EDITORIAL

DOI: 10.4274/ejgg.galenos.2024.2023-11-1

Eur J Geriatr Gerontol 2024;6(2):80-90

Healthcare Problems and Possible Solutions in Older Adults in Turkey: Geriatric Syndromes and Chronic Diseases

Mehmet Akif Karan[1,2], İlhan Satman[2,3], Teslime Atlı[4], Gülistan Bahat Öztürk[1], Mustafa Cankurtaran[5], Deniz Suna Erdinçler[6], Meltem Halil[5]

[1]İstanbul University, İstanbul Faculty of Medicine, Department of Internal Medicine, Division of Geriatrics, İstanbul, Turkey
[2]The Turkish Institute of Public Health and Chronic Disease (TÜHKE), The Health Institutes of Türkiye (TUSEB), İstanbul, Turkey
[3]İstanbul University, İstanbul Faculty of Medicine, Department of Internal Medicine, Division of Endocrinology and Metabolism, İstanbul, Turkey
[4]Medline Adana Hospital, Clinic of Internal Medicine, Division of Geriatrics, Adana, Turkey
[5]Hacettepe University Faculty of Medicine, Department of Internal Medicine, Division of Geriatrics, Ankara, Turkey
[6]İstanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, Department of Internal Medicine, Division of Geriatrics, İstanbul, Turkey

Introduction

The increasing number and proportion of the older adult population and its effects on health, social, cultural, and economic fields in Turkey necessitate changes and regulations in policies and actions for older adults' health and care. This study is organized with reference to the vision of the Turkish Institute of Public Health and Chronic Disease (TÜHKE), an official organ of the Health Institutes of Türkiye (TUSEB), and in accordance with the tasks designated in the eleventh development plan (1). In this report, a contemporary approach to older adults' health and diseases in the country is discussed by identifying current situations, barriers, and suggested solutions to existing problems (2). A large study group consisting of 147 representatives from a wide range of public institutions and private sectors dealing with the health of older adults, including the Ministry of Health, the Ministry of Labor and Social Security, the Ministry of Family and Social Services, the TUSEB, the World Health Organization (WHO)-Turkey, the Red Crescent-Turkey, 25 universities, and 19 professional associations, helped in the preparation of this report. Here, the issues covered in this report are summarized along with the main landscapes.

Population Growth

Population growth all over the world and the decrease in mortality along with declining birth rates lead to an increase in life expectancy and the proportion of older adults in society. Such problems that we have encountered in recent years, such as the aging of the population much faster than expected, the transition from a large family to a nuclear family, the increase in urbanization rates along the transition from an agricultural to an industrial society, and the acceleration of the technological revolution, all highlight the health and care problems of older adults. Aging is a global phenomenon. Not only developed countries, but also developing countries are aging. It is estimated that by 2025, two out of three older adults in the world will live in less developed countries (3). WHO defines biological aging as "a condition in which the gradual accumulation of molecular and cellular damage results in a decrease in a physiological reserve capacity, and an individual capacity in general, finally preceding to many diseases and increased risk of death". The generally accepted age threshold is usually 65 years (4).

The percentage of population aged 65 years and over in Turkey was 3.9% in 1935, 3.3% in 1950, and 5.7% in 2000; it reached 9.7% in 2021, accounting for 8,245,124 people (5). It is predicted that this rate will be 11.0% in 2025, 16.3% in 2040, and 25.6% in 2080 (Figure 1). Similarly, the life expectancy at birth was 78 years in the 2013-2015 period, it increased to 78.6 years in the 2017-2019 period (6). This rate is higher than that in upper-middle-income countries (74 years) and worldwide (72.7 years). According to the 2017-2019 life table data, the average

Address for Correspondence: Mehmet Akif Karan, İstanbul University, İstanbul Faculty of Medicine, Department of Internal Medicine, Division of Geriatrics, İstanbul, Turkey; The Turkish Institute of Public Health and Chronic Disease (TÜHKE), The Health Institutes of Türkiye (TUSEB), İstanbul, Turkey
Phone: +90 532 674 34 09 **E-mail:** m.akifkaran@gmail.com **ORCID:** orcid.org/0000-0002-9080-404X
Received: 13.11.2023 **Accepted:** 27.02.2024

Cite this article as: Karan MA, Satman İ, Atlı T, Bahat Öztürk G, Cankurtaran M, Erdinçler DS, Halil M. Healthcare Problems and Possible Solutions in Older Adults in Turkey: Geriatric Syndromes and Chronic Diseases. Eur J Geriatr Gerontol. 2024;6(2):80-90

