

BMJ Open Descriptive epidemiology on the trends and sociodemographic risk factors of disease burden in years of life lost due to suicide in South Korea from 2000 to 2018

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ABSTRACT

Objectives In 2018, South Korea's suicide mortality rate was 26.59 deaths per 100 000 people; this figure is 2.2 times higher than that of the year 2000, during which 12.22 deaths per 100 000 people were ascribed to suicide. This study aims to observe the trend of disease burden in years of life lost (YLL) due to suicide from 2000 to 2018 in South Korea and investigate the related sociodemographic risk factors.

Design This quantitative research used secondary data—including claim data, cause of death statistics, life tables and census data—from national health insurance corporation and Statistics Korea. Based on the methodology of Korean National Burden of Disease study, this study used an incidence-based approach to measure YLL.

Results The total YLL due to suicide during the last two decades was 4 298 886 years; the average YLL per death was 18.65 years. The YLL rate per 100 000 people was 482 (male: 664, female: 300) in 2018, 1.7 times higher than the 387 (male 387, female 183) in 2000. Low education levels and non-marital status were shown to be related to the increase in YLL rate.

Conclusion These results show the increasing disease burden of suicide in South Korea and suggest the necessity of more in-depth research to analyse correlation and causation with sociodemographic risk factors.

INTRODUCTION

The Organisation for Economic Cooperation and Development (OECD) publishes an annual global age-standardised suicide rate (per 100 000 population) that discounts variations arising from differences in age structures across countries.¹ According to an analysis of OECD health statistics in 2019,¹ South Korea's suicide rate is 24.6 per 100 000 people, the highest among the OECD member countries that had an average suicide rate of 11.5 in 2017.

As South Korea has the highest OECD-standardised suicide rate, the Ministry of Health and Welfare in South Korea

Strengths and limitations of this study

- To our knowledge, this study is the first to measure disease burden relating to suicide in South Korea by using years of life lost (YLL) and to analyse the annual trends of YLL from 2000 to 2018.
- This study is descriptive epidemiology focusing on descriptive statistics of the entire South Korean population; therefore, further in-depth studies are needed to establish causation between YLL and sociodemographic risk factors.
- Despite its limitations, the Korean National Burden of Disease study is the most reliable method available to determine the level of Korea's burden of disease due to suicide by using a representative data source, compared with other countries.

established a continuous integrated national strategy for suicide prevention. The ministry developed various 5-year plans for suicide prevention: the first was implemented in the year 2004, the second—the 'Suicide Prevention Comprehensive Plan'—ran from 2009 to 2013, the third—'Life Love Plan'—for the period 2016 to 2020 and the fourth, the 'National Action Plan,' was implemented for preventing suicide for the period 2018–2022.²

Despite these efforts, data released by Statistics Korea³ show that, considering the rate from 1983, the suicide rate reached its peak of 31.7 deaths per 100 000 in 2011, after which it decreased to 24.3 per 100 000 in 2017. However, it increased again in 2018 to 26.6 per 100 000. These figures placed suicide fifth among the top ten causes of death in South Korea in 2018. Furthermore, among the exogenous causes of death—including transportation accidents (V01–V99), falls (W00–W19), drowning (W65–W74), exposure to smoke, fire and flames (X00–X09), and accidental poisoning by exposure to

noxious substances (X40–X49)—suicide ranked the highest in all age groups. The suicide rate was also higher among males than females.

In South Korea, suicide-related research has composed of national-led research and development studies, academic research by related medical facilities and organisations, and individual-level research. However, most studies have used traditional epidemiological indicators of suicide and death statistics or surveys. In addition, most studies have focused only on specific high-risk groups or certain risk factors; especially those related to mental health. This shows that to date, suicide-related research in Korea has been segmented and that a comprehensive viewpoint is required to evaluate the situation and establish effective policies.^{2,4}

Considering the above, it is necessary to conduct research to measure the actual burden of disease of suicide in South Korea as a comprehensive indicator and to investigate related sociodemographic risk factors. The summary measures of population health include disability-adjusted life-years (DALYs), an indicator for comprehensively measuring the health level of a population group. DALYs is calculated by the sum of years of life lost (YLLs) due to premature death and years lived with disability (YLDs). The disease burden due to suicide can be calculated by YLLs, which is the number of years that a person dies earlier than their normal life expectancy.⁵

