

2018년 사망원인통계

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Cause-of-death statistics in 2018 in the Republic of Korea

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This study aimed to present and analyze the causes of death in the Korean population in 2018 through an analysis of cause-of-death data from Statistics Korea, which are classified based on the International Statistical Classification of Diseases and Related Health Problems, 10th revision and the Korean Standard Classification of Diseases and Causes of Death. The total number of deaths was 298,820, reflecting an increase of 13,286 (4.7%) from 2017. The crude death rate was 582.5 per 100,000 population, which was an increase of 25.1 (4.5%) from 2017. The 10 leading causes of death, in order, were malignant neoplasms, heart diseases, pneumonia, cerebrovascular diseases, intentional self-harm, diabetes mellitus, liver diseases, chronic lower respiratory diseases, Alzheimer disease, and hypertensive diseases. Within the category of malignant neoplasms, the top five leading organs of involvement were the lung, liver, colon, stomach, and pancreas. Colon cancer was ranked as the third leading cause of death among malignant neoplasms. The most notable characteristics of the 2018 cause-of-death statistics were the ranking of pneumonia as the third leading cause of death, the inclusion of Alzheimer disease in the top 10 causes of death, and the exclusion of transport accidents from the 10 leading causes of death, which is a result that has not been seen since comparable statistics were first published in 1983. These changes reflect the increase of people over 65 years of age, who are vulnerable to infectious diseases.

Key Words: Alzheimer disease; Cause of death; Colonic neoplasms; Pneumonia; Republic of Korea

Introduction

In previous studies, cause-of-death statistics in

the Republic of Korea 2014 [1] and 2016 [2] were published. Therefore, this report aimed to present a follow-up on the same statistical data for 2018. In the 2018 data, topics of particular interest were pneumonia, cerebrovascular diseases, and cardiovascular diseases. Understanding the mortality statistics of Korea is essential because Korea is experiencing a rapid decrease in the number of births and a continuous increase in the number of deaths. The total fertility rate—defined as the total number

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Table 1. Codes for alcohol-related causes of death

Code	Death cause
E24.4	Alcohol induced Cushing syndrome
F10	Mental and behavioural disorders due to use of alcohol
G31.2	Degeneration of the nervous system due to alcohol
G62.1	Alcoholic polyneuropathy
G72.1	Alcoholic myopathy
I42.6	Alcoholic cardiomyopathy
K29.2	Alcoholic gastritis
K70	Alcoholic liver disease
K86.0	Alcohol-induced acute pancreatitis
R78.0	Finding of alcohol in blood
X45	Accidental poisoning by alcohol
X65	Accidental poisoning by and exposure to alcohol
Y15	Poisoning by and exposure to alcohol

of children that would be born to each woman if she were to live to the end of her childbearing years (from 15-year-old to 49-year-old) and give birth to children in alignment with the prevailing age-specific fertility rates [3]—has rapidly declined to 0.977, and the number of births was 326,800 in 2018 [4]. It is anticipated that the change in the net natural number of the population will reach 0% in 2020 or 2021, after which the total population of Korea will steadily decrease.

Therefore, the aims of this article are the same as those of the previous report on statistics from 2014: “Examining the corresponding changes in the causes of death in the Korean population may provide some insights regarding how to cope with issues of public health and welfare in developing countries as well as in other Organization for Economic Cooperation and Development countries” [1]. We focused on the following items: the number of deaths and the crude death rate, the number of deaths and death rates by age and sex, life expectancy, trends in death rates by major causes of death, and alcohol-related causes of death.

Methods

The data collection and analysis methods were the same as those of the previous study on cause-of-death statistics from 2016 [2]. Data were obtained from death certificates issued in 2018 for Korean people who had resided in the Republic of Korea [5]. The mid-year population numbers used to calculate death rates originated from the resident registration population of the Republic of Korea. The causes of death were classified as recommended by the World Health Organization [6]. Furthermore, to generate a more accurate classification of the underlying cause of death, 22 types of administrative data were collected and linked to death certificates using the same method as in our study of cause-of-death statistics from 2016 [2]. The causes of death were classified as recommended by the World Health Organization [6]. The Korean Standard Classification of Diseases and Causes of Death (KCD-7) was also used, as this system reflects an adaptation of the International Statistical Classification of Diseases and Related Health Problems, 10th revision (ICD-10) to fit circumstances in Korea [7]. More specifically, the KCD-7 contains specific codes and rare disease codes that reflect the health care environment in Korea. For example, other specified arthropod-borne viral fevers are classified as A93.8 in the ICD-10, but are specified as A93.80 (severe fever with thrombocytopenia syndrome, SFTS) and A93.88 (other specified arthropod-borne viral fevers) in the KCD-7. To generate the ranked list of causes of death, the same list of 56 causes of death was used as in the previous report on causes of death from 2016 [2]. The codes for alcohol-related causes of death are presented in Table 1.

