Working Paper 2015-16

Development of Health —— Inequality Indicators and Health Inequality Monitoring in Korea

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http://www.kihasa.re.kr ISBN: 978-89-6827-314-8 93510

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Introduction <<

To raise the health of the entire population, improving the health of each individual is most important. But equally important is the effort to reduce health inequalities between population groups.

The United States is known for its poor health investment outcomes. The country has invested an enormous amount of money in the field of public health and yet fails to improve population health. One of the most important reasons for this failure is a wide gap among the health levels of different population groups, including those defined by race.

The concept of health inequality is not unknown in Korea. In its 2005 Second National Health Plan, the Ministry of Health and Welfare acknowledged the importance of health equity by choosing the improvement of health equity" and the "extension of healthy life expectancy" as its two major goals. In the plan, the ministry recognized that "health equality can be promoted by relieving the health gaps among groups of different socioeconomic levels." It further said, "It is impossible to present measurable goals at the moment because of the absence of materials that can show overall health equality conditions. But by making the promotion of health equity one of two major goals

along with the extension of healthy life expectancy, the master plan will serve as a guideline for future action plans to improve health equity and all projects in the master plan will be made with the issue in mind."¹⁾

In 2006, health equality became a social issue thanks to a special report about the problem. In January of the same year, the Ministry of Health and Welfare announced an inter-ministerial plan to ease health inequalities. It said it would include the issue in the agenda concerning social polarization for the meetings of ministers related to social and cultural policy to continuously cope with the problem.²⁾ The ministry also pledged to cooperate with other ministries in conducting research and evaluating outcomes(see Figure 1-1).³⁾

¹⁾ Seo, Mi-gyeong et al (2005). "Establishment of a New National Health Promotion Master Plan," Ministry of Health and Welfare & Korea Institute for Health and Social Affairs, p. 46

The Hankyoreh, 2006. "Unequal Health in Society," 1st part of the "Special Report of the Year: For Overcoming Social Polarization" (reported on January 15, 2006).

³⁾ The Hankyoreh, "The Government to Tackle Health Inequalities" (reported on January 26, 2006). (http://www.hani.co.kr/arti/society/health/98289.html)





Sources: The 3rd National Health Plan (2011-2020), Ministry of Health and Welfare (2011)

Efforts to reduce health inequality on that national level are fully justified not only in ethical terms but also in the aspects of health policy and efficiency in the utilization of national resources. Woodward et al.(2000)⁴) argue that health inequality needs to be dealt with on a national level for several reasons. Primarily inequality itself is unfair and affects all citizens and yet can be overcome. They also say efforts to reduce inequality have proved

Woodward, A and I. Kawachi. (2000). Why reduce health inequalities? J Epidemiol Community Health, 54 (12), pp. 923–929.

cost efficient in many cases (Yeongjeon Shin et al., 2009).

Meanwhile, Sen (1985)⁵⁾ defines the value of health as the basic capability to allow people to choose the life that they believe worthy(Yeongjeon Shin et al., 2009). Marmot in The Marmot Review (2010) sees health inequality as a product of social inequalities. These arguments are meaningful in that they emphasize social values of health related to social justice in addition to the importance of health in a traditional sense. From such arguments, we can infer that health inequality may result in consequences that run counter to the social values of health.

The Korean Society for Equity in Health (2012) cites Whitehead (1998) to suggest a comprehensive and cooperative policy to reduce health gaps followed by a series of policy stages. Any policy for relieving health disparity starts by surveying and understanding the current status. Whitehead's approach to the problem of health inequality begins with the measurement and understanding of various phenomena, followed by steps to raise awareness and then actions(see Figure 1-2).

⁵⁾ Sen, A. (1985). Commodities and Capabilities, Amsterdam, North Holland.



[Figure 1-2] Stages of activities to reduce health inequalities

Source: Whitehead (1998): Spring Conference Kit, Korean Society for Equity in Health (2012).

Korea has also produced statistics related to health inequality. "Public Health Statistics" published by the Centers for Disease Control and Prevention shows disparities among different socioeconomic population groups in regard to health behaviors or health outcomes. "Causes of Death Statistics" by Statistics Korea also reveals regional disparities related to death.

To relieve health inequalities, a series of processes is necessary, ranging from the establishment of plans to problem management and the implementation of actions to evaluation (Taeho Yun, 2007).

The Second National Health -Plan included the "promotion

of health equality" as a major task but failed to present detailed plans. The Third Plan also fell short of solving the health disparity problem. It even neglected to identify health equity as a major task and limited the scope of its project to the improvement of health for vulnerable population groups as part of its group-specific health promotion project. As such, Korea still remains at the stage of partial recognition of the importance of health inequality and has failed to develop it into a sincere social agendum. For this reason, to make the relief of health inequity a major national social health agendum, continuous efforts are needed to produce related statistics and indicators and monitor the current status.

This report attempts to monitor health inequalities in Korea by producing indicators to measure health inequity among groups living in different regions and by income and occupation.

To this end, this report defines index categories and develops indicators in each area to help represent Korean realities by modifying the scheme developed earlier by Dongjin Kim et al. (2013).

Based on a WHO CSDH (Commission on Social Determinants of Health)-suggested framework, Dongjin Kim et al. (2013) presented 47 indicators in five areas: socioeconomic status; region; health behavior; health outcomes (healthy life expectancy, diseases and death); and health service accessibility. They developed the indicators based on the principle that the outcomes of health inequality monitoring should be linked to actual efforts to relieve disparities (Kim et al., 2013).

In addition, segmenting indicators by age, region, gender, income and educational attainment allowed closer monitoring of socioeconomic and health levels within the population, which enabled simultaneous tracking of current status and trend identification.

The United Kingdom and other European countries have long recognized that the problem of health inequality exists not only between countries but also between regions and different population groups within a country and have exerted efforts to develop policies to deal with the issue. Continuous monitoring of health inequalities has been the most basic and important part of those efforts.

As in other countries, the efforts to reduce health inequities in Korea should start with measures to raise social awareness of the problem. This health inequality report offers the most basic, yet essential, information required for the development of policy to eliminate health disparities between regions and population groups in the country.



Health Inequity Indicators <<

Development of health inequity indicators requires a review of various determinants that lead to inequalities along with descriptions of how these determinants of health are linked to health inequalities among population groups.

Such a review can be carried out through a health disparity model that covers various factors, including socioeconomic and intermediary determinants and health status. Health determinants in the model need to cover a wide range of factors, such as individual (e.g. health behaviors and utilization of health care services), socioeconomic (gender, education level and income) and the physical environmental (living and labor environments). In other words, health disparity models need to equally cover distal and proximal causes.

The model should be built in consideration of both the health disparities caused by health determinants at each level and the policy approaches to relieve the problems. When the indicators are associated with elaborate measures to prevent or reduce the causes of health inequalities, their results can be doubled as they not only monitor health disparities but also record direct or indirect indicators of policy achievements related to relieving health inequities.