Many global studies have measured the actual suicide disease burden using YLL or potential years of life lost (PYLL) as indicators.^{6–8} Countries like China and Iran have conducted representative studies that measured disease burden at a national level. In China, the average PYLL per 100 000 persons due to suicide was 167.62 (193.98 in rural males, 186.83 in rural females, 125.96 in urban males, 104.68 in urban females) between 2006 and 2010.⁷ Furthermore, in Iran, the number of deaths due to suicide from 2006 to 2015 was 35 297 and the total YLL during this 10-year period was 23.35 per 1000 persons (34.52 males and 13.61 females).⁸

In 2019, Naghavi performed a representative study that measured disease burden on a global level using estimates from the Global Burden of Disease (GBD) Study 2016 from 1990 to 2016.^{6,9} According to this study, the total number of deaths from suicide increased to 817 000 (6.7%) globally in 2016, compared with 1990. However, the age-standardised mortality rate from suicide decreased to 11.2 deaths per 100 000 (32.7%) and the age-standardised YLL was reduced to 458.4 per 100 000 (34.2%) in 2016, compared with 1990. The age-standardised mortality rate from suicide was higher among males in countries with a higher sociodemographic index numbers; however, there was a change in the age-standardised mortality rate of females, compared with males, in countries with lower sociodemographic indices.

On a global level, Naghavi's study does not directly suggest the value of a particular country; however, South Korea is mentioned often. The high rates of suicide mortality in South Korea influenced regional averages

among high-income Asian Pacific countries. The age-standardised suicide mortality rates were the highest among women in Lesotho, Uganda, Liberia and South Korea. Thus, measuring South Korea's actual disease burden due to suicide using YLL has become imperative. This study presents some of the detailed values from Naghavi's study in the discussion section.

To the best of our knowledge, this study is the first to measure disease burden relating to suicide using the YLL indicator in South Korea. This study, therefore, observes the tendency of disease burden (in YLL) due to suicide from 2000 to 2018 in South Korea. We also investigate the YLL rate and potential social inequality risk factors based on gender, age, education and marital status, and observe the trends.

MATERIALS AND METHODS

The GBD study and the Korean National Burden of Disease study

Since the 1990s, principal investigator Murray and the Institute for Health Metrics and Evaluation have been studying GBD at the University of Washington. The GBD study is a global, national and regional research programme on disease burden that comprehensively assesses mortality and disability related to diseases, injuries and other risk factors. To measure disease burden, the original GBD study's creators developed a single measurement: DALYs; this measure consists of the sum of YLL and the YLD due to premature death.^{10–13}

The Korean National Burden of Disease (KNBD) study's methodology was adapted for South Korea with reference to the GBD study and has been implemented since 2002. The KNBD study developed the disease classification, estimation of epidemiological parameters and relative weightings of disabilities.^{14–17} Based on the KNBD study, the present study's methodology uses YLL due to premature deaths (one component of the DALYs) to estimate the burden of disease due to suicide from 2000 to 2018 in South Korea. An incidence-based approach is used, as suicide is not a disease but is a concept of incidence due to premature death by an action.

Calculating YLL due to suicide

An important factor in measuring incidence-based YLL is calculating the gender-specific and age-specific mortality rates for each disease for a certain period by ensuring the accuracy of the number of deaths and the causes of death. Therefore, the number of study subjects is based on the total population by year. In addition, the number of deaths is based on the total number of deaths by year (table 1). The criteria for accuracy for the cause of death were considered as described next.

The mortality rate by age, gender and cause of death for each year was accurately calculated using the 2000–2018 statistical cause of death data that are based on all the death certificates issued in South Korea. Causes of death statistics were collected based on the Statistics Act, the Act

Table 1 Number of deaths and mortality rate due to suicide per 100 000 people in South Korea from 2000 to 2018 by gender

Years	No of deaths due to suicide			Mortality rate due to suicide (per 100 000 people)		
	Male	Female	Total	Male	Female	Total
2000	4069	1791	5860	16.90	7.49	12.22
2001	4414	1899	6313	18.40	7.97	13.20
2002	5757	2618	8375	23.61	10.81	17.23
2003	7305	3307	10612	29.87	13.61	21.77
2004	7721	3564	11285	31.51	14.63	23.09
2005	7879	3928	11807	31.65	15.86	23.78
2006	7039	3352	10391	28.17	13.48	20.84
2007	7585	4372	11957	30.21	17.50	23.87
2008	8119	4538	12657	31.83	17.87	24.86
2009	9809	5430	15239	38.27	21.27	29.78
2010	10245	5198	15443	39.81	20.26	30.05
2011	10780	5005	15785	41.72	19.41	30.57
2012	9567	4512	14079	36.87	17.41	27.14
2013	10010	4349	14360	38.44	16.70	27.57
2014	9676	4080	13756	37.50	15.81	26.65
2015	9503	3940	13443	36.72	15.20	25.95
2016	9219	3833	13052	36.11	14.98	25.54
2017	8890	3533	12423	34.76	13.77	24.25
2018	9840	3801	13641	38.43	14.79	26.59

Source: National health insurance sharing service: Claim data.

on the Registration of Family Relationships. Inaccurate causes of death were corrected by using data from other administrative agencies, such as the National Health Insurance Service (NHIS), National Cancer Center, National Forensic Service, National Police Agency, Ministry of National Defense and the Korea Coast Guard.