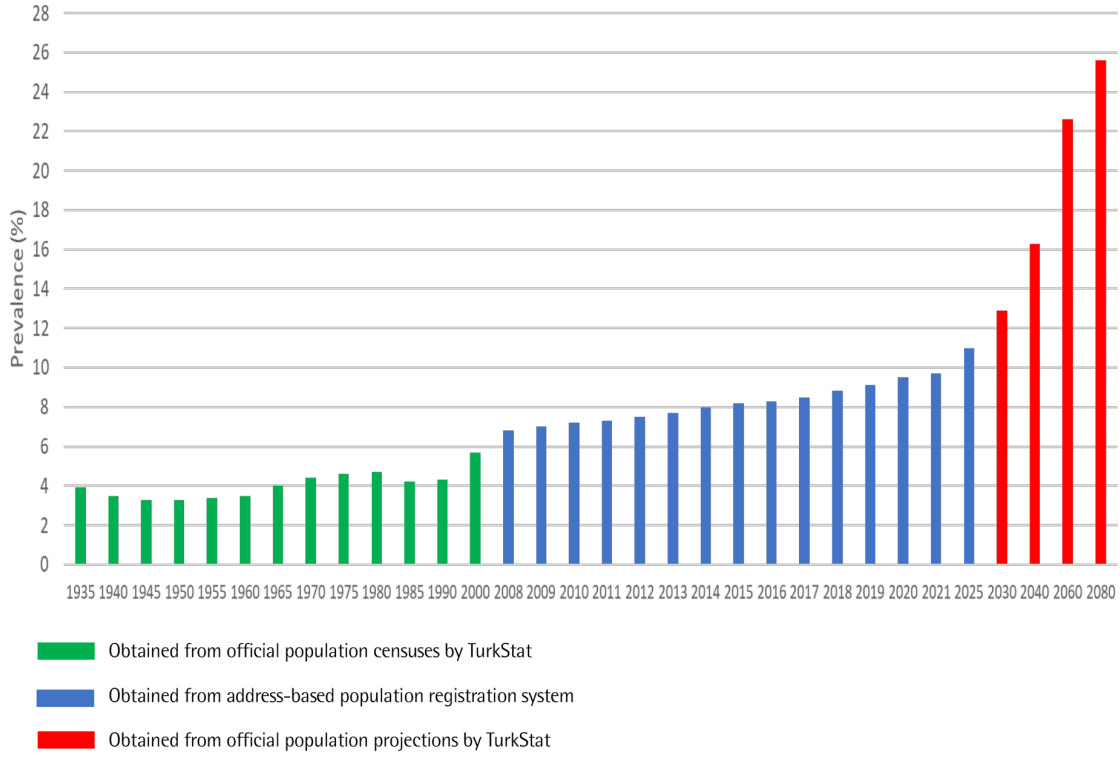

Figure 1. Population growth in 65+ years in Turkey

life expectancy of a 65-year-old person is 18 years (16.3 years for men; and 19.6 years for women). Meanwhile, the older adult dependency ratio (the number of older adults per 100 people of working age) was 7.1% in 1990, 8.8% in 2000, and 12.6% in 2017; it increased to 14.3% in 2021, which is at the level of the world average (5).

Aging: A Natural Consequence of Life

Aging is not a disease; nevertheless, the frequency and number of diseases increase during this period. Among the characteristic problems of the older adult population, the higher rate of disability, being unable to practice their profession, excess of women, individualization, increased number of people living alone, loss of social status, poverty, and inequality are the most prominent ones (7,8). Unfortunately, older people are commonly portrayed as unaware of the world, unable to communicate, frail, dependent, and thought of as a burden to society. This prejudice against older adults and aging is defined as "age discrimination" and poses a substantial threat (9,10).

Practitioners dealing with older people should be well trained on physiologic and psychologic alterations with aging, communication with older adults, difficulties in history taking and physical examination, preventive medicine practices, healthy and successful aging, different presentations of diseases in older adults, management of chronic diseases and geriatric syndromes, multimorbidity, drug metabolism in older adults, short- and long-term care, palliative care and treatment, and terminal patient management (11-16). Interdisciplinary teamwork should be given immense importance to provide effective and productive service to older adults; besides the physicians, other medical professionals, including geriatric nurses, nutritionists, and dietitians, physiotherapists, occupational therapists, ergo therapists, psychologists, gerontologists, and social workers, should be employed in appropriate numbers.

At this point, it is necessary to clarify the concepts of "geriatrics" and "gerontology", which are often confused in non-medical settings as both are in the same field focused on older adults. They serve different functions but also complement each other. Geriatrics is referred to as old age medicine; it is one of the subspecialties in internal medicine, and it focuses on the care and treatment of older persons, including clinical examination, diagnosis, therapy, and follow-up tasks related to all health problems and diseases of people aged 65 and over (13,17). However, "gerontology" is a multidisciplinary field of study and practice that encompasses the physical, mental, and social aspects of aging (18,19).

In Turkey, the number of geriatricians and geriatrics fellows is around 150; however, the actual need should be more than three thousand according to scientific standards (4,13). Enabling the geriatricians to serve in compliance with their profession; giving authorization to geriatricians for reimbursement of

some crucial drugs, which are frequently used in the treatment of commonly encountered diseases and syndromes in older adults by the Social Security Institution; promoting the entire health professionals dealing with older adults on issues such as education, social rights, and an effective working atmosphere will not only contribute to a better quality of life for older adults but will also have a positive impact on health expenditures in the long run, owing to its cost-effectiveness (20-22).

Preventive Medicine in Geriatrics

Screening tests are performed for the early diagnosis of diseases and prevention of complications in older adults (23-26). Life expectancy, skills to perform the test, and personal preferences should be considered when planning screening tests; the benefit-hazard balance should be established by taking into account the possible damages of the tests. In our country, screening policies for breast, prostate, colon, and cervix cancers in older adults and lung cancer in the risk group have been determined. Screening for diseases that increase with age (diabetes, hypertension, osteoporosis, thyroid dysfunctions, etc.) should be pursued. Immunization programs for older adults (influenza, pneumococcal pneumonia, herpes zoster vaccine, tetanus-diphtheria-pertussis vaccine, and coronavirus disease-2019 (COVID-19) vaccine] are applied meticulously in Turkey (27-30). Older people should perform 150-300 minutes of aerobic activity per week. As their physical condition allows, it is beneficial to perform moderate-to-vigorous aerobic exercise for 75-150 minutes per week (31,32).

Geriatric syndromes should be included in the scope of health care provided to older adult individuals in primary settings (23,24,33,34); training and follow-up materials are available so that screening and follow-up on this subject can be performed by family physicians (22-24). Access to services should be facilitated by giving priority to older adults or, if there is no accompanying person, providing personnel to help in secondary and tertiary care outpatient services. It is necessary to increase awareness of health literacy and provide access to e-health applications for older adults (9,10,35,36). A safe home environment should be created to prevent falls, especially among frail older individuals (37-39). Social support is critically important for older adults (36). It is necessary to ensure compliance with society by disseminating life-long learning model practices, and to contribute to intergenerational communications and thus help preserve the mental health of advanced aged people through volunteering projects and social projects that enable them to communicate with young people (9,19,40). It should be strived to create a positive old age perception in society. There should be necessary regulations for older adults to protect their life standards and enable them to work on their medical condition.

The essential aim of geriatric medicine is for the individual to become self-sufficient and self-confident in terms of physical, mental, and cognitive capacity until advanced age, to become independent, and to be "vigorously healthy" (41-43). Frailty is a syndrome with multiple causes that occurs as a result of age-related loss of physiological reserves, insufficient response to internal and external stress factors, and decreased adaptation capacity (39). Frailty may increase the risk of medical complications, delirium and falls, hospitalization, admission to nursing homes, and mortality (25,37,38,44). Appropriate screening tests should be routinely performed to identify frailty. Interventions such as physical exercise, regulation of nutrition, combating polypharmacy, and cognitive training programs should be applied for the prevention or regression of the disease (32,45-47).