The conceptual framework of factors that cause health inequalities presented by WHO in 2010 traces social and other determinants of health inequalities, examines the relationship between major determinants and shows the mechanism by which social determinants cause inequality. Structural determinants(social determinants of health inequality: socioeconomic context·political context, socioeconomic status), and intermediary determinants(social determinants of health: material circumstances, health behaviors, and psychosocial factors) are key components of this framework. "Context" here is defined as social class, including social and political mechanisms. The framework also indicates that government welfare and distribution policy, among all contextual factors, is the most influential factor(see Figure 2-1).



[Figure 2-1] WHO conceptual framework of factors that cause health inequalities

Source: WHO (2010). A Conceptual Framework for Action on the Social Determinants of Health, p. 48: Dongjin Kim et al. (2013), reproduced

Intermediary determinants are the products of the determinants that cause social class, which contributes to poor health, exposure to unhealthy environments and vulnerability to such exposure. They comprise material circumstances, psychosocial circumstances, behavioral and/or biological factors and the health system(see Figure 2-2).



[Figure 2-2] WHO conceptual framework of intermediary determinants of health

Source: WHO (2010). A Conceptual Framework for Action on the Social Determinants of Health, p. 41; Dongjin Kim et al. (2013), reproduced

The conceptual framework of WHO (2010) was largely indebted to the framework developed by Diderichsen and others (1998). The framework attempts to elucidate the pathways through which social contexts influence individual social positions by causing social stratification which results in differences in the amount of exposure and vulnerability to health-compromising conditions and eventually discriminating outcomes, such as more risks of diseases for the socially vulnerable groups(see Figure 2-3).



[Figure 2-3] Diderichsen & Hallqvist's framework(1998)

Source: Diderichsen F. & Hallqvist, J. (1998). "Social inequalities in health: some methodological considerations for the study of social position and social context," Inequality in health—A Swedish perspective. Stockholm: Swedish Council for Social Research, pp. 25-39, reproduced

This study utilizes the WHO framework (2010) to define the indicator categories to monitor health inequalities among different population groups. In particular, it closely examines health outcomes of social, structural and intermediary determinants.

Health outcomes are defined in six areas: life expectancy and healthy life expectancy; self-rated health; activity limitations; chronic disease prevalence; infectious disease prevalence; and mortality rate. A total of 16 indicators are included.

Area (numbers of indicators)	Indicators
Life expectancy & healthy life	Life expectancy at birth
expectancy (2)	Healthy life expectancy
Self-rated health status(1)	Favorable subjective health status ratings
Activity limitations (1)	Activity limitations rates (ADL: Activities of Daily Living, IADL: Instrumental Activity of Daily Living)
	Hypertension prevalence
Chronic disease prevalence (3)	Diabetes prevalence
	Arthritis prevalence
Infectious disease prevalence (1)	Hepatitis B prevalence
	Total mortality rate
	Cancer mortality rate
Martalita rata (6)	Stomach cancer mortality rate
Mortanty rate (6)	Cerebrovascular disease mortality rate
	Heart disease mortality rate
	Suicide mortality rate

(Table 2-1) Korean health inequality indicators: health outcomes

3

Current Status of Health Inequalities in Korea: Health Outcomes

- 1. Life expectancy and healthy life expectancy
- 2. Self-rated health status
- 3. Activity limitations
- 4. Chronic disease prevalence
- 5. Infectious disease prevalence
- 6. Death

Current Status of Health 《《 Inequalities in Korea: Health Outcomes

1. Life expectancy⁶⁾ and healthy life expectancy⁷⁾

□ Disparities among population groups

Large differences were found in life expectancy (LE) and healthy life expectancy (HLE) for men and women among people with different levels of educational attainment in 2010. The population was split into three education levels: middle school graduates and those with less education, high school dropouts and graduates, college graduates and those with higher levels of education. In all the three groups, both LE and HLE showed a gradient effect.

HLE can be calculated by subtracting the number of years in poor health from LE. Therefore, a higher ratio of HLE to LE or smaller difference between LE and HLE is more desirable. But people in all three groups showed disparity when examined in both ways. The ratio of HLE and LE was higher and the gap between LE and HLE smaller among people with higher levels of education. This disparity was more prominent among women than men(see Table 3-1).

⁶⁾ Definition: The average years a person of a certain age may live based on the year of the present average mortality rate. Unit: Year

⁷⁾ Definition: Expected years of life in good health. It is calculated by excluding from life expectancy those periods in poor health due to diseases or injuries. Unit: Year

(Table 3-1) Life expectancy (LE) and healthy life expectancy (HLE) of 30 years old (total, by gender and by socioeconomic variables, 2010)

			To	tal			Μ	en			Wor	men	
Cate	gory	LE	HLE	HLE / LE (%)	LE HLE	LE	HLE	HLE / LE (%)	LE HLE	LE	HLE	HLE / LE (%)	LE HLE
	Middle school or less	46.3	35.8	77.2	10.6	41.2	32.8	79.6	8.4	50.6	38.2	75.6	12.3
Education level	High school or less	50.7	44.0	86.7	6.7	48.4	42.4	87.6	6.0	54.6	46.1	84.5	8.5
	College or more	51.7	46.6	90.0	5.2	50.7	45.9	90.6	4.8	55.5	48.4	87.2	7.1

Source: Dongjin Kim et al. (2014). Health Inequality Indicators and Policy Challenges in Korea-Health Inequity Repor≒t: Statistics II, p. 438, Table 4-3

□ Regional disparities

Life expectancy in Suji-gu in Yongin, Gyeonggi-do, in 2010 was 83.33 years, the longest in Korea. In general, life expectancy in large cities, including metropolitan zones, was longer than in other areas.

Citizens of Seoul had the longest healthy life expectancy at birth in 2010 at 72.4, compared with 68.8 in Jeollanam-do, the shortest. The gap between the two regions was 3.6. Healthy life expectancy also appeared longer in metropolitan areas, and the tendency was more pronounced than the case with life expectancy (see Figure 3-1).



[Figure 3-1] Life expectancy and healthy life expectancy at birth by region (2010)

Source: Dongjin Kim et al. (2014). Health Inequality Indicators and Policy Challenges in Korea-Health Inequity Report: Statistics I, pp. 183, 185-186, Figures 3-120 and 3-121

2. Self-rated health status⁸⁾

□ Disparities among population groups

A wide gap was also found between groups with different socioeconomic positions in the self-rated health status levels. When the population was split into four income groups, people with less income tended to rate their health lower. In Korea, there is a stark difference in the level of education obtained by those above and below age 65. For this reason, self-rated health levels were examined separately for the two groups. Both among the group falling between ages 30 and 64 and those in the group at 65 and older, those with less education rated their health lower. By occupation, blue-collar workers gave higher ratings than those with white-collar jobs (see Table 3-2).

Regional disparities

There was no consistent pattern found in regional comparisons, but people in central and southern inland areas assessed their health lower than others(see Figure 3-2).

