopted an EMR system, reaching 100% of tertiary general hospitals, 96% of general hospitals, and 91% of hospitals as of 2020. The adoption rate of EMR systems in clinics was 92% as of 2017.⁴⁴ However, EMR systems are not yet widely standardized across hospitals. There are several reasons for this, including the lack of a principal organization responsible for regulating a standardized EMR system, insufficient government support for a standardized approach, a lack of active of patient information exchange between healthcare institutions reducing the need for standardization, and low awareness and application of existing EMR standardization protocols.

4.2.2 Medical information exchange system

In 2006, the Korean government initiated the National Health and Medical Information Comprehensive Plan to establish a centralized system for medical information exchange between public medical institutions across the country.

However, challenges arose in integrating and standardizing data due to inconsistencies in data format, storage methods, and terminology among different hospitals. High costs and the need for specialized labor to refine and process data posed additional difficulties. Moreover, the government-led development the system faced criticism in three main areas. First, concerns arose that the government’s direct development and mandated usage of the system would hinder innovation in information and communication technology by favoring specific platforms and software. Second, storing and managing patient information in a third-party location instead of with the patient or their healthcare institution was seen as a violation of data protection principles. Finally, concerns arose that widespread implementation of the system under government leadership could lead to a lack of ownership and accountability among user institutions, potentially resulting in neglect of problem-solving efforts or ethical issues regarding personal data use.

Due to these challenges, the development of a national standard system has been unsuccessful. Instead, efforts are shifting toward implementing a medical information exchange system that would enable healthcare institutions to share and access mutual EMRs as needed. Unlike a national standard system, the exchange system does not require integrating data formats or storing EMR records on central servers, thereby reducing costs and making industry standards easier to apply. According to Korea Health Information Service, as of December 31, 2022, 7,509 healthcare institutions participate in this health data exchange system.⁴⁵

4.2.3 Management of chronic diseases

Digital health technology has demonstrated significant potential in the management of chronic diseases, such as hypertension, diabetes, and heart failure.⁴⁶ For instance, the implementation of a clinical decision support system, which uses a mobile phone-connected glucometer and individualized text messaging, has yielded promising outcomes in managing diabetes among older adults.⁴⁷ Given these benefits, Korea has taken significant strides to advance digital health in chronic disease management. Initiatives such as the Chronic Diseases Management Registration Program and My Health Bank by the NHIS empower individuals to manage their health risk factors while assisting policymakers and healthcare professionals to tailor their approaches.⁴⁸

However, accessibility has become a concern. Digital literacy levels among four vulnerable groups, including people with disabilities, low-income groups, farmers and fishermen, and older adults, is 72.2%, which is lower than that of the general population.⁴⁹ This suggests that the benefits of these digital health services may not be reaching all populations.

4.2.4 Opportunities and challenges in using next-generation technology

Big data and artificial intelligence (AI) can bring innovation to various aspects of healthcare. At the national level, Korea has been making efforts to utilize medical big data, including the establishment of the National Healthcare Big Data Platform in 2018 and the amendment of the Data 3 Act in 2020. The National Healthcare Big Data Platform provides data from nine healthcare institutions to researchers for public purposes. The amendments introduced the concept of pseudonymous information, which ensures that individuals cannot be identified in a data set without additional information.⁵⁰

Construction and management of the National Big Data Platform is encountering constraints. Acquiring data of superior quality is difficult due to data contamination. Furthermore, there is a general lack of data sharing among institutions and differences in data formats. Moreover, even when data are anonymized, the risk of re-identification remains when multiple datasets are merged. In addition, the utilization of synthetic, or artificially generated, medical data in research and development for novel drug candidates gives rise to concerns about privacy violations, unauthorized use of personal information, and ethical implications associated with medical data. The establishment of pertinent regulations and the implementation of legal enhancements are required to address these concerns effectively.

4.3 Application of digital health infrastructure in health crises

4.3.1 Pandemic response utilizing digital technology

Korea effectively utilized its well-established information technology infrastructure and innovative digital technologies to contain the spread of COVID-19 (see Case Study 1). During the early stages of the pandemic, the country integrated various systems to streamline information and enhance treatment efficiency. For example, the National Infectious Disease Management System and International Traveler Information System were combined with the Drug Utilization Review System and the NHIS Eligibility Inquiry System. This integration allowed healthcare professionals to quickly verify crucial information about patients, including their overseas travel history, underlying conditions, and vaccination records. With these data, hospitals and pharmacies could promptly identify and treat individuals, contributing to efficient and targeted care.

As the crisis progressed, Korea swiftly implemented additional systems to address specific needs. In response to the shortage of personal protective equipment, the Mask Duplicate Purchase Verification System was introduced to prevent hoarding and ensure fair distribution. Additional systems were put in place to manage patient transfers, monitor healthcare facilities, and effectively allocate medical resources. By leveraging innovative technologies, Korea could respond rapidly to

the evolving COVID-19 situation, enabling efficient containment efforts and effective resource allocation.

Moreover, Korea utilized the Cell Broadcast System to immediately disseminate epidemic information to mobile phones. Standardization efforts were carried out to deliver disaster information using 4G, 5G, and LTE networks. Additionally, an app-based contact tracing system was developed to trace confirmed patients. This system generated a map of confirmed patients' movements using GPS, credit card usage locations, and other data. However, these efforts have raised concerns about privacy infringement, as they often involve collecting and using information about people's activities. In addition, verification of vaccination status when entering public places was conveniently conducted through mobile applications developed and distributed by public entities.

4.3.2 The changing status of telemedicine

In principle, the use of telemedicine is not permitted by law in Korea; the only exception being the use of telemedicine between healthcare professionals in different areas.⁵¹ However, during the COVID-19 pandemic, telemedicine was temporarily permitted by Article 49-3 of the Infectious Disease Control and Prevention Act, enabling healthcare professionals to write prescriptions remotely and provide telephone consultations to patients.⁵² Approximately 25,000 healthcare institutions in South Korea provided remote treatment to 13.79 million people from February 2020 to January 2023.⁵³ Notably, there was high telemedicine uptake among older people and those with chronic disease.⁵⁴

With the downgrading of the public health alert in June 2023, the emergency provisions that temporarily granted the usage of telemedicine to treat patients have been revoked. Given the benefits of telemedicine in expanding access to healthcare and improving efficiency, there have been growing calls to institutionalize its usage.⁵⁵ Several policies are pending in the Korean National Assembly related to the expansion of the target group of telemedicine and criteria for healthcare institutions that seek to use telemedicine.⁵⁶ However, there are several challenges to these policies, specifically in decisions like whether it should be offered to first-time patients.⁵⁷ In September 2023, the MOHW also launched a nationwide pilot project to support telemedicine usage among certain populations in an attempt to better understand its usage and establish guardrails.⁵⁸

4.3.3 Accessibility of public health data

During the COVID-19 pandemic, Korea was able to effectively utilize health and medical information for public benefit by taking significant steps in data accessibility. The groundwork for data sharing was laid by legal frameworks including the Infectious Disease Prevention and Control Act, the Public Data Act, and the Basic Act on Disaster and Safety Management. Under these provisions, information related to infectious disease cases could now be disclosed to the public, especially in "serious crisis warning" scenarios.

Data on public mask distribution, COVID-19 testing, confirmed cases, and vaccination were made available. Institutions providing public data include the MOHW, Korea National Information Society Agency (NIA), HIRA, KDCA, NHIS, and National Fire Agency. For example, the NHIS provided data to healthcare institutions through a patient review system, enabling doctors to easily find patients' information based on their underlying diseases and their immigration and quarantine status. Similar datasets were made available in various formats, including open APIs, CSV, and Excel files on a public data portal.⁵⁹ For example, the Korean government converted public data on pharmacies and mask inventory into open APIs, allowing software developers to synchronize data between multiple platforms and enabling an effective response to the supply of personal protective equipment.

However, challenges in data utilization arose. One notable issue was inconsistency in information disclosure formats between local and central governments, limiting the integration of health information. Efforts to address such issues are limited.

4.4 Recommendations

Balancing patient safety and well-being, cost effectiveness, and ongoing technological advancements is critical. To address this multifaceted issue and continue to build upon Korea's successes in digital health infrastructure, the following recommendations are provided:

RECOMMENDATION 4A

Simplify and expedite new health technology assessment procedures to reduce the time to market for innovative technologies

It can take more than a year to introduce innovative technologies to the market, which may deter small, lesser-known companies from research and development and leave patients waiting for treatment. Although the government has already adopted many new systems, such as the one-stop service system, further simplification and acceleration of the nHTA evaluation process is necessary.

RECOMMENDATION 4B

Enhance digital health literacy among vulnerable populations to enable widespread adoption of digital health infrastructure

Efforts should be made to address the digital health literacy gap among vulnerable populations, ensuring they can fully harness the benefits of digital healthcare tools and information. This necessitates the implementation of targeted educational programs, user-friendly interfaces, and support systems, building on existing government efforts that offer health, data, and information-related programs to digitally vulnerable groups.

RECOMMENDATION 4C

Establish a centralized governing authority for chronic disease management programs

Presently, chronic disease management programs utilizing digital health technology are highly fragmented, with multiple entities such as the MOHW, NHIS, HIRA, and KDCA⁶⁰ conducting separate initiatives. This fragmentation hinders program effectiveness, necessitating a control tower or coordinating body for overseeing and streamlining digital health initiatives, promoting coordination and collaboration, and standardizing approaches among various stakeholders and sectors.

RECOMMENDATION 4D

Clarify and refine existing standards and guidelines pertaining to the use of telemedicine

Standards and guidelines on the usage of telemedicine in Korea are limited. Developing clear guidelines, regulations, and reimbursement policies for telemedicine services can provide a structured framework for their implementation. Addressing concerns regarding privacy, data security, and the quality of care will foster trust in telemedicine. Collaborative discussions involving healthcare professionals, policymakers, and patient advocacy groups can help identify and address potential barriers and conflicts, thereby encouraging the widespread adoption of telemedicine.

RECOMMENDATION 4E

Institute comprehensive data protection measures

As the digital healthcare landscape expands, robust institutional and technological systems are needed to effectively manage the potential misuse and abuse of personal information. Measures such as encryption technologies, stringent access controls, regular security audits, and data breach protocols should be put in place to protect patient privacy and ensure data security, fostering trust and confidence in digital health initiatives. Moreover, establishing regulations and implementing legal enhancements are required to provide a comprehensive framework for these systems.