Geriatric Syndromes

Low body mass index in older adults is a much more important risk factor than obesity (48). Malnutrition in older adults is caused by inadequate food intake, loss of appetite, inflammatory processes associated with chronic diseases, and sarcopenia (49-51). Malnutrition is a pathological condition that causes a noticeable deterioration in body size, composition, and function as a result of low or high-energy intake of protein and other nutrients and reduces survival (49). The awareness level and knowledge of all physicians and healthcare workers, especially those working in long-term care facilities, such as nursing homes, residential care homes, and hospitals, should be increased. The daily energy requirement is 25-30 kcal/kg for a healthy older adult with practically normal physical activity; the daily protein requirement is 1.0-1.2 g/kg (47,52). In malnutrition, trauma, and medical conditions requiring surgical intervention and hospitalization, protein requirement increases significantly (1.2-1.5 g/kg/day) depending on the severity of the medical condition (2,52,53). The daily fluid requirement can be estimated as 30 mL/kg (53).

Sarcopenia is the deterioration of the individual's mobility, independence in daily life activities, and physical performance as a result of decreased muscle mass, muscle strength, and physical performance (34). Early diagnosis of sarcopenia is crucial because its prevalence increases with advanced age and causes mortality, falls, functional loss, hospitalization, long-term hospital stay, decreased quality of life, and increased frailty (54,55). The prevalence of sarcopenia among older adults living in the community is between 10% and 20% (2,34). The cornerstones of sarcopenia treatment are nutritional support, physical activity, and vitamin D supplementation. It is necessary to raise awareness among health professionals and the society regarding malnutrition and sarcopenia in older adults and increase preventive and therapeutic practices (52,53).

Falls pose an important public healthcare problem in the older adult population because of their medical, social, and economic consequences (37). Approximately 20% of post-fall hip fractures

are lost within a year or result in dependence, loss of autonomy, confusion, immobilization, depression, and fear of falling (2). "The risk of falling" should be determined in all individuals over 65 years of age who apply for any reason; problems should be treated, and risk should be reduced by creating a safe environment (37).

Multiple or inappropriate drug use is an important problem in older adults. In our country, the rate of use of 5 or more types of drugs is more than 50% among individuals aged 65 years and older who apply to outpatient clinics (46). Age-related physiological changes affect drug metabolism. Polypharmacy and inappropriate drug use have many negative consequences, such as drug-drug interactions, drug side effects, morbidity, mortality, hospitalization rates, treatment costs, and increased drug non-compliance. To combat polypharmacy and inappropriate drug use, training programs to raise awareness among society and healthcare workers should be promoted, and information technologies should be used to support physicians and pharmacists (45,46). Physicians are eager to intensify medications, whereas they largely ignore the deintensification of diabetes management. According to a large multicentral cross-sectional study of older patients with type 2 diabetes performed in Turkey, one in ten older adults was overtreated, while one in four required modifications of their current antihyperglycemic and antihypertensive treatments (56). These results warrant reinforced measures to improve the care of older adults with type 2 diabetes and hypertension. For this purpose in our country, "Turkey inappropriate drug use criteria (TIME criteria)" has been established under the leadership of the Academic Geriatrics Association, and with the wide participation of expert faculty members, the developed application can be used on all smartphones (57).

Urinary incontinence negatively affects individuals' quality of life as a result of decreased participation in physical activities, social isolation, and increased stress levels (58,59). Correctable and reversible causes of urinary incontinence in older adults should be investigated and treated.

Dementia syndrome is a condition in which cognitive function is impaired as a result of damage to the central nervous system in adults, and this deterioration affects daily life activities (60). The prevalence of dementia is 1-2% at the age of 65 years, and this rate doubles every six years of life (2). Dementia is the fifth most common cause of death worldwide, and the expenses spent on patients are approaching 1 trillion dollars annually (2). The most common cause of dementia is Alzheimer's disease (61). In patients with dementia, reversible causes such as delirium and depression, medical diseases, normal pressure hydrocephalus, and brain tumors should be investigated (60,62,63). Reasons that increase the risk of dementia, such as low education level, hypertension, diabetes mellitus, hearing loss, obesity, smoking, depression, physical inactivity, low social interaction, excessive alcohol consumption, and head trauma, should be addressed (2,64). Most people with dementia also have other diseases. Post-diagnostic care, physical and mental health, social care, and support programs should be developed. With special interventions and support for caregiver family members, the quality of life of patients and caregivers can be enhanced, and costs can be reduced.

Depression is a mood disorder in which an individual feels collapsed or unwilling/unhappy for most of the day for a minimum of two weeks, additionally, thoughts of guilt and valuelessness, such psychological symptoms as death wish or plan, or physical symptoms such as loss of concentration and appetite, sleep disorders, exhaustion, and weakness (62). Suicide attempts, an important complication of depression, are more common in older adults (65). The prevalence of geriatric depression in our country is between 16-45% (2). It is necessary to raise awareness of depression among older adults and explain to the public that depression in old age is not a normal situation. Depression prevention, screening, diagnosis, treatment, and follow-up processes should be developed. Physicians' knowledge of geriatric psychiatry should be increased through postgraduate training; topics such as the different presentations of psychiatric syndromes in older adults, older adults-specific treatment methods, and pharmacological treatment should be included in these trainings. "Geriatric psychiatry" should be organized as a subspecialty area. Regulations should be made in the Health Practice Communiqué so that physicians treating geriatric patients can prescribe appropriate anti-depressant medications.

Delirium is a syndrome that progresses with deterioration in attention and awareness, usually emerges within hours and days, tends to rapidly emerge and fluctuate during the day compared with the previous attention/awareness level of the person (66,67). Delirium is observed in 50% of hospitalized older adults, and approximately 60% of cases are omitted (2). Delirium may be the first and only manifestation of serious illness in older adults. Conversely, situations that increase and facilitate the tendency toward delirium should be recognized and corrected. Delirium may cause prolonged hospital stay; increased risk of complications, falls, and pressure ulcers; transfer to nursing homes; increased incidence of dementia, mortality, and healthcare costs. Delirium may lead to a decrease in the quality of life, cognitive function, and functionality of patients and their relatives (2,68). The awareness level and knowledge of all physicians and healthcare workers, especially those working in healthcare institutions and hospitals, should be increased.

Pressure sores and ulcers are the result of localized tissue damage to the skin and/or subcutaneous tissue caused by pressure or shearing forces. Pressure injuries have negative

effects on the physical, functional, and social well-being of older adults and significantly increase health costs. Risk factors include functional limitation, impaired mobilization, fecal and urinary incontinence, impaired sensory perception, decreased level of consciousness, malnutrition, age 75 years and older, presence of comorbid conditions, lack of family and social support, and skin wetness. Prevention of pressure sores is easier and more important than treatment; repositioning, skin care, nutritional status, and disease treatment are the main preventive approaches (68). Prevention of pressure ulcers is a quality indicator of health. Particularly, insufficient care while turning the patient or changing the bed sheets or the patient's clothes can cause pressure on the skin by friction and shear forces (2,69,70). In addition to the employees of the inpatient institutions, the knowledge of the members of the home care team should be increased.