⁸⁾ Definition: The ratio of people who rated their own health to be "good" or "very good." Numerator: Number of people who rated their own health to be "good" or "very good"/Denominator: Number of people over 19 among the survey respondents Unit: %

			,))								
			Tota	_			Mer	-			Wor	nen	
0	Category	Crude rates (%)	Standardized rates (%)	Relative (95% co inte	gap(times) infidence irval)	Crude rates (%)	Standardized rates (%)	Relative (95% o inte	gap(times) onfidence erval)	Crude rates (%)	Standardized rates (%)	Relative (95% c into	gap(times) onfidence erval)
	Lowest quartile	23.4	26.0	0.7	(0.6-0.8)	28.2	29.9	0.7	(6.0-9.0)	20.1	22.8	0.6	(0.5-0.8)
Income	Second quartile	28.7	29.1	0.8	(0.7-0.8)	30.9	31.1	0.8	(0.7-0.8)	26.8	27.4	0.8	(0.7-0.9)
level	Third quartile	34.7	34.4	0.9	(0.8-1)	36.2	36.2	0.9	(0.8-1)	33.2	32.8	0.9	(0.8-1)
	Highest quartile	38.2	38.2			40.8	41.0			35.4	35.1		
	(Ages 30-64)												
	Elementary school or less	21.4	28.1	0.7	(0.5-1.2)	25.1	44.6	1.1	(0.8-1.5)	21.4	28.1	0.7	(0.5-1.2)
	Middle/high school	31.2	31.0	0.8	(0.7-0.9)	33.3	33.9	0.8	(0.7-0.9)	31.2	31.0	0.8	(0.7-0.9)
Education	Junior college or more	37.1	37.7			40.3	41.2			37.1	37.7		
level	(Ages 65 and over)												
	Elementary school or less	19.9	19.4	0.6	(0.5-0.8)	29.3	29.2	0.8	(0.7-1)	19.9	19.4	0.6	(0.5-0.8)
	Middle school	26.6	26.2	0.8	(0.6-1.3)	29.1	29.7	0.8	(0.6-1)	26.6	26.2	0.8	(0.6 - 1.3)
	High school or more	34.1	31.2			36.5	36.2			34.1	31.2		
Occupation	Blue-collar	39	39.9	1.2	(1.1-1.3)	39.8	41.0	1.2	(1.1 - 1.3)	37.3	36.2	1.3	(1.2-1.5)
(Ages	Service/sales	34	33.1	1	(0.9-1.1)	36.4	37.3	1.1	(0.9-1.2)	32.3	30.7	1.1	(1.1 - 1.1)
30-04)	White-collar	31.5	32.5			34.3	34.9			26.1	27.2		
Source: L 4	Jongjin Kim et 55-456, Table	al. (2014) s 4-9, 4-1	. Health In 0 and 4-11	equality	Indicators	and Pol	licy Challer	iges in F	korea-Hea	lth Inec	luity Repoi	rt: Statis	tics II, pp.

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[Figure 3-2] Favorable self-rated health status ratings by region (2012)

Source: Dongjin Kim et al. (2014). Health Inequality Indicators and Policy Challenges in Korea-Health Inequity Report: Statistics I, p. 188, Figure 3-123

3. Activity limitations⁹⁾

□ Disparities among population groups

People with higher levels of income and education reported lower rates of activity limitations in a survey of groups with different levels of income and educational attainment. By gender, disparities by income level were found to be statistically significant among men and those by educational attainment among women (see Table 3-3).

□ Regional disparities

Regional disparities concerning activity limitations resulted in different outcomes for men and women. Higher rates were found in Gangwon-do in the case of men and in Jeolla-do for women (see Figure 3-3).

⁹⁾ Definition: Ratio of people who selected the answers "partial help," "complete help," "a little help," "much help" or "totally impossible" more than once on questions measuring ADL (activities of daily living) and IADL (instrumental activities of daily living) among the age group. Numerator: Number of people at ages 65 and above who are relevant to more than 1 question mentioned above/ Denominator: Number of people at ages 65 and above Unit: %

			T	otal			×	len			M	omen	
	Category	Crude rates (%)	Standardized rates (%)	Relati (95%co	ve gap (times) nfidenceinterval)	Crude rates (%)	Standardized rates (%)	Relati (95%cc	ve gap (times) onfidenceinterval)	Crude rates (%)	Standardized rates (%)	Relat (95%cc	ive gap (times) onfidenceinterval)
	Lowest quartile	17.7	14.6	1.3	(1.0-1.6)	16.7	14.8	2.0	(1.2-3.2)	18.2	14.9	1.0	(0.8-1.2)
Income	Second quartile	15.5	14.0	1.2	(1.0-1.4)	13.5	12.0	1.6	(1.1-2.3)	16.9	16.2	1.0	(0.9-1.3)
level	Third quartile	15.2	14.7	1.3	(1.1-1.5)	10.6	9.6	1.3	(1.0-1.8)	19.2	19.7	1.3	(1.0-1.5)
	Highest quartile	12.3	11.6			8.0	7.5			16.3	15.6		
	(Ages 65 and over)												
Education	Elementary school or less	18.1	15.1	1.8	(1.4-2.4)	15.3	12.8	1.6	(1.1-2.3)	19.3	17.3	2.0	(1.3-2.0)
level	Middle school	8.9	11.3	1.4	(1.0-1.9)	7.8	7.4	0.9	(0.6-1.4)	11.0	15.3	1.8	(1.0-1.8)
	High school or more	8.0	8.3			8.1	7.9			7.6	8.7		
Source:	Dongjin Kim ∈ 477-478, Tabl	et al. (20 es 4-23	114). Health , 4-24 and	ו Inequ 4-25	uality Indicate	ors and	Policy Cha	llenge	s in Korea-He	ealth Ine	equity Rep	ort: St	atistics II, pp.

(Table 3-3) Activity limitations rates (total, by gender and by socioeconomic variables, 2011)



[Figure 3-3] Activity limitations rates by region (2011)

Source: Dongjin Kim et al. (2014). Health Inequality Indicators and Policy Challenges in Korea-Health Inequity Report: Statistics I, pp. 193-194, Figure 3-127

4. Chronic disease prevalence¹⁰⁾

1) Hypertension (high-blood pressure)

□ Disparities among population groups

Hypertension prevalence was 1.2 times higher for the lowest-income group than for the highest-income group. Among those in the 30-64 age group, it was 2.2 times higher in the lowest-income group than in the highest-income group. By occupation, hypertension prevalence was found highest among white-collar workers (see Table 3-4).

Regional disparities

By region, hypertension prevalence was higher in central and northern parts of the country than in southern parts. In the case of women, higher prevalence was found in Chungcheong-do and inland areas of Gyeongsang-do (see Figure 3-4).