RECOMMENDATION 4F

Support and incentivize health data standardization and exchange among healthcare institutions

Promoting health data exchange among institutions brings many advantages such as improved patient care coordination, reduced duplication of efforts, and more effective clinical decision-making. To implement this recommendation, the government should consider incentivizing institutions to participate in the medical information exchange system, and investing in secure, efficient data-sharing infrastructure. This approach would overcome the challenges associated with a standardized national EMR system and foster a more interconnected and data-driven healthcare ecosystem.

CASE STUDY 1

**Korean resident
registration
system in
COVID-19**



Optimal utilization of information systems has played a crucial role in facilitating central government decision-making and enhancing health crisis response. A prime example of this is the integration of the Korean resident registration system with ICT-based administrative and billing systems that enable the government to efficiently access and utilize data for public benefit. Before the pandemic, this integration helped deter fraudulent health insurance claims, minimize risks related to drug utilization, and enforce adherence to health exams. Early in the pandemic, this integration facilitated the prompt identification, isolation, and contact tracing of infected individuals who visited medical institutions and had a history of international travel. Additionally, when face masks were scarce, the system enabled pharmacies to receive individuals' mask purchase records. It also facilitated the management and sharing of vaccination records.

Several other examples highlight the strength of Korea's information systems in health crisis management. During the pandemic, Korea implemented a healthcare resource distribution system by using big data. This system helped direct patients with mild COVID-19 to community treatment centers (see Case Study 2), whereas patients with severe disease were referred to hospitals. Additional information systems were rapidly built to oversee the availability of hospital beds, monitor patient movements, facilitate the allocation of medical personnel, and track the inventory of COVID-19 treatment supplies. Originally developed independently for specific uses, these systems now function collectively as the Healthcare Crisis Response System.⁶¹

Despite these benefits, concerns have emerged over data privacy and security, resulting from the disclosure of personal data early in the COVID-19 pandemic. For example, infection clusters originating in nightclubs in the Itaewon area of Seoul in May and June 2020 spurred contact tracing efforts using mobile phone GPS data, credit card data, and lists of visitors to nightclubs in the area. Concerns spread that the personal information of people who visited gay nightclubs would be made public, contributing to stigma against sexual minority groups and concerns that people who were exposed to COVID-19 in those settings would not seek testing to protect their privacy. Anonymous testing was then introduced, requiring only individuals' cell phone numbers.⁶² South Korea's data laws are meant to enable big data use and integration for both commercial research and protecting the public good while protecting personal privacy.⁶³ Nevertheless, the COVID-19 pandemic underscored that balancing safeguards for individual privacy with the upholding of public health interests remains a challenge, especially when implementing new systems.

5. DOMAIN 5

Service delivery



5.1 Structure of healthcare delivery

5.1.1 Overview of systems in place to deliver healthcare

Healthcare delivery in Korea is heavily reliant on private providers: Korea has approximately 3000 private hospitals (>90% of all hospitals) and approximately 200 public hospitals.⁶⁴ As such, most patients, especially those in urban areas, seek care at private facilities.⁶⁵ While this does result in problems such as high out-of-pocket (OOP) spending (see Domain 6), it also enables greater accessibility to care and investment to improve healthcare. Moreover, hospital capacity in Korea is much higher than the OECD average (12.5 vs. 4.4 beds per 1,000 people in 2019).

These factors and others collectively contribute to positive health outcomes, as exemplified by exceptional rates of childhood immunization, in-hospital 30-day mortality for patients with stroke, mammography screening participation, and patient outcomes for breast, cervical, and esophageal cancers.⁶⁶ However, antibiotic prescription rates, asthma and diabetes hospitalization rates, and in-hospital 30-day mortality rates for patients with acute myocardial infarction are concerning.⁶⁷

5.1.2 Quality of care

In Korea, the central government is responsible for improving quality of care and ensuring patient safety primarily through the Korea Institute for Healthcare Accreditation (KOIHA) and the HIRA. KOIHA sets accreditation standards for hospitals, conducts assessments, and publishes accreditation results. However, participation has been low because of high accreditation fees, the requirement of LTC facilities, the voluntary nature of the process, and the exclusion of primary care institutions.⁶⁸ HIRA assesses the quality of care covered by the NHI or Medical Aid (a healthcare financing scheme for low-income groups, see Domain 6), sets standards for 73 quality assessment items (as of June 2023), and publishes assessment results. Primary care institutions may be assessed for health services such as diabetic care.

Accreditation and quality assessment results are used to calculate quality payments to hospitals. For example, the outcomes of HIRA quality assessment are used to calculate payment through the Value Incentive Program to primary care institutions.⁶⁹ Through this program, healthcare providers receive incentives for high-quality ratings, while reimbursed amounts may be lowered for those with low ratings.

5.1.3 Role of primary care

Patients in Korea typically encounter a physician, either a family physician (general practitioner) or a specialist, as the initial healthcare provider for their primary care needs. This initial contact often occurs at primary care facilities or local hospitals near patients' residences or workplaces. Initial consultations are also provided by doctors at public health centers and health sub-centers, along with community health practitioners stationed at primary healthcare posts in rural and remote areas. Patients often maintain a consistent relationship with their healthcare provider to manage chronic conditions like high blood pressure or diabetes.

Primary care physicians do not have a gatekeeper role; patients have the autonomy to select their healthcare providers, including specialists. For example, many patients visit tertiary hospitals even when they have minor symptoms. Despite policies mandating patients to acquire a referral from a primary care physician or hospital doctor before seeking care at tertiary hospitals, these referrals are typically nominal. In particular circumstances, such as emergency medical treatment and childbirth, the referral requirement is waived.

Measures promoting primary care as the initial point of contact for patients within the healthcare system have had limited effectiveness. In 1994, the government initiated a pilot project to establish a primary care physician registry. However, the project was terminated due to inadequate

government preparedness and resistance from the medical community. Later, scholars and nongovernmental organizations advocated reinstating the system; however, the government has yet to adopt it as an official policy. Since 2010, government policy inputs into the primary care sector have gradually increased. For instance, the Hypertension and Diabetes Registration and Management Pilot Project, initiated in 2007, has undergone multiple modifications and demonstrated increasing efficacy and uptake over time.⁷⁰

Overall, however, gaps remain in developing a rigorous primary care system. Countries with well-established primary care systems have multidisciplinary teams consisting of physicians and nurses. Korea currently lacks such comprehensive care teams; more healthcare facilities operate without nurses than those that do, and only a few healthcare professionals specialize in family medicine. Incentives and support for primary care are lacking, as the proportion of expenditures allocated to primary care has decreased. In 1970, clinics constituted 22.7% of total health expenditure, reaching a peak of 29.4% in 2000 and declining to 17.2% by 2022.⁷¹

5.1.4 Insufficient focus on prevention and chronic diseases

The primary strategy for mitigating the prevalence of chronic diseases is the National Health Plan, as discussed in Domain 1. Furthermore, the National Health Promotion Act mandated the establishment of the Korea Health Promotion Institute to offer technical assistance to public health centers.

However, the prioritization of chronic disease prevention is not consistently reflected in financial allocations. Preventive services accounted for 4.7% of current health expenditures in 1970, less than 3.0% between 1981 and 2007, then exceeded 3.0% beginning in 2008, and peaked at 4.4% in 2020. Since 2000, expenditures for personal health services have accounted for more than 92.5% of current health expenditures, of which preventive services accounted for a very small share.⁷² Currently, the only preventive services covered by the NHI are health screenings and smoking cessation drugs. While the National Health Plan incorporates a budgetary framework for every policy and project, the plan does not entail establishing or independently managing distinct budget accounts. This centralized budgeting approach makes it challenging to trace the allocation of funds to specific initiatives.

Moreover, the lack of integration of health promotion with personal health services is a challenge that needs to be overcome. Central and local governments play a pivotal role in setting public health policies at a broader, systemic level, such as increasing the price of tobacco to reduce smoking rates, regulating tobacco and alcohol advertising, and improving road conditions to prevent traffic accidents. However, the effectiveness of these efforts are diminished when they remain isolated from personal health services, such as primary care. As such, improving the impact of health promotion policies and interventions can be greatly bolstered by coordinating these efforts with personal health services and strengthening the primary care system.

5.1.5 Challenges in LTC

Korea is aging faster than any other high-income country (see Domain 1). While the growing elderly population reflects improvements in healthcare quality, the gap between life expectancy and healthy life expectancy remains. Life expectancy increased from 80.2 years in 2020 to 83.3 years in 2019, and healthy life expectancy increased from 70.9 to 73.1 years, respectively, highlighting a persistent gap of approximately 10 years.

Moreover, according to the 2020 Survey of the Living Conditions of the Elderly, the average number of chronic diseases was 2.6 for those aged ≥85 years and 1.5 for those aged 65–69 years.⁷³ The percentage of older adults with no functional limitations was 58.0% for those aged ≥85 years and 95.7% for those aged 65–69 years (Table 7).⁷⁴ Taking these data and the trends toward longer life expectancy together, an increase in the burden of health and social care is expected.

Table 7: Health and functional status of Korean older adults

	65–69 years	70–74 years	75–79 years	80–84 years	85+ years	Overall
Number of chronic diseases	1.5	1.9	2.1	2.3	2.6	1.9
Proportion of older adults with no limited function	95.7%	91.9%	86.5%	78.2%	58.0%	87.8%

Source: MOHW and Korea Institute for Health and Social Affairs (KIHASA), 2020년도 노인실태조사 [Survey of the living conditions of the elderly 2020] (2021), 264–6, www.mohw.go.kr/board.es?mid=a10411010100&bid=0019&act=view&list_no=366496.

To maintain the health and quality of life of older adults, it is important to strengthen the role of primary care, expand transitional care, prevent and manage chronic diseases, and establish an appropriate LTC system. In 1994, the Korean government amended the Medical Service Act to classify LTC hospitals as medical institutions. In 2008, LTC insurance was introduced, providing home and institutional care benefits. Nevertheless, challenges persist in Korea’s LTC system.

First, LTC hospitals are often used as substitutes for nursing homes due to the lack of differentiation in their roles and functions. Unlike nursing homes, which require patients to fall within LTC rating categories I or II for admission, LTC hospitals have more flexible admission criteria. They can admit patients based on individual or family needs, as well as medical assessments by healthcare professions, as long as patients meet legal criteria such as having geriatric diseases. Consequently, many older adults who do not meet the LTC rating requirements for nursing home admission find themselves in LTC hospitals instead.⁷⁵ While the medical needs of older adults may be relatively modest, their LTC needs can be quite large, making it challenging to receive the appropriate care within a hospital setting. This situation is compounded by extended hospital stays, variation in quality of care, and high cost of care.

