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Urology and Geriatrics in Korea: Present Status and Future Directions

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Globally, the population aged 65 years and over is growing faster than all other age groups. South Korea, in particular, is one of the most rapidly aging societies worldwide. With the increase in the older population, the incidence of urologic diseases has increased significantly along with that of chronic diseases. Urologic diseases are an important component of the health problems faced by an aging society. Among those, urinary incontinence and voiding dysfunction cause significant health and quality of life problems in older adults. To properly manage these diseases, especially in the field of urology, it is necessary to propose appropriate policies for the health care of older people. Accordingly, the significance of geriatrics, particularly geriatric urology, has increased. Although geriatric urology in South Korea began relatively recently, the founding of the Korean Society of Geriatric Urological Care represents a significant step in the development of geriatric urology as a subspecialty. The goal of this review is to elaborate on the concept of geriatrics and to provide an overview of geriatric urology with a focus on its current status in South Korea. Furthermore, future challenges in the face of rapid demographic changes are reviewed.

Keywords: Urology; Geriatrics; Gerontology; Aging; Geriatric medicine

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INTRODUCTION

Recent population analyses and demographic data have shown rapid growth of the older population and predicted that it will continue to grow throughout the century [1]. According to this global demographic trend, health problems in older adults are emerging as important personal and social issues. In addition, many older people experience illness, disability, and dependency, which are associated with high costs of medical and social care [2,3]. Furthermore, South Korea is becoming one of the most rapidly aging countries worldwide [4].

Changes in the demographic structure of society have been accompanied by changes in the distribution of diseases, and the demand for health care in the older population is also increasing. The incidence of urologic diseases has increased significantly, along with other chronic diseases. Therefore, urologic diseases play an important part in the health problems of an aging society, and the number of patients visiting urology clinics is rising [3]. To properly respond to changes in the clinical environment and health demands of older people, especially in the field of urology, it is necessary to establish a system and to propose appropriate policies for the health care of older adults [5]. Therefore, we present an outline of geriatric urology focusing on the current situation and future challenges in the face of rap-

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id demographic changes in South Korea.

AGING OF THE KOREAN POPULATION

National Statistics Korea has been collecting and organizing elderly-related statistics every year on the "Day of Older Persons" (October 2) since 2003 [6]. According to the 2021 Statistics on the Aged in Korea, the population aged 65 years and over comprised 8.537 million persons, accounting for 16.5% of the total population [6]. According to the United Nations, when the population aged 65 years and over reaches 7.0% of the total population, the county is considered an "aging society," at 14% or more, it becomes an "aged society," and when it exceeds 20%, it becomes a "super-aged society" [7,8]. Therefore, South Korea became an "aging society" in 2000 and an "aged society" in 2018. In 2025, when the older population reaches 20.3%, it will become a "super-aged society" [6]. Furthermore, this proportion is expected to exceed 30% in 2036 and reach 43.9% in 2060 [6].

In Japan, it took 24 years for the proportion of the older population to increase from 7% in 1970 to 14% in 1994. In South Korea, it took 18 years to become an aged society from an aging society [7]. This was the fastest transition worldwide. Furthermore, it is expected that it will take about a century for countries such as the United States and United Kingdom to shift from aged to super-aged societies, while in South Korea, this transition will take place in only 25 years [7]. According to the 2019 United Nations Population Data [9], Japan is the oldest country globally, to date, and most countries among the world's 25 oldest countries are in Europe (Table 1) [9,10]. Interestingly, South Korea is not one of the top 25. However, South Korea has the most rapidly aging population. Furthermore, with the continual increase in the number of super-aged countries, South Korea is expected to soon become one of the most rapidly super-aged countries worldwide.