10) Definition: Ratio of people ages 30 and over who have been diagnosed with hypertension
Numerator: Number of those who have been diagnosed with hypertension by a doctor or during a medical checkup among those ages 30 and over Denominator: Number of people ages 30 and over Unit: %

			Tot	al			Mer	E			Wom	nen	
	Category	Crude rates (%)	Standardized rates (%)	Relativ (95%	e gap (times) confidence nterval)	Crude rates (%)	Standardized rates (%)	Relativ (959	/e gap (times) /confidence interval)	Crude rates (%)	Standardized rates (%)	Ψ.	telativ (95%
	Lowest quartile	47.6	31.8	1.2	(1.0-1.4)	42.1	33.4	1.2	(0.9-1.5)	51.6	29.2		1.2
	Second quartile	24.6	23.8	0.9	(0.0-0.0)	26.8	26.4	0.9	(0.7 - 1.1)	22.4	21.1	0	6
level	Third quartile	24.2	26.3	1.0	(1.0-1.0)	27.6	28.1	1.0	(0.8-1.2)	20.7	23.4	1	0.
	Highest quartile	25.0	26.5			28.6	29.0			21.1	23.6		
	(Ages 30-64)												
	Elementary school or less	14.9	13.0	2.2	(1.2-4.0)	17.8	17.9	2.4	(1.0-6.1)	12.4	10.7		~
	Middle or high school	8.7	7.7	1.3	(1.1-1.6)	11.6	9.7	1.3	(1.0-1.7)	5.9	5.5	1.0	0
Education level	Junior college or more	4.4	5.9			5.9	7.4			2.2	3.4		
	(Ages 65 and over)												
	Elementary school or less	21.0	20.9	0.9	(0.7-1.1)	18.4	18.4	0.7	(0.6-0.9)	22.0	21.8	1.	
	Middle school	24.6	25.1	1.1	(0.8-1.4)	27.9	28.6	1.1	(0.8-1.6)	18.8	18.9	1.0	0
	High school or more	22.9	23.6			24.6	24.9			17.2	9.6		
	Blue-collar	11.0	9.3	1.0	(0.8-1.2)	11.6	10.1	1.0	(0.8-1.3)	9.6	7.4	0.0	
Occupation	Service/sales	7.6	8.7	0.9	(0.7-1.2)	9.6	12.3	1.2	(0.8-1.7)	6.0	6.4	0.7	~
handes an of	/ White-collar	5.8	9.7			7.1	10.3			3.0	8.7		



[Figure 3-4] Hypertension prevalence by region (2012)

Source: Dongjin Kim et al. (2014). Health Inequality Indicators and Policy Challenges in Korea-Health Inequity Report: Statistics I, p.196, Figure 3-129

2) Diabetes¹¹⁾

□ Disparities among population groups

The prevalence of diabetes was 1.4 times higher in the lowest-income group than in the highest-income group. Among the age group of 30-64, it was 2.2 times higher in the group with the lowest level of educational attainment than in the group with the highest level of education. Also, disparities were more pronounced among women than among men in terms both of income level and educational attainment (see Table 3-5).

□ Regional disparities

The prevalence of diabetes was higher in northern central areas than in southern parts. In the case of men, it was more prominent around the central inland areas (see Figure 3-5).

11) Definition: Ratio of people who have been diagnosed with diabetes among those ages 30 and over
Numerator: Number of people who have been diagnosed with diabetes by doctors or during health checkups
Denominator: Number of people age 30s and above
Unit: %

(Table 3	-5) Diabetes	orevaler	ice rates (total,	by gende	er and l	oy socioec	onom	ic variabl	es, 2012)			
			Total				Men				Womer	د	
	Category	Crude rates (%)	Standardized rates (%)	Relativ (95% i	e gap (times) confidence interval)	Crude rates (%)	Standardized rates (%)	Relative (95% ii	e gap (times) confidence nterval)	Crude rates (%)	Standardized rates (%)	Relative (95% ii	e gap (times) confidence nterval)
	Lowest quartile	18.1	12.7	1.4	(1.1-1.8)	19.1	14.1	1.2	(0.9-1.6)	17.4	11.5	2.1	(1.5-2.9)
	Second quartile	9.7	9.2	1.0	(0.9-1.2)	10.2	9.9	0.8	(0.7 - 1.0)	9.3	8.6	1.5	(1.2-2.0)
	Third quartile	8.4	9.2	1.0	(0.9-1.2)	10.0	10.5	0.9	(0.7 - 1.1)	6.6	7.7	1.4	(1.0-1.9)
	Highest quartile	7.6	8.9			10.5	11.9			4.5	5.6		
	(Ages 30-64)												
	Elementary school or less	14.9	13.0	2.2	(1.2-4.0)	17.8	17.9	2.5	(1.0-6.2)	13.4	10.7	3.2	(1.4-7.0)
	Middle or high school	8.7	7.7	1.3	(1.1-1.6)	11.6	9.7	1.3	(1.1-1.7)	5.9	5.5	1.6	(1.0-2.5)
Education	Junior college or more	4.4	5.9			5.9	7.2			2.2	3.4		
Iavai	(65 or over)												
	Elementary school or less	21.0	20.9	0.9	(0.7-1.1)	18.4	18.4	0.7	(0.6-0.9)	22.0	21.8	1.1	(0.7-1.7)
	Middle school	24.6	25.1	1.1	(0.8-1.4)	27.9	28.6	1.1	(0.8 - 1.6)	18.8	18.9	1.0	(0.6-1.7)
	High school or more	22.9	23.6			24.6	24.9			17.2	19.6		
Occupation	Blue-collar	11.0	9.7	1.0	(0.8-1.3)	11.6	10.1	1.0	(0.8-1.3)	9.6	7.4	6.0	(0.5-1.6)
(Ages	Service/sales	7.6	8.7	0.9	(0.7-1.2)	9.6	12.3	1.2	(0.8-1.7)	6.0	6.4	0.7	(0.0-12.0)
30-04)	White-collar	5.8	9.3			7.1	10.3			3.0	8.7		
Source: D	ongjin Kim et al 31-532, Tables (l. (2014). 1 -44, 4	Health Ine 45 and 4-46	qualit	y Indicators	s and Pc	licy Challer	ıges ir	ı Korea-He	ealth Inequ	uity Report:	Statis	tics II, pp.



[Figure 3-5] Diabetes prevalence rates by region (2012)

Source: Dongjin Kim et al. (2014). Health Inequality Indicators and Policy Challenges in Korea-Health Inequity Report: Statistics I, p. 200, Figure 3-133

3) Arthritis¹²⁾

□ Disparities among population groups

The prevalence of arthritis was higher in the groups with lower income and less education as well as among the blue-collar workers. The figure for the lowest-income group was 1.4 times higher than that for the highest-income group. In the age group of 30-64, the prevalence was three times higher in people with the lowest level of educational attainment than in those with the highest levels. Arthritis prevalence was also 1.9 times higher among blue-collar workers than among their white-collar counterparts (see Table 3-6).

□ Regional disparities

The prevalence of arthritis showed regional disparities that are different from those for other chronic diseases. It was relatively higher in the central and southern inland areas than in northern and coastal areas. However, high prevalence was observed evenly in the western part of the country, from coastal to inland areas (see Figure 3-6).