Second, inadequate community care infrastructure contributes to prolonged stays in nursing homes and assisted living facilities. Upon discharge from a hospital or facility, older adults struggle because no one organization or person is responsible for their health care needs. Providing housing and living support for older adults with limited function and high medical needs is also a challenge. To address this, Korea implemented a pilot initiative on community care in 16 counties in 2019–2022, and a pilot project on integrated support health and social care for older adults in 12 counties in 2023.

5.2 Maintaining services in a crisis

5.2.1 Responding to surge capacity

Korea’s experience with the 2015 Middle East respiratory syndrome (MERS) outbreak played a crucial role in its early response to the COVID-19 pandemic. The government proactively developed diagnostic kits, conducted epidemiological investigations and contact tracing, and isolated patients, with many hailing the response as effective (see Domain 1).

However, the health system remained initially unprepared to handle surge capacity. Despite private institutions greatly outnumbering public ones, public medical centers provided 69.4% of the total hospital beds for patients with COVID-19.⁷⁶ The small number of public hospitals available limited the capacity to effectively treat patients, and health authorities have previously suggested that there were fewer than 10 intensive-care beds in Seoul with a population of 26 million.⁷⁷ To address this, the government established community treatment centers, which cared for mildly ill patients to make capacity for more severe cases.⁷⁸ Generous financial compensation was also offered to private hospitals to care for patients.

5.2.2 Coordination of care and private–public partnerships

The necessity and significance of care coordination is becoming more recognized. The government has implemented several programs to enhance care coordination across different providers of healthcare services, including the Long-term Care Hospital Patient Discharge Support Program, the Community Care Initiative, and the Rehabilitation Hospital Care and Payment Pilot Project. However, these projects are fragmented and lack substantial connections to primary care. They are also currently either in the experimental phase or limited in scope.

Amidst the COVID-19 pandemic, the focal point of policy was not in care coordination but rather collaboration between the public and private sectors. During the first two years of the pandemic, a significant proportion of patients with COVID-19 received medical care at public hospitals. By late 2021, in response to the spreading delta variant and the subsequent surge in cases, the government began engaging more with private hospitals to facilitate care provision for patients with COVID-19. One potential approach to managing patient care during the pandemic involves a division of responsibility, whereby public hospitals treat patients with COVID-19 while private hospitals provide care for patients without COVID-19. Nevertheless, a lack of clarity remains regarding the extent to which the public and private sectors have effectively fulfilled their roles within this framework. This uncertainty arises from the overall reduction in healthcare utilization, attributable to the decline in respiratory infections resulting from COVID-19 control measures, as well as the decrease in voluntary healthcare utilization among marginalized populations.⁷⁹ Additionally, the effectiveness of government crisis response efforts have been constrained by the private healthcare sector's general distrust of the government.

5.3 Health equity

5.3.1 Distribution of and access to service

Korea has achieved substantial success in enabling equitable access to comprehensive healthcare services through UHC; NHI provides healthcare coverage to all citizens, and the Medical Aid program is available for low-income groups. Nevertheless, disparities persist in geographical accessibility to healthcare services, the burden of healthcare financing, and quality of care.⁸⁰ For example, a 2022 report published by the National Medical Center, a hospital in Seoul, found that 89.9% of Seoul residents could access urgent care within 30 min; however, only 44%, 40.8%, and 32.5% of residents in the rural areas of Gangwon, Gyeongsang, and South Jeolla provinces, respectively, could access urgent care in that same timeframe.⁸¹ Moreover, the private-dominated healthcare system results in frequent and high OOP payments, despite government efforts to curb healthcare spending and increase cost coverage (see Domain 6).

These disparities may have worsened because of the COVID-19 pandemic. A comprehensive examination of the pandemic's ramifications on individuals experiencing homelessness and occupying informal settlements found a notable decline in their ability to obtain adequate healthcare services because public hospital services were diverted toward pandemic response efforts. Initial COVID-19 outbreaks were observed in locations such as psychiatric hospitals and call centers with high concentrations of vulnerable populations, including individuals with mental disabilities and irregular workers. The ongoing pandemic has also resulted in reduced employment rates among low-income individuals.⁸²

To mitigate disparities resulting from the COVID-19 pandemic, the government implemented temporary assistance programs for LTC workers and activity support workers serving those with disabilities. Efforts have also been undertaken to promote home health care services, particularly for older adults living alone.

The true extent to which the COVID-19 pandemic has altered these patterns of health inequality remains uncertain. Fortunately, certain disparities in healthcare utilization decreased during the

pandemic. Whether this phenomenon can be attributed to increased service utilization among low-income individuals or decreased service utilization among their high-income counterparts during the pandemic remains uncertain.⁸³ As such, an assessment is needed of the efficacy of government measures to address health inequalities during the COVID-19 pandemic.

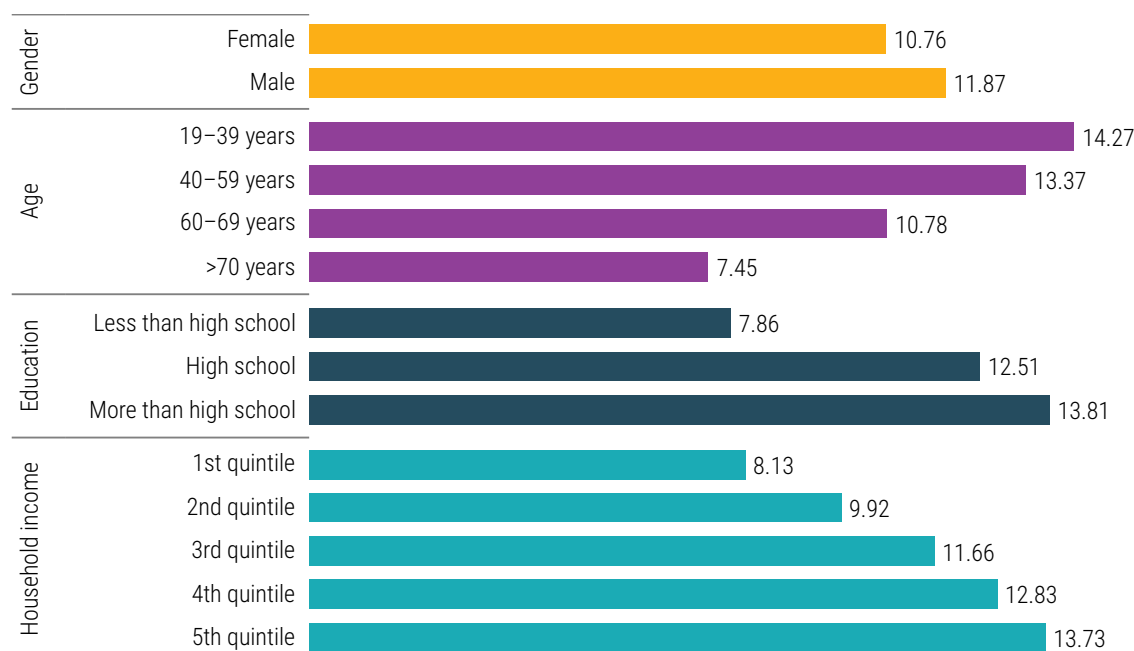
5.3.2 Health literacy

The ongoing demographic and epidemiological transitions are increasing the importance of health literacy. However, health literacy is a concern in Korea. According to the 2021 Korea Health Panel Survey using the HLS-EU-Q16 (European Health Literacy Survey Questionnaire), only 50.6% of adults aged 19 and over have adequate health literacy.⁸⁴ This is lower than the average of 52.5% in Germany, 53.7% in Greece, 55.2% in Ireland, 60.0% in the Netherlands, 71.4% in the United Kingdom, and 55.4% in Poland.⁸⁵ Factors such as older age, minimal educational attainment, and lower household income were also associated with lower health literacy levels (see Figure 13).

The Korean government has made several efforts to improve health literacy. These measures include the development of a health literacy survey tool, integrated into the 2023 National Health and Nutrition Examination Survey. Additionally, efforts are underway to improve the health information infrastructure, such as the KDCA's National Health Information Portal.

However, health education is not yet required in the education system, and patient education infrastructure is lacking. Few policies are in place to support socioeconomically vulnerable groups such as older adults and those with limited access to education. Healthcare institutions, especially primary care providers, need to be developed as trusted providers of health information.

Figure 13: Health literacy levels by population characteristics



Adapted from: Jaeyong Bae and Hyeyun Kim, “한국의료패널로 본 헬스 리터러시 실태와 정책적 시사점 [Health literacy in Korea: findings from a nationally representative survey],” Health and Welfare Policy Forum, 316 (February 2023): 85.

5.4 Recommendations

RECOMMENDATION 5A

Strengthen primary care infrastructure through increased funding, streamlined programs, and dedicated governance

Although not strongly adopted in Korea, a strong primary care system can ensure timely care for patients and effective monitoring of chronic diseases. This can be achieved by consolidating and streamlining fragmented programs related to primary care, shifting funding toward primary care services, and creating legal and institutional frameworks. To facilitate this, a primary care bureau should be established under the MOHW to drive policies in an integrated and comprehensive manner, ensuring that primary care receives the attention and support it needs.

RECOMMENDATION 5B

Improve the LTC system

A clear distinction should be made between the roles of LTC hospitals and nursing homes to optimize the resource allocation and cater to the population's needs. Promoting the development of daycare centers within communities is another essential step. This shift should align with the overarching policy direction of moving from institutionalized to community-centered LTC. Coordination between primary and LTC is also needed to deliver holistic care.

RECOMMENDATION 5C

Promote health literacy across the population

Improving the health literacy of the population, including older adults, is vital for informed decision-making and healthcare management. To this end, comprehensive efforts are needed. Traditional education systems should incorporate additional health and medical literacy into their curricula, and primary care institutions should be promoted as trusted providers of health and medical information.

RECOMMENDATION 5D

Institutionalize the coordination of care between the public and private sectors to prepare for future crises

This institutionalization should start with an evaluation of how the private and public sectors coordinated care during the COVID-19 pandemic, forming the basis of institutionalizing public-private collaboration in both routine and crisis conditions, informing responses to future health crises.