Chronic Diseases

One of the main fields of geriatrics is the diagnosis and treatment of chronic diseases and the approach to multimorbid older adults (46). The prevalence of multimorbidity is less than 2% among those under the age of 35 years, and it reaches 46% among those 65 years and older in Turkey (2). In particular, the prevalence of hypertension, diabetes, coronary artery disease, atrial fibrillation, chronic kidney disease, cerebrovascular disease, dyslipidemia, Parkinson's disease, chronic obstructive pulmonary disease, depression, and cancer is higher in older adults than in the general population (71-80) (Table 1). In addition, approximately, 25% of adults aged over 65 years experience pain and loss of function due to osteoarthritis. It is estimated that one out of three females and one out of five males aged over 50 years will experience an osteoporosis-related fracture in the rest of their lives (79).

The most common cancers in older adults are breast, cervical, and corpus uteri cancer in women; prostate cancer, colon-rectal, and non-Hodgkin lymphoma in men (2). The first three cancer types that cause the most death in the world are lung and bronchial cancers, liver, and stomach in men; breast, lung, and colorectal cancers in women. In contrast, lung, stomach, and lymphoma in men; and lung, breast, and lymphoma in women are the most common causes of death from cancers in Turkey (80,81).

Prevention and Early Diagnosis of Chronic Diseases

Physiological and functional status varies greatly among older adults. This heterogeneity means that both preventive and therapeutic decisions must be based on individual needs. Age alone may not be the main determinant of interventions (4,14,82). All treatments should aim to preserve function and maximize quality of life. The concept of latency is important in screening and other preventive measures. With the occult blood test in stool, the risk of death in only one out of 1000 people screened in 10 years can be prevented for colorectal cancer. If an individual's life expectancy is five years, then this screening is unlikely to provide any benefit. For this reason, each patient should be evaluated individually, and the screening process should be decided (83-86). Preventive medicine practices are classified into three levels: primary, secondary, and tertiary.

Primary prevention: It covers the preventive medicine practices applied to prevent disease occurrence in asymptomatic people. For example, immunization, recommendations for diet and exercise to prevent cardiovascular diseases, and quitting smoking and alcohol (29,43,87-89).

Secondary prevention: It includes preventive medicine practices that seek to detect diseases in the asymptomatic period and prevent disease progression with treatment. For example; blood pressure measurement (90) and blood glucose measurement (91), cancer screening (80,92-95), bone mineral densitometry measurement (96,97), screening for mild cognitive impairment (98,99), screening for impaired visual acuity for early diagnosis of age-related macular degeneration (100), and treatment of hyper/dyslipidemia (101,102).

Table 1. Commonly encountered chronic diseases in older adults in Turkey

Chronic disease	Prevalence (%)	Age group (years)
Hypertension	74	60-69
	79	70-79
	83	≥80
Diabetes	34.7	≥65
Coronary artery disease and/or stroke	22	≥65
Atrial fibrillation	2	60-69
	2.5	≥70
Chronic kidney disease	15.7	≥18
	32.7	60-69
	41.3	70-79
	54.7	≥80
Cerebrovascular disease	6	65-74
	M: 9, F: 11	≥75
Hyperlipidemia	M: 20, F: 34	65-74
	M: 18, F: 26	≥75
Parkinson disease	1.9	≥65
Dementia	4.8	≥65
Chronic obstructive lung disease	M: 13, F: 12	65-74
	M: 17, F: 15	≥75
Any cancer	3	≥65

M: Male, F: Female

Tertiary prevention: It comprises preventive medicine practices targeting to reduce the complications of diseases and prevent the progression of the disease. For example; such as eye examination in patients with diabetes for retinopathy and albuminuria measurement for nephropathy (103).

Functional decline and loss of independence are not inevitable consequences of aging. Given the prevalence and impact of chronic noncommunicable diseases among older patients, evidence-based interventions to address these issues are increasingly important to maximize life expectancy and quality of life in older adults (104).

Intervention, Treatment, and Care

The targets and treatment of chronic diseases are different in frailing and conditioned or vigorously healthy older adult individuals (104). Considering the life expectancy of older adults with chronic diseases, interactions among drugs, side effect profiles, and multimorbidity, follow-up, and treatment specific to each chronic disease should be based on evidence-based guidelines and updated when necessary (57,102,103,105). Older adults should be screened for chronic diseases in primary care, and diagnosis and treatment should be arranged in secondary and, when necessary, tertiary health institutions; follow-up should be undertaken by primary health care institutions as much as possible, and cooperation and coordination between the institutions should be ensured.

According to the definition of the WHO, rehabilitation is "a set of interventions designed to optimize the functionality and reduce disability of individuals in various health states who interact with their environment". Rehabilitation includes medical, psychological, social, and vocational services (4,22,106). Most of those benefiting from rehabilitation services in Turkey are older people.

Long-term care services include all services that provide support to people who have difficulty in maintaining their basic life activities independently because of a lack of or decrease in physical, functional, or mental capacity. The status of family members who play a critical role in home care is often ignored. Long-term care facilities, such as nursing homes, care and rehabilitation centers, and home care services for adults and persons with a disability in Turkey. Local authorities (municipalities), on the other hand, usually provide services such as maintenance, repair, and cleaning services, participation in social activities, etc., under the name of domestic care. To achieve good care service, it is necessary to monitor compliance with quality standards, management, and strategic planning at all levels. Older adult care insurance should be implemented as a financing model.

With the aging of the population, the emergence of various physiological alterations in the human body, variability in drug metabolism, different manifestations, and disease course have led to the need to solve the problems of older adults in a single center by allocating sufficient time (7,11,12,57,79,104). The interdisciplinary team consists of geriatricians, nurses, gerontologists, dieticians, psychologists, social workers, physiotherapists, occupational therapists, and pharmacologists/pharmacists. Moreover, if necessary, other members, such as podologists, optometrists, audiologists, language-speech therapists, dentists, and spiritual support teams, should be incorporated into the team (13,107-110). The legislative regulations should be established to enable the interdisciplinary team members to serve as full-time employees in the same institution, in a united structure, in compliance with their job definition and specialty. It is also necessary to create legislation to pay for every service provided by team members. Assigning older adult care technicians to the interdisciplinary team may contribute to these services.