12) Definition: Ratio of people who have been diagnosed with arthritis by doctors
Numerator: Number of people who have been diagnosed with arthritis by doctors among those age 50 or over
Denominator: Number of people age 50 or over
Unit: %

$ \begin{array}{ $				Ť	otal			M	en			Worr	nen	
$ \begin{array}{llllllllllllllllllllllllllllllllllll$		Category	Crude rates (%)	Standardize rates (%)	d Relat (95	ive gap (times) % confidence interval)	Crude rates (%)	Standardizeo rates (%)	d Relati (95	ve gap (times) % confidence interval)	Crude rates (%)	Standardize d rates (%)	Relat (95%	ive gap(times) % confidence interval)
Beoond quartile 208 16.0 1.2 (10-1.4) 7.0 7.2 1.2 (08-1.8) 30.6 2.5 1.1 (10-1.4) Phind quartile 17.1 16.1 1.1 (0.9-1.3) 6.0 5.4 0.9 (0.6-1.4) 26.1 2.5 1.1 (10-1.4) Hiphest quartile 13.6 14.3 7.1 0.9 (0.6-1.4) 28.1 26.1 1.2 (10-1.4) (Ages 30-64) 23.1 8.3 3.0 (2.2-4.1) 7.0 2.5 1.7 1.2 2.4 1.2 (Ages 30-64) 23.1 8.3 3.0 (2.2-4.1) 7.0 2.5 1.1 2.4 1.2 1.2 (Adele or high school 12.2 4.4 1.6 (1.2-2.2) 5.5 2.6 1.4 1.5 2.7 1.1 2.3 0.2 Middle or high school 12.2 2.7 4.1 1.5 1.5 5.6 1.1 1.5 1.5 5.6 1.4 1.		Lowest quartile	30.1	20.7	1.4	(1.2-1.7)	10.5	7.2	1.2	(0.8-1.8)	42.6	30.1	1.3	(1.1-1.6)
Monteneries Triand quartitie 17.1 16.1 1.1 (0.9-1.3) 6.0 5.4 0.9 (0.6-1.4) 28.1 26.1 1.2 (1.0-10) Highest quartitie 13.6 14.3 3.0 2.2-4.1) 5.3 5.9 3.14 11.3 2.0 (1.4-1) Maps 30-64) 2.31 8.3 3.0 (2.2-4.1) 7.0 2.5 1.7 (10-3.0) 31.4 11.3 2.0 (1.4-1) Maps 30-64) 12.2 4.4 1.6 (1.2-2.2) 5.5 1.7 (10-3.0) 31.4 11.3 2.0 (1.4-1) Madule or high school 12.2 4.4 1.6 (1.2-2.2) 5.5 2.0 1.1 1.3 0.9 Undule or high school 12.2 4.4 1.5 7.0 1.3 0.3 1.3 0.9 Undule or high school 36.3 36.2 2.4 1.5 1.5 1.5 1.5 1.4 1.3 0.9 More 5.3	la como e	Second quartile	20.8	16.9	1.2	(1.0-1.4)	7.0	7.2	1.2	(0.8-1.8)	30.6	25.2	1.1	(1.0-1.3)
$ \begin{array}{ $	Income level	Third quartile	17.1	16.1	1.1	(0.9-1.3)	6.0	5.4	0.9	(0.6-1.4)	28.1	26.1	1.2	(1.0-1.4)
$ \begin{array}{llllllllllllllllllllllllllllllllllll$		Highest quartile	13.6	14.3			5.3	5.9			23.1	22.4		
$ \begin{array}{llllllllllllllllllllllllllllllllllll$		(Ages 30-64)												
Holdle or high school 12.2 4.4 1.6 (1.2-2.2) 5.5 2.0 1.3 (0.8-2.2) 19.7 7.1 1.3 (0.9- House Junior college or 7.6 2.7 4.1 1.5 1.5 5.6 7.1 1.3 (0.9- House Junior college or 7.6 2.7 2.4 (2.0-2.8) 13.2 16.5 1.6 (1.1-2.2) 45.5 5.6 1.1 (0.9- House 36.3 36.2 2.4 (2.0-2.8) 13.2 13.2 1.6 (1.1-2.2) 45.5 45.7 1.1 (0.9- Model school 27.7 28.5 1.8 (1.5-2.4) 15.0 15.4 1.8 1.2-2.8) 48.5 50.2 1.2 (0.9- Midel school 15.3 15.4 1.5 15.5 1.8 1.5-2.4) 15.0 1.5 48.5 50.2 1.2 (0.9- Midel school 15.3 15.4 1.8 1.5-2.28) 8.5		Elementary school or less	23.1	8.3	3.0	(2.2-4.1)	7.0	2.5	1.7	(1.0-3.0)	31.4	11.3	2.0	(1.4-2.9)
		Middle or high school	12.2	4.4	1.6	(1.2-2.2)	5.5	2.0	1.3	(0.8-2.2)	19.7	7.1	1.3	(0.9-1.8)
	Education level	Junior college or more	7.6	2.7			4.1	1.5			15.5	5.6		
High school or 36.3 36.2 2.4 (2.0-2.8) 13.2 13.2 1.6 (1.1-2.2) 45.5 45.7 1.1 (0.9- Middle school 27.7 28.5 1.8 (1.5-2.4) 15.0 15.4 1.8 (1.2-2.8) 48.5 50.2 1.2 (0.9- Middle school 27.7 28.5 1.8 (1.5-2.4) 15.0 15.4 1.8 (1.2-2.8) 48.5 50.2 1.2 (0.9- Bue-collar 15.3 15.4 1.9 (1.3-2.8) 8.4 7.7 1.6 (1.0-2.6) 33.0 26.6 1.3 (0.9- Occupation 3ervice/sales 15.4 1.9 (1.3-2.9) 25.7 0.6 0.3-1.3) 22.7 23.1 1.1 (0.7- Occupation 7.2 8.0 25.7 23.1 1.1 (0.7- Mite-collar 7.2 8.0 4.7 4.9 4.7 1.47 21.1 (0.7-		(65 or over)												
Middle school 27.7 28.5 1.8 (1.5-2.4) 15.0 15.4 1.8 (1.2-2.8) 48.5 50.2 1.2 (0.9- High school or more 15.3 15.4 8.5 8.5 38.3 42.7 0.9- Blue-collar 18.2 15.4 8.4 7.7 1.6 (1.0-2.6) 33.0 26.6 1.3 (0.9- Occupation Service/sales 15.4 1.9 (1.3-2.9) 8.4 7.7 1.6 (1.0-2.6) 33.0 26.6 1.3 (0.9- Occupation 15.4 15.6 1.9 (1.3-2.9) 2.5 2.7 0.6 (0.3-1.3) 2.7 1.1 (0.7- Mote-collar 7.2 8.0 4.9 4.7 4.7 1.4 1.1 (0.7-		Elementary school or less	36.3	36.2	2.4	(2.0-2.8)	13.2	13.2	1.6	(1.1-2.2)	45.5	45.7	1.1	(0.9-1.3)
High school or more 15.3 15.4 8.5 8.5 3.5 42.7 Blue-collar 18.2 15.5 1.9 (1.3-2.8) 8.4 7.7 1.6 (1.0-2.6) 33.0 26.6 1.3 (0.9- Occupation (Ages 30-64) Service/sales 15.4 1.5 1.9 (1.3-2.9) 2.5 2.7 0.6 0.3-1.3) 22.7 23.1 1.1 (0.7- Mote-collar 7.2 8.0 4.9 4.7 1.4 21.1 0.7-		Middle school	27.7	28.5	1.8	(1.5-2.4)	15.0	15.4	1.8	(1.2-2.8)	48.5	50.2	1.2	(0.9-1.5)
Blue-colar 18.2 15.5 1.9 (1.3-2.8) 8.4 7.7 1.6 (1.0-2.6) 33.0 26.6 1.3 (0.9- Occupation (Ages 30-64) Service/sales 15.4 15.6 1.9 (1.3-2.9) 2.5 2.7 0.6 (0.3-1.3) 22.7 23.1 1.1 (0.7- Minte-collar 7.2 8.0 4.9 4.7 1.47 21.1		High school or more	15.3	15.4			8.5	8.5			38.3	42.7		
Occupation (Ages 30-64) Service/sales 15.4 15.6 1.9 (1.3-2.9) 2.5 2.7 0.6 (0.3-1.3) 22.7 23.1 1.1 (0.7- 1.4) (Ages 30-64) 7.2 8.0 4.9 4.7 14.7 21.1 0.7-		Blue-collar	18.2	15.5	1.9	(1.3-2.8)	8.4	7.7	1.6	(1.0-2.6)	33.0	26.6	1.3	(0.9-1.8)
White-collar 7.2 8.0 4.9 4.7 14.7 21.1	Occupation (Ages 30-64)	Service/sales	15.4	15.6	1.9	(1.3-2.9)	2.5	2.7	0.6	(0.3-1.3)	22.7	23.1	1.1	(0.7-1.6)
		White-collar	7.2	8.0			4.9	4.7			14.7	21.1		