RECOMMENDATION 5E

Enhance preventive care services and align them with primary care and health promotion

Closely related to primary care, investment in preventive care services at the community level can contribute to resilience of the health system in future crises as well as the sustainability of health services as the population ages. These efforts should be integrated with other efforts to improve primary care and health promotion.

RECOMMENDATION 5F

Assess the efficacy of government measures to address health inequalities during the COVID-19 pandemic

The results of such an assessment should inform planning for the implementation of the recommendations listed above, including the expansion of primary care, preventive services, and health literacy programs. Ensuring equity in access to health services will be crucial for the next crisis, whether it be health, economic, or environmental.

6. DOMAIN 6
Financing

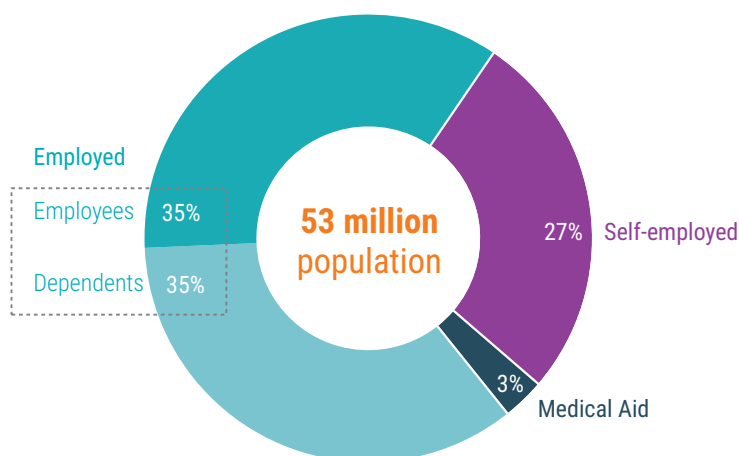


6.1 Overview

6.1.1 Sources of healthcare financing

Healthcare in Korea is financed through various means, with the NHI playing a pivotal role. The NHIS administers the NHI, providing healthcare coverage to all citizens. Employed individuals make up much of the population covered by the NHI (97.2% or 51.34 million people in 2022). The remaining population covered by the NHI are those qualifying for Medical Aid (2.9% or 1.53 million people in 2022), which provides affordable healthcare services to low-income individuals (Figure 14).

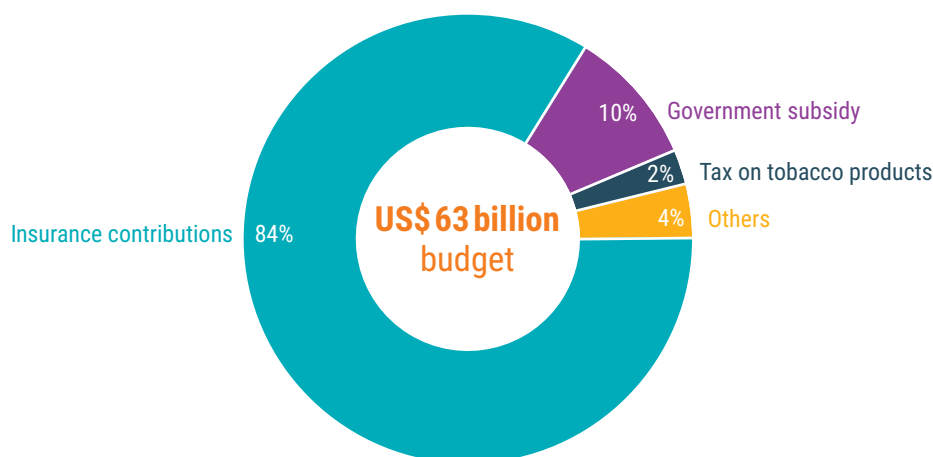
Figure 14: Population coverage of Korean National Health Insurance, 2022



Source: "The Overview of Korean National Health Insurance [unpublished internal documents]," National Health Insurance Service (NHIS), 2022.

Approximately 84% of NHIS's total budget comes from insurance premiums paid by employed subscribers, amounting to US\$53 billion in 2020, followed by government subsidies (9.8%, US\$7.7 billion), taxes levied on tobacco products (also known as the National Health Promotion Fund, 2.5%), and other sources, including coverage for veterans' medical expenses and industrial accident medical expenses (3.7%, Figure 15). Furthermore, purpose-specific funds, including the Emergency Medical Fund, are partially funded by anticipated revenues generated by fines and penalties imposed under the Road Traffic Act to provide compensation to emergency medical services.

Figure 15: Sources of finances in Korean National Health Insurance



Source: "The Overview of Korean National Health Insurance [unpublished internal documents]," National Health Insurance Service (NHIS), 2022.

6.1.2 Provider payment mechanisms

The NHI covers the eligible medical expenses of subscribers. All healthcare providers in Korea must be registered in the NHI system through the Designation System for Healthcare Institutions under Article 42 of the National Health Insurance Act. This policy was implemented in the 1970s and 1980s to secure healthcare resources during a period of scarcity.

This social health insurance system in Korea typically uses a fee-for-service approach, whereby payments to providers are based on individuals' visits or procedures. However, this approach often results in over-utilization of medical services and prolonged hospitalization, leading to increased healthcare expenditures. For example, in 2013, the average number of outpatient visits per capita in Korea was 14.6, which is more than twice the OECD average of 6.7.⁸⁶

To address these challenges, the Korean government announced measures in 2018 to strengthen health insurance coverage for medical expenses, aiming to increase NHI's health service coverage from 63.4% of services eligible for NHI reimbursement to around 70% by 2022.⁸⁷ Despite continuous government efforts, the health service coverage rate has remained stagnant at around 65%. This stagnation can be attributed to the increasing provision of non-covered services by healthcare providers. Many providers choose to offer non-covered services to patients because they perceive the reimbursement rates for NHI-covered services as insufficient for increasing their revenues.

6.1.3 Value-based payment system

As an alternative to the traditional fee-for-service payment system, a value-based payment system (VBPS) has been suggested.⁸⁸ A VBPS would grant healthcare providers discretion in determining payment levels while requiring accountability for expenditures and quality of care.⁸⁹ Under a VBPS, providers would receive incentives only for positive performance based on pre-agreed levels of accountability with insurers, and they would bear the responsibility of accepting penalties such as payment reductions for poor performance. A component of this endeavor is the expanded pay-for-performance system already implemented in Korea, wherein supplementary incentives are offered in conjunction with fee-for-service arrangements for specific diseases or services.

Moreover, a diagnosis-related group system, whereby patients with similar diagnoses and treatments are categorized into groups, with a fixed payment structure, is being explored. The current system is presently limited to nine diseases. Broadening to encompass additional diseases and service domains can improve healthcare efficiency and cost effectiveness.

6.2 Opportunities to improve healthcare coverage

6.2.1 OOP payments and private medical insurance

In 2016, 37% of health spending was financed directly by households; this figure is significantly higher than that of other OECD countries.⁹⁰ This high household spending is due to the poor NHI benefit coverage and a health system dominated by private providers.

To reduce the burden of healthcare expenses resulting from non-covered services, many Koreans enroll in private insurance, known as supplementary private health insurance. According to the Korean Medical Panel, approximately 72.6% of the population had some form of supplementary private health insurance, such as "actual cost" health insurance, in 2016.⁹¹ The market size for supplementary private health insurance was estimated to be KRW 27.4 trillion (approximately US\$21 billion) based on insurance premium income in 2011.

Although supplementary private health insurance can provide coverage for medical services not covered by the NHI, several problems are associated with it. First, vulnerable populations, individuals with preexisting diseases, and high-risk groups who are unable to enroll in private insurance are

often excluded from its benefits. Cases of consumer harm caused by incomplete sales due to the complexity and abundance of private insurance products have also been reported. Furthermore, concerns have risen over adverse selection, in which individuals select more generous health insurance plans than they need, and moral hazard, meaning individuals consume more services because they bear only a small share of their medical expenses.⁹² New enrollees in supplementary private medical insurance recorded significantly more non-covered services, transportation expenses, prescription costs, and total medical expenses compared with new enrollees in fixed-amount medical expense insurance.⁹³ Consequently, new enrollment in supplementary private health insurance increased both individual medical expenses and national healthcare expenditures. In response to this, the government is increasing the OOP payments of supplementary private health insurance policyholders to discourage unnecessary healthcare utilization and improve the financial stability of private health insurers.⁹⁴

6.2.2 Efforts to increase cost coverage

Efforts are being made to increase cost coverage, meaning the proportion of costs covered by the NHI, and reduce the financial burden of medical expenses on the population through various measures such as special estimate cases (or special calculation cases, *SanjeongTukrye-Jedo* in Korean), the copayment ceiling system, and disease-specific allowances.

Special estimate cases lower the copayment rates for the treatment of severe illnesses, including cancer, heart disease, rare diseases, severe incurable diseases, severe trauma or burns, tuberculosis, and severe dementia. Patients registered under special estimate cases only pay 5%–10% of their medical expenses OOP, and patients with tuberculosis are exempt from all OOP payments. Special estimate cases vary in duration; eligibility lasts 5 years for patients with cancer, severe dementia, and other incurable diseases, 30 days for patients with heart disease or severe trauma or burns, and 1 year for rare diseases or severe burns. A reassessment for extension can be conducted 1–3 months before the special estimate period expires.

The copayment ceiling system was introduced in 2004 to reduce the financial burden of OOP expenses not covered by the NHI. This system divides patients' income levels into seven categories and sets a ceiling for each, beyond which the NHI covers the copayment for medical expenses. The support scope includes all actual medical expenses incurred by patients, with no limit on the number of readmissions for the same disease. This program is particularly beneficial when households incur excessively high medical fees, ensuring they can obtain appropriate care.

Finally, the disease-specific allowances system was designed to safeguard workers' income during periods of illness or injury outside of work, enabling them to prioritize treatment. The MOHW is in the second stage of a pilot program aimed at refining both the payment amount and the overall system.

Overall, these additional health financing mechanisms function as a safety net to reduce the medical expense burden on low-income individuals and maintain household stability.