The mortality rate of COVID-19 was particularly high in frail older adults with low functional reserve and high morbidity (111,112). This experience helped us establish preparedness plans for future pandemics and unexpected critical conditions. To prevent falls and long periods of inactivity, it would be beneficial to offer informative brochures or digital platforms that will provide physical mobility during and after the quarantine period for such conditions for the use of older adults. To meet the basic needs of older adults who are isolated from society and stay at home during the quarantine, loyalty social support teams, municipalities, volunteers, and headmen should be made visible, and older adults should be informed about the existence of these services. Establishment of different communication and support lines for older adults; social and spiritual support mechanisms and formation of teams; and provision of delayed/skipped routine health check-ups and care services should be presented. COVID-19 in older adults may not be recognized because of atypical symptoms such as falling, cognitive fluctuations, and behavioral changes (112). The clinician following the patient should decide on the treatment of older adult patients according to the general condition of the patient, presence and condition of underlying diseases, laboratory values, oxygen demand, and presence of other concomitant infections (113). The side effects of COVID-19 medications should be considered in older adult patients; such health problems as life-threatening cardiac arrhythmias and liver and kidney dysfunctions should be taken into account. Malnutrition and sarcopenia are the causes of infection with severe acute respiratory syndrome coronavirus 2, and they may also result in the fatal course of the disease. A precision diet, exercise, and physical activity program customized according to the individual's needs should be organized (54,114-116). Tele-rehabilitation applications and studies should be initiated to provide the physiotherapy and rehabilitation services at home to older adults who have had

COVID-19 infection at home or have been discharged from the hospital and have post-COVID-19 syndrome (111).

Due to the challenges and tough life standards, immigrants are expected to have signs of social, physiological, and psychological aging well before the age of 65. Turkey, with more than 4 million immigrants, has become "the top-ranked country with the highest number of refugees in the world" Syrians registered in Turkey can benefit from all health services free of charge. Migrants and asylum seekers are provided with health services in immigrant health centers, foreign nationals outpatient clinics, and voluntary health facilities, psycho-social support, counseling, rehabilitation, and various support services for older adults in temporary accommodation centers (117). Those who require care must apply to the official geriatric care institutions. Not being able to participate in the labor force among immigrants is the most important risk factor for social exclusion (118). Public service announcements, increased translation services, and cultural sensitivity training of health personnel will benefit health levels. These measures will enable older adult immigrants and asylum refugees to access health services (117,119). To ensure intercultural cohesion, content that encourages social cohesion and multiculturalism should be prepared in the media, in schools, parks, mosques, and other communal living spaces in areas where immigrants are predominantly living. Furthermore, awareness should be raised about problems that can cause discrimination and xenophobia (118,120).

Technological Solutions

It has become necessary to use technological applications to reduce health expenditures. Digital literacy should also be disseminated to older adults. Tele-medicine enables patients with financial and transportation restrictions to access health services and also saves time. Tele-medicine, tele-nursing, and tele-rehabilitation services should be disseminated. In this context, technologies such as image-based, sensor-based, virtual reality-based, and robotic applications are used for tele-monitoring and evaluation, physiotherapy and rehabilitation practice, tele-conference/tele-education, and tele-consultation/tele-counselling (35,36,121). With the use of information and communication technologies (ICT) in older adults, it is possible to reduce the number of physician visits, prevent re-admissions to the hospital, and prevent the emergence of adverse conditions with patient and caregiver education. Moreover, ICT helps monitor patients' vital symptoms, enables healthcare professionals to intervene when needed, and eases access to care services (2). With wearable technological devices, the lives of older adults become easier, quality of life increases, physical, mental, and social capacities are improved, and real-time health monitoring can be performed (121). These technologies may help prevent the disappearance of patients with cognitive disorders. Furthermore, the technology may help in areas such as monitoring falls, cardiovascular functions, tremors, hearing and vision losses, pressure ulcers, respiratory functions, balance problems, diabetes, skeletal and muscle problems, mouth and dental problems, and stool and urine controls.

"Smart homes" are residences that are equipped with a high-tech network connected to sensors and indoor devices. They can remotely monitor, access, and control devices and applications and provide services to meet the needs of residents (2). Effective and useful for monitoring physiological and functional parameters, providing a safe environment and reducing risks, following up and helping when necessary; facilitating social interactions as well as cognitive and sensory support.

While designing "the elder-friendly cities", exterior spaces and buildings, transportation, residences, social participation, inclusion in social life, and society's respect for older adults, fulfilling their civic duty and participating in the workforce, information and communication, community support, and health services are prioritized (109,122,123). "The elderly-friendly hospitals" are healthcare institutions that provide services to older individuals in the most appropriate manner and aim to provide a physical environment and service processes compatible with the needs of older adults and their families (109,124,125). Elderly-friendly cities and hospitals that support active aging should be developed and augmented in Turkey (110).

In our country, the awareness of healthcare professionals and other stakeholders involved in innovation processes is insufficient. Uncertainties about intellectual property rights and lack of support during certification and clinical trials are the leading issues. In addition, there are many other problems and obstacles such as the inadequacy of policies, infrastructure, and resources that encourage and facilitate the innovation process; insufficient cooperation networks with institutions and organizations in different fields; the absence of health-oriented innovation centers; and the lack of models that support and provide attractive guiding processes to provide motivation. Health innovation models and policies unique to the country should be developed; health-oriented innovation models to participate in all processes should be established; and integrated cooperation platforms where all stakeholders are involved should be created. Priority should be considered in resources as well as targets; innovation should be planned and supported according to the manpower infrastructure in the country and the strategic needs of the market, and the investment-production-market relationship should be brought into functionality.

Conclusion

In conclusion, life expectancy in Turkey is increasing and the number of older adults is rising faster than expected. The

aging of society should be the main denominator in all areas, especially health and care services, economic, social, political, etc. Policies should be established based on this situation, which has not been experienced before, and solutions should be developed for existing and potential problems. Individuals at younger ages should be educated about active and healthy aging. To increase the knowledge and skills of healthcare professionals regarding older adults' health and care, education should be continued after graduation as before graduation. We should always take into account that effective and high-quality health and care services can be provided to our older adults not only by physicians but also by the interdisciplinary teamwork of all health professionals and with the support and interest of society.