[Figure 3-6] Arthritis prevalence rates by region (2012)

Source: Dongjin Kim et al. (2014). Health Inequality Indicators and Policy Challenges in Korea-Health Inequity Report: Statistics I, p. 198, Figure 3-13

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5. Infectious disease prevalence

1) Hepatitis B prevalence¹³⁾

□ Disparities among population groups

The prevalence of hepatitis B was higher in the groups with higher income and also higher education. This contrasts with the results concerning other diseases, where people with higher income were found to maintain better health conditions in general.

By occupation, white-collar workers had higher prevalence in both men and women (see Table 3-7).

Regional disparities

No special regional difference was observed in the prevalence of hepatitis B. The areas with higher and lower prevalence were evenly distributed across the country (see Figure 3-7).

13) Definition: Ratio of people who said they suffered hepatitis B for over three months during the last year among those age 30 or over who were subject to hepatitis B tests
Numerator: Number of people who said they have suffered hepatitis B for over three months during the last year
Denominator: Number of people age 30 or over who were subject to hepatitis B tests
Unit: %

	/ nepanns p (Jrevale	nce rates	lola	, by gena	er ario	DA SOCIO		nic variadi	es, 201	(7)		
			To:	tal			W	en			Wom	len	
Ū	Category	Crude rates (%)	Standardizeo rates (%)	d Relative (95% ii	e gap (times) confidence nterval)	Crude rates (%)	Standardized rates (%)	Relativ (95% i	e gap (times) confidence nterval)	Crude rates (%)	Standardized rates (%)	Relative (95% ii	e gap (times) confidence nterval)
	Lowest quartile	2.86	3.11	0.65	(0.41-1.03)	2.82	3.26	0.63	(0.34-1.16)	2.89	2.89	0.67	(0.33-1.35)
la reference el	Second quartile	4.03	3.97	0.83	(0.63-1.08)	4.24	4.21	0.81	(0.56-1.16)	3.83	3.74	0.86	(0.60-1.24)
	Third quartile	4.38	4.24	0.88	(0.68-1.15)	4.84	4.76	0.91	(0.64-1.29)	3.88	3.67	0.85	(0.59-1.22)
	Highest quartile	4.97	4.80			5.62	5.22			4.23	4.33		
	(Ages 30-64)												
	Elementary school or less	4.38	2.23	0.50	(0.50-0.51)	4.74	2.67	0.55	(0.22-1.39)	4.19	1.90	0.50	(0.27-0.92)
	Middle or high school	4.67	4.64	1.05	(1.04-1.05)	5.41	5.27	1.08	(0.78-1.50)	3.96	4.02	1.06	(0.71-1.58)
Education level	Junior college or more	4.36	4.43			4.88	4.87			3.62	3.80		
	(65 or over)												
	Elementary school or less	2.49	2.49	0.86	(0.85-0.86)	1.65	1.64	0.71	(0.32-1.57)	2.84	2.86	0.65	(0.21-2.01)
	Middle school	2.21	1.86	0.64	(0.63-0.65)	2.69	2.29	0.99	(0.39-2.52)	1.38	1.13	0.26	(0.05-1.36)
	High school or more	3.09	2.90			2.36	2.31			5.60	4.41		
	Blue-collar	4.40	4.49	0.94	(0.68-1.29)	4.91	4.95	0.95	(0.66-1.36)	3.39	3.34	0.82	(0.45-1.51)
Occupation (Ages 30-64)	Service/sales	3.90	4.40	0.92	(0.64-1.31)	4.24	4.89	0.94	(0.58-1.51)	3.64	3.95	0.97	(0.53-1.78)
	White-collar	4.95	4.80			5.51	5.22			3.85	4.06		
Source: Doi 585	ngjin Kim et al. (2 586, Tables 4-6	2014). H 5, 4-66	fealth Inequant and 4–67	uality I	ndicators a	ind Poli	cy Challen	ges in]	Korea-Healı	th Inequ	lity Report	: Statis	tics II, pp.

2012) oriobloc ž 200 Ì 10+0+1 + 0 α Table 3-7\ Honatitic



[Figure 3-7] Hepatitis B prevalence rates by region (2012)

Source: Dongjin Kim et al. (2014). Health Inequality Indicators and Policy Challenges in Korea-Health Inequity Report: Statistics I, pp. 206-207, Figure 3-139

6. Death

1) Mortality rate¹⁴⁾

□ Disparities among population groups

Death rates were higher among people with less education, especially among those aged 30-64 than those aged 65 and over. Disparities among population groups were more prominent in men than in women. Among the women ages 30-64, the death rate was 4.6 times higher among women with the lowest level of education than women belonging to those with the most education. As for men, the gap was 5.5 times.

By occupation, men with service/sales jobs had the highest mortality rate but in the case of women, blue-collar workers had the highest mortality rate (see Table 3-8).

Regional disparities

In both men and women, the lowest morality rates were observed in the Seoul metropolitan area, including Incheon and Gyeogngi-do. Gangwon-do and central and southern coastal areas had higher mortality rates. In the case of men, central and southern coastal areas, including Gyeongsangbuk-do, Gyeongsangnam-do and Jeollanam-do, saw higher mortality rates (see Figure 3-8).

