

REVIEW

Men's health in South Korea

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Over the last four decades, rapid industrialisation and a Westernized lifestyle have changed disease patterns in South Korea. This study was conducted to review the current state of men's health in South Korea. By reviewing reports of government authorities and domestic and foreign studies related to men's health, we found that in men ≥ 65 years of age, 28.4% considered their health status good, whereas 38.3% considered their health status poor. The prevalence of moderate-to-severe lower urinary tract symptoms was similar to that in Caucasians. The prevalence of erectile dysfunction was higher than the global average. The incidence of cryptorchidism and hypospadias showed a tendency towards increase. The prevalence of diabetes mellitus continuously increased by 10.8% in 2008 and was the fifth leading cause of death in 2008. The prevalence of obesity increased from 26.0% in 1998 to 31.7% in 2007. The prevalence of ischaemic heart disease has continuously increased, with heart diseases causing one of every 12 deaths. The prevalence of chronic obstructive pulmonary disease in 2005 was 17.2% among adults ≥ 45 years of age. The top five prevalent cancers in men, in descending order, were cancers of the stomach, lung, liver, large bowel and prostate, among which the incidence of stomach, lung and liver cancers decreased by 0.7%, 0.6% and 2.2%, respectively, from 1999 to 2007, whereas the incidence of large bowel and prostate cancers increased by 7.0% and 13.2%, respectively. The prevalence of depression, dementia and sleep disorders was estimated as 17.3%, 4.21% and 20.2%, respectively. Together, these findings suggest that disease patterns in South Korean men are becoming Westernized.

Asian Journal of Andrology (2011) 13, 519–525; doi:10.1038/2010.134; published online 11 April 2011

Keywords: Health; men; South Korea

INTRODUCTION

The global increase in mean life expectancy and the drastic reduction in fertility rates have resulted in a rapidly ageing global population. South Korea is representative of such changes. The life expectancy in Korean men has been increasing, from 61.8 years in 1980 to 67.3 years in 1990, 72.3 years in 2000, 75.1 years in 2005 and 76.5 years in 2008.¹ The birth rate in South Korea is among the lowest in the world. The total fertility rate (1.47 in 2000, 1.08 in 2005 and 1.15 in 2009) and the growth rate of the population (1.57 in 1980, 0.99 in 1990, 0.84 in 2000 and 0.38 in 2004) have been declining. As a result, the national population is expected to peak in 2018 and to start declining thereafter. In contrast, the proportion of the population aged ≥ 65 years has been continuously increasing, as shown by the following statistics: 3.82% in 1980, 5.12% in 1990, 7.2% in 2000, 8.3% in 2005 and 9.9% in 2009 (Table 1).²

In addition to genetic determinants, environmental and lifestyle factors, including nutrition, exercise and substance use (i.e., smoking and alcohol abuse), also significantly affect the progression of ageing. According to the Third Korean National Health and Nutrition Examination Survey (KNHANES III) in 2005, the intake of cereals had been continuously decreasing from 1969 to 2005 (Figure 1a), whereas the intake of meat, milk and dairy products had been continuously increasing (Figure 1b), while vegetable intake showed no changes during this period (Figure 1a).³

Over the past four decades, rapid industrialisation, a Westernized lifestyle and the continuous increase in the ageing population have

changed disease patterns in South Korea. The top three leading causes of death, malignant neoplasms, followed by cerebrovascular diseases and heart diseases, remained the same from 1998 to 2008. In 1998, the fourth and fifth leading causes of death were liver disease and traffic accidents; in 2003, they became liver disease and suicide, and in 2008, suicide and liver disease.⁴ South Korea spent 6.8% of its gross domestic product on health in 2009. The spending per person has significantly grown over the past decade, although it remains lower than the Organization for Economic Cooperation and Development (OECD) average of 8.9%.⁵ In 2009, the medical expenditures for the elderly ≥ 65 years of age accounted for 31.4% of the total medical expenditures, a 1.6-fold increase, compared with that in 2002 (Table 1).² This study was conducted to review the current status of men's health in South Korea.