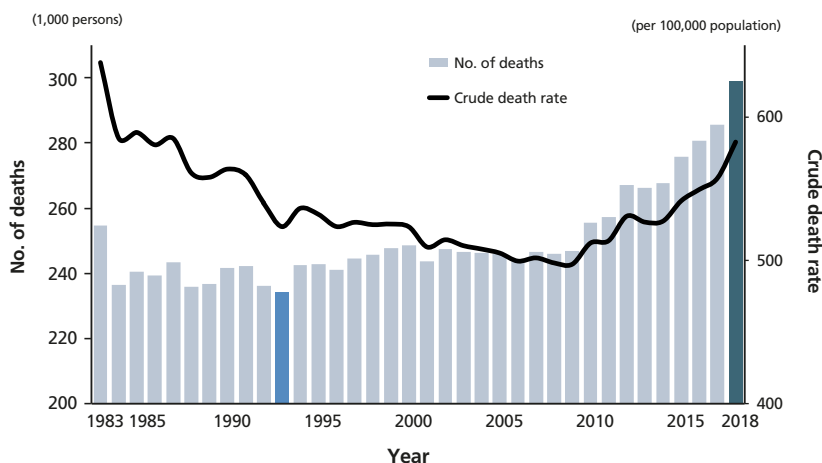


Figure 1. The number of deaths and crude death rate from 1983 to 2018 in Korea.

Table 2. The number of deaths and mortality rate (1983–2018)

Year	No. of deaths (person)			Mortality rate (per 100,000 population)			Sex ratio (male: female)	Daily no. of deaths	
	Total	Male	Female	Total	Male	Female			
1983	254,563	148,101	106,462	637.8	735.8	538.2	1.37	697	
1985	240,418	140,671	99,747	589.2	683.7	493.1	1.39	659	
1990	241,616	138,730	102,886	563.6	643.2	483.0	1.33	662	
1995	242,838	137,059	105,779	532.1	597.8	465.8	1.28	665	
2000	248,740	137,789	110,951	523.3	577.4	468.7	1.23	680	
2005	245,874	135,317	110,557	505.1	554.4	455.5	1.22	674	
2010	255,405	142,358	113,047	512.0	570.0	454.0	1.26	700	
2011	257,396	143,250	114,146	513.6	571.1	456.0	1.25	705	
2012	267,221	147,372	119,849	530.8	585.1	476.4	1.23	730	
2013	266,257	146,599	119,658	526.6	579.8	473.4	1.22	729	
2014	267,692	147,321	120,371	527.3	580.6	474.1	1.22	733	
2015	275,895	150,449	125,446	541.5	591.0	492.1	1.20	756	
2016	280,827	152,529	128,298	549.4	597.5	501.5	1.19	767	
2017	285,534	154,328	131,206	557.3	603.4	511.4	1.18	782	
2018	298,820	161,187	137,633	582.5	629.6	535.6	1.18	819	
From 2017	Change	13,286	6,859	6,427	25.1	26.2	24.1	-	-
	Change rate	4.7	4.4	4.9	4.5	4.3	4.7	-	-

Results

1. Number of deaths and crude death rate

In 2018, there were 298,820 deaths, reflecting an increase of 13,286 deaths (4.7%) from 2017. This was

the highest figure since comparable statistics were first published in 1983. The number of deaths in males was 161,187, which was an increase of 6,859 (4.4%) from 2017. The number of deaths in females was 137,633, which was an increase of 6,427 (4.9%) from 2017. The average number of deaths per day was 819, which was 36 persons more than in 2017 (Figure 1, Table 2, Suppls. 1,2).

The crude death rate (the number of deaths per 100,000 population) was 582.5, corresponding to an increase of 25.1 (4.5%) from 2017. In 2018, the crude death rate was the highest figure yet recorded, after the rate of 561.0 deaths per 100,000 population in 1988, whereas the lowest figure was 497.3 in 2009. The crude death rate for men was 629.6, which was an increase of 26.2 (4.3%) from 2017. The crude death rate for women was 535.6, reflecting an increase of 24.1 (4.7%) from 2017. The crude death rate of men was 1.18 times higher than that of women, which is a similar proportion to that from 2017. The age-standardized death rate, which reflects differences in age distribution, was 322.6 in 2018, corresponding to a decrease of 1.7 from 2017.