6.3 Challenges to the sustainability of healthcare financing

Factors such as population aging, increasing prevalence of chronic diseases, low birth rates, and changes in occupational structure are expected to pose challenges to the financial sustainability of the NHI system.⁹⁵

6.3.1 Population aging and health expenditure

With low birth rates and longer life expectancies, Korea is transforming into a super-aged society (see Domain 1). The proportion of LTC benefits for elderly individuals has also increased from 37.6% in 2015 to 43.1% in 2020, accounting for half of total medical expenses.⁹⁶ This demographic shift also brings a rise in chronic diseases such as hypertension and diabetes, further increasing

healthcare expenditure. Notably, chronic disease–related medical expenses accounted for 25.5% of total medical expenses in 2002 but increased to 36.3% in 2012.⁹⁷

To address some of these financing challenges, in 2008, Korea introduced a public LTC insurance system, featuring comprehensive universal LTC coverage for people aged 65 and older. LTC insurance is separate from NHI, although both are administered and managed by the NHIS, as a single insurer with two funding pools. Under this system, diverse service providers exist outside of government-contracted nonprofit private organizations, and reimbursements to these providers are paid based on performance rather than operational costs. This approach incentivizes private-sector involvement to meet the shortage of service providers and personnel and expands service provider options for beneficiaries to improve the quality of care.

However, this shift has intensified competition among LTC service providers, increasing service expenditure and wastage of social resources. Contrary to expectations, service quality has not improved quickly. Additional factors such as training high-quality service personnel, ensuring a stable supply of personnel, and implementing a workforce management system are also vital to ensure service quality. However, these objectives remain difficult to achieve due to persistently low wages and poor working conditions for caregivers as well as inadequate systems for training service personnel.

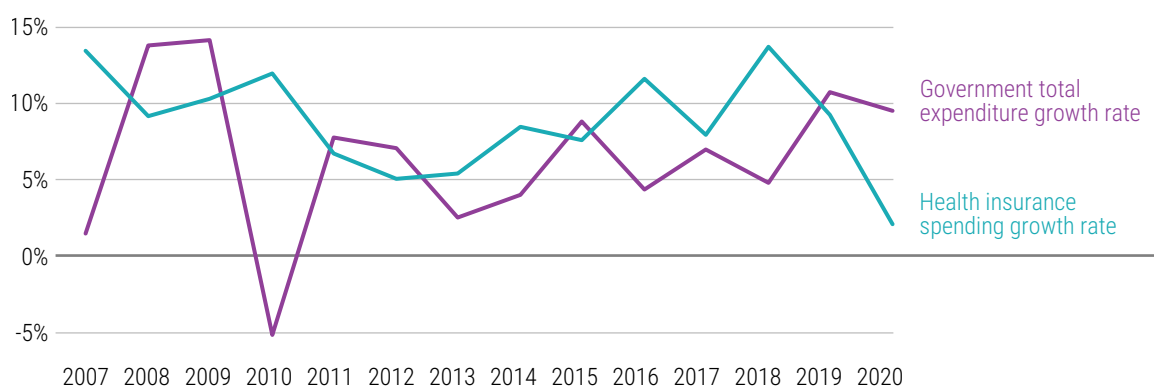
As LTC expenditure increases and becomes more difficult to control, emphasis on a patient-centered care system has been growing. The Korean government has begun promoting community care policies to enable elderly patients to receive care while living in their own communities.

6.3.2 National growth and health expenditure

Korea’s GDP growth is projected to decline to 1.5% in 2023.⁹⁸ As NHI primarily relies on health insurance premiums paid by employees, slowing economic growth will weaken the financial sustainability of NHI. Moreover, health insurance typically operates on a short-term system, so ensuring a balanced current account with secure revenue is crucial to long-term financial stability.

The rate of increase in health insurance expenditure is predicted to surpass the economic growth rate. From 2007 to 2019, Korea recorded a health insurance expenditure growth rate of 8%–9%, exceeding the government’s total expenditure growth rate of 6% (Figure 16).⁹⁹

Figure 16: Government total expenditure growth rate v. health insurance spending growth rate



Source: Eunkyung Lee, “건강보험 재정건전성 제고를 위한 거버넌스 체계 구축 방안 [Establishing a governance system for enhancing the fiscal soundness of health insurance],” *Korean Institute of Public Finance (KIPF) Issue Paper 144* (April 2023): 1–12.

One reason for this discrepancy in spending is the lack of comprehensive data used for the allocation of funds. Korea's System of National Accounts, which provides an overview of all national economic and financial activity, includes 10 major categories, including health, and 69 subcategories. Social welfare and health are currently only categorized at the major level, limiting the granularity of data available for effective fund allocation and resource management.

Although the government could increase health insurance premiums to increase NHI funding, such a policy would increase the burden on businesses and employees and would not be a viable long-term solution.¹⁰⁰ Instead, the growth rate of health insurance expenditures should be managed by aligning it with the government's total expenditure growth rate or GDP growth rate and regulating the total health expenditure amount.¹⁰¹

6.3.3 Protecting vulnerable groups

In Korea, only 2.9% of the population receives Medical Aid, meaning that some poor and many "near-poor" households with high health expenditures are unable able to benefit from the program. Near-poor households are not Medical Aid recipients but earn less than 120% of the minimum cost of living in Korea. Therefore, assistance should be expanded to increase household coverage through measures, such as reducing insurance premiums, supporting elderly and disabled people, and increasing investments to improve health insurance management and operations.¹⁰²

6.4 Financing during the COVID-19 pandemic

6.4.1 Subscriber support

The NHIS played a pivotal role in easing the financial burden on beneficiaries during the pandemic. It eliminated diagnostic test costs for citizens, encouraging mass testing for people with suspected COVID-19 and enabling early detection and prevention of large-scale spread. Hospitalization expenses for people confirmed to have COVID-19 were also mostly covered by the NHI and government subsidies. Furthermore, health insurance premiums were reduced for vulnerable groups affected by regional outbreaks and the economic impact of COVID-19. The special calculation period for severe illnesses was also extended temporarily.

Although overall expenditures, including diagnostic tests and hospitalization costs, increased due to the pandemic, NHIS could cover expenses using its accumulated health insurance reserve funds. Additionally, the decrease in general patient visits due to concerns about nosocomial infections contributed to offsetting COVID-19 expenses.

6.4.2 Provider support

To support providers, the NHIS focused primarily on securing sufficient beds to respond to the surge in COVID-19 cases and resolving the financial issues facing hospitals and clinics experiencing a significant decrease in general patients. A prepayment and early payment system for care expenses was implemented to provide advance payment of care fees to medical facilities. This system, based on the previous year's payment amount, allows for 90% of medical fees to be paid before medical facilities submit claims. The NHIS also supported medical facilities experiencing financial difficulties by providing medical loans. To prevent COVID-19 infections among patients visiting hospitals, "National Safe Hospitals" dedicated to infectious diseases were identified and were provided with financial support by the NHI for their operating expenses. Financial support was provided to hospitals lacking negative-pressure isolation rooms to accommodate patients with severe COVID-19 and to community care centers capable of isolating and treating patients with mild COVID-19. Moreover, to alleviate administrative burdens, on-site inspections and evaluations of medical institutions were postponed.

6.5 Recommendations

RECOMMENDATION 6A

Strengthen health economic data reporting by providing comprehensive national statistics at the subcategory level and developing health finance satellite accounts

A comprehensive analysis of health expenditures can improve policy formulation, facilitate effective responses to emergencies, and expand coverage to underserved communities. To obtain the appropriate level of granularity, additional efforts are needed to produce health-related statistics at the subcategory level in Korea's System of National Accounts. Moreover, by developing health finance satellite accounts, the government can also produce and analyze detailed information on areas of health spending and administrative costs to respond to the economic impacts of an aging population.

RECOMMENDATION 6B

Diversify health insurance funding sources through increased government subsidies

Currently, funding for the NHI relies heavily on premiums paid by employees and the self-employed, and increasing funding through premium hikes poses a burden on both groups. To secure the financial sustainability of a health insurance system, which faces threats from changes in population and industrial structures, and to promote social equity, increasing government support of NHI is needed. The government should consider a higher contribution to the financing of NHI, surpassing the current contribution of approximately 15%.

RECOMMENDATION 6C

Reform provider payment systems away from the fee-for-service approach

The current fee-for-service payment system results in excess use of medical services. Therefore, improvement of the provider payment system is necessary. Such reform can involve widespread adoption of a VPBS or broadening of the new diagnosis-related group system to encompass additional diseases and service domains.

RECOMMENDATION 6D

Align the growth rate of health insurance expenditures with the total government expenditure growth rate or GDP growth rate

To ensure the financial sustainability of the NHI system, its expenditures must be thoroughly linked to overall government spending and projected growth. This can be achieved through comprehensive financial analysis of healthcare needs, the establishment of growth benchmarks, regular monitoring of relevant indicators, and ensuring policy flexibility to adapt to changing circumstances.

RECOMMENDATION 6E

Broaden the scope of Medical Aid assistance to reach more individuals

Currently, only 2.9% of those covered by the NHI are beneficiaries of Medical Aid. To address the growing economic strain on beneficiaries, policymakers can explore the expansion of the eligibility criteria for Medical Aid. This would require an assessment of general access to Medical Aid benefits and the identification of gaps in coverage.