Acknowledgments

We thank the members of the Turkish Older Adults Report for their invaluable contributions in preparing the book on which this report is based, and special thanks to Mrs. Sezin Ünal for the draft translation of the report into English.

Keywords: Chronic diseases, geriatric syndromes, geriatrics, healthy aging, older adults

Authorship Contributions

Concept: M.A.K., İ.S., Design: M.A.K., İ.S., Analysis or Interpretation: M.A.K., İ.S., T.A., G.B.Ö., M.C., D.S.E., M.H., Literature Search: M.A.K., İ.S., T.A., G.B.Ö., M.C., D.S.E., M.H., Writing: M.A.K., İ.S.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Cumhurbaşkanlığı On Birinci Kalkınma Planı (2019-2023). Türkiye Cumhuriyeti Cumhurbaşkanlığı, Strateji ve Bütçe Başkanlığı. 2019.
2. Karan MA, Satman I. Türkiye Yaşlı Sağlığı Raporu: Güncel Durum, Sorunlar ve Kısa-Orta Vadeli Çözümler. TÜHKE Yayınları. No. 48569. İstanbul; Aralık 2021
3. Nilsson K. Aging in Twenty-First Century: A Celebration and A Challenge. New York: The United Nations Population Fund (UNFPA). 2012:30-31.
4. WHO. Ageing and Health. 2018. Available at http://www.who.int/en/news-room/fact-sheets/detail/ageing-and-health. Accessed on 22 December 2020.
5. TurkStat Elderly Statistics, 2021. Released on 18 March 2022. Available at https://data.tuik.gov.tr/Bulten/Index?p=Istatistiklerle-Yaslilar-2021-45636. Accessed on 14 January 2023.
6. TÜİK- Hayat Tabloları. 2017-2019. Türkiye İstatistik Kurumu Hayat Tabloları 2017-2019 (released on 17 September 2020). Available at https://data.tuik.gov.tr/Bulten/Index?p=Hayat-Tablolari-2017-2019-33711. Accessed on 21 February 2021.
7. Amarya S, Singh K, Sabharwal M. Ageing process and physiological changes, in gerontology. IntechOpen. 2018.
8. Komşu UC. Aging, problems of aged and adult education. ASOS J. 2014;2:370-389.
9. Karaağaç G, Temel AB, Yıldırım JG. Investigate Young Peoples' Perception, Attitudes and Perspectives on Aging. Elderly Issues Research Journal. 2019;12:32-41.
10. Akdemir N, Çınar Fİ, Görgülü Ü. Perception of ageing and ageism. Turkish J Geriatr. 2007;10:215-222.
11. İşli F. Özel Durumlarda Vücutta Fizyolojik ve Metabolik Değişiklikler. Türker P, Karabudak E, (eds). Besin-İlaç Etkileşimleri. Ankara: Sonsöz Matbacılık, 2017:43-49.
12. Fjell AM, Walhovd KB. Structural Brain Changes in Aging: Courses, Causes and Cognitive Consequences. Review Neurosci. 2010;21:187-222.
13. Soulis G, Kotovskaya Y, Bahat G, Duque S, Gouiaa R, Ekdahl AW, Sieber C, Petrovic M, Benetos A. Geriatric care in European countries where geriatric medicine is still emerging. Eur Geriatr Med. 2021;12:205-211.
14. Steptoe A, Deaton A, Stone AA. Subjective wellbeing, health, and ageing. Lancet. 2015;385:640-648.
15. Sağlık Bakanlığı Çok Yönlü Yaşlı Değerlendirmesi ve İzlem Kılavuzu. T.C. Sağlık Bakanlığı Halk Sağlığı Genel Müdürlüğü. Ankara, 2019. Available at https://hsgm.saglik.gov.tr/depo/birimler/kronik-hastaliklar-ve-yasli-sagligi-db/Dokumanlar/Kitaplar/Cok_Yonlu_yasli_Izlem_Kilavuzu2022.pdf. Accessed on 7 February 2021.
16. Sağlık Bakanlığı Birinci Basamak Sağlık Hizmetlerinde Çalışan Hekimler İçin Yaşlı Sağlığı Tanı ve Tedavi Rehberi. T.C. Sağlık Bakanlığı, Temel Sağlık Hizmetleri Genel Müdürlüğü. 2010. Available at https://hsgm.saglik.gov.tr/depo/birimler/kronik-hastaliklar-ve-yasli-sagligi-db/Dokumanlar/Kitaplar/Yasli_Sagligi_Tani_Tedavi_Rehberi.pdf. Accessed on 24 January 2021.
17. Tıpta Uzmanlık Tüzüğü.19/6/2002 tarih ve 24790 No'lu Resmi Gazete. https://www.resmigazete.gov.tr/eskiler/2002/06/20020619.htm#9
18. Yazıcı S, Yaylagül NK. Küreselleşme ve Yaşlılık: Eleştirel Gerontolojiye Giriş. Kolektif Ütopya, Ankara. 2014:21-38.
19. Kolland F. Eğitimsel Gerontoloji: Yaşlanan Toplumlarda Yaşam Boyu Öğrenme. Tufan İ, Durak M, (ed). Gerontoloji. Ankara: Nobel Yayınevi. 2017;89-106.
20. Miller RA. Extending life: scientific prospects and political obstacles. Milbank Q. 2002;80:155-174.
21. Rowe JW, Carr DC. Successful Aging: History and Prospects. Oxford Research Encyclopedia. 2018.
22. Sağlık Bakanlığı Türkiye Sağlıklı Yaşlanma Eylem Planı ve Uygulama Programı 2015-2020. T.C. Sağlık Bakanlığı, Türkiye Halk Sağlığı Kurumu. 2015. Available at https://ekutuphane.saglik.gov.tr/Yayin/508. Accessed on 5 February 2021.
23. Sağlık Bakanlığı Aile Hekimliği Uygulamasında Önerilen Periyodik Sağlık Muayeneleri ve Tarama Testleri-2015. T.C. Sağlık Bakanlığı Türkiye Halk Sağlığı Kurumu Aile Hekimliği Eğitim ve Geliştirme Daire Başkanlığı. Yayın no: 991, 2015.
24. Sağlık Bakanlığı Hastalık Yönetim Platform (HYP) Uygulaması. Sağlık Bakanlığı HSGM. 2019. Available at hhttps://hyp.saglik.gov.tr/. Accessed on 4 February 2021.
25. Donini LM, Poggiogalle E, Molfino A, Rosano A, Lenzi A, Rossi Fanelli F, Muscaritoli M. Mini-Nutritional Assessment, Malnutrition Universal Screening Tool, and Nutrition Risk Screening Tool for the Nutritional Evaluation of Older Nursing Home Residents. J Am Med Dir Assoc. 2016;17:959.
26. Taşar PT, Şahin S. Nutritional Screening Methods and Evaluation. Turkiye Klinikleri J Geriatr-Special Topics. 2016;2:25-28.
27. Erişkin Bağışıklama Rehberi. Türkiye Enfeksiyon Hastalıkları ve Klinik Mikrobiyoloji Uzmanlık Derneği. İstanbul, 2016. Available at https://www.ktu.edu.tr/dosyalar/aile_9588a.pdf. Accessed on 6 February 2021.
28. Sağlık Bakanlığı Aşı Portalı. Yetişkin Aşılama. T.C. Sağlık Bakanlığı Halk Sağlığı Genel Müdürlüğü 2021. Available at https://asi.saglik.gov.tr/. Accessed on 15 January 2023.