GENERAL HEALTH

According to the 2008 Korean Statistical Information Service,⁶ 75.1% and 77.7% of Korean men regularly ate breakfast and maintained proper sleeping schedules (6–8 h), respectively. Of men ≥ 65 years of age, 94.9% and 88.7% regularly ate breakfast and maintained proper sleeping schedules, respectively. In total, 35.1% and 44.4% of Korean men regularly exercised and received regular medical check-ups, respectively, whereas of men ≥ 65 years of age, 39.2% and 64.7% regularly exercised and received regular medical check-ups, respectively. In comparison, of women ≥ 65 years of age, 29.1% and 56.9% regularly

Table 1 Yearly trend of the proportions of the population and medical expenditures for individuals ≥ 65 years of age²

Year	2002	2003	2004	2005	2006	2007	2008	2009
Population (%)	7.2	7.5	7.9	8.3	8.6	9.2	9.6	9.9
Expenditure (%)	19.3	21.2	22.8	24.4	25.9	28.2	29.9	31.4

exercised (at least 30 min of exercise more than three times a week) and received regular medical check-ups, respectively. Ageing men were more concerned of their health than ageing women. Of men ≥ 20 years of age, 50.8% were smokers, and 23.8% drank alcohol at least 3–4 times a week, whereas of the elderly ≥ 65 years of age, 15.6% and 22.7% were smokers and drank alcohol at least 3–4 times a week, respectively.

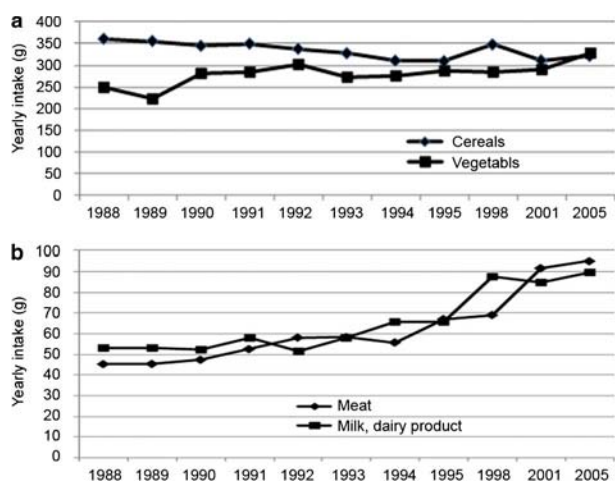
In the self-assessment of their health, rated on seven levels, 56.7% of men ≥ 15 years of age rated their health as good, whereas 11.0% rated it as poor. Of men ≥ 65 years of age, 28.4% rated their health as good, whereas 38.3% rated it as poor. The number of 'good' responders increased with increasing levels of education and income.

GENITOURINARY SYSTEM

Benign prostatic hyperplasia (BPH) and lower urinary tract symptoms (LUTS)

The incidence of LUTS increases with age, and the most common cause of LUTS in ageing men is BPH. Asian men have a smaller prostate than Caucasians. While the lifetime probability of surgical treatment in Americans at the age of 50 years has been estimated to be 25%–30%,⁷ the probability of surgical treatment in Korean men at this age is only 4%.⁸ However, reported data have shown that an enlarged prostate is not necessarily associated with the severity of LUTS⁹ and that Asian men may have similar or higher symptom scores and a more impaired quality of life as compared with Europeans and Americans.¹⁰

In a community-based epidemiological study to determine the prevalence of LUTS in Korean men ≥ 50 years of age, 23.3% were moderately to severely symptomatic (17.7% in the 50- to 59-year age group, 23.3% in the 60- to 69-year age group and 35.3% in the ≥ 70 -year age group), suggesting that the prevalence of moderate-to-severe LUTS in Korean men is similar to that in Caucasians.¹¹ The proportion of severely symptomatic men approximately doubles with each decade of age. A previous study suggested that the higher

**Figure 1** Yearly change in the intake of cereals and vegetables (a) and meat, milk and dairy products (b). Adapted with permission.³

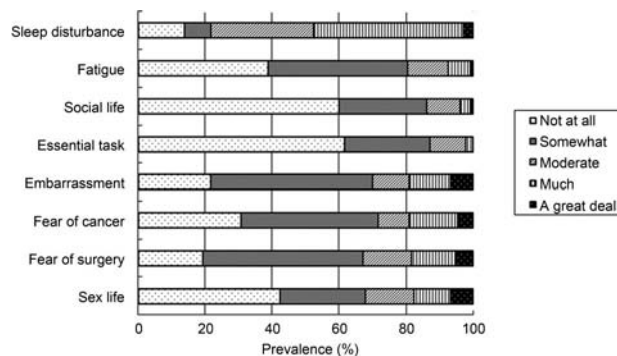
ratio of the transition zone enlargement relative to the entire prostate in Korean men, compared with that in Caucasians, might be related to the higher incidence of clinical symptoms.¹²