7. DOMAIN 7

Governance

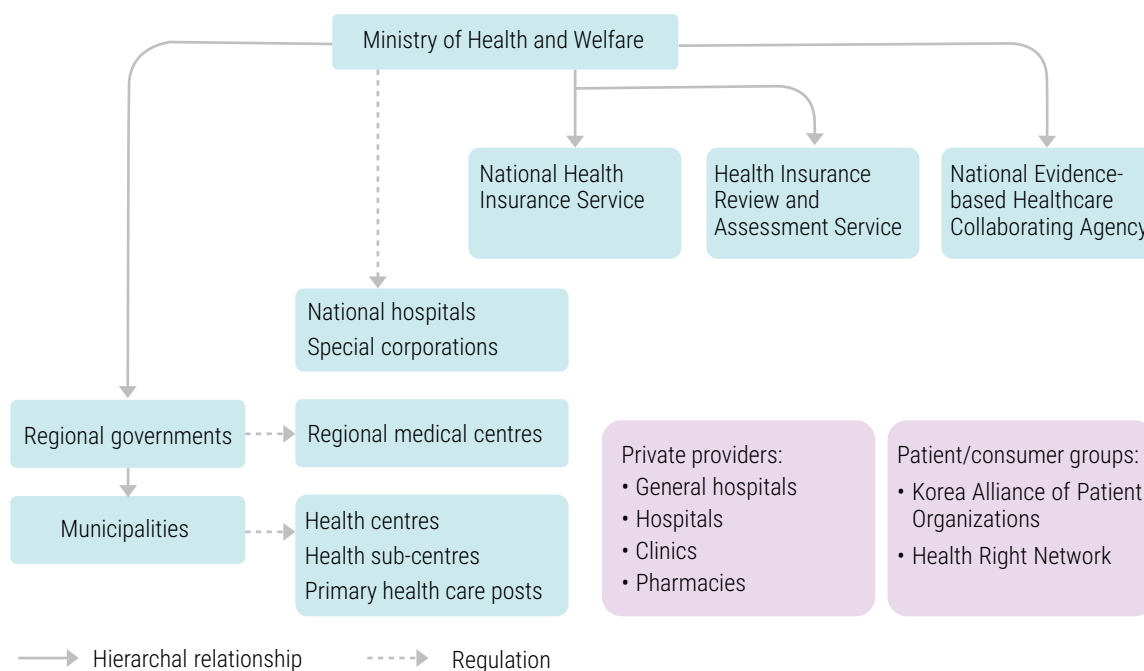


7.1 Collaboration in health system governance

7.1.1 Centralized health governance

The MOHW plays a central role in health system governance in Korea, formulating and implementing health policy at a national level and overseeing key agencies including the NHIS, HIRA, and NECA. It collaborates with related ministries, local governments, the private sector, patient groups, and medical supplier groups to promote population health (Figure 17).¹⁰³

Figure 17: Organization of the health system in Korea



Source: Soonman Kwon, Tae-jin Lee, and Chang-yup Kim, "Republic of Korea Health System Review," *Health Systems in Transition* 5, no. 4 (2015), https://iris.who.int/bitstream/handle/10665/208215/9789290617105_eng.pdf.

This system exhibits varying degrees of centralization in terms of authority and finance. Although most healthcare providers in Korea are private, the MOHW, along with regional and municipal governments, only has regulatory authority over public services including hospitals, health centers, health clinics, and urban health offices.¹⁰⁴ Private healthcare providers are financially regulated and monitored through negotiations on insurance fees with the NHIS or through post-assessment and evaluation by the HIRA, without direct government regulation.¹⁰⁵ Therefore, the influence of public health policies is often limited, emphasizing the importance of cooperation over authority.

Moreover, the governance in the Korean health system is not well devolved to the local and regional level.¹⁰⁶ Decisions are typically made centrally by the MOHW, and local health institutions have limitations to implement their own health promotion programs. Regional and municipal health systems are required to develop a health plan every year applying guidance from the MOHW's National Health Plan.¹⁰⁷ However, as local healthcare institutions face challenges such as vulnerable infrastructure, insufficient personnel, and budget constraints, the MOHW established a committee in 2018 to review regional public health plans and provide greater oversight and expertise.¹⁰⁸

7.1.2 Interministerial efforts to promote public health

Korea's National Health Plans have emphasized the need for a collaborative governance approach to effectively connect and implement interministerial health promotion policies and to monitor and evaluate their results. The Korean government has identified cooperative projects in the fields of environmental health, physical activity, and nutrition.¹⁰⁹ Examples of these projects are provided in Table 8.

Table 8: Policy collaboration projects in the health promotion area

Projects	Related ministries
Create programs for promoting healthy environments (e.g., programs regulating fine particulate matter)	Ministry of Environment Korea Disease Control and Prevention Agency
Prepare measures for preventing antibiotic misuse by cooperating in various fields such as promoting healthy eating habits and safe use of medicines	Ministry of Health and Welfare Ministry of Health and Welfare (Korea Diseases Control and Prevention Agency) Ministry of Agriculture, Food and Rural Affairs Ministry of Oceans and Fisheries Ministry of Culture, Sports and Tourism
Encourage cooperation between ministries and agencies to improve eating habits	Ministry of Agriculture, Food and Rural Affairs Ministry of Food and Drug Safety Ministry of Health and Welfare

Sources: MOHW and KHEPI, 제4차 국민건강증진종합계획 (Health Plan 2020, 2016–2020) (2015), www.khepi.or.kr/board/view?pageNum=1&rowCnt=10&menuId=MENU00829&maxIndex=9999999999999999&minIndex=9999999999999999&schType=0&schText=&categoryId=&continent=&country=&upDown=0&boardStyle=&no1=0&linkId=559210; Dongjin Kim, “제4차 국민건강증진종합계획추진을 위한 정책 방향과 과제: 건강생활실천 및 만성질환 관리를 중심으로 [Health Plan 2020: promotion of health behaviors and prevention of chronic diseases],” *Health and Welfare Policy Forum*, no. 246 (April 2017): 6–21.

The Korean government has established a National Health Promotion Council, which includes relevant ministries such as the MOHW and the Ministry of Economy and Finance, alongside private experts. This council monitors the status of smoking cessation, mental health, nutrition, obesity, and alcohol consumption as well as fostering collaboration across these areas (Table 9). Comprising six to nine experts, the council is designed to facilitate in-depth discussions in specific fields at the practice level, with a particular emphasis on nutrition and obesity.¹¹⁰

Table 9: Operation of the Health Promotion Deliberation Committee Expert Council

Issue area	Tasks
Community health and healthy environment	Creation of a healthy environment, deliberation and review of health promotion projects National Health Plan performance monitoring, plan implementation
Smoking cessation policy	Deliberation and review of smoking cessation policy (price/non-price), smoking cessation advertisements, and effectiveness of smoking cessation programs and delivery systems
Mental health	Basic plan and project deliberation and review, including abstinence policy, suicide, and addiction

Source: MOHW and KHEPI, 제4차 국민건강증진종합계획 (Health Plan 2020, 2016–2020) (2015), www.khepi.or.kr/board/view?pageNum=1&rowCnt=10&menuId=MENU00829&maxIndex=9999999999999999&minIndex=9999999999999999&schType=0&schText=&categoryId=&continent=&country=&upDown=0&boardStyle=&no1=0&linkId=559210.

Despite these efforts, as described in Domain 1, more work is needed to fully adopt the HiAP approach and expand the impact of collaborative governance in the Korean health system.

7.1.2 Sustainability in health information management through open government data

A robust health data management system is vital for a sustainable health system. In Korea, HIRA provides timely health data including medical and drug prescription records, public health examination information, medical supply status, pharmaceutical company information, and medical resource information. These data, commonly referred to as open government data (OGD), are readily accessible without restrictions to both public and private consumers.¹¹¹ Korea ranked highest in the OECD Open, Useful, and Re-usable data (OURdata) Index, which evaluates government initiatives in terms of data availability, accessibility, and support for data reuse, for three consecutive years between 2015 and 2018. Korea is also a leading country within the OECD in implementing OGD policies and practices,¹¹² some of which are outlined in Figure 18.

Figure 18: Roadmap of Korean OGD policies

Policies (mid- and long-term)	<ul style="list-style-type: none"> • 1st Open Data Master Plan (2013–2017) • 2nd Open Data Master Plan (2017–2019) • 1st National Core Data Release Plan (2015–2017) • 2nd National Core Data Release Plan (2017–2019) • Government-wide Data Release Plan (2019–2021)
Strategy	<ul style="list-style-type: none"> • Open Data Innovation Strategy (2018–2019)
Implementation Plans (annual)	<ul style="list-style-type: none"> • Open Data Implementation Plan (2014–2019) • Annual National Core (open government) Data Release Plan (2015–2018)

Source: United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP) and Asian and Pacific Training Centre for ICT for Development (APCICT), Open government data policies and practices in the Republic of Korea (2020), <https://repository.unescap.org/bitstream/handle/20.500.12870/5324/ESCAP-2020-RP-Open-data-policies-and-practices-ROK.pdf?sequence=1&isAllowed=y>.

In the public sector, OGD has been used to provide public health alert services through analysis of data on patient care, food poisoning, weather, environment, and social networks. These data are used to track and provide real-time alerts for five major diseases: common colds, conjunctivitis, food poisoning, asthma, and dermatitis. In the private sector, OGD enables various entities such as the pharmaceutical industry, medical equipment manufacturers, universities, and research institutes to conduct research projects for public health promotion. One of the most representative cases of OGD utilization in the private sector is “Goodoc,” a mobile health information platform that provides information on pharmacies and emergency rooms based on the vital real-time healthcare data provided by the HIRA Service system.

While health data sharing has improved among healthcare organizations, more active information sharing is still needed among institutions such as the MFDS, cancer centers, and other ministries. Moreover, healthcare providers must be more active in disclosing information on the quality of medical care. A framework for evaluating medical technology is also needed to ensure that data and technology effectively align with the requirements of medical care.

7.2 Crisis preparedness

7.2.1 Governance during the COVID-19 pandemic

Various national government entities, including the MOHW's Disease Policy Division, the KDCA, and the National Quarantine Center, play key roles in managing infectious disease crises. During the COVID-19 pandemic, Korea significantly reorganized its governance framework, elevating the KDCA to serve as the infectious disease "control tower" and lead all quarantine measures regardless of crisis level.¹¹³ This allowed for a centralized and coordinated approach to managing the pandemic.

Local governments also played a pivotal role during the COVID-19 pandemic. In particular, the Seoul Metropolitan Government and medical institutions collaborated to establish a cluster response group, operate a 24-hour emergency quarantine work system, and form a COVID-19 expert advisory group. In addition, an extensive testing initiative was conducted through an active "3T (testing, tracking, and treatment) approach" involving public-private cooperation, spearhead by local governments.¹¹⁴ This effort involved enforcing contact tracing procedures and increasing treatment rates by using efficient medical systems and collaborating with medical staff.

However, health system management during the COVID-19 pandemic revealed several weaknesses. Because the primary focus was on the isolation and hospitalization of patients with COVID-19, monitoring the severity of their illness and providing comprehensive community-level care were relatively neglected. Furthermore, the implementation of scientific and evidence-based decision-making was inadequate, and the opinions of medical experts were insufficiently incorporated within the administrative-centric governance of the Korean health sector. Moreover, the centralized policies of the Korean government failed to delegate appropriate authority and responsibility to local governments in the early stages of the pandemic. This hindered the ability of local authorities to respond effectively to unique regional circumstances and promptly implement tailored measures to contain COVID-19.