29. Grohskopf LA, Alyanak E, Broder KR, Blanton LH, Fry AM, Jernigan DB, Atmar RL. Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices - United States, 2020-21 Influenza Season. MMWR Recomm Rep. 2020;69:1-24.
30. Wu Z, Hu Y, Xu M, Chen Z, Yang W, Jiang Z, Li M, Jin H, Cui G, Chen P, Wang L, Zhao G, Ding Y, Zhao PF, Yin W. Safety, Tolerability, and Immunogenicity of An Inactivated SARS-CoV-2 Vaccine (CoronaVac) in Healthy Adults Aged 60 Years and Older: A Randomised, Double-Blind, Placebo-Controlled, Phase 1/2 Clinical Trial. Lancet Infect Dis. 2021;21:803-812.
31. Department of Health and Human Services. Physical Activity Guidelines for Americans 2nd Edition. 2018-a. Available at https://health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf. Accessed on 5 February 2021.
32. Sağlık Bakanlığı Türkiye Fiziksel Aktivite Rehberi. T.C. Sağlık Bakanlığı, Türkiye Halk Sağlığı Kurumu. 2014. Available at https://hsgm.saglik.gov.tr/depo/birimler/saglikli-beslenme-ve-hareketli-hayat-db/Dokumanlar/Rehberler/Turkiye_Fiziksel_Aktivite_Rehberi.pdf. Accessed on 5 February 2021.
33. Dillaway HE, Byrnes M. Reconsidering Successful Aging: A Call for Renewed and Expanded Academic Critiques and Conceptualizations. J Applied Gerontology. 2009;28:702-722.
34. Ali S, Garcia JM. Sarcopenia, cachexia and aging: diagnosis, mechanisms and therapeutic options - a mini-review. Gerontology. 2014;60:294-305.
35. Özkan S. Türkiye'de Sağlık Okuryazarlığı: Sağlıklı Yaşlanma Perspektifi ile Bir Değerlendirme. Türkiye Aktif ve Sağlıklı Yaşlanma Zirvesi-2017. Akçakaya İB, Özmete E (eds). Türkiye Aktif ve Sağlıklı Yaşlanma Zirvesi-2017. T.C. Sağlık Bakanlığı Sağlığın Geliştirilmesi Genel Müdürlüğü ve Ankara Üniversitesi Yaşlılık Çalışmaları Uygulama ve Araştırma Merkezi (YAŞAM); 2017.
36. Bujnowska-Fedak MM, Pirogowicz I. Support for e-health services among elderly primary care patients. Telemed J E Health. 2014;20:696-704.
37. Karlsson MK, Magnusson H, von Schewelov T, Rosengren BE. Prevention of Falls in the Elderly--A Review. Osteoporos Int. 2013;24:747-762.
38. Hao W, Li J, Fu P, Zhao D, Jing Z, Wang Y, Yu C, Yuan Y, Zhou C. Physical frailty and health-related quality of life among Chinese rural older adults: a moderated mediation analysis of physical disability and physical activity. BMJ Open. 2021;11:e042496.
39. Clegg A, Young J, Iliffe S, Rikkert MO, Rockwood K. Frailty in elderly people. Lancet. 2013;381:752-762.
40. Morgan JN. Unpaid Productive Activity Over the Life Course. Productive Roles in An Older Society/Committee on Aging Society, Institute of Medicine and National Research Council. Washington, DC: National Academy Press. 1986.
41. Herzog AR, Kahn RL, Morgan JN, Jackson JS, Antonucci TC. Age Differences in Productive Activities. J Gerontology. 1989;44:129-138.
42. Liu-Ambrose T, Barha C, Falck RS. Active Body, Healthy Brain: Exercise for Healthy Cognitive Aging. Int Rev Neurobiol. 2019;147:95-120.
43. Lee IM, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT; Lancet Physical Activity Series Working Group. Effect of Physical Inactivity on Major Non-communicable Diseases Worldwide: An Analysis of Burden of Disease and Life Expectancy. Lancet 2012;380:219-229.
44. NICE Guideline-Delirium: prevention, diagnosis and management in hospital and long-term care. 2019. National Institute for Health and Clinical Excellence (NICE). Available at https://www.nice.org.uk/guidance/cg103. Accessed on 10 February 2021.
45. Morley JE. Polypharmacy in the Nursing Home. J Am Med Dir Assoc. 2009;10:289-291
46. Aggarwal P, Woolford SJ, Patel HP. Multi-Morbidity and Polypharmacy in Older People: Challenges and Opportunities for Clinical Practice. Geriatrics (Basel). 2020;5:85.
47. Diyetisyenler İçin Hasta İzleme Rehberi: Ağırlık Yönetimi El Kitabı. Bölüm 3: Yaşlılarda Ağırlık Yönetimi Bireysel Standart Beslenme Danışmanlığı Programı. T.C. Sağlık Bakanlığı Halk Sağlığı Genel Müdürlüğü. Ankara. 2017; 1081.T.C. Sağlık Bakanlığı, Diyetisyenler İçin Hasta İzleme Rehberi: Ağırlık Yönetimi El Kitabı. 2017. Available at https://hsgm.saglik.gov.tr/depo/Yayinlarimiz/Rehberler/Diyetisyenler_icin_hasta_izleme_rehberi.pdf. Accessed on 7 February 2021.
48. Babiarczyk B, Turbiarz A. Body Mass Index In Elderly People—Do the Reference Ranges Matter? Prog Health Sci. 2012;2:58–67.
49. Corcoran C, Murphy C, Culligan EP, Walton J, Sleator RD. Malnutrition in the Elderly. Sci Prog. 2019;102:171-180.
50. Kaiser MJ, Bauer JM, Rämsch C, Uter W, Guigoz Y, Cederholm T, Thomas DR, Anthony PS, Charlton KE, Maggio M, Tsai AC, Vellas B, Sieber CC; Mini Nutritional Assessment International Group. Frequency of malnutrition in older adults: a multinational perspective using the mini nutritional assessment. J Am Geriatr Soc. 2010;58:1734-1738.
51. Fávaro-Moreira NC, Krausch-Hofmann S, Matthys C, Vereecken C, Vanhauwaert E, Declercq A, Bekkering GE, Duyck J. Risk Factors for Malnutrition in Older Adults: A Systematic Review of the Literature Based on Longitudinal Data. Adv Nutr. 2016;7:507-522.
52. TÜBER (Türkiye Beslenme Rehberi 2015). Pekcan G, Şanlıer N, Baş M, Başoğlu S, Tek AN, (ed). T.C. Sağlık Bakanlığı Yayın No:1031, 2016. Available at https://okulsagligi.meb.gov.tr/meb_iys_dosyalar/2017_01/27102535_tyrkiye_beslenme_rehberi.pdf. Accessed on 10 February 2021.
53. Volkert D, Beck AM, Cederholm T, Cruz-Jentoft A, Goisser S, Hooper L, Kiesswetter E, Maggio M, Raynaud-Simon A, Sieber CC, Sobotka L, van Asselt D, Wirth R, Bischoff SC. ESPEN guideline on clinical nutrition and hydration in geriatrics. Clin Nutr. 2019;38:10-47.
54. Bahat G, Tufan A, Tufan F, Kilic C, Akpinar TS, Kose M, Erten N, Karan MA, Cruz-Jentoft AJ. Cut-off points to identify sarcopenia according to European Working Group on Sarcopenia in Older People (EWGSOP) definition. Clin Nutr. 2016;35:1557-1563.
55. Atmis V, Yalcin A, Silay K, Ulutas S, Bahsi R, Turgut T, Mut Sürmeli D, Selvi Öztorun H, Yaman S, Çoşarderelioğlu Ç, Aras S, Varli M. The relationship between all-cause mortality sarcopenia and sarcopenic obesity among hospitalized older people. Aging Clin Exp Res. 2019;31:1563-1572.
56. Sonmez A, Tasci I, Demirci I, Haymana C, Barcin C, Aydin H, Cetinkalp S, Ozturk FY, Gul K, Sabuncu T, Satman I, Bayram F; TEMD Study Group. A Cross-Sectional Study of Overtreatment and Deintensification of Antidiabetic and Antihypertensive Medications in Diabetes Mellitus: The TEMD Overtreatment Study. Diabetes Ther. 2020;11:1045-1059.
57. Bahat G, Ilhan B, Erdogan T, Halil M, Savas S, Ulger Z, Akyuz F, Bilge AK, Cakir S, Demirkan K, Erelel M, Guler K, Hanagasi H, Izgi B, Kadioglu A, Karan A, Kulaksizoglu IB, Mert A, Ozturk S, Satman I, Sever MS, Tukek T, Uresin Y, Yalcin O, Yesilot N, Oren MM, Karan MA. Turkish inappropriate medication use in the elderly (TIME) criteria to improve prescribing in older adults: TIME-to-STOP/TIME-to-START. Eur Geriatr Med. 2020;11:491-498.
58. Gibson W, Johnson T, Kirschner-Hermanns R, Kuchel G, Markland A, Orme S, Ostaszkiewicz J, Szonyi G, Wyman J, Wagg A. Incontinence in frail elderly persons: Report of the 6th International Consultation on Incontinence. Neurourol Urodyn. 2021;40:38-54.
59. Irwin DE, Milsom I, Hunskaar S, Reilly K, Kopp Z, Herschorn S, Coyne K, Kelleher C, Hampel C, Artibani W, Abrams P. Population-based survey of urinary incontinence, overactive bladder, and other lower urinary tract symptoms in five countries: results of the EPIC study. Eur Urol. 2006;50:1306-1314.
60. Fong TG, Davis D, Growdon ME, Albuquerque A, Inouye SK. The interface between delirium and dementia in elderly adults. Lancet Neurol. 2015;14:823-832.
61. Jia RX, Liang JH, Xu Y, Wang YQ. Effects of physical activity and exercise on the cognitive function of patients with Alzheimer disease: a meta-analysis. BMC Geriatr. 2019;19:181.
62. Alexopoulos GS. Mechanisms and treatment of late-life depression. Transl Psychiatry. 2019;9:188.