Overactive bladder (OAB) is a subset of storage LUTS defined as urgency, with or without urge urinary incontinence. The prevalence of OAB in Korean men was 29.9%. OAB was more common in professional workers (43%), high-income individuals (26%) and urban dwellers (64%). The incidence of OAB increased with age, and the prevalence was 53% in men >70 years of age. Urge incontinence symptoms were reported in 13% of men aged ≥ 18 years. Some degree of suffering was recorded in 32% of men with OAB, of whom only 5.9% received treatment for OAB.¹³

Couples that have lived together for many decades share health concerns that directly affect their partners. This is particularly true in the cases of LUTS and clinical BPH because they occur in ageing men at a time when both partners are increasingly concerned about health matters and their vulnerabilities and susceptibilities to diseases. A study on LUTS in men on health-related quality of life of their spouses revealed that almost all spouses (98%) suffered from one or more inconvenience to some degree¹⁴ (Figure 2).

Erectile dysfunction (ED)

The prevalence of ED is reported differently depending on the evaluation methods. Based on the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders, the prevalences of ED in South Korea were 37.2%, 69.2%, 83.3% and 100% in men in their 50s, 60s, 70s and >80 years of age, respectively.¹⁵ In another survey using the International Index of Erectile Function, the prevalences of ED were 46%, 60%, 74% and 85% in men in their 30s, 40s, 50s and ≥ 60 years of age, respectively.¹⁶ The prevalences of self-reported ED, however, were much lower: 7.3%, 10.0%, 23.9% and 34.1% in men in their 40s, 50s, 60s and 70s, respectively.¹⁷ According to the Global Study of Sexual Attitudes and Behaviors,^{18,19} the prevalence of ED in Korean men aged 40–80 years was higher than the global average and than that in other Asian regions. The higher prevalence of ED may be attributed to the relatively higher prevalence of risk factors for ED (Figure 3). However, only 2% of men and women in South Korea discussed their sexual problems with a medical doctor. This low percentage was largely due to the belief that the problem is a natural phenomenon of ageing, the belief that the problem is not serious, not suffering from the problem, difficulties in accessing or in affording medical care, and/or the lack of awareness of available treatments. However, since the launch of Viagra, an improved understanding of ED, an increased number of patients recognizing the need for treatment and the availability of convenient oral medication for treatment

**Figure 2** Prevalence of factors affecting partner's quality of life in men with lower urinary tract symptoms. Adapted with permission.¹⁴

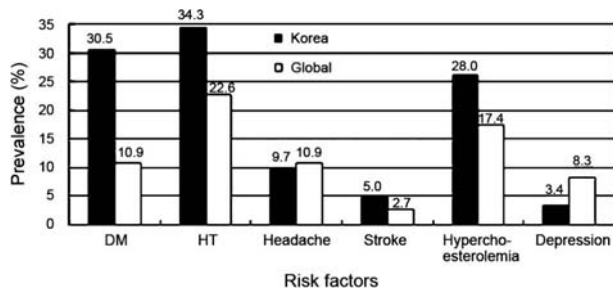


Figure 3 Prevalence of risk factors of erectile dysfunction: a comparison with global average. Adapted with permission.¹⁹ DM, diabetes mellitus; HT, hypertension.

have contributed to a significant increase in the number of patients visiting clinics for ED treatment.²⁰

Not surprisingly, some illegal generic drugs are circulating on the black market, and this situation has led to drug misuse. A survey conducted in South Korea in 2008 revealed that 10.6% of men 20–60 years of age who purchased phosphodiesterase type 5 inhibitors bought the drugs without a prescription through non-pharmacy channels (acquaintance, Internet or sex shop) (75%), pharmacy (13%) and non-pharmacy/pharmacy (12%).²¹ The oral agents purchased through non-pharmacy channels are presumably counterfeit.