‘Garbage’ codes—such as cardiac arrest, respiratory arrest and ageing—were redistributed based on the distribution rate of the algorithm presented in the GBD 2010 to secure the feasibility of estimating mortality. Among the various indicators, a standard expected YLL was used to estimate YLL. We multiplied the number of deaths and the life expectancy presented by Statistics Korea and added up the measured values for all genders and ages. Finally, YLL was calculated by substituting the variable value and the age at the time of death in the function formula, with a 3% relaxation for time and age–weight. Incidence-based YLL was calculated by multiplying the number of deaths due to suicide (N) by the standard life expectancy at the age at which death occurred (L). Therefore, the basic formula for YLL is $N \times L$.^{18 19} The detailed calculation formula is as follows : $YLL = K C e^{r+a} + \beta 2 \{ e^{-r+\beta L+a-r+\beta L+a-1-e-r+\beta a-r+\beta a-1} \} + 1 - K r 1 - e^{-rL}$.²⁰ where, r=discount rate, β =age-specific weight parameter, K=use of age-specific weight (using age–weight, applied 1; not using age–weight, applied 0), C=constant, a=age at death, L=life expectancy at death.

Investigation of related sociodemographic risk factors for YLL due to suicide

Sociodemographic risk factors are considered to be important in many suicide-related studies. There is, therefore, a need to confirm whether there is a difference in the burden of disease due to suicide in relation to socio-demographic risk factors. This study uses cause of death statistics obtained from population parameters, focusing on descriptive statistics that expresses and summarises the characteristics of the collected data through sociodemographic risk factors such as gender, age, education level and marital status.

After calculating the number of YLL and the average YLL rate per 100 000 people from suicide, we adjusted these numbers by the number of people by gender–age group in a specific year. However, to calculate the gender–education level and gender–marital status-specific YLL rate per 100 000 people, we used additional census data. The census data from Statistics Korea provide statistics on the population and housing in six metropolitan cities and nine provinces nationwide at 5-year intervals. However, statistics on education level and marital status are provided only for those older than 15 years.²¹ As we did not obtain variables of education level and marital status by gender from the claims data, we estimated the rate of population in relation to education level and marital status in the census data and applied it to the

overall population, including those younger than 15 years of age. The YLL rate per 100 000 people from suicide for specific years was then divided by the derived population numbers by gender and education level (classified as 6 years of primary school, 3 years of middle school and 3 years of high school) and marital status (classified as never married, married, widowed and divorced).

Data collection and analysis

In this study, incidence-based YLLs were calculated based on claims data, cause of death statistics, life tables and census data. The NHIS manage the claims data of the entire Korean population and provides a research database to researchers who were approved by the national health information data request review committee and who paid the required fee.²² Researchers can access the claims data by using a statistical analysis tool at the 'Big Data Analysis Centre' where a PC that can read and analyse the claims data is installed.

Cause of death statistics were obtained through Micro-data Integrated Service via limited access and were linked to claims data. Like claims data, access to cause of death statistics is also a payable service that requires approval. The number of deaths caused by intentional suicide in the claims data and the cause of death statistics are defined by the diagnostic codes (X60–X84) of the sixth Korean Standard Classification of Diseases Act, which is based on the 10th revision of the International Classification of Diseases Act (ICD-10).^{23 24}

Furthermore, the life tables (https://kosis.kr/statHtml/statHtml.do?orgId=101&tblId=DT_1B42) and census data (https://gsis.kwdi.re.kr/statHtml/statHtml.do?orgId=338&tblId=DT_1IN0512) were obtained by Statistics Korea via open access. Data analyses were performed using SAS V.9.4 (SAS institutes).²⁵

As this study used public data from the NHIS that are deidentified, informed consent was not acquired.

Patient and public involvement

No patients or members of the public were involved in the design, conduct, or dissemination plan for this study.