Table 1. The world's 25 oldest countries in 2019

Rank	Country	% of population aged 65 and over
1	Japan	28.2
2	Italy	22.8
3	Finland	21.9
4	Portugal	21.8
5	Greece	21.8
6	Germany	21.4
7	Bulgaria	21.3
8	Croatia	20.4
9	France	20.3
10	Latvia	20.3
11	Serbia	20.2
12	Sweden	19.9
13	Lithuania	19.8
14	Estonia	19.8
15	Denmark	19.6
16	Czech Republic	19.6
17	Slovenia	19.6
18	Hungary	19.3
19	Malta	19.2
20	Spain	19.1
21	Netherlands	18.9
22	Austria	18.8
23	Belgium	18.7
24	United Kingdom	18.3
25	Switzerland	18.3

Adapted from United Nations Population Division, World Population Prospects 2019, Population Reference Bureau, 2019.

THE CONCEPTS OF GERIATRICS, GERONTOLOGY, AND GERIATRIC SYNDROME

Geriatrics is a branch of medicine focused on the health care of older people. In contrast, gerontology is the study of the aging process itself [11]. The term "geriatrics" comes from the Greek world "geron" meaning "old man," and "iatros" meaning "healer," while the term "gerontology" comes from the words "geron" and "logia" meaning "study of." Interestingly, interpreting the term "gerontology" as meaning "the study of old men" is erroneous; instead, it should be interpreted as meaning "the study of old age" [12,13]. Geriatrics is sometimes referred to as medical or clinical gerontology because gerontology refers to the complex study of the social, psychological, cognitive, and biological aspects of aging, including social gerontology and biogerontology, in a comprehensive sense [11,14]. Geriatrics or geriatric medicine aims to promote health by preventing and treating diseases and disabilities in older adults [5].

In older adults, multiple etiologic factors interact with pathogenic pathways to produce a unified manifestation of disease. Geriatric syndromes are defined as a set of multifactorial conditions affecting older adults who are vulnerable to changing cir-

cumstances [15]. Geriatric syndromes include falls, incontinence, delirium, dementia, inappropriate prescription of medications, depression, iatrogenic problems, osteoporosis, sensory alterations, failure to thrive, immobility and gait disturbances, pressure ulcers, sleep disorders, and nonspecific disease presentations [16]. Among these, the 5 geriatric syndromes with the highest prevalence include falls, incontinence, pressure ulcers, delirium, and functional decline, which are associated with high morbidity and poor quality of life [15]. Therefore, geriatric syndromes are a major factor for geriatricians in the evaluation and treatment of older patients.

HISTORY OF GERIATRICS

The word "geriatrics" was first proposed by Ignatz Leo Nascher in 1909. Nascher, the so-called father of geriatrics, founded the Society of Geriatry in New York in 1912 and published the textbook *Geriatrics* in 1914 [17]. At that time, Dr. Nascher emphasized the need to consider the diagnosis and treatment of medical conditions in older adults as a separate medical discipline [18]. Marjorie Warren made significant contributions to the development of modern geriatrics in the United Kingdom. She, the so-called mother of geriatrics, emphasized active rehabilitation programs for older people [13]. Another innovator of geriatrics in the United Kingdom was Bernard Isaacs, who created the term the "giants of geriatrics." These include immobility, instability, incontinence, and intellectual impairment [19]. He emphasized that all issues common to older people are associated with 1 or more of these giants.

Therefore, although the term "geriatrics" was birthed in the United States, it was the United Kingdom that created the basic principles in this area. However, it was researchers from the United States who provided scientific verification of the United Kingdom protocols and took the next step in the scientific development of geriatrics [13]. Therefore, as a reflection of scientific interest in this field, the American Geriatrics Society, founded in 1942, started to publish its journal, *Geriatrics*, in 1946. The title was changed by the publisher, and the official journal continued in 1953 as *The Journal of the American Geriatrics Society* [17]. In the United Kingdom, the Medical Society for the Care of the Elderly, later renamed the British Geriatrics Society, was founded in 1947. Through this process, geriatrics or geriatric medicine — essentially a product of the National Health Service of the United Kingdom — became a prosperous and influential medical specialty [12]. Geriatrics is now a recognized specialty not only in geriatric medicine, but also throughout the health care disciplines, including nursing, pharmacy, dentistry, and various therapeutic fields worldwide [18].

