Geriatrics Fact Sheet in Korea 2021

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South Korea became an aged society in 2017 and is predicted to become a super-aged society by 2025. Therefore, knowing the trends among older adults and identifying the geriatric burden are crucial for both healthcare professionals and policymakers. We previously summarized the general health and socioeconomic profiles of Korean older adults from the 2017 National Survey of Living Conditions and Welfare Needs of Older Koreans. In this update, we briefly summarized the results of the 2020 National Survey of Living Conditions and Welfare Needs of Older Koreans by categorizing them according to their general aging profile, socioeconomic status, lifestyle, and health status. In addition, we reviewed recent updates in the field of frailty and sarcopenia from population-based community cohorts in Korea. We hope this study will serve as a current reference for nationwide statistical data on common clinical and social parameters used in geriatrics and gerontology.

Key Words: Aged, Frail elderly, Health services for the aged, Residence characteristics

INTRODUCTION

While the global population is aging, South Korea is one of the most rapidly aging societies worldwide. It took 17 years for Korea to transition to an aged society from an aging society, defined as proportions of the population aged 65 years or older of ≥ 14.0% and 7.0%, respectively, while Japan took 24 years for the same transition.[1] More strikingly, Korea is expected to become a super-aged society, defined as a proportion of the population aged 65 years or older of ≥ 20.0%, in 2025. This prominent trend of population aging in Korea has been, to some degree, attributed to rapid economic development that accompanies the fast-growing life expectancy at birth with the establishment of modern healthcare systems after the Korean War (1950–1953) and the lowest birth rate among developed countries.[2,3]

Many potential social and economic challenges arise from the unprecedented speed of population aging in Korea. Human aging biology leads to an increased prevalence of multiple chronic conditions, frailty, and functional decline in older adults.[4,5] Therefore, a given society must prepare to serve its aging population in a multifaceted manner, from developing fiscal policies to establishing healthcare models that are specially designed for older multimorbid individuals.[6] While many policies have been developed to tackle the aging population, the sustainability and viability of modern welfare systems and government-operated healthcare systems that were originally proposed in Western countries have not been

tested at this extreme pace of aging in Korea.

To establish future care policies for the older population, it is necessary to understand the dynamically changing social characteristics and health status of these people. In 2019, we summarized the general health and socioeconomic profiles of Korean older adults based on an analysis of data from the 2017 National Survey of Living Conditions and Welfare Needs of Older Koreans.[7] The present brief review updated the previous study from the preliminary results of the latest National Survey of Living Conditions and Welfare Needs of Older Koreans performed in 2020 by the Ministry of Health and Welfare, Republic of Korea.[8] This survey was conducted for 9 months, from March 2020 to November 2020, and encompassed 969 nationwide investigation districts and 10,097 older adults aged over 65 years. The survey investigated the general information, family and social relationships, health and functional status, economic status, leisure and social activity, and living environment of this population. For disabilities, we used data from the 2019 Long-Term Care Status Survey, a triennial study started in 2019 to assess the population characteristics of long-term care insurance (LTCI) and related services.[9] In addition, we provided a brief updated summary of recent literature from population-based studies on age-related conditions in Korea.[10] Based on this study, we intended to provide an up-to-date reference for Korean nationwide statistical data on common clinical and social parameters used in research on geriatrics and gerontology.

PROFILE OF AGING IN KOREA

According to the Korean statistics in 2019, the population aged 65 years or older was 7,746 thousand persons, accounting for 15.5% of the total population, a 4.8% increase compared to the previous year.[11] The overall life expectancy at birth was 86.3 years in women and 80.0 years in men. In particular, the remaining life expectancies at 60 years of age were 28.1 and 23.3 years for women and men, respectively, which were an increase of 0.6 and 0.5 years, respectively, from 2018.[12]

SOCIOECONOMIC STATUS OF KOREAN OLDER ADULTS

The private income of older adults per year has steadily increased to US$13,939 compared to US$10,384 (2017) and US$8,430 (2014). More than one-third (36.9%) of the total older adults and 55% of older adults aged 65–69 years were currently working. The proportion of employee/self-employment income and private pension increased significantly, which subsequently increased the

chance of financial independence. Most older adults (78.2%) lived as a single household: living alone or living with a spouse with frequent (more than once weekly) contact with their children, friends, and neighbors. The level of education had also increased markedly; the uneducated group shrank to 10.6% (33% in 2008), while the proportion of older adults with education beyond high school increased to 34.3% (17.2% in 2008) (Table 1).[8]