Infertility

With the definition of infertility as the failure to conceive after 1 year of unprotected sexual intercourse, a study on the utilisation of health services and coping strategies for infertility conducted in South Korea in 2001 revealed that the rate of infertility in couples was 23.2% (primary, 10.8%; secondary, 12.4%).²² The rate of conception failure during the first year after marriage was 13.5%, and it decreased to 11.3% (14.6% minus the 3.3% that were spontaneous abortions) after 3 years of marriage.

A male factor was identified as the cause of infertility in 30%–40% of couples and a contributing factor in 50% of the cases.²³ Although no definitive nationwide data are available for the rate of male factor infertility in South Korea, among 920 new male patients who visited a hospital of infertility specialty for sterility from January 2009 to December 2009, 269 (29.2%) were abnormal in ≥ 1 parameter (count, motility and morphology) of sperm analysis, and 96 (10.4%) were azoospermic.²⁴ Of the men with abnormality in 1 parameter of the sperm analysis, 113 (42.0%) presented with varicocele, whereas of 555 men diagnosed as normal in the sperm analysis, 84 (15.1%) presented with varicocele. The causes of azoospermia were obstructive in 25.0% and non-obstructive in 70.8% (Table 2). The prevalence of Y-chromosome microdeletions in Korean men with infertility is 13.0% and 13.3% in patients with non-obstructive azoospermia and those with severe oligozoospermia, respectively.²⁵

Congenital anomalies, cryptorchidism and hypospadias

A number of animal studies have shown that exposure to industrial chemicals containing estrogenic properties or anti-androgens *in utero* or during the perinatal period may cause cryptorchidism, hypospadias, reduced sperm count and testicular cancer in males, which may represent the symptoms of an underlying developmental disease, the testicular dysgenesis syndrome.²⁶ Previously published studies have suggested that the incidence of these congenital anomalies has increased during the past half century in developed industrial countries, but not in less developed countries,²⁶ and evidence suggests that

Table 2 Causes of azoospermia in Korean men. Adapted with permission²⁴

Cause	Number (%)
Obstruction	24 (25.0)
Vas/epididymis	12
Congenital vassal dysgenesis	10
Ejaculatory duct	2
Non-obstruction	68 (70.8)
Sertoli cell only syndrome	33
Maturation arrest	10
Hypospermatogenesis	8
Chromosomal abnormality	17
Retrograde ejaculation	4 (4.2)
Total	96 (100.0)

there is a geographical variation in the prevalence of cryptorchidism and hypospadias at birth.²⁷

Industrial development has been remarkable over the past 40 years in South Korea, resulting in the spread of environmental pollution.²⁸ In a recent study, the national incidence of cryptorchidism and hypospadias in males 0–4 years of age increased from 5.01 to 17.43 per 10 000 people and from 1.40 to 3.28 per 10 000 people, respectively, between 2000 and 2005.²⁹

ENDOCRINE SYSTEM

Diabetes mellitus (DM)

Type 2 DM is a major chronic disease and public health problem in South Korea. The prevalence of DM in South Korea increased from <1% in 1960 to 6%–9% by the end of the 1990s.^{30,31} A recent large-scale community cohort prospective study has shown that the gender- and resident-specific annual incidence of type 2 DM among people aged from 40 to 70 years rapidly increased (Table 3).³² The most recent report from the Fourth Korean National Health and Nutrition Examination Surveys (KNHANES IV) revealed that the prevalence of DM in the ≥ 30 -year age group was 10% (10.8% in males and 9.3% in females).³³ The rapid rise in the incidence and prevalence of DM in South Korea during the last decades may be attributed to an increased adoption of a Westernized diet, decreased physical activity, increasing obesity and a genetic background of susceptibility.³⁴

A report by a task force assembled to study the epidemiology of Korean DM in 2003 reported the following results: 44.8% of foot amputees were diabetic; diabetes affected 56.7% of all end-stage renal disease patients; and of those who underwent renal replacement therapy, 70.5% were diabetic. The incidence rates of cataracts, retinopathy and glaucoma were reported to be 3, 3.9 and 1.5 times more common in diabetics than those in non-diabetics, respectively. Acute stroke was estimated to be 5.2 times more common in diabetic patients compared with the general population.³⁵ DM was listed as the fifth leading cause of death in 2008.³⁶

Table 3 Gender- and resident-specific annual incidence of type 2 diabetes mellitus among people at 40–70 years of age³²