GERIATRICS IN KOREA

South Korea's aging population is growing at the fastest rate of all countries worldwide. The increase in the number of chronic diseases in the elderly due to rapid aging will result in a demand for geriatricians. Therefore, the Korean Geriatric Society was established to meet these expectations in 1968. The concept of geriatrics has been established in the medical community since the late 1990s, and has attracted the attention of many physicians. Subsequently, in 1999, the Korean Academy of Clinical Geriatrics was established and in 2004, the Korean Geriatric Medical Association was founded; this latter society has mainly been led by private physicians [20]. In addition, the Korean Gerontological Society was established in 1978 and the Korean Society for Gerontology in 1989. With these 2 societies, in 1995, the Korean Association of Gerontology and Geriatrics was established in collaboration with the existing Korean Geriatric Society [21].

Accordingly, the interest of physicians in older patients is rapidly growing. As the proportion of older patients in specialized societies, excluding the Pediatrics Association, has increased, many societies specializing in geriatrics have been established with the goals of more effectively treating the diseases of older people and actively conducting research on geriatric chronic diseases [21]. The Korean Association for Geriatric Psychiatry, the Korean Society of Geriatric Neurosurgery, Korean Society of Geriatric Neurology, Korean Academy of Geriatric Rehabilitation Medicine, Korean Society of Geriatric Anesthesia and Pain, Korean Society of Geriatric Gynecology [20, 21], and Korean Society of Geriatric Urological Care (KSGUC) were established [22]. Thus, various societies associated with geriatric medicine have been launched to establish and research the concepts of medical care for the elderly.

However, despite this situation, medical colleges still do not provide enough education in geriatrics, and geriatricians do not play a critical role in the care of older people in South Korea [21]. Several Korean medical societies with significant interest in geriatric medicine are planning for geriatric medicine as a subspecialty. In addition, they are trying to establish uniform geriatric medicine fellowship programs and certification systems. However, the lack of coordinated effort and consensus by

the Korean academic societies will be very problematic for the successful development and implementation of geriatric medicine as a subspecialty. In addition, the competitive stance among societies presents a very difficult challenge to organizing geriatric medicine as a subspecialty in South Korea [4]. Nevertheless, the related societies are constantly working to prepare a system for Korean geriatric medicine. Since this necessity has been recognized by the medical community, a special committee for the subspecialty of Korean geriatric medicine has been formed, and discussions on this are currently underway.

GERIATRIC UROLOGY

With the rapid aging of the population, the prevalence of many urologic disorders has increased substantially. Major geriatric urologic conditions include urinary incontinence, bladder outlet obstruction, urinary tract infection, sexual dysfunction and urologic malignancies such as prostate, bladder, and kidney cancers. These are common and complex morbidities in older persons; therefore, specialized consideration for older patients is required [23,24]. In particular, urinary incontinence and voiding dysfunction are the most prevalent major urologic problems in older patients [24,25]. These conditions cause significant health and quality of life problems in older adults, including restricted activity, poor self-esteem, social isolation, and depression, and result in early institutionalization in long-term care facilities [26].

Aging is associated with a general decline in almost all physiological functions of many biological organs, including the lower urinary tract [27]. In particular, many changes in the lower urinary tract are associated with the aging process. The effect of aging on the bladder has been investigated in both aged animal models and in human studies [28]. The major underlying mechanisms of voiding dysfunction in older adults appear to include decreased detrusor muscle function and bladder capacity, secondary to collagen deposition and fibrosis, and increased sensitivity to neurotransmitters [27].

Urologic problems are common in older people, and older patients make up a significant proportion of most urologic clinical practice. Furthermore, these events often have a significant impact on a patient's quality of life. However, until recently, formal educational requirements and opportunities in geriatric urology were limited [23].