7.2.2 Injury prevention and management

Apart from infectious disease management, another critical area of crisis preparedness is damage prevention and management. Damage, in this context, refers to harm to the body or mind resulting from intentional or unintentional accidents.¹¹⁵ HP2020 set ambitious goals to reduce traffic accident mortality per 100,000 people from 13.9 in 2008 to 5 in 2020 and lower the annual damage incidence among Korean adults from 7.3% in 2008 to less than 5% in 2020.¹¹⁶

Nonetheless, governance for overall damage management is lacking in the Korean health system, even though damage remains a costly and important issue in Korea and many other countries. This is mainly because of the social perception in Korean society that damage results from unexpected, unpreventable accidents or violence.¹¹⁷ Consequently, operational inefficiencies have arisen, such as overlapping education and infrastructure, along with a sporadic and fragmented approach to damage management across sectors and departments. These issues have persisted due to the perceived low necessity for a national-level systematic response and limited policy priorities. Nonetheless, in recent years, there has been growing recognition that damage can be prevented to an extent by considering personal risk factors, risk intermediaries, and environmental risk factors.¹¹⁸

7.3 Recommendations

RECOMMENDATION 7A

Implement a novel participatory governance framework to restructure the health system

The growing challenges posed by environmental and demographic changes have highlighted the limitations of the current centralized decision-making approach in Korea to address value conflicts and intricate policy issues. The current health system governance should be restructured, focusing on establishing a novel participatory governance framework wherein experts, local governments, and citizens have defined roles with accountability.

RECOMMENDATION 7B

Develop community-centered health and primary care infrastructure and a collaborative primary care approach

Communities require more local facilities including small-scale care and nursing homes and household support services. This should be coupled with an integrated enrollment system for primary care to enhance access, coordination, and continuity of healthcare services. This also involves fostering collaboration among healthcare professionals and expanding the presence of nursing care coordinators within primary care settings. These measures enhance community-level healthcare services and ensure the preparedness of community health systems for future crises.

RECOMMENDATION 7C

Promote the harmonized use, sharing, and evaluation of medical technology and data

Medical data and technology facilitate the optimization of healthcare delivery and innovation. This recommendation encourages expanded information and data sharing among government institutions and the development of a robust framework for evaluating the use of data and technology to ensure they are fit for purpose and secure.

RECOMMENDATION 7D

Establish a cross-institutional "control tower" for damage mitigation and prevention

Recognizing that damage is preventable, the Korean health system should establish a control tower dedicated to overall damage prevention and management. This control tower should integrate institutions that manage and utilize damage-related indicators and apply a cooperative or multisectoral governance approach to effectively address the multifaceted nature of risk factors.

CASE STUDY 2

Collaborative governance for pandemic response

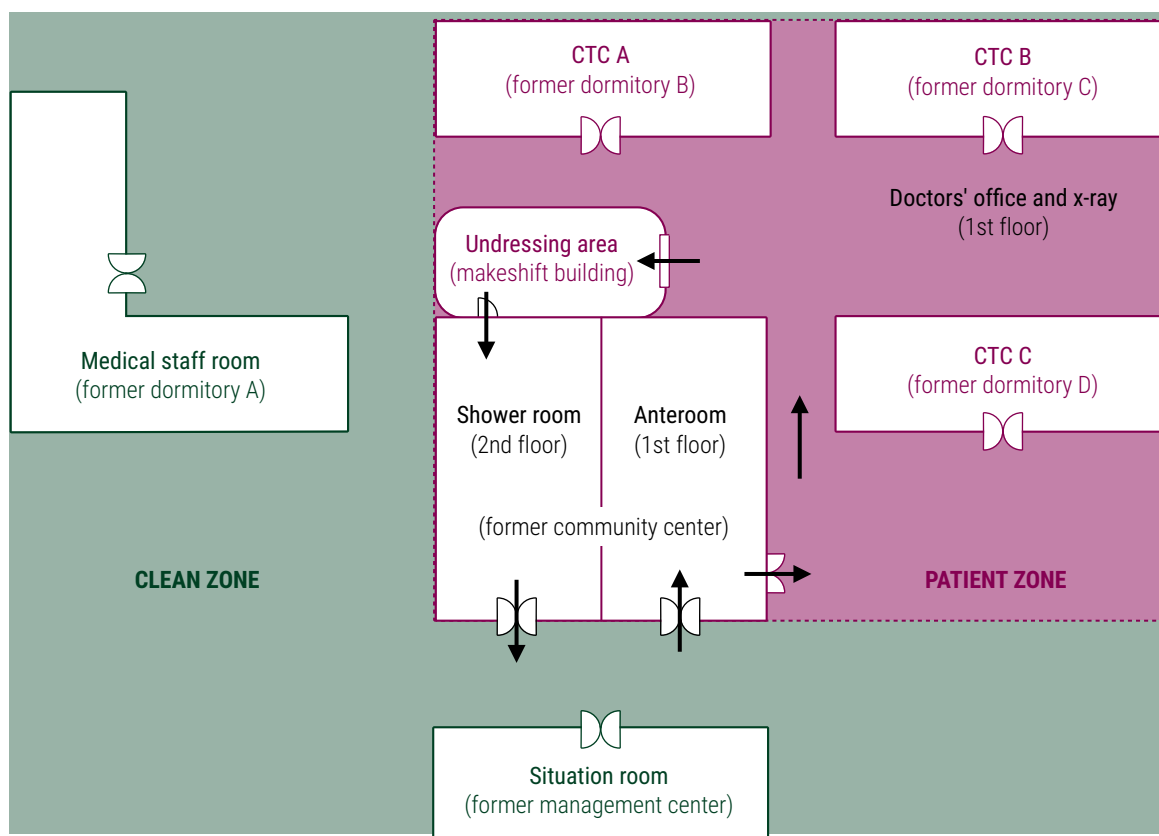


Collaborative governance for pandemic response: The Community Residential Treatment Center program

Following the MERS outbreak and amid the COVID-19 pandemic, changes in disaster response governance and the development of crisis communication strategies facilitated a prompt response to the COVID-19 pandemic. The MOHW assumed control over the Central Accident Response Headquarters, which is a unit activated during national emergencies to establish crisis management measures. The KDCA, transformed in 2020 from the Korea Centers for Disease Control and Prevention, now manages the Central Defense and Safety Countermeasure Headquarters (CDSC HQ), which is responsible for natural disaster prevention, response, and recovery. Decisions within these crisis headquarters involve collaborative discussions among experts without hierarchical imposition, greatly expediting the adoption of novel approaches.

Spearheaded by the CDSC HQ in March 2020, the Community Residential Treatment Center (CTC) program is a noteworthy example of collaboration among the central government, local governments, public institutions, and professional associations. The CTCs were independent buildings that housed patients with mild or asymptomatic COVID-19 who required isolation and monitoring but not hospitalization (for an example of how such a center was operated and managed, see Sun-Young Lee et al. (2020)).¹¹⁹ These dormitory-style centers (Figures 19 and 20) enabled the isolation and treatment of patients outside hospitals, minimizing the risk of viral spread in both healthcare settings and communities and conserving medical resources in hospitals for patients with moderate or severe symptoms. Patients stayed in these CTCs until they either tested negative for COVID-19 or developed worsening symptoms requiring transfer to a hospital.

Figure 19: Floor plan of Gyeongbuk-Daegu 7 CTC



Note: Arrows indicate the movement direction of healthcare providers. CTC is community treatment center.

Source: Peong Gang Park et al., "Out-of-Hospital Cohort Treatment of Coronavirus Disease 2019 Patients with Mild Symptoms in Korea: an Experience from a Single Community Treatment Center," *Journal of Korean Medical Science* 35, no. 13 (April 2020): 3.

Figure 20: Medical staff at Dongho Residential Treatment Center in eastern Seoul monitoring patients with COVID-19



Source: Hwan-hee Eo and Ji-Eun Seo, "Biggest center for mild Covid cases wraps up its work," *Korea JoongAng Daily*, May 4, 2022, <https://koreajoongangdaily.joins.com/2022/05/04/national/socialAffairs/Korea-Covid19-residential-treatment-center/20220504050004245.html>.

The MOHW and affiliated institutions took responsibility for the overall operation of the treatment centers, including providing and managing labor and operational expenses. Local governments were actively involved in planning the centers' operations, obtaining consent from residents, and deploying support personnel within the facilities. The Ministry of the Interior and Safety, in coordination with the Fire Administration, led patient transportation, and the Ministry of Environment managed waste disposal. Soldiers dispatched by the Ministry of National Defense distributed food to treatment center residents, and military officers in healthcare roles oversaw patient treatment. The National Police Agency deployed police officers to maintain internal order and external security. Local partner hospitals played a crucial role in providing comprehensive treatment for residents, and professional associations representing doctors, nurses, and hospitals facilitated effective communication and collaboration between experts and the centers.

Although the implementation of CTCs was crucial for keeping South Korea's COVID-19 fatality rate low, especially early in the pandemic, certain challenges and incompetencies arose during the operation of the centers. The centers prioritized safety, resulting in suboptimal operational efficiency. The centers also lacked tailored guidance for foreign individuals living in the centers. The centers also faced challenges in accommodating individual patients' religious dietary restrictions. Nevertheless, the overall success of the CTC initiative offers valuable lessons for handling future healthcare crises, both in terms of surge capacity management and collaborative governance in a crisis.

Reflections and conclusions



The Korean health system has many strengths, and the COVID-19 pandemic highlighted some important lessons that can be shared globally. First, the prompt and consistent communication system enabled by the KDCA redesigned disaster response governance and established a crisis communication strategy based on previous health crises, such as MERS. Second, policy flexibility is required as a crisis evolves. Despite prompt and efficient top-down decision-making, the Korean health system needs stronger governance at all levels to enable this flexibility through the absorption, adaptation, and transformation phases of a disaster. Third, Korea's single-payer health system meant that the government could mobilize NHI funds, being able to quickly make decisions and focus resources to cover vaccination, testing, and treatment. However, the current structure that centers health policies on the NHI is far from sustainable, necessitating increased governmental support. Finally, increased public-private cooperation and coordination is required in the use of medical resources.

Critical gaps in the health system

Despite its strengths, the Korean health system has critical gaps that cut across the seven domains. First, its financial sustainability is under threat due to a rapidly aging population, leading to an increased prevalence of NCDs and chronic diseases requiring long-term and community-based primary care (Domains 1 and 5). As the working-age population shrinks due to low birth rates, Korea is already experiencing workforce shortages in healthcare and public health (Domain 3) and a shrinking tax base that serves as the foundation of NHI's finances (Domain 6).