2. Life expectancy

Life expectancy at birth in 2018 was 82.7 years,

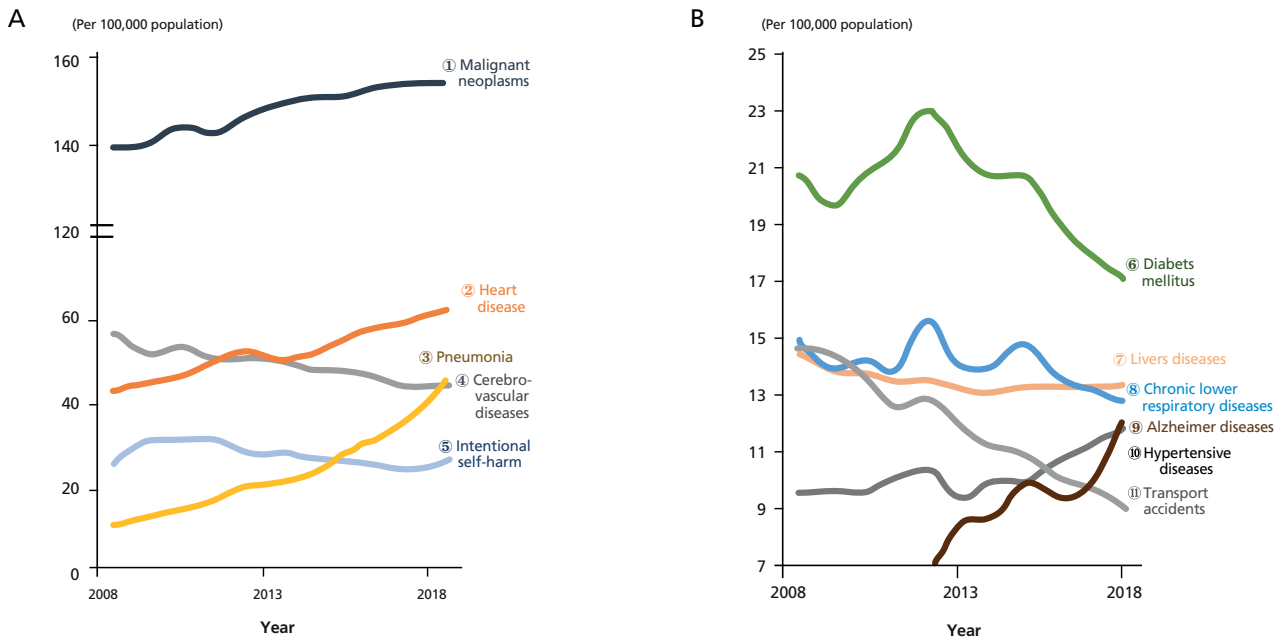


Figure 2. Trends in the leading causes of death from 2008 to 2018. (A) First five top-ranking causes and (B) next six top-ranking causes of death.

which was equal to that of 2017 (82.7) and 3.1 years longer than that of 2008. The life expectancy at birth for males in 2018 was 79.7 years, and that of females was 85.7 years, matching the corresponding values of 79.7 years for males and 85.7 for females in 2017. In 2018, the sex gap in life expectancy at birth was 6.0 years. The remaining life expectancy at age 40 was 40.8 years for males and 46.5 years for females, and the remaining life expectancy at age 60 was 22.8 years for males and 27.5 years for females.

3. Trends in death rates by major causes of death

1) Leading causes of death

By rank, the 10 leading causes of death in 2018 were malignant neoplasms (cancer), heart diseases, pneumonia, cerebrovascular diseases, intentional self-harm, diabetes mellitus, liver diseases, chronic lower respiratory diseases, Alzheimer disease, and hypertensive diseases (Figures 2). The 10 leading causes of death in 2018 accounted for 68.8% of all deaths,

Pneumonia rose from fourth in 2017 to third in 2018. Pneumonia has steadily risen from 10th place in 2004. The rank of Alzheimer disease rose from 11th in 2017 to ninth in 2018, marking the first time that Alzheimer disease was included in the 10 leading causes of death. Among the 10 leading causes of death, the death rates for cancer, heart diseases, pneumonia, and Alzheimer disease have steadily increased, whereas those for cerebrovascular diseases and diabetes mellitus have decreased (Figure 2, Suppls 3, 4).

The 10 leading causes of death in males were as follows, in order: malignant neoplasms, heart diseases, pneumonia, cerebrovascular diseases, intentional self-harm, liver diseases, diabetes mellitus, chronic lower respiratory diseases, transport accidents, and sepsis. The 10 major causes of death in females, in order, were: malignant neoplasms, heart diseases, cerebrovascular diseases, pneumonia, Alzheimer’s disease, diabetes mellitus, hypertensive diseases, intentional self-harm, sepsis, and chronic