Age (year)	Men		Women	
	Rural (%)	Urban (%)	Rural (%)	Urban (%)
40–49	1.68	2.35	1.33	1.55
50–59	1.65	3.18	1.48	2.30
60–69	1.85	4.55	2.05	4.10
70–79	3.93	5.00	3.08	5.00

Thyroid diseases

Thyroid diseases are common endocrine disorders and are much more prevalent in females than in males. Although there are no well-designed, prospective cohort studies to evaluate the epidemiology of thyroid dysfunction in South Korea, the data from an institutional-based, cross-sectional study showed a prevalence similar to that of other iodine-sufficient areas.³⁷ The prevalence of hyperthyroidism, subclinical hyperthyroidism, overt hypothyroidism and subclinical hypothyroidism is shown in **Table 4**. The prevalence of hyperthyroidism and hypothyroidism peaked in the fifth decade and in the seventh decade, respectively.

Obesity

The prevalence of obesity is rapidly increasing in many countries, including South Korea.^{38–41} The data from KNHANES IV demonstrated that it (≥ 19 years of age) dramatically increased from 26.0% in 1998 to 31.7% in 2007.³³ The data showed a higher prevalence of obesity in males than in females since 1998 (**Figure 4**). The Westernized diet and a reduction in physical activity appear to have caused a rapid rise in the prevalence of obesity during the past 10 years. The prevalence of the metabolic syndrome has also markedly increased in South Korea recently.^{38,39}

CARDIOVASCULAR SYSTEM

Hypertension

According to a Korean health survey, the prevalence of hypertension was 30.0% (32.4% in men, 27.0% in women) in 1998 and decreased to 27.9% in 2005 (30.9% in men; 24.1% in women) (**Figure 5**). Hypertension is more frequent in men, the elderly (the prevalence peaked in the 60s for men and in the 70s for women), people with low levels of formal education and people in a low income bracket.⁴² The overall mortality of hypertension was 10.4 per 100 000 people (6.9 in men; 13.9 in women) in 2005. The yearly trend of mortality related to hypertensive diseases is shown in **Figure 6**. Strokes triggered by hypertension were one of the six leading causes of death in South Korea.^{3,43}

Hypertension accounted for 27.3 of 100 000 deaths and contributed to nearly 70% of the mortality due to cardiovascular diseases.⁴⁴ Age (in women), obesity (body mass index >23 kg m⁻²), smoking (>30 -pack-years; number of pack-years=(packs smoked per day) \times (years as a smoker)), alcohol (>30 g per day), lack of exercise, working >40 h per week and insufficient sleep were suggested to be risk factors for hypertension.⁴⁵ It has been suggested that Korean dietary habits (spicy and salty food and alcohol) may increase the prevalence of hypertension.⁴⁶

Recently, a multicentre, nationwide, cross-sectional, population-based survey involving 13 184 hypertensive patients was conducted to investigate the current status of hypertension treatments in Korean patients.⁴⁷ Based on the multivariate analysis, diabetes (odds ratio (OR): 5.57; 95% CI: 5.05–6.13) and chronic kidney disease (OR:

Table 4 Prevalence of hyperthyroidism and hypothyroidism in men and women in South Korea (per 1000 people)³⁷

	Men	Women
Hyperthyroidism		
Overt	3.6	7.7
Subclinical	11.8	13.0
Hypothyroidism		
Overt	1.1	4.9
Subclinical	11.2	26.7

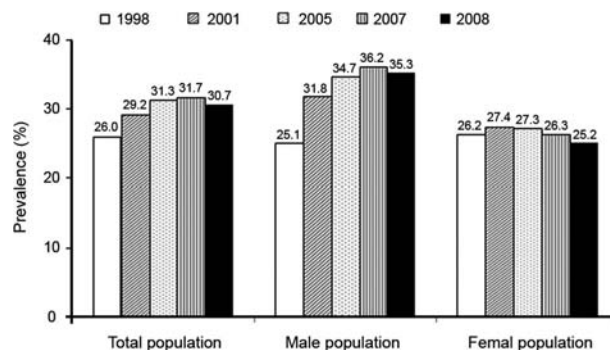


Figure 4 Age-related prevalence of obesity, defined as body mass index (BMI) ≥ 25 kg m⁻². Adapted with permission.³³

3.40; 95% CI: 2.54–4.54) were the most significant independent factors related to poor blood pressure control.