Second, these demographic changes are incompatible with Korea's current health system centered on acute care. Patients requiring rehabilitation are placed in LTC hospitals, which do not provide appropriate care or value for patients' money. This is a threat to both the health system's ability to sustainably provide quality care (Domain 5) and the health system's resilience to future shocks, such as another pandemic or health-related impacts of climate change (Domain 2).

Third, the private sector-dominated healthcare system and input-centered NHI compensation system create incentives for overtreatment, which jeopardize the sustainability of health system financing (Domain 6) and service delivery (Domain 5). Crucially, all these challenges relate to a significant gap in primary care infrastructure.

Finally, despite having an ICT-based administrative system, access to medical big data, and a high ICT dissemination rate, vulnerable groups will be more isolated due to an information gap and low digital literacy. As telehealth and digital quarantine measures (Domain 4) adopted during the emergency phase of the COVID-19 pandemic are retained in routine care, policies should be established to ensure their sustained implementation in future pandemics.

What's next: Future-proofing the health system through collaboration

This report outlines several recommendations for enhancing sustainability and resilience in the Korean health system. Of those, the following high-priority recommendations will prepare the system for future challenges – both known and unknown.

The COVID-19 pandemic revealed that the South Korean health system does not yet sufficiently protect disadvantaged groups. To improve health outcomes for the medically vulnerable, their diverse needs must be identified and addressed by improving digital and medical literacy (Domains 4 and 5) and expanding the foundations of community and primary care (Domain 1). Implementing robust data collection and information sharing systems (Domains 4 and 7 and Case Study 1) across government and healthcare facilities can ensure that at-risk populations are not left vulnerable in either routine or crisis conditions. Furthermore, investment is necessary not only in these measures but also in restructuring the financial management system (Domain 6) and investing in a well-trained workforce (Domain 3) across public health, healthcare, and digital infrastructure.

The challenges facing the Korean healthcare system transcend disciplines and sectors. To achieve Health in All Policies, collaboration and the removal of silos between government ministries, economic sectors, and stakeholders are needed. The residential treatment center model for isolating and treating patients with mild COVID-19 (Case Study 2) highlighted how innovative approaches to collaborating in a crisis can involve government actors and civil society from the local to the national level. Again, strengthening the base of primary care at the community level (Domains 1 and 5), with teams of doctors and nurses trained in preventive and LTC (Domain 3) collaborating with the public health and education sectors (Domain 1), will be essential as Korea's population experiences the increasing burden of chronic disease.

Finally, building social consensus on key values and reorganizing health governance will be continual processes, in both routine and crisis settings, requiring stakeholders working across all domains of the health system to form the foundation of an upgraded health system. The guidelines for crisis response should be developed based on prioritized values rather than simple action guidelines. Moreover, the societal and financial value of issues that may affect the national health system in the future, such as technological innovation and environmental disasters, should be evaluated. Various stakeholders should review value conflicts (e.g., efficiency vs. equity and timeliness vs. privacy), establish policy priorities, and discuss how current policies can reflect values that are currently irrelevant but must be considered in the future. As environmental changes, such as population aging, species extinction, technological advances, and environmental pollution, create value conflicts, central-level decision-making will have limitations. Therefore, a new model of participatory governance is needed in which experts, local governments, and citizens can have direct authority and responsibility.

Appendix



Key data on the healthcare workforce

Table A1: Number of physicians per 1,000 population

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Korea	2.0	2.1	2.2	2.2	2.2	2.3	2.4	2.4	2.5	2.5
OECD Avg.	3.2	3.2	3.3	3.3	3.3	3.4	3.4	3.5	3.6	3.6

Note: normally defined as "practicing" doctors providing direct care to patients.

Source: "Healthcare Resources : Physicians – Overall," OECD Statistics, accessed December 31, 2023, <https://stats.oecd.org/Index.aspx?QueryId=74634>.

Table A2: Number of nurses per 1,000 population

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Korea	4.7	4.8	5.2	5.6	5.9	6.8	7.0	7.2	7.9	8.4
OECD Avg.	7.7	7.9	7.8	7.9	7.7	8.0	7.9	8.1	8.2	8.3

Note: normally defined as "practicing" nurses providing direct health services to patients.

Source: "Health resources – Nurses – OECD Data," OECD Statistics, accessed December 31, 2023, <https://data.oecd.org/healthres/nurses.htm>.

Table A3: Average monthly wages for physicians and nurses compared to the general population (USD)

	Physician			Nurse			Average monthly wage income	Average monthly household income
	Overall	Private practitioner	Salaried physician	Overall	Specialized nurse	General nurse		
2019	14,888	19,984	11,175	2,906	4,133	2,861	3,765	4,378
2020	14,547	18,556	11,690	2,992	4,220	2,948	3,830	4,563

Notes:

1. The average monthly wages for physicians and nurses = annual average income divided by 12. Calculation of wages includes those in regular workforce and military physicians, while those for residents and interns are excluded.
2. Data for average monthly wage income and average monthly household income is provided quarterly. Values displayed in the table were calculated by averaging these quarterly data points.
3. KRW 1,321.60 = US\$1 (as of June 1, 2023).

Sources: MOHW and KIHASA, 보건의료 인력 실태조사 [Survey on the status of health and medical personnel] (2022), www.prism.go.kr/homepage/entire/researchDetail.do?researchId=1351000-202200328; "평균소득, 중위소득, 소득분포 [Average income, median income, income distribution; Labor Administration Statistics]," Korean Statistical Information Service (KOSIS), accessed June 1, 2023, https://kosis.kr/statHtml/statHtml.do?orgId=101&tblId=DT_1EP_2021&conn_path=I3; "가구당 월평균 가계수지 (도시,2인이상) 가계동향조사 [Average monthly household balance per household (urban, 2 or more people) Household Income and Expenditure Survey]," KOSIS, accessed June 10, 2024, https://kosis.kr/statHtml/statHtml.do?orgId=101&tblId=DT_1L9V021&conn_path=I3.

Table A4: Number of physicians and specialists

	2018	2019	2020
Total physicians	123,106	126,724	129,242
Specialists	97,271	100,161	103,379
Percentage specialists	79%	79%	80%

Source: NHIS and HIRA, National Health Insurance Statistics Yearbook (2022), www.hira.or.kr/bbsDummy.do?pgmid=HIRAJ030000007001&brdScnBltNo=4&brdBltNo=7&pageIndex=1&pageIndex2=1#none.

Key data on health service delivery

Table A5: Average length of stay for hospitals (days)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total	16.1	16.5	17.0	17.9	17.4	18.4	19.1	18.0	19.1	18.5
Curative	9.2	8.9	8.0	7.9	7.6	7.6	7.5	7.3	7.8	7.6

Source: "Healthcare Utilisation: Hospital aggregates," OECD Statistics, accessed December 31, 2023, <https://stats.oecd.org/Index.aspx?QueryId=30144>.

Table A6: Number of hospital beds per 1,000 population

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total	10.3	10.9	11.6	11.6	12.0	12.3	12.4	12.4	12.7	12.8
Public	1.2	1.2	1.2	1.2	1.3	1.3	1.2	1.2	1.2	1.2
Curative	7.0	7.1	7.3	7.0	7.1	7.2	7.1	7.1	7.2	7.3

Sources: "Healthcare Resources : Hospital beds by function of healthcare," OECD Statistics, accessed December 31, 2023, <https://stats.oecd.org/Index.aspx?QueryId=30183>; "Healthcare Resources: Hospital beds by sector," OECD Statistics, accessed December 31, 2023, <https://stats.oecd.org/Index.aspx?QueryId=114826>.

Table A7: Immunization (percentage of children immunized)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Diphtheria, Tetanus, Pertussis (DTP)	95.8	97.1	97.8	98.1	98.2	97.4	97.5	97.3	97.6	97.8
Measles	94.8	96.7	96.5	98.1	98.2	97.4	97.6	97.4	97.3	97.6
Hepatitis B	95.9	97.3	98.0	98.3	98.4	97.7	97.7	97.4	97.7	97.9

Source: "Healthcare Utilisation: Immunisation," OECD Statistics, accessed December 1, 2023, <https://stats.oecd.org/index.aspx?queryid=30145>.

Table A8: In-hospital 30-day mortality (age-sex standardized rate per 100 patients)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Hemorrhagic stroke	18.5	18.8	18.2	17.1	15.7	15.9	15.5	15.1	16.0	16.0
Ischemic stroke	4.5	4.5	4.3	4.2	4.0	3.7	3.3	3.5	3.7	3.3
Acute myocardial infarction (AMI)	8.7	8.6	8.3	8.3	9.9	9.8	9.2	8.6	8.7	8.4

Source: "Healthcare Utilisation: Immunisation," OECD Statistics, accessed December 31, 2023, <https://stats.oecd.org/index.aspx?queryid=30145>.

Table A9: Screening rate (% of women aged 50–69 screened)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Breast cancer	74.1	–	67.6	61.6	65.3	64.8	64.4	63.2	65.9	74.2

Note: based on survey data.

Source: "Healthcare Utilisation: Screening," OECD Statistics, accessed December 31, 2023, <https://stats.oecd.org/index.aspx?queryid=30159>.

Table A10: Age-standardized 5-year net survival for women with cancer aged 15 and over (%)

	2000–2004	2005–2009	2010–2014
Breast cancer	79.5	84.0	86.6
Cervical cancer	76.0	77.0	77.3

Source: "Healthcare Quality Indicators: Cancer Care," OECD Statistics, December 31, 2023, <https://stats.oecd.org/Index.aspx?QueryId=51882>.

Table A11. Total volume of drugs for systemic use (DDD per 1,000 population per day)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Antibiotics	24.5	24.6	25.3	25.3	26.2	25.9	23.8	22.9	17.4	15.6

Note: DDD = Defined daily dose, the assumed average maintenance dose per day for a drug used for its main indication in adults.

Source: "Healthcare Quality Indicators: Prescribing in primary care," OECD Statistics, December 31, 2023, <https://stats.oecd.org/index.aspx?queryid=69051>.

Table A12: Hospitalization rate (age-sex standardized rate per 100,000 population)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Asthma	111.1	99.7	96.2	96.4	91.4	85.6	79.0	68.5	40.6	31.4
Diabetes	319.9	306.5	293.0	279.4	274.8	260.1	251.2	237.3	201.3	196.1

Source: "Healthcare Quality Indicators: Primary Care," OECD Statistics, accessed December 31, 2023, <https://stats.oecd.org/Index.aspx?QueryId=30144>.

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