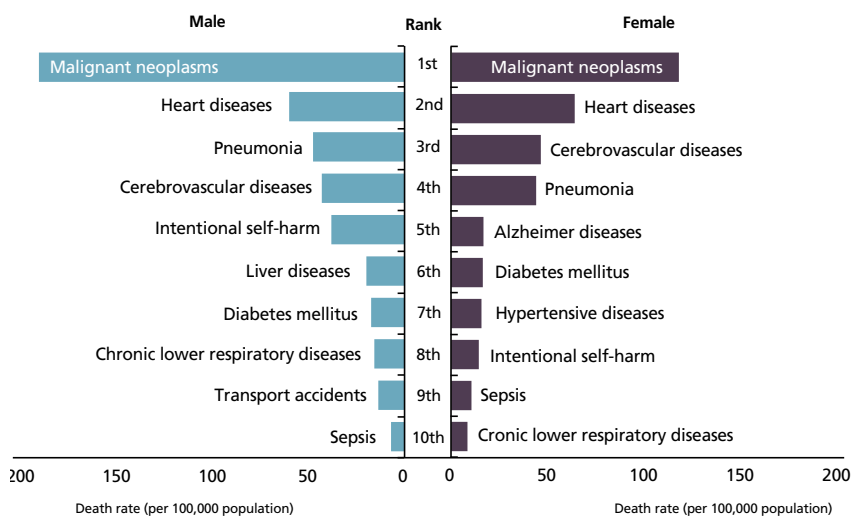


Figure 3. Leading causes of death by sex in 2018.

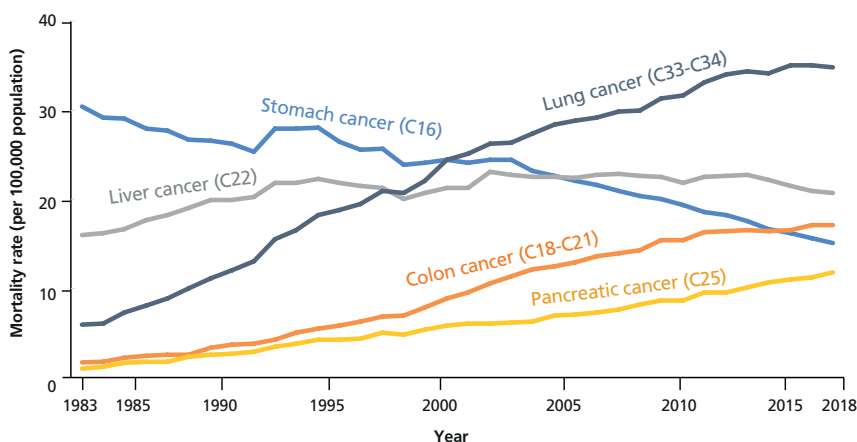


Figure 4. Trends in the mortality rate due to major cancers from 1983 to 2018.

lower respiratory diseases (Figure 3). The death rate of females for malignant neoplasms was 1.6 times higher than that of males in 2018. In males, the rank of pneumonia rose from fourth in 2017 to third in 2018, while in females, the rank of Alzheimer disease rose from seventh in 2017 to fifth in 2018.

The top cause of death in the age groups of 10–19, 20–29, and 30–39 was intentional self-harm (suicide). In the age groups of 40–49 and over, the top cause of death was malignant neoplasms. Intentional self-harm was the second leading cause of

death in the age groups of 40–49 and 50–59.

2) Mortality due to malignant neoplasms

In 2018, malignant neoplasms accounted for 26.5% of all deaths. The death rate due to malignant neoplasms was 154.3 in 2018, rising by 0.4 (0.2%) from 2017. The top five leading causes of death due to malignant neoplasms were lung cancer (34.8), liver cancer (20.7), colon cancer (17.1), stomach cancer (15.1), and pancreatic cancer (11.8). There were decreases in the death rates from stomach cancer (–3.7%), breast cancer (–1.9%), and liver cancer (–1.2%), while increases were observed in the death rates from prostate cancer (9.4%) and pancreatic cancer (4.2%) (Figure 4). The mortality rate due to malignant neoplasms was 191.0 for males and 117.7 for females. The death rate for

males was 1.6 times higher than that of females. The top causes of death from malignant neoplasms for males were lung cancer (51.5), liver cancer (30.4), and stomach cancer (19.9), and those for females were lung cancer (18.1), colon cancer (15.0), and pancreatic cancer (11.1). The sex ratio of deaths due to malignant neoplasms was 10.9 for esophageal cancer, 2.8 for lung cancer, and 2.8 for liver cancer. The death rate due to malignant neoplasms for males in 2018 decreased by 0.1 (–0.0%) compared to 2017, while there was an increase of 0.8 (0.7%) among