Coronary artery disease

From 1983 to 2007, the prevalence of ischaemic heart disease had continuously increased, but it was somewhat decreased in 2008 (2%). Ischaemic heart disease has become a leading cause of death in the >50 -year age group. The overall mortality of ischaemic heart disease is 25.7 per 100 000 people (27.8 in men; 23.6 in women). Heart disease caused one of every 12 deaths, and the total number of deaths due to ischaemic heart disease was 12 760 in 2004. The prevalence of ischaemic heart disease was higher in men and in the elderly. Similarly, the mortality associated with ischaemic heart disease also increased in 2007 (**Figure 7**).^{43,48,49} The in-hospital case-fatality rate within 30 days of admission for acute myocardial infarction was significantly higher than the OECD average in 2007 (8.1% versus 4.9%), whereas in-hospital case-fatality rates for both ischaemic and hemorrhagic stroke were both lower than the OECD average (2.4% versus 5.0% and 11.0% versus 19.8%, respectively).^{50,51}

Cardiovascular surgery was first introduced in South Korea in 1959, and the number of cases has increased annually. A total of 635 074 cardiovascular surgeries/interventions have been performed. While percutaneous coronary intervention using coronary stents has markedly increased during the past 10 years, bypass surgeries have not

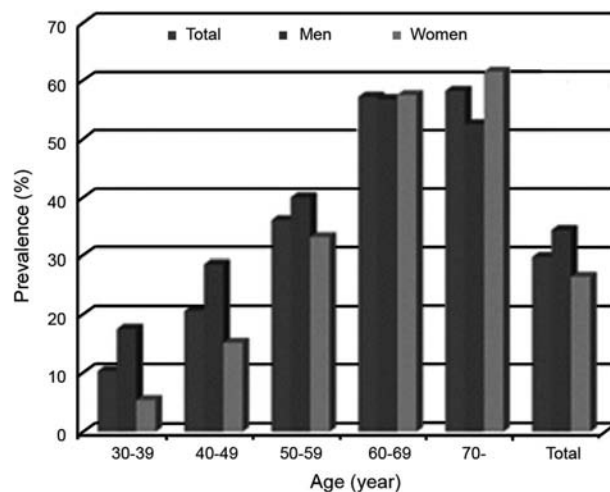


Figure 5 Prevalence of hypertension in accordance with age (%). Adapted with permission.⁴²

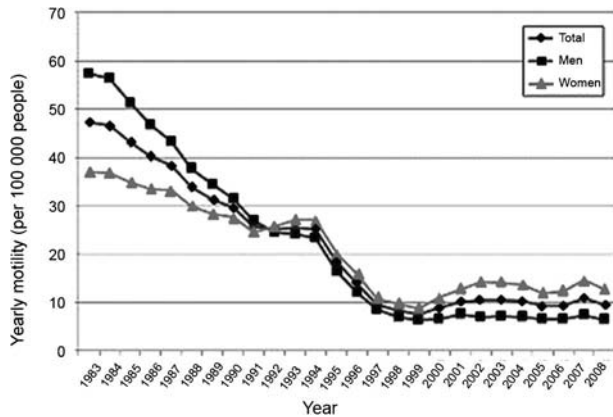


Figure 6 Yearly mortality related to hypertensive diseases (unit: per 100 000 people). Adapted with permission.^{3,34}

increased.⁵² Primary percutaneous coronary intervention is currently performed nationwide in patients with acute ST-elevation myocardial infarction; this progress may have a significant impact on decreasing the total mortality rate of acute myocardial infarction in South Korea. The use of statin therapy in patients with coronary artery disease has markedly increased and has improved the prognosis of these patients.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

The exact worldwide prevalence of COPD is largely unknown, although it has been estimated to vary from 7% to 19%.⁵³ The prevalence of COPD in South Korea in 2005 was 17.2% among adults ≥ 45 years of age.⁵⁴ The primary cause of COPD is exposure to tobacco smoke. Although the role of air pollution in the aetiology of COPD is unclear, the effect is small compared with that of cigarette smoking. The proportion of non-smokers, men who quit smoking and current smokers among Korean men ≥ 45 years of age accounted for 20.0%, 26.8% and 53.2% of COPD cases, respectively.⁵⁴ The prevalence of COPD was 14.6% in non-smokers, 27.8% in men who quit smoking and 28.6% in current smokers. The risk factors of COPD analysed by multivariate logistic regression were age (OR: 4.05; $P < 0.0001$), male gender (OR: 2.62; $P < 0.0001$), income (OR: 2.13; $P < 0.0001$) and a ≥ 20 -pack-years smoking history (OR: 2.81; $P < 0.0001$).