RESULTS

The number of deaths due to suicide in South Korea increased by 2.7 times, from 5860 people in 2000 (4069 males and 1791 females) to 15 785 people in 2011 (10 780 males and 5005 females). In 2018, it decreased again to 13 641 people (9840 males and 3801 females; [table 1](#)). Therefore, the mortality rate due to suicide per 100 000 people increased by 2.5 times, from 12.22 (16.90 for males and 7.49 for females) per 100 000 people in 2000 to 30.57 (41.72 for males and 19.41 for females) per 100 000 people in 2011. It then declined again to 26.59 (38.43 for males and 14.79 for females) in 2018 ([table 1](#)). The mortality rate due to suicide per 100 000 people by gender showed a higher rate among males than females and generally tends to increase along with age ([table 2](#)).

The total YLL due to suicide from 2000 to 2018 was 4 298 886 years (2 843 243 for males and 1 455 643 for females) and the average YLL per death was 18.65 years (18.06 for males and 19.93 for females) in South Korea. The YLL due to suicide was 1 369 14 years (93 102 for males and 43 811 for females) in 2000; this number increased by 2.13 times to 2 923 311 years (1 801 171 for males and 1 122 140 for females) in 2009. However, it declined again to 2 471 34 years (1 700 53 for males and 770 81 for females) in 2018 ([table 3](#)). The average YLL rate per 100 000 people due to suicide increased by 2.3 times, from 285 (387 for males and 183 for females) in 2000 to 571 (703 for males and 439 for females) in 2009. It then declined to 482 (664 for males and 300 for females) in 2018. The gender ratio (male to female) of the average YLL rate per 100 000 people due to suicide was consistently 2:1 from 2012 to 2018; the YLL risk due to suicide was approximately twice as high among males than among females. Considering

Table 2 Mortality rate due to suicide per 100 000 South Korean people in 2000, 2011 and 2018 by gender and age

Year/age	Total	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80+	
Total	2000	13.6	0.1	3.8	11.1	15.1	18.8	22.1	25.7	38.8	51.0
	2011	31.7	0.0	5.5	24.3	30.5	34.0	41.2	50.1	84.4	116.9
	2018	26.6	0.0	5.8	17.6	27.5	31.5	33.4	32.9	48.9	69.8
Male	2000	18.8	0.1	4.2	14.1	20.7	27.8	35.6	40.6	61.8	88.3
	2011	43.3	0.0	6.2	28.2	38.7	47.7	61.5	78.3	143.1	209.2
	2018	38.5	0.0	5.7	21.5	36.4	45.4	51.4	53.0	83.2	138.5
Female	2000	8.3	0.1	3.3	8.0	9.1	9.4	8.9	13.8	25.7	36.4
	2011	20.1	0.0	4.8	20.0	22.0	19.8	20.7	24.4	43.6	79.6
	2018	14.8	0.0	5.9	13.2	18.3	17.3	15.1	13.6	22.0	37.3

The data in this table were taken from the deaths that occurred during the year; therefore, it differs slightly from the NHIS claim data. Source: Statistics Korea, cause of death statistics https://gsis.kwdi.re.kr/statHtml/statHtml.do?orgId=338&tblId=DT_LCB_0003&conn_path=l2. NHIS, National Health Insurance Service.

Table 3 The number of YLL and the average YLL rate (per 100 000 people) from suicide by gender in South Korea from 2000 to 2018

Years	No of YLL due to suicide	YLL rate due to suicide by gender (per 100 000 people)			Male to female YLL rate ratio	% of total YLL
		Male	Female	Average		
2000	136914	387	183	285	2.1	5.6
2001	139429	401	182	292	2.2	5.9
2002	163790	462	211	337	2.2	7.1
2003	203620	568	267	418	2.1	8.8
2004	204784	567	270	419	2.1	9.0
2005	220522	569	319	444	1.8	9.8
2006	187899	496	258	377	1.9	8.7
2007	226170	540	363	451	1.5	10.5
2008	243364	582	374	478	1.6	11.3
2009	292311	703	439	571	1.6	13.4
2010	283603	702	402	552	1.7	13.0
2011	289492	740	381	561	1.9	13.5
2012	255132	652	331	492	2.0	11.9
2013	260356	676	323	500	2.1	12.3
2014	252568	673	306	489	2.2	12.0
2015	236277	623	289	456	2.2	11.3
2016	232121	618	291	454	2.1	11.1
2017	223400	603	270	436	2.2	10.7
2018	247134	664	300	482	2.2	11.7

YLL, years of life lost.

the total YLL, the proportion of YLL due to suicide accounted for 5.6% in 2000 and increased by 2.4 times to 13.4% in 2009; it then declined to 11.7% in 2018 but has remained consistently above 10% (table 3).