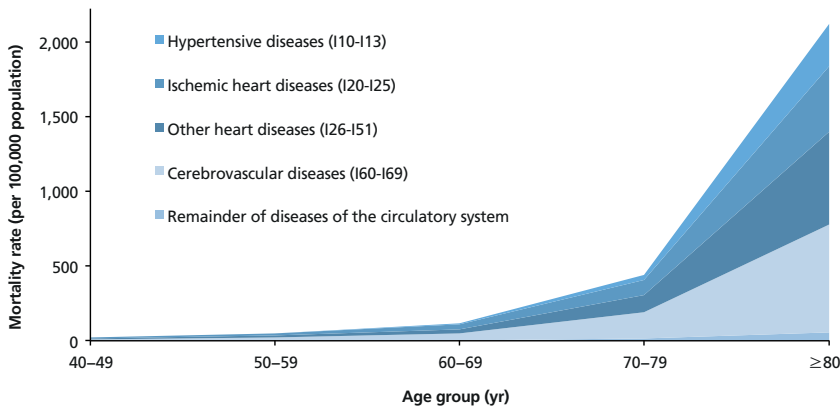


Figure 5. Mortality rate due to diseases of the circulatory system by age group in 2018.

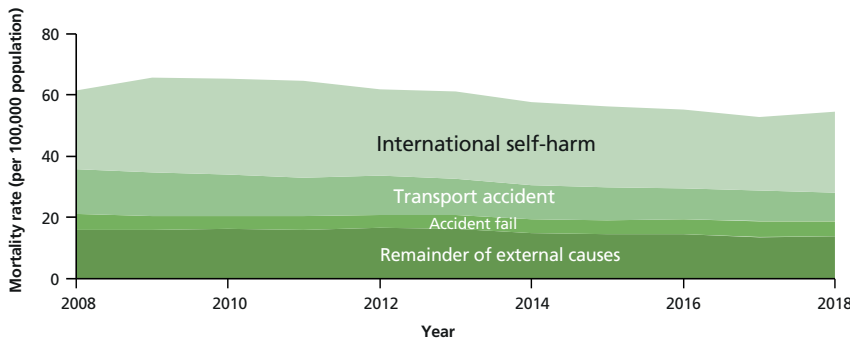


Figure 6. Mortality rate due to external causes of death from 2008 to 2018.

females. Of malignant neoplasms, the top cause of death for the 30–39 age group was stomach cancer, liver cancer for the 40–59 age group, and lung cancer for the 60 and over age group. The death rates for lung cancer, colon cancer, and pancreatic cancer have increased steadily, whereas the death rate for stomach cancer has decreased.

3) Mortality due to diseases of the circulatory system

The death rate due to diseases of the circulatory system was 122.7 in 2018, which primarily consisted of 62.4 for heart diseases, 44.7 for cerebrovascular diseases, and 11.8 for hypertensive diseases. The death rates due to hypertensive diseases (4.9%), cerebrovascular diseases (3.6%), and heart diseases (0.7%) increased compared to the previous year.

The death rate due to circulatory system diseases increased with age (Figure 5). The category of “other” heart diseases, such as endocarditis, myocarditis, or heart failure, accounted for more deaths than ischemic heart disease in people 70 years and over, while ischemic heart disease was the most common circulatory system-related cause of death in the age groups from 40 to 69 years.

4) Mortality due to external causes of death

In 2018, external causes of death accounted for 9.4% of all deaths, which was a decrease of 0.1%p (9.5%) from 2017. The death rate due to external causes of death was 54.7, which was an

increase of 1.7 (3.1%) from 2017 (Figure 6). The top three external causes of death were intentional self-harm (26.6 deaths per 100,000 population), transport accidents (9.1), and accidental falls (5.2). Compared to the previous year, there were decreases in the death rates from transport accidents (–7.2%), accidental drowning (–4.9%), and assault (–4.5%), whereas increases were observed in the death rates from intentional self-harm (9.5%) and accidental poisoning (4.4%). The male-to-female ratio of external causes of death was 3.5 for accidental drowning, 2.7 for transport accidents, and 2.6 for intentional self-harm.

5) Alcohol-induced mortality

The number of alcohol-induced deaths was

Table 3. Alcohol-induced deaths and death rates by age and sex in 2008, 2017, and 2018