LIFESTYLES OF OLDER KOREANS

The most important lifetime activities were hobbies and leisure (37.7%), followed by economic (25.4%), social (19.3%), religious (14.1%), volunteer (1.7%), and learning activity (0.9%). Smartphone users accounted for 56.4% of the population, and the ability to use smartphones was far superior in young-old adults. For instance, 92.4% of individuals aged 65–69 years could send text mes-

Table 1. Socioeconomic status of older Koreans

Index	Unit (%)	
	2017	2020
Annual private income (US dollar)	10,384	13,939
Type of income		
Employee income	13.3	24.1
Self-employment income	13.6	17.1
Property income	12.2	11.0
Private transfer	22.0	13.9
Public transfer	36.9	27.5
Private pension	0.8	6.3
Participation in economic activities		
Currently working	30.9	36.9
Previously worked	59.3	49.5
Never worked	9.8	13.6
Residence type		
Living alone	23.6	19.8
Living with spouse	48.4	58.4
Living with children	23.7	20.1
Other	4.4	1.7
Social network[a]		
Children (come-and-go)	38.0	16.9
Children (contact)	81.0	63.5
Friends or neighbors (contact)	64.2	71.0
Relatives (contact)	16.8	20.3
Level of education		
Uneducated (illiterate)	24.3	10.6
Elementary school ($\leq 6\,y$)	34.1	31.7
Middle school (> 6 and $\leq 9\,y$)	16.9	23.3
High school (> 9 and $\leq 12\,y$)	17.3	28.4
Beyond college ($> 12\,y$)	7.5	5.9

[a]More than once a week.

sages compared to 19.9% among those aged 85 years and older. Most (83.8%) older Korean adults preferred to live in the same place, and more than half (56.5%) of the adults also desired aging-in-place even with an impaired mobility status. The level of overall satisfaction with life was 49.6%. Satisfaction with health status increased considerably from 37.1% (2017) to 50.5% (2020). The satisfaction with economic status also increased from 28.8% (2017) to 37.4% (2020) (Table 2).[8] However, these trends should be interpreted with some caution with possible cohort or period effects along with drastic social changes.

GERIATRIC SYNDROMES AND COMMON COMORBIDITIES

Common Medical Conditions

The average number of chronic diseases in Korean older adults was 1.9, with 84% of the population having more than one chronic disease. In comparison, 89.5% of the older population had one or more chronic diseases, 73% had two or more, and 51% had three or more in 2017. The top five chronic diseases were hypertension

(56.8%–64.4%), diabetes mellitus (24.2%–29.0%), dyslipidemia (17.1%–38.9%), osteoarthritis (16.5%), and lumbar pain or sciatica (10%). Notably, the rate of depressive symptoms steadily decreased to 13.5% compared to 30.8% in 2008 and 21.1% in 2017 (Table 3).[8,13-15]

Among the recipients of LTCI, the mean number of chronic diseases was 3.4 according to the 2019 Long-Term Care Status Survey.[9] In this population, the common diseases included hypertension (60.3%), dementia (57.2%), diabetes (29.3%), arthritis (27.8%), and stroke (25.8%). LTCI recipients took a mean of 9.8 daily medications, and 79.4% of them took five or more medications per day.

Functional and Cognitive Status

Functional disability was assessed based on activities of daily living

Table 2. Lifestyle of older Koreans

Index	Unit (%)	
	2017	2020
Most important activity in current life	NA	-
Hobby and leisure activity	-	37.7
Economic activity	-	25.4
Social activity	-	19.3
Religious activity	-	14.1
Volunteer activity	-	1.7
Learning activity	-	0.9
Smartphone user	NA	56.4
Preferred residency (healthy state)		
Living in the same place	88.6	83.8
Moving to a better environment	11.4	16.1
Preferred residency (dysmobility state)		
Living in the same place	57.6	56.5
Living with spouse/children/siblings	10.3	7.2
Living close to children/siblings	-	4.9
Older adult care facility	31.9	31.3
Life satisfaction		
General	NA	49.6
Health status	37.1	50.5
Economic status	28.8	37.4
Health awareness		
Healthy	37.1	49.3
Neither healthy nor unhealthy	23.3	30.8
Unhealthy	39.7	19.9

NA, not applicable.