One of the indicators used in this study was the gender-specific and age-specific YLL rate due to suicide per 100 000 people in South Korea. The total rate across all age groups increased from 3162 (2148 for males and 1014 for females) in 2000 to 6182 (3829 for males and 2353 for females) in 2009 (figure 1A,B). It then decreased to 4939 (3345 for males and 1594 for females) in 2018 (figure 1A,B). In males, the gender-specific and age-specific YLL rate due to suicide per 100 000 people increased within the given time frame of 2000–2018 across all age groups, especially in the age groups 25–39 and 40–59. In each age group, the highest YLL rate was 1073 for those aged 25–39 years and 955 for those aged 40–59 years in 2011 (figure 1A). In females, the gender-specific and age-specific YLL rate due to suicide per 100 000 people increased from 2000 to 2018 across all age groups, especially in the age groups 25–39 and 15–24. Considering each age group, the highest YLL rate was 825 for those aged 25–39 years in 2009 and 539 for those aged 15–24 years in 2007 (figure 1B).

Another indicator was the gender and education-level YLL rate per 100 000 people due to suicide in South

Korea. We calculated this by using population and housing census data from 2000 to 2015, with 5-year intervals. The total number of the population considering gender and education level was estimated by grouping males and females older than 15 years by their education level. The gender and education-level-specific YLL rate per 100 000 people increased from 2000 to 2010 and decreased slightly in 2015. The YLL rate by education level was higher in males and for those with education levels lower than middle school graduation. For example, the YLL rate for males with an education level lower than middle school was 802 in 2000 and 1090 in 2015, while it was 266 in 2000 and 519 in 2015 for males with a high school education. For females with an education level lower than middle school, the rate was 236 in 2000 and 315 in 2015, while it was 149 in 2000 and 263 in 2015 for females with a high school-level education (figure 2).

The ratio of the YLL rate between education level lower than middle school and above high school level was higher in males than in females; this ratio decreased from 2000 to 2015. For example, the ratio per 100 000 males decreased from 3.0 times in 2000 to 2.1 times in 2015, and the ratio per 100 000 females decreased from 1.6 times in 2000 to 1.2 times in 2015. However, even though these ratios decreased, the absolute value of the YLL rate increased till 2010; however, it has decreased slightly since