		No. of deaths (person)	Death rate (per 100,000 population)								
			Total	20–29	30–39	40–49	50–59	60–69	70–79	≥80	
Total	2008	4,643	9.4	0.3	3.1	16.3	27.2	21.4	17.9	10.1	
	2017	4,809	9.4	0.3	2.7	11.8	22.8	19.1	14.8	9.7	
	2018	4,910	9.6	0.3	2.5	11.7	22.2	20.9	14.1	10.1	
	From 2017	Change	101	0.2	-0.0	-0.1	-0.1	-0.7	1.8	-0.7	0.4
	Change rate	2.1	2.0	-5.5	-5.4	-0.5	-2.9	9.2	-4.7	4.5	
Male	2008	4,243	17.1	0.4	4.9	29.2	50.6	42.9	40.4	29.1	
	2017	4,207	16.4	0.3	3.5	18.7	40.9	36.3	31.1	25.5	
	2018	4,233	16.5	0.3	2.9	17.9	39.3	39.1	29.5	26.6	
	From 2017	Change	26	0.1	0.0	-0.6	-0.8	-1.6	2.8	-1.6	1.1
	Change rate	0.6	0.5	8.6	-17.7	-4.4	-3.9	7.8	-5.2	4.2	
Female	2008	400	1.6	0.2	1.3	2.9	3.6	2.3	3.3	2.3	
	2017	602	2.3	0.3	1.8	4.7	4.4	2.8	2.2	2.4	
	2018	677	2.6	0.2	2.2	5.4	4.8	3.4	1.9	2.3	
	From 2017	Change	75	0.3	-0.1	0.3	0.7	0.4	0.7	-0.2	-0.1
	Change rate	12.5	12.3	-22.6	18.9	14.6	8.3	23.4	-10.2	-2.3	
Sex ratio (male:female)	2008	10.6	10.6	2.1	3.7	10.2	13.9	18.5	12.3	12.5	
	2017	7.0	7.0	1.1	1.9	4.0	9.2	13.0	14.4	10.7	
	2018	6.3	6.3	1.5	1.3	3.3	8.2	11.3	15.2	11.4	

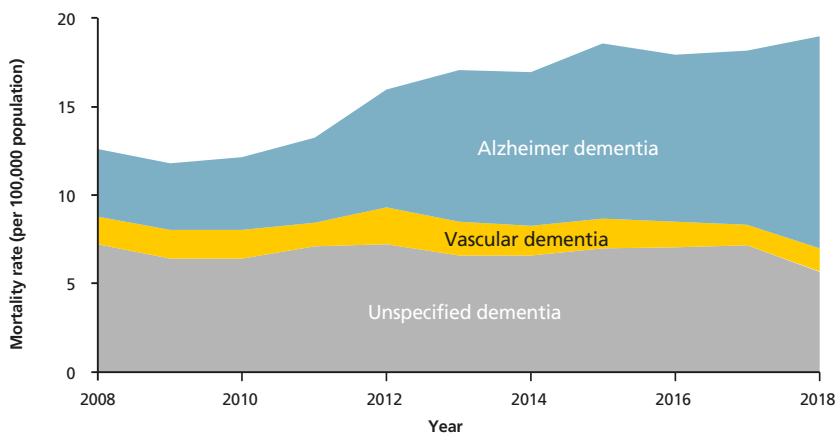


Figure 7. Mortality rate due to dementia-related death from 2008 to 2018.

4,910 in 2018, rising by 101 (2.1%) from 2017. The average number of alcohol-induced deaths per day was 13.5 persons. The alcohol-induced death rate was 9.6, which was an increase of 0.2 (2.0%) from 2017. The alcohol-induced death rate for males was 16.5, rising by 0.1 (0.5%) from 2017, while that for females was 2.6, reflecting an increase of 0.3 (12.3%)

from 2017. The alcohol-induced death rate of males was 6.3 times higher than that of females. The alcohol-induced death rate rapidly increased starting at 30 years of age, peaked in the 50–59 age group, and then declined (Table 3).

6) Dementia-related mortality

In 2018, a total of 9,739 persons died of dementia-related causes, reflecting an increase of 448 (4.8%) from 2017 (Figure

7). The death rate for dementia was 19.0, of which the highest proportion corresponded to Alzheimer disease, at 12.0 per 100,000 population, followed by unspecified dementia (5.7) and vascular dementia (1.3). For dementia, the death rate of females was 2.3 times higher than that of males. The dementia-related death rate among men increased by 10.3%

Table 4. Dementia-related deaths and death rates by age and sex in 2008, 2017, and 2018

		No. of deaths (person)	Death rate (per 100,000 population)				
			Total	Alzheimer dementia	Vascular dementia	Unspecified dementia	
Total	2008	6,226	12.6	3.8	1.6	7.2	
	2017	9,291	18.1	9.8	1.2	7.1	
	2018	9,739	19.0	12.0	1.3	5.7	
	From 2017	Change	448	0.8	2.2	0.1	-1.5
	Change rate	4.8	4.7	22.5	8.2	-20.4	
Male	2008	1,913	7.7	2.4	1.1	4.3	
	2017	2,699	10.6	5.3	1.0	4.2	
	2018	2,980	11.6	6.9	1.0	3.7	
	From 2017	Change	281	1.1	1.6	0.0	-0.5
	Change rate	10.4	10.3	30.6	0.7	-12.8	
Female	2008	4,313	17.5	5.3	2.0	10.2	
	2017	6,592	25.7	14.3	1.4	10.0	
	2018	6,759	26.3	17.1	1.6	7.7	
	From 2017	Change	167	0.6	2.8	0.2	-2.4
	Change rate	2.5	2.4	19.5	13.6	-23.6	
Sex ratio (male:	2008	0.4	0.4	0.4	0.5	0.4	
	2017	0.4	0.4	0.4	0.7	0.4	
	2018	0.4	0.4	0.4	0.6	0.5	

compared to 2017, and that of women increased by 2.4% compared to 2017 (Table 4).