¹⁴⁾ Definition: The number of deaths in the total population/ Numerator: Number of deaths/ Denominator: Total population/ Unit: Person per 100,000

			Total			Men			Women	
Ū	Category	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)	Crude rate (person/100,000 persons)	Standardized rate (person/100,00 persons)	9
	(Ages 30-64)									
	Elementary school or less	796.2	790.3	5.2	1493.9	1,149.3	5.5	411.7	431.4	
	Middle or high school	296.6	273.3	1.8	465.0	406.9	1.9	147.2	139.8	
ducation level	Junior college or more	124.3	152.7		166.3	210.9		67.3	94.5	
	(65 or over)									
	Elementary school or less	3695.8	3,470.0	1.3	5026.2	4,571.2	1.2	3184.9	2,369.0	
	Middle school	2574.4	3,175.0	1.2	3469.5	4,186.6	1.1	1516.7	2,165.0	
	High school or more	2437.4	2,750.0		2927.4	3,683.6		1353.0	1,816.0	
	Blue-collar	159.1	181.0	1.6	219.7	270.1	1.4	57.6	91.9	
Sccupation Ages 30-64)	Service/sales	177.8	207.0	1.8	355.4	360.4	1.9	54.4	53.7	
	White-collar	170.1	114.8		224.5	192.8		48.3	36.9	

(Table 3-8) Mortality rate (total, by gender and by socioeconomic variables, 2012)

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[Figure 3-8] Mortality rate by region (2012)

Source: Dongjin Kim et al. (2014). Health Inequality Indicators and Policy Challenges in Korea-Health Inequity Report: Statistics I, p. 221, Figure 3-154

2) Cancer mortality rate¹⁵⁾

□ Disparities among population groups

Less educated people were found to have higher cancer mortality rates. In the case of men aged 30-64, the death rate of the group with the lowest level of education was 2.9 times higher than that of those with the highest level of education, and among their female counterparts, 2.0 times higher. Any significant disparities were associated with educational attainment among the 65-plus age group.

By occupation, service/sales workers had the highest cancer death rate for the male population aged 30-64, 2.5 times higher than that for white-collar workers. But in the case of women, the highest cancer death rate was found in blue-collar workers, 4.0 times higher than in white-collar workers (see Table 3-9).

□ Regional disparities

The cancer mortality rate was lower in metropolitan areas, including Seoul and Gyeonggi-do, and higher in coastal areas.

In the case of men, the rate was higher in southern central areas, including Gyeongsang-do and Jeolla-do. For women, higher rates were observed in the northern central parts of the country and Gyeongsangnam-do (see Figure 3-9).

¹⁵⁾ Definition: Number of people who died of cancer among the total population Numerator: Number of people who died of cancer (C00-C97) Denominator: Total population Unit: Person per 100,000

			Total			Men			Women	
J	Category	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)	Crude rate (person/100,000 persons)	Standa ra (person, pers	ardized nte /100,000 sons)
	(Ages 30-64)									
	Elementary school or less	268.8	170.1	2.5	455.7	234.9	2.9	165.8	105.	~
	Middle or high school	101.8	87.6	1.3	144.3	117.6	1.4	64.0	57.5	
Education level	Junior college or more	48.2	67.4		58.5	81.5		34.2	53.3	
	(65 or over)									
	Elementary school or less	855.9	978.5	1.1	1527.7	1,443.3	1.2	597.9	513.8	
	Middle school	849.6	922.1	1.1	1212.5	1,341.1	1.1	420.8	503.1	
_	High school or more	892.5	880.0		1103.0	1,259.9		426.5	500.2	
	Blue-collar	59.7	75.5	2.5	79.9	106.7	2.1	25.9	44.2	
Occupation (Ages 30-64)	Service/sales	60.3	71.3	2.3	123.2	126.7	2.5	16.6	15.9	
	White-collar	48.1	30.8		62.3	50.5		16.2	11.2	

(Table 3-9) Cancer mortality rate (total, by gender and by socioeconomic variables, 2012)



[Figure 3-9] Cancer mortality rate by region (2012)

Source: Dongjin Kim et al. (2014). Health Inequality Indicators and Policy Challenges in Korea-Health Inequity Report: Statistics I, p. 224, Figure 3-156

3) Stomach cancer mortality rate¹⁶⁾

□ Disparities among population groups

Stomach cancer caused more deaths among the less educated. In the group of adult men ages 30-64, the stomach cancer rate among the least educated group was 2.6 times higher than that of the most educated. The corresponding gap in their female counterparts was 1.7 times.

In the case of men ages 30-64, the highest stomach cancer death rate was observed among people with service/sales jobs, 2.8 times higher than that of white-collar workers. But in the female group of the same age, the highest death rate was found among blue-collar workers: a substantial 4.9 times that of white-collar workers (see Table 3-10).

Regional disparities

Higher stomach cancer rates were observed in the southern central inland areas and more remarkably among men (see Figure 3-10).

16) Definition: Number of people who died of stomach cancer among the total population
 Numerator: Number of people who died of stomach cancer (C16)/
 Denominator: Total population
 Unit: Person per 100,000

			Total			Men			Women	
Ŭ	ategory	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)
	(Ages 30-64)									
	Elementary school or less	34.5	22.3	2.3	64.9	31.6	2.6	17.7	13.0	1.7
	Middle or high school	15.0	13.2	1.3	22.0	18.2	1.5	8.8 8	8.1	1.1
Education level	Junior college or more	7.7	9.9		8.9	12.0		6.0	7.7	
	(65 or over)									
	Elementary school or less	122.3	140.7	1.3	228.6	214.3	1.3	81.5	67.2	1.3
	Middle school	109.7	120.6	1.1	162.8	182.7	1.1	47.1	58.5	1.2
	High school or more	114.2	110.2		147.7	169.8		39.9	50.5	
	Blue-collar	9.6	11.3	2.7	12.4	16.0	2.3	4.8	6.6	4.9
Occupation (Ages 30-64)	Service/sales	9.2	10.9	2.6	18.9	19.5	2.8	2.5	2.3	1.7
	White-collar	6.5	4.2		8.5	7.0		1.9	1.3	
Source: Dongji 702-70	in Kim et al. (2014 33, Tables 4-114,). Health Inec 4-115 and 4-	quality Indicat 116	ors and	Policy Challe	anges in Korea	a-Healtl	h Inequity Re	port: Statistic	s II, pp.

(Table 3-10) Stomach cancer mortality rates (total, by gender and by socioeconomic variables, 2013)

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[Figure 3-10] Stomach cancer mortality rates by region (2012)

Source: Dongjin Kim et al. (2014). Health Inequality Indicators and Policy Challenges in Korea-Health Inequity Report: Statistics I, p. 229, Figure 3-160

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4) Cerebrovascular disease mortality rate¹⁷⁾

□ Disparities among population groups

People with less education were found to have higher rates of cerebrovascular disease mortality rates. In the case of men ages 30-64, the rate was 4.5 times higher among people with the lowest level of education than those with the highest level of education. The gap was 5.5 times among their female counterparts.

Men and women produced different results in the comparison by occupation. The cerebrovascular disease mortality rate was highest in service/sales workers in the case of men, 2.1 times higher than that for white-collar workers. But the death rate stood highest among blue-collar workers in the female group, 2.1 times that of white-collar workers (see Table 3-11).

□ Regional disparities

Cerebrovascular disease mortality rates were observed higher in east and west coastal areas and their vicinities. This tendency was more noticeable among men than women. In the case of women (see Figure 3-11).