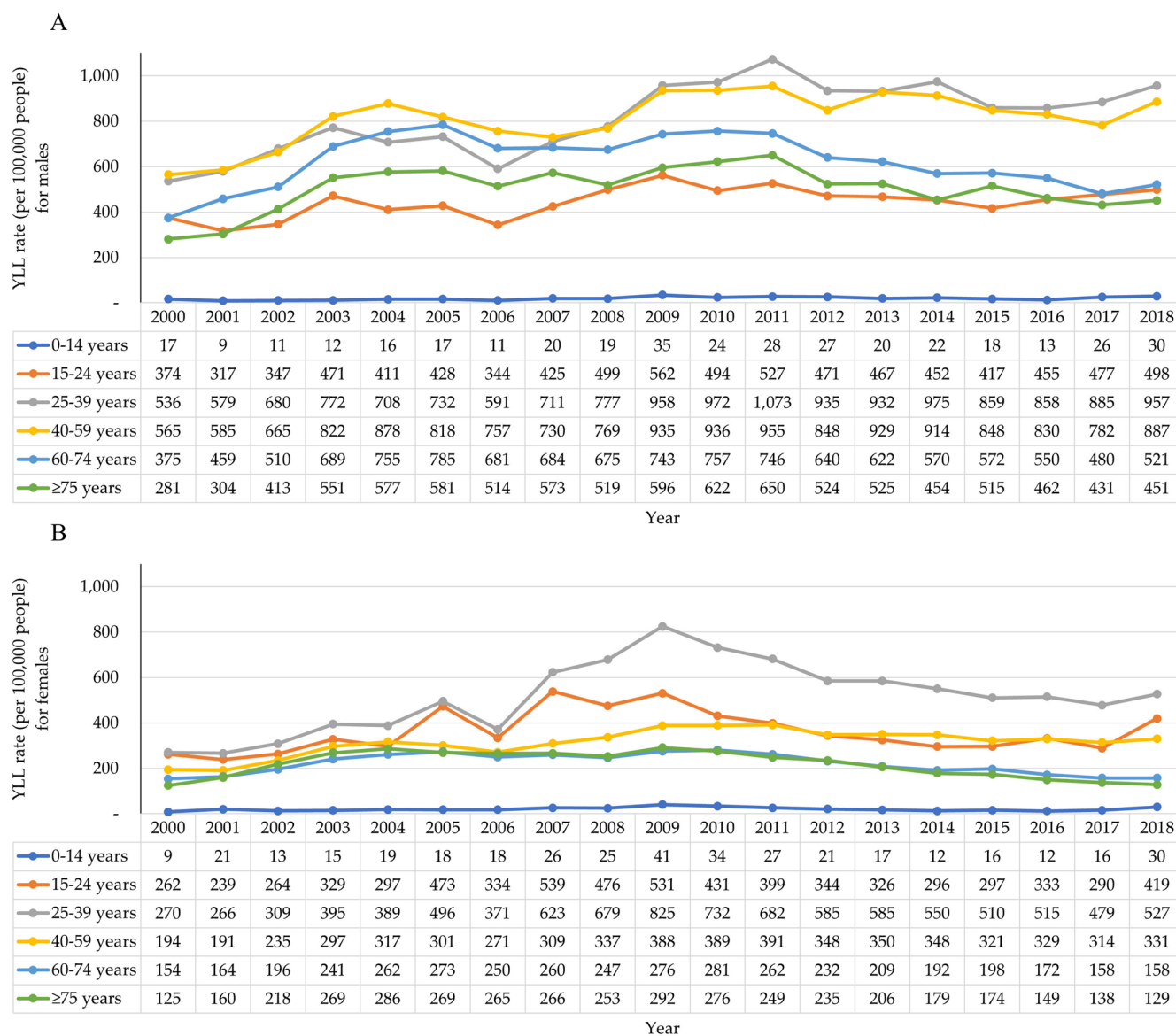


Figure 1 Gender-age group-specific YLL rate due to suicide in South Korea from 2000 to 2018. (A) Males, (B) Females. YLL, years of life lost.

then; it was higher in males with lower education levels (figure 2).

We calculated the gender and marital status-specific YLL rate per 100 000 people by using population and housing census data from 2000 to 2015 with 5-year intervals. The total population number by gender-marital status was estimated by grouping males and females older than 15 years based on their marital status. The gender and marital status-specific YLL rate per 100 000 people due to suicide in South Korea increased from 2000 to 2010, before decreasing slightly in 2015. The rate was higher for males and for those with a non-married status, which includes never married, divorced, widowed and unknown. For example, the YLL rate for non-married males was 569 in 2000 and 908 in 2015, while the rate for married males was 272 in 2000 and 412 in 2015. The

rate for non-married females was 256 in 2000 and 404 in 2015, while the rate for married females was 135 in 2000 and 194 in 2015. The ratio of the YLL rate between non-married status and married status was around 2.1 times for both genders from 2000 to 2015. Overall, the absolute value of the YLL rate increased as the years progressed and was higher for non-married individuals than those who are married (figure 3).

DISCUSSION

Interpretation of investigated sociodemographic risk factors

Our results show that the suicide rate and YLL in South Korea increased during the last two decades. Additionally, as reported by many international studies, the suicide rate was higher among males.^{6 26} Furthermore, the specific