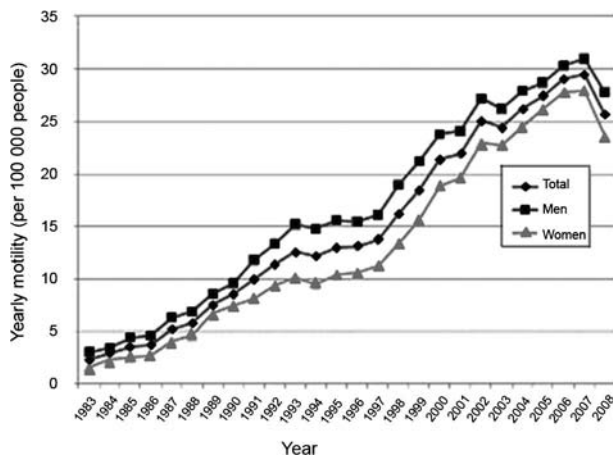


Figure 7 Yearly mortality related to ischaemic heart disease (unit: per 100 000 people). Adapted with permission.^{43,48,49}

MALIGNANCY

The epidemiology of cancer in South Korea has been changing in parallel with the increase in the number of elderly and the adoption of a Western lifestyle. The top five cancers in Korean men are cancers of the stomach, lung, liver, large bowel and prostate,⁵ among which the incidence of stomach, lung and liver cancers decreased by 0.7%, 0.6% and 2.2%, respectively, from 1999 to 2007, whereas the incidence of large bowel (7.0%) and prostate cancers (13.2%) increased during this period⁵⁵ (**Figure 8**). The incidence and mortality rates of stomach, liver and cervix cancers (known to be related to infections) have decreased, whereas the incidence rates of prostate, large bowel and breast cancers (so-called Western cancers) have increased, which may be attributed to the diet and lifestyles in South Korea that have been rapidly Westernized during the last 20 years. For colorectal cancer, the 5-year relative survival rate between 2001 and 2006 was close to the OECD average: 59.1% (OECD average, 56.4%) for males and 57.1% (OECD average, 58.0%) for females.⁵

Prostate cancer, the most rapidly increasing cancer in Korean men, has been one of the 10 most common cancers since 1996 and became the fifth most common cancer from 2003 to 2007. Prostate cancer accounted for 3.3% of all cancers during the same period, exceeding cervical cancer, which accounted for 2.2% of all cancers and was one of the five cancers included in the national cancer screening program. A report of the Korean Urological Association in 2009 demonstrated that the rate of detecting prostate cancer among men ≥ 55 years of age was 3.4%.⁵⁶ The 5-year survival rate of prostate cancer in 2007 was 82.4%, lower than that of breast cancer (89.5%) and much lower than that of Americans with prostate cancer (99.7%).^{55,57}

Prostate cancer accounted for 0.5% of all deaths by cancer in Korean men in 1990, and the rate continuously and rapidly increased to 2.4% in 2008, becoming the seventh most common cause of cancer-related deaths. The blood level of prostate-specific antigen, a representative screening test for the early detection of prostate cancer, was introduced in South Korea in 1990 but was not widely adopted, therefore resulting in a continuous increase in yearly deaths caused by prostate cancer in