Table 3. Health status and common comorbidities of Korean older adults

Index	Unit (%)	Reference
Number of chronic diseases		8)
≥ 1	84	
≥ 2	54.9	
≥ 3	27.8	
Type of chronic disease (top 5)		
Hypertension	56.8–64.4	8,13,14)
60–69 y	51.5	
≥ 70 y	67.2	
Diabetes mellitus	24.2–29.0	8,13,15)
60–69 y	24.2	
≥ 70 y	31	
Dyslipidemia	17.1–38.9	8,13)
60–69 y	42.8	
≥ 70 y	35.1	
Osteoarthritis	16.5	8)
Lumbar pain and sciatica	10	8)
Cognitive decline	25.3	8)
Dementia	10.3	16)
65–69 y	4.2	
80–74 y	8.9	
75–79 y	22	
80–84 y	27	
≥ 85 y	35.2	
Depressive symptoms	13.5	8)
Male	10.9	
Female	15.5	
Functional status		8)
IADL disability	6.6	
ADL+IADL disability	5.6	

ADL, activities of daily living; IADL, instrumental activities of daily living.

(ADL) and instrumental activities of daily living (IADL). Approximately 6.6% of older adults had limitations only in IADL, while 5.6% of older adults had limitations in both ADL and IADL. The prevalence of cognitive impairment increased to 25.3% compared to 14.5% in 2017. In addition, the prevalence of dementia was 10.33%, and increased with age (Table 3).[8,16]

Disabilities and Healthcare Needs

The proportion of LTCI recipients has been increasing in the total Korean population, from 1.0% in 2016 to 1.3% in 2018, according to the 2019 Long-Term Care Status Survey.[9] Among the recipients, 83.5% of the population used at least one long-term care service among home-based and institution-based services, at a ratio of 7:3. Regarding eligibility levels, 4.5%, 11.4%, 32.2%, 43.8%, and 7.7% of recipients were classified into levels 1, 2, 3, 4, and 5, respectively.[10]

Among all LTCI recipients, the mean number of clinic visits for the last quarter was 5.3, with 11.1% of recipients visiting clinics more than 10 times in the last quarter. In addition, 26.8% of the recipients had experienced hospitalization within the last 12 months,

with 12.6% of the recipients experiencing institutionalization to convalescent hospitals.

Frailty Status

The prevalence of frailty in Korean older adults ranged from 2.5% to 55.7%, as defined by the Cardiovascular Health Study (CHS) frailty phenotype, frailty index, and other operational measures (Table 4).[17-30] Recent Korean studies have shown that either frailty index, phenotype model, or physical performance measures could similarly identify older individuals at risk for geriatric adverse outcomes.[18] In addition, gait speed was inversely related to the frailty index and predicted adverse health outcomes (mortality or institutionalization).[31] The Timed Up and Go test was associated with both the CHS frailty phenotype and total Short Physical Performance Battery.[20]

Sarcopenia

The prevalence of sarcopenia ranges from 4% to 46.8% according to different diagnostic criteria. Recent population-based studies have investigated diagnostic tools for sarcopenia (Table 5).[32-39]

Table 4. Prevalence of frailty in Korean older adults

Frailty assessment		Prevalence (%)	Settings	Regions		Publication year	Study
				Urban	Rural		
Frailty screening	CFS	51.0	Hospital (inpatients)	NA	NA	2021	Ko et al.[23]
		45.1	Hospital (inpatients)	NA	NA	2021	Han et al.[17]
	FRAIL questionnaire	27.0	Community		○	2016	Jung et al.[19]
		12.4	Community	○	○	2018	Kim et al.[22]
		31.2	Hospital (inpatients)	NA	NA	2021	Han et al.[17]
	KFI	21.3	Community	○		2010	Hwang et al.[30]
		9.1	Community	○	○	2018	Kim et al.[22]
	CSHA frailty definition	20.2	Community	○	○	2017	Ko et al.[24]
	TUG[a]	38.4	Community	○	○	2020	Lee et al.[25]
	SPPB[b]	18.2	Community	○	○	2020	Jung et al.[20]
		55.7	Community		○	2021	Jung et al.[18]
Frailty phenotype	SOF	2.5	Community	○	○	2018	Kim et al.[22]
	CHS phenotype	8.4	Community	○	○	2008	Park et al.[28]
		13.2	Community	○		2014	Jung et al.[21]
		17.0	Community		○	2016	Jung et al.[19]
		11.4	Community	○	○	2018	Kim et al.[22]
		7.7	Community	○	○	2020	Lee et al.[26]
Frailty index	KFI-PC	17.5	Community	○	○	2020	Won et al.[29]
	Frailty index	26.3	Community		○	2021	Jung et al.[18]
Social frailty	Social frailty index	20.5	Community		○	2019	Park et al.[27]
	Social deficit level	32.4	Community	○	○	2020	Lee et al.[26]