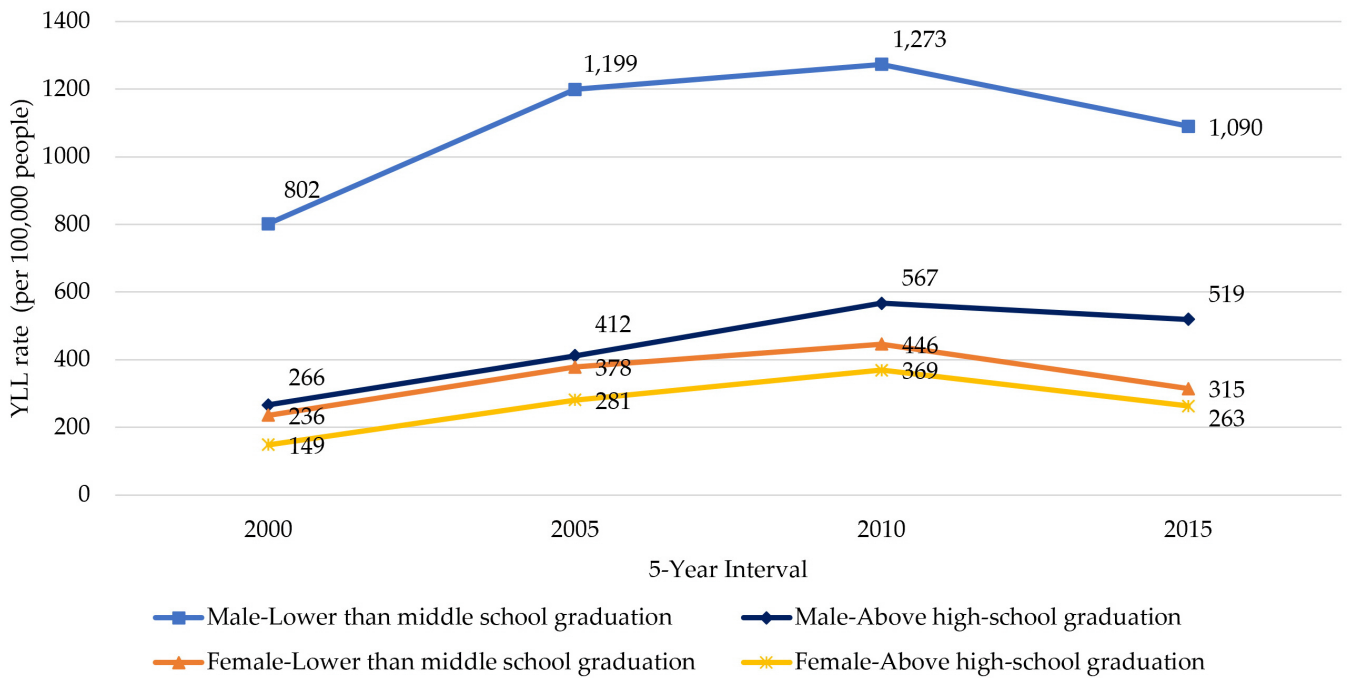


Figure 2 Gender–education level-specific YLL due to suicide in South Korea from 2000 to 2015. School types in South Korea are classified as 6 years of elementary school, 3 years of middle school, and 3 years of high school. YLL, years of life lost.

YLL values by gender, age, education level and marital were higher among males than females.

The gender gap in the suicide rate and YLL can be assumed to be related to gender differences in behaviour or other characteristics. Some gender differences are evident in emotional expression, attitudes regarding asking for help, and completeness of suicide attempts during stressful periods.^{27–30}

Education level is an important sociodemographic factor. People whose education level is lower than a middle school education are more likely to face financial difficulties or weakening (or complete lack of) social integration. Thus, people with low level of education are more likely to make extreme choices.^{27 31}

Marital status is also an important sociodemographic factor related to resilience, including family ties and social