In the United States, the American Urological Association (AUA) launched a program of continuing medical education enhancement in 1998, when the first plenary session on geriatrics was held. Moreover, in 2000, the AUA held the first Geriatric Forum as part of the AUA annual meeting. Finally, the Geriatric Urology Society (GUS), was established in 2002. Similarly, with the increasing interest in geriatric urology, participation in the GUS continues to grow with time [23].

GERIATRIC UROLOGY IN KOREA

In 2014, the Korean Study Group of Geriatric Urological Care was established to promote research in the field of geriatric urology and provide public health policies for the care of geriatric urology patients as an affiliated organization of the Korean Urological Association [22]. Since then, this study group was renamed the KSGUC in 2017. The first symposium was held in 2014, followed by the KSGUC annual meeting. In 2019, the Joint Annual Meeting of the Korean Gerontological Nursing Society was held to promote collaboration among nurses caring for older patients.

Similarly, the founding of the KSGUC represented a significant step in the development of geriatric urology as a subspecialty, as it will provide an important forum for research among urologists and other colleagues interested in urology and geriatrics [23]. However, there are several differences between the KSGUC and other geriatric societies. The first is that KSGUC plays a leading role in the government's public policy associated with geriatrics in the field of urology, and the second is that the KSGUC improves the quality of life of the elderly through care for voiding dysfunction and urinary tract infections among elderly individuals residing in long-term care facilities.

In South Korea, the number of long-term care facilities and beds is constantly increasing. As the number of long-term care facilities has increased, voiding dysfunction, urinary catheter management, and urinary tract infections have also emerged as important problems [29]. However, although the role of a urologist is important in long-term care facilities to properly manage urologic diseases, few urologists currently work in these facilities [30]. In addition, polypharmacy has recently become an increasing problem. This is because older adults who take multiple drugs are at risk of adverse drug reactions due to drug interactions. In particular, older adults who visit the urology department often have several underlying chronic diseases and take several drugs associated with urologic diseases, including benign prostate hyperplasia and urinary incontinence; thus, the possibility of polypharmacy is high. Therefore, a clinical study

on polypharmacy in older urologic patients in South Korea was conducted with KSGUC research support [2]. In that study, a significant number of older patients who visited the urology department took potentially inappropriate medications. Therefore, drug use in older patients, especially in the urology department, should be carefully monitored [2].

FUTURE DIRECTIONS IN GERIATRIC UROLOGY

Demographic changes, such as the rapid growth of the aging population in recent years, will fundamentally change South Korean society in the future. Although this trend is occurring worldwide, the continued expansion of the older population can lead to the identification of unique conditions and challenges in terms of urology and geriatrics [18]. There is growing interest in interprofessional research to address the unique conditions and needs of older people. Therefore, these changes will make urology a major specialty of geriatric medicine and will increase the need for urologists in the future.

Multidisciplinary research, education, and health care constitute the 3 fundamental factors that will become more relevant in the future development of geriatric urology [18]. First, in the multidisciplinary field, older patients often have complex medical needs that are best addressed by subspecialists from different disciplines. Second, focused education on geriatric urology is critical for developing expertise among the physicians and researchers who are interested in caring for older adults. Currently, many medical institutions and societies are developing various educational programs to meet these needs. Lastly, urologists need to contribute to the development of better health care policies associated with geriatric urology for the rapidly growing aging population.

CONCLUSIONS

Due to the unprecedentedly rapid aging rate in South Korea, the prevalence of chronic degenerative diseases and the number of long-term care facilities are increasing. The proportion of urologic diseases in older adults is expected to increase accordingly. Therefore, urologists need to promote interdisciplinary collaboration in research and clinical practice to provide care for serious geriatric health care problems. In addition, specialized education in geriatric urology should focus on care for older people with complex morbidities such as voiding difficulties and dementia. Through these efforts, the role of urologists will continue to grow, and urologists will be able to contribute to developing and implementing a wide range of high-quality geriatric policies in South Korea.

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· Conceptualization: *STC*
· Methodology: *HRN*
· Visualization: *HRN*
· Writing-original draft: *STC, HRN*
· Writing-review & editing: *STC, HRN*

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