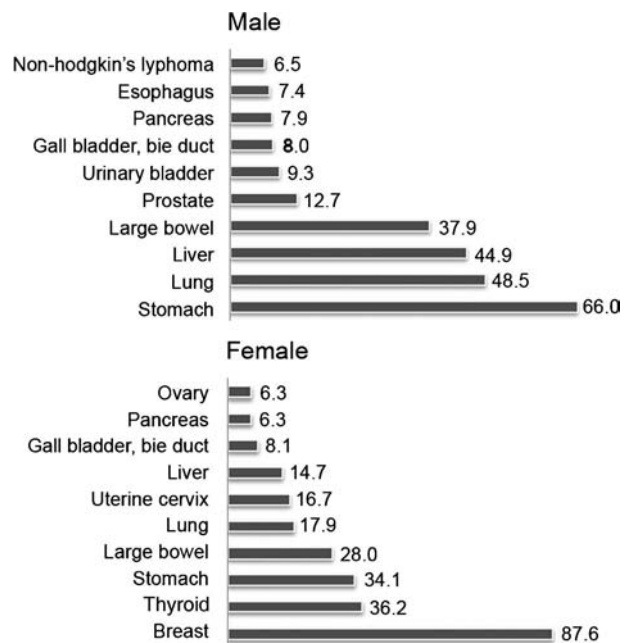


Figure 8 Incidence of 10 major cancers in South Korean in 2005 (unit: per 100 000 people). Adapted with permission.⁵⁵

South Korea. In contrast, in the United States and United Kingdom, the prostate-specific antigen test was widely adopted when it was introduced, and the mortality of prostate cancer markedly decreased.⁵⁸

The incidence of thyroid cancer has increased during the last two decades in South Korea. Thyroid cancer became the most common cancer in women and the sixth most common cancer in men in 2007.⁵⁹ The age-adjusted incidence of thyroid cancer in 1986 was 3.9 in females and 0.8 in males per 100 000 people per year.⁶⁰ According to the data from the Korean National Cancer Registry, the age-adjusted incidence of thyroid cancer in 2007 was 64.8 in females and 11.6 in males per 100 000 people per year.⁵⁹ This dramatic increase in thyroid cancer incidence during the past 20 years appears to result from the improved diagnosis of small cancers due to the increased use of ultrasound-guided fine-needle aspiration biopsies in South Korea.

MUSCULOSKELETAL

The prevalences of musculoskeletal diseases were 144.6, 140.0 and 197.2 per 1000 people, and the annual self-reported prevalences of arthritis were 117.9, 109.2 and 146.4 per 1000 people in 1998, 2001 and 2005, respectively. Based on the KNHANES III,³ osteoarthritis was the most prevalent musculoskeletal disease in both genders, and 58% of persons >65 years of age presented with at least one musculoskeletal disease (73% of women). The incidence of musculoskeletal diseases correlated with sociodemographic status.

CENTRAL NERVOUS SYSTEM/PSYCHE

Cognitive impairment and depression

The prevalence of cognitive impairment, based on a Korean Mini-Mental State Examination score ≤ 23 and the prevalence of depression, demonstrated by a Centre for Epidemiologic Studies Depression score ≥ 25 , was estimated to be 18.8% (female, 47.0%) and 17.3% (female, 17.9%), respectively.⁶¹ The prevalence of depressive symptoms was not related to gender, age, year of education, marital status, physical illness, occupation, living condition or financial status. The prevalence of cognitive impairment (56.2%) and depressive symptoms (23.5%) in institutionalized elderly people was higher.⁶²

Dementia

In a community study, the age-gender adjusted prevalence of dementia was 6.25% (male, 4.21%; female, 8.28%). The four statistically significant risk factors for dementia were age, illiteracy, unconsciousness after head injury and lack of exercise.⁶³ In another study, the prevalence of dementia in an urban community was 7.0%. Age and a low level of education were risk factors for dementia.⁶⁴

Sleep disorders

In a nationwide survey involving 5000 men and women aged 21–69 years, the prevalence of sleep disorders was 22.8% (men, 20.2%; women, 25.3%).⁶⁵ The rate peaked in individuals in their 60s (34.6%) and was higher in those with lower incomes. Among those with sleep disorders, 8.6% experienced difficulties in falling asleep, and 11.2% experienced difficulties in staying asleep more than two nights per week.

CONCLUSION

A rapidly ageing population due to the increase in life expectancy and the drastic reduction in birth rates, a rapid industrialisation, Westernisation of the diet and a reduction in physical activity in South Korea has changed disease patterns in men, increasing the prevalence of BPH and LUTS, ED, congenital genitourinary anomalies

such as cryptorchidism and hypospadias, DM, thyroid diseases, obesity, hypertension, coronary artery disease, COPD, colorectal and prostate cancers, and suicide. Consequently, a sharply rising medical expenditure for elderly men is becoming a real burden of national finance. Education regarding the value of preventive health care must be strongly encouraged at a national level to protect ageing men's health.

COMPETING FINANCIAL INTERESTS

The authors declare no competing financial interest.

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