CFS, Clinical Frailty Scale; CHS, Cardiovascular Health Study; CSHA, Canadian Study of Health and Aging; KFI, Korean Frailty Index; KFI-PC, Korean Frailty Index for Primary Care; K-FRAIL, Korean version of the Fatigue, Resistance, Ambulation, Illness, and Loss of weight scale; SOF, Study of Osteoporotic Fracture; TUG, Timed Up and Go test; NA, not available.
[a]10 seconds or longer was regarded as frail. [b]9 seconds or less was regarded as frail.

Table 5. Prevalence of sarcopenia in Korean older adults

Criteria		Prevalence (%)	Data sources	Regions		Publication year	Study
				Urban	Rural		
Skeletal muscle (ASM/height^2 < 1 SD)	Total	5.2	Community	○	-	2010	Lim et al.[39]
	Male	6.3					
	Female	4.1					
Skeletal muscle (ASM/height^2 < 2 SD)	Total	4.0	Community	○	○	2015	Kim et al.[36]
	Male	9.3					
	Female	0.2					
Low handgrip strength (< 26 kg, male and < 18 kg, female)	Total	46.8	Community	○	○	2017	Oh et al.[32]
	Male	33.2					
	Female	57.4					
AWGS (2014)	Total	16.5	Community	-	○	2018	Jang et al.[35]
	Male	14.0					
	Female	18.5					
AWGS (2014)	Total	10.2	Community	○	○	2018	Kim et al.[38]
	Male	11.4					
	Female	9.1					
AWGS (2014)	Total	16.1	Community	○	-	2019	Cha et al.[33]
	Male	-					
	Female	-					
EWGSOP (2010)	Total	8.8	Community	○	-	2015	Kim et al.[36]
	Male	8.8					
	Female	8.8					
EWGSOP (2010)	Total	20.8	Community	○	○	2019	Kim et al.[37]
	Male	25.5					
	Female	16.2					
EWGSOP2 (2019)	Total	9.3	Community	○	○	2019	Kim et al.[37]
	Male	11.9					
	Female	6.7					
EWGSOP2 (2019)	Total	14.7	Community	○	○	2021	Hong et al.[34]
	Male	-					
	Female	-					

ASM, appendicular skeletal muscle; AWGS, Asian Working Group for sarcopenia; EWGSOP, European Working Group on Sarcopenia in Older People.

Calf circumference has been proposed as a surrogate marker of muscle mass because it was well correlated not only with appendicular muscle mass and skeletal muscle index but also with physical function.[40] In addition, skeletal muscle radiodensity measured using computed tomography at the third lumbar vertebra level was positively associated with jump power, which was positively correlated with sarcopenia, as defined by the European Working Group on Sarcopenia in Older People (EWGSOP2).[34] Recently, a novel sarcopenia phenotype score (SPS), which is the sum of each abnormal sarcopenic marker (low muscle mass, low handgrip strength, and slow gait speed), was proposed in the Aging Study of PyeongChang Rural Area cohort. The SPS showed better dose-response predictability of adverse health outcomes (mortality and institutionalization) compared to the pre-existing sarcopenia definition, especially the revised definition from the EWGSOP.[41]

CONCLUSION

Mostly living as a single household, Korean older adults had higher education levels and higher private income compared with that reported previously. In contrast to previous reports from the 2017 survey, we noted the increasing adoption of information technology in the older population. Moreover, economic status is improving in this population. We also observed trends in the older population of caring for their own health and having improved satisfaction with their general health. Healthcare providers and policymakers should reflect these current characteristics of older adults to pursue healthy aging and establish an age-friendly healthcare

environment.

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