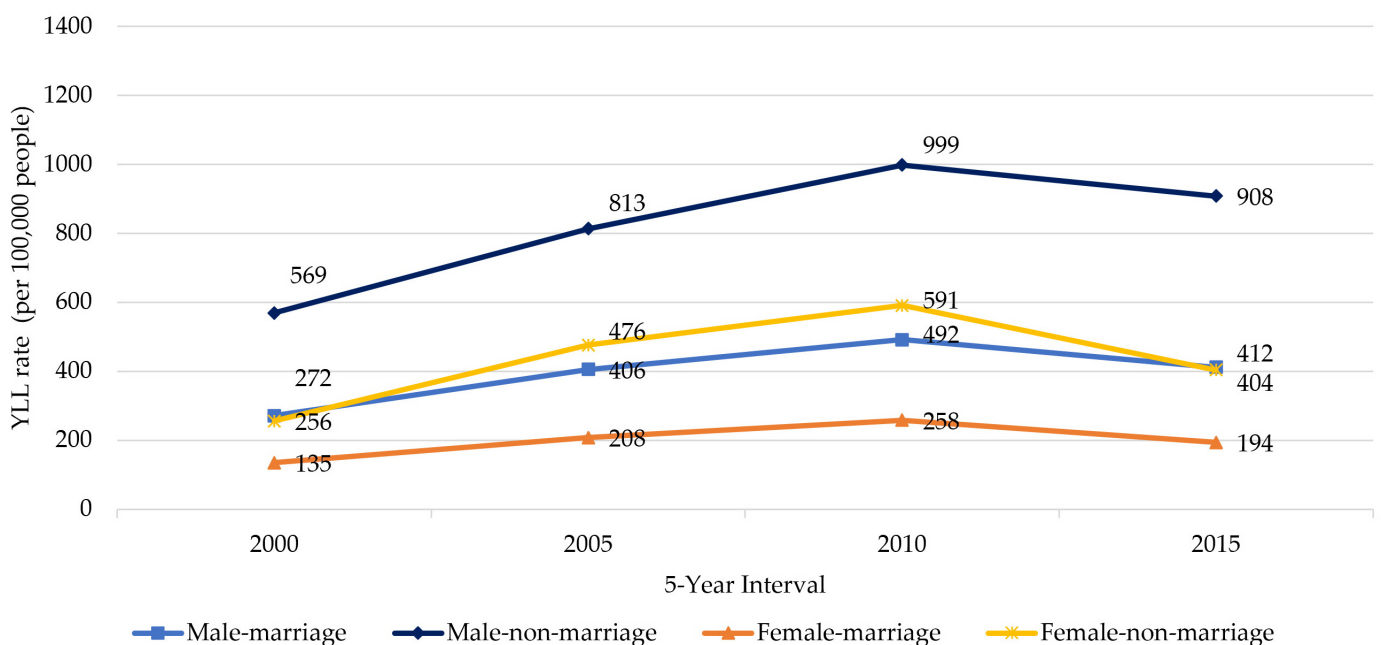


Figure 3 Gender and marital status-specific YLL due to suicide in South Korea from 2000 to 2015. Marital status in South Korea is classified as never married, married, widowed, and divorced. Marriage group: married people. Non- marriage group: never married, widowed, and divorced people. YLL, years of life lost.

integration when people struggle in stressful situations. People who do not receive support from family, friends and colleagues are more likely to encounter difficulties regarding social relationships, residential environments and managing disease; therefore, they are more prone to consider suicide than people who are supported by their family and friends.^{27 31 32}

Comparison of the YLL rate due to suicide in the region

According to Naghavi and Global,⁶ considering high-income Asian Pacific countries, the total number of YLL due to suicide was 1 480 000 (95% CI 1 228 000 to 1 708 000) in 2016 and the age-standardised rate of YLL per 100 000 from suicide was 742.0 years (614.6 to 855.6) in 2016; further, the age-standardised rate of YLL was 1034.7 years for males (774.0 to 1248.3) and 447.5 years for females (377.6 to 533.3). The gender ratio of YLL per 100 000 people due to suicide was 0.4 in 2016. The age-standardised mortality rate for suicide was the highest for women in South Korea (15.5, 10.0 to 22.7) in 2016.

In this study, the total number of YLL due to suicide in South Korea was 232 121 in 2016. The YLL rate per 100 000 due to suicide was 454 years in 2016; in the same year, the YLL rate per 100 000 was 618 years for males and 291 years for females. The gender ratio of YLL per 100 000 people due to suicide was 2.1 times higher for males in 2016, and the mortality rate due to suicide per 100 000 population for females in South Korea was 14.98 in 2016.

The results of this study cannot be generalised to other high-income Asian Pacific countries due to differences in study population, country, region, period, data source, concept of indicator and specific research methods. Despite this limitation, the results of this study—which used the KNBD study methodology and cause of death statistics from Statistics Korea to provide accurate information on the situation of South Korea—can be considered meaningful on a national level.

Limitations of the study

This study has several limitations. YLL values increased along with specific gender, age, education level and marital status. Therefore, further in-depth research is needed to determine correlation and causation. Furthermore, suicide is multifaceted, with various risk factors. People with severe mental illness, in particular, have a higher mortality rate than the general population due to poor accessibility to appropriate healthcare and medical intervention.^{33 34} According to the 2018 National Survey on Suicide,³⁵ the major reason for suicide attempts described by people who have previously attempted suicide was psychological symptoms such as depression or anxiety, accounting for 35.1% of all cases. Thus, there is a need to examine not only the relationship of suicide with the sociodemographic risk factors, but also the relationship of suicide with severe mental illness.

Despite its limitations, the KNBD study is the most reliable study available to determine the level of Korea's

burden of disease due to suicide, compared with other countries. Considering that suicide-related deaths are preventable, it is necessary to analyse the risk factors of suicide and measure the actual burden of disease caused by suicide as a comprehensive indicator. To reduce suicide-related deaths and social inequality, effective health policies customised for specific population categories based on gender, age, education and marital status should be implemented.

CONCLUSIONS

The death and disease burden (YLL) due to suicide in South Korea is increasing at an excessive rate. This study discovered an increasing trend, especially for males and for both genders in the age group of 25–39 years. Furthermore, YLL values were increased along with specific socio-demographic risk factors, such as low education level and non-marital status. To reduce suicide-related deaths and social inequality, efforts should be made using a strategic approach based on scientific evidence to obtain high-quality data and effective health policies customised for vulnerable groups.

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