17) Definition: Number of people who died of cerebrovascular diseases among the total population
Numerator: Number of people who died of cerebrovascular diseases/ Denominator: Total population
Unit: Person per 100,000

(Table 3-1	1) Cerebrovascu	ular disease	mortality rat	es (tota	al, by gende	r and by so	cioecon	omic variabl	es, 2012)	
			Total			Men			Women	
0	Dategory	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)
	(Ages 30-64)									
	Elementary school or less	58.6	40.3	4.8	95.7	53.6	4.5	38.1	27.1	5.5
	Middle or high school	19.3	17.1	2.0	27.7	23.5	2.0	11.9	10.7	2.2
Education level	Junior college or more	6.6	8.5		9.3	12.0		2.9	4.9	
	(65 or over)									
	Elementary school or less	464.5	412.8	1.3	565	505.4	1.2	425.9	320.1	1.4
	Middle school	303.6	387.2	1.2	397	492.2	1.2	193.2	282.2	1.3
	High school or more	272.7	316.6		320.7	407.2		166.3	226.0	
	Blue-collar	9.6	12.3	1.7	13.1	16.5	1.5	4.4	8.1	2.1
Occupation (Ages 30–64)	Service/sales	12.9	14.1	1.9	21.8	22.3	2.1	6.7	0.9	1.5
	White-collar	10.6	7.4		12.9	10.7		5.5	4.0	
Source: Don 735-	gjin Kim et al. (20 -736, Tables 4-12	14). Health In 8, 4-129 and 4	equality Indic 4-130	cators an	ıd Policy Chal	lenges in Kor	ea-Healt	th Inequity Re	eport: Statistic	s II, pp.



[Figure 3-11] Cerebrovascular disease mortality rate by region (2012)

Source: Dongjin Kim et al. (2014). Health Inequality Indicators and Policy Challenges in Korea-Health Inequity Report: Statistics I, p. 234, Figure 3-164

5) Heart disease mortality¹⁸⁾

□ Disparities among population groups

People with lower levels of educational attainment tended to have higher rates of heart disease with the tendency more remarkable among those ages 30-64 than the group ages 65 and over.

In the case of the group ages 30-64, the rate for those with the lowest level of education was 4.5 times higher than that for those with the highest education level for men, and 5.5 times for women.

Different results were observed between men and women by occupation. Men with service/sale jobs had the highest rate of heart disease deaths, 2.3 times the rate for their counterparts with white-collar positions. Among women, blue-collar workers showed the highest death rate, 2.1 times that of white-collar workers (see Table 3-12).

□ Regional disparities

Higher heart disease death rates were found among women than men in the Gangwon, Gyeongbuk and Gyeongnam regions. In the case of men, the death rate stood highest in Gyeongsang-do (see Figure 3-12).

¹⁸⁾ Definition: Number of people who died of heart diseases Numerator: Number of people who died of heart diseases (I20-I51)/ Denominator: Total population Unit: Person per 100,000

(Table 3 [.]	-12) Heart d	isease morta	lity rates (t	otal, by ge	ender and k	oy socioecor	nomic vari	ables, 2012	(
			Total			Men			Women	
0	category .	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)
	(Ages 30-64)									
	Elementary school or less	55.5	52.8	4.6	108.9	87.3	4.5	26.03	18.4	5.5
	Middle or high school	19.7	17.7	1.5	34.7	29.6	1.5	6.409	5.9	1.7
Education	Junior college or more	9.5	11.5		15.1	19.6		1.915	3.4	1.0
Ievel	(65 or over)									
	Elementary school or less	391.1	323.6	1.2	412.6	369.2	1.0	382.9	277.9	1.5
	Middle school	245.7	321.0	1.2	304.2	383.3	1.0	176.5	258.7	1.4
	High school or more	237.7	278.1		283.9	366.6		135.3	189.7	1.0
	Blue-collar	13.9	14.8	1.8	20.8	25.7	1.7	2.264	4.0	2.1
(Ages 20_64)	Service/sales	15.3	18.5	2.2	33.7	34.6	2.3	2.520	2.4	1.3
(±0 00	White-collar	13.1	8.4		17.7	14.9		2.809	2.0	1.0
Source: D	ongjin Kim et 52-753, Tables	al. (2014). Hea : 4-135, 4-136	lth Inequalit , 4-137	y Indicators	s and Policy (Challenges in	Korea-Hea	alth Inequity]	Report: Statis	tics II, pp.



[Figure 3-12] Heart disease mortality rate by region (2012)

Source: Dongjin Kim et al. (2014). Health Inequality Indicators and Policy Challenges in Korea-Health Equity Report: Statistics I, pp. 236-397, Figure 3-166

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6) Suicide mortality¹⁹⁾

□ Disparities among population groups

Suicide mortality rates tended to rise among populations with less education. In the case of people ages 30-64, the suicide death rate was 5.0 times higher among those with the lowest level of education than those with the highest level for men, and 4.6 percent among women. In the population group ages 65 and over, the death rate was 2.1 times higher among the least educated than among those with the highest level of education.

By occupation, people with service/sales jobs showed the highest suicide death rates for both men and women. The rate was 2.2 times higher than that of white-collar workers among men and 2.4 times among women (see Table 3-13).

Regional disparities

Higher suicide mortality rates were observed in the inland areas of Gangwon-do, Chungcheongnam-do and Gyeongsang-do. In the case of men, the rate was higher in a wide area of the northern central region. For women, Gangwon-do, Chungcheongnam-do, Gyeongsangbuk-do and some parts of Gyeongsangnam-do showed higher rates (see Table 3-13).

 ¹⁹⁾ Definition: Number who killed themselves among the total population Numerator: Number of deaths from suicide (X60-X84)/ Denominator: Total population Unit: Person per 100,000

(Table 3-1	3) Suicide mor	tality rate (t	otal, by gend	der and	by socioeco	onomic variat	oles, 20	112)		
			Total			Men			Women	
0	ategory	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)	Crude rate (person/100,000 persons)	Standardized rate (person/100,000 persons)	Relative gap (times)
	(Ages 30-64)									
	Elementary school or less	70.0	107.2	4.9	134.6	145.0	5.0	34.5	69.4	4.6
	Middle or high school	40.8	43.1	2.0	60.9	60.9	2.1	22.9	25.3	1.7
Education level	Junior college or more	22.1	22.0		27.2	28.8		15.3	15.2	
	(65 or over)									
	Elementary school or less	87.7	109.0	2.1	172.9	168.1	2.1	55.1	49.8	1.9
	Middle school	77.9	79.8	1.5	119.3	128.3	1.6	28.9	31.3	1.2
	High school or more	58.5	53.0		73.4	79.3		25.5	26.6	
	Blue-collar	23.4	22.4	1.5	30.7	32.8	1.4	11.0	12.0	2.2
Occupation (Ages 30–64)	Service/sales	28.9	33.0	2.3	53.4	52.9	2.2	11.9	13.1	2.4
	White-collar	19.3	14.5		25.6	23.6		5.4	5.4	
Source: Don 836,	gjin Kim et al. (2 Tables 4-172, 4	014). Health 1-173 and 4-1	Inequality Ind 74	icators a	nd Policy Ch	allenges in Ko	rea-Hea	lth Inequity I	Report: Statist	ics II, p.

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[Figure 3-13] Suicide rate by region (2012)

Source: Dongjin Kim et al. (2014). Health Inequality Indicators and Policy Challenges in Korea-Health Inequity Report: Statistics I, p. 250, Figure 3-178

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