Discussion

1. Number of deaths, crude death rate, and life expectancy

The total number of deaths (298,820) in 2018 was the highest value recorded since comparable statistics were first published in 1983 (Figure 1). The year-by-year increase in total deaths may have occurred because of the increase in the number of aged people. Korea is expected to become a super-aged society in 2026, when the proportion of people aged over 65 years is projected to become more than 20% of the entire population [4]. Rapid population aging will result in a steady increase in the number of deaths,

In accordance with the increase in the life expectancy, the number of the aged population has increased in Korea from 6,408,951 in 2015 to 6,608,816 in 2016, 6,889,816 in 2017, and 7,139,506 in 2018. In the population pyramid, the proportion of the population younger than 30 years old has continuously decreased, whereas the proportion of aged people has increased. Because of the rapid decrease in the total fertility rate, which was 1.05 in 2017 and 0.98 in 2018, this phenomenon will be accelerated. These trends can also be deduced from recent changes in the number of total births and deaths and the

birth and death rates. The total number of births was 406,243 in 2016, 357,771 in 2017, and 326,822 in 2018, whereas the total number of deaths was 280,872 in 2016, 285,534 in 2017, and 298,820 in 2018. Therefore, the natural population increase was 125,371 in 2016, 72,237 in 2017, and 28,002 in 2018. It can be projected that a 0% natural increase in the population may occur in 2020 or 2021 in Republic of Korea.

The age-standardized death rate in 2018 was 322.7, which was 1.7 less than the corresponding rate from 2017. Aged people accounted for a large proportion of the deaths. Life expectancy in 2018 was nearly equal to that in 2017, which means that the tendency for life expectancy to increase year by year halted in 2018. In fact, 2018 is the first year that life expectancy did not increase since 1970. Therefore, follow-up research should

investigate possible changes in the life expectancy in 2019 and 2020. Furthermore, the gap in life expectancy between males and females did not change appreciably, from 6.1 years in 2016 to 6.0 years in 2018.

2. Neoplasms

The steady increase of deaths caused by lung cancer is believed to originate from the high frequency of habitual smoking among older men. The dramatic decrease of deaths by stomach cancer is expected to be maintained steadily due to changes in eating habits and the early detection of stomach cancer through regular screening with gastroduodenal endoscopy. This screening program, which is supported by the Korean government, might have contributed to the decrease in deaths from stomach cancer. In contrast, the number of deaths due to colon cancer and pancreatic cancer has steadily increased. Colon cancer ranked third among cancers as a cause of death. This trend reflects the adoption of Western-style dietary habits, characterized by increased meat consumption and decreased vegetable consumption. Lung cancer remained the leading cause of death among malignant neoplasms. The above trends may be expected to continue in the near future in Korea (Figure 4). The high male-to-female ratio of malignant neoplasms—10.9 for esophageal cancer, 2.8 for lung cancer, and 2.8 for liver cancer—primarily originates from differences in lifestyle factors such as smoking and alcohol drinking between men and women. For instance, the smoking rate of men aged 19 and over was 37.7%, while that of women was 3.5% [8]. Therefore, to prevent the above three malignant neoplasms, men should take steps to adopt a healthier lifestyle.

3. Reduced cerebrovascular disease and continued growth of cardiovascular disease as leading causes of death

Westernized living habits, intense working conditions, stress, growth in the elderly population, smoking, and excessive drinking are risk factors expected to contribute to the increased frequency of chronic diseases. Deaths from cerebrovascular diseases continue to decrease, whereas deaths from heart disease are increasing in frequency. With the steady decrease in deaths from cerebrovascular diseases, it is necessary to determine whether any measures can be taken to improve the early detection and early treatment of related cardiovascular diseases. Further research is needed on the causes of the increase in deaths due to cardiovascular disease. Nonetheless, it is known that improvements in the level of treatment received by patients with high blood pressure are a reason for the decrease in deaths from cerebrovascular disease [9]. In Japan, cerebrovascular diseases have also diminished as a cause of death, while deaths from heart disease have increased [10].

4. Pneumonia as the third leading cause of death

In 2018, pneumonia became the third leading cause of death overall (third in men and fourth in women). According to the future population estimates released in March 2018 by Statistics Korea, the proportion of people aged 65 or older is expected to increase from 13.8% in 2017 to 46.5% in 2067 [11]. These estimates also anticipate a rapid increase in the elderly population as life expectancy continues to increase. Elderly people usually show lower immunity to pulmonary infections due to chronic diseases such as cancer and diabetes. This situation is projected to increase the budgetary burden of pneumonia prevention and treatment in the

future [12]. Half of pneumonia patients are aged 70 or older; furthermore, the death rate of pneumonia surges after the age of 75. This issue requires not only further analyses of infection sources and environmental vulnerabilities to pneumonia, but also a corresponding policy approach.

5. Surge of deaths due to dementia

The death rate for dementia increased from 18.1 in 2017 to 19.0 in 2018. The death rate of men from dementia was 11.6, while that of women was 26.3. This increase may have originated from the increased life expectancy in recent years and a higher frequency of dementia diagnoses in affected patients. Through governmental projects for dementia prevention, awareness of dementia as a disease entity has spread beyond physicians to encompass more members of the general public. The Korean government has done its best to promote the early diagnosis and treatment of this disease [13]. In 2018, Alzheimer disease became one of the top 10 causes of death, and its importance as a cause of death can be expected to increase steadily along with population aging.

6. Continuing decrease of deaths due to diabetes mellitus

The death rate for diabetes mellitus decreased from 17.9 in 2017 to 17.1 in 2018. This phenomenon can be explained by the appropriate care provided to diabetes patients and efforts made to promote early detection and control by regularly checking both fasting blood glucose levels and hemoglobin A1c levels. More active interventions by physicians will help further improve patients' quality of life and reduce the death rate due to diabetes [14].

7. Alcohol-induced mortality

In 2018, the sex gap in alcohol-induced mortality was 6.3 times, reflecting a decrease of 4.3 since 2008. This implies that alcohol-induced deaths are now a greater burden among women than was the case in the past.

Conclusion

The number of deaths of Korean people in 2018 was the highest since comparable statistics were first published in 1983. The number of deaths is expected to increase over time, concomitantly with population aging. Some other noteworthy findings of the data from 2018 were the continuing increase in the death rate of pneumonia, from 37.8 to 45.4 per 100,000 population, and Alzheimer disease, from 9.8 to 12.0. Pneumonia became the third leading cause of death, whereas transport accidents were not among the 10 leading causes of death for the first time since 1983. Alzheimer disease was the ninth leading cause of death, marking the first time that it was included in the top 10 causes of death. The number of deaths caused by this disease will continue to increase. The death rates of transport accidents and diabetes decreased, from 14.7 to 9.1 and from 17.9 to 17.1, respectively. Mortality caused by hypertensive diseases increased from 11.3 to 11.8; however, its ranking decreased from ninth to 10th. The increase in the death rate of intentional self-harm from 24.3 in 2017 to 26.6 in 2018 was a disappointing and painful result. The present findings might reflect changes in disease patterns, effective preventive strategies for cerebral stroke and diabetes mellitus by the

Korean government, and the lifestyle changes among the Korean people. The Korean government has continued to implement a variety of initiatives to manage chronic diseases. Ongoing efforts should be made to help people with hypertension and diabetes receive early diagnoses and appropriate treatment.

찾아보기말: 알츠하이머병; 사망원인; 대장암; 폐렴; 한국

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Conflict of Interest

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

Supplementary Materials

Supplementary materials are available from Harvard Dataverse: <https://doi.org/10.7910/DVN/VM7GTA>.

- Suppl. 1.** The number of deaths by cause (103 items), by sex, and by age (5-year age groups) in 2018
- Suppl. 2.** Mortality rates by cause (103 items), by sex, and by age (5-year age groups) in 2018
- Suppl. 3.** The number of deaths by cause (103 items) and by sex from 2008 to 2018
- Suppl. 4.** Mortality rates by cause (103 items) and by sex from 2008 to 2018

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Peer Reviewers' Commentary

This paper investigated the cause of death in South Korea in 2018 and analyzed temporal trend of the cause of death. The top 10 causes of death includes malignant neoplasms, heart diseases, pneumonia, cerebrovascular diseases, intentional self-harm, diabetes mellitus, liver diseases, chronic lower respiratory diseases, Alzheimer's disease, and hypertensive diseases. It is noteworthy that the number of deaths from pneumonia, Alzheimer's disease, and suicide increased, and that the risk of death from traffic accidents decreased. It is also remarkable that among the cancer specific death, the number of deaths from gastric and breast cancer decreased and the number of deaths from prostate and pancreatic cancer increased. A thorough analysis of the cause of death has a great influence on the decision of health care policy. Thus, much more research should be conducted.

[Editorial by Editorial Board]