63. Graff-Radford NR, Jones DT. Normal Pressure Hydrocephalus. Continuum (Minneap Minn). 2019;25:165-186.

64. Outeiro TF, Koss DJ, Erskine D, Walker L, Kurzawa-Akanbi M, Burn D, Donaghy P, Morris C, Taylor JP, Thomas A, Attems J, McKeith I. Dementia with Lewy bodies: an update and outlook. Mol Neurodegener. 2019;14:5.

65. Conejero I, Olié E, Courtet P, Calati R. Suicide in older adults: current perspectives. Clin Interv Aging. 2018;13:691-699.

66. Agar M, Bush SH. Delirium at the End of Life. Med Clin North Am. 2020;104:491-501.

67. Parrish E. Delirium Superimposed on Dementia: Challenges and Opportunities. Nurs Clin North Am. 2019;54:541-550.

68. Beeckman D, Vanderwee K, Demarré L, Paquay L, Van Hecke A, Defloor T. Pressure ulcer prevention: development and psychometric validation of a knowledge assessment instrument. Int J Nurs Stud. 2010;47:399-410.

69. Smith EM, Shah AA. Screening for Geriatric Syndromes: Falls, Urinary/Fecal Incontinence, and Osteoporosis. Clin Geriatr Med. 2018;34:55-67.

70. Cederholm T, Bosaeus I, Barazzoni R, Bauer J, Van Gossum A, Klek S, Muscaritoli M, Nyulasi I, Ockenga J, Schneider SM, de van der Schueren MA, Singer P. Diagnostic criteria for malnutrition - An ESPEN Consensus Statement. Clin Nutr. 2015;34:335-340.

71. TBSA (Türkiye Beslenme ve Sağlık Araştırması-2017). T.C. Sağlık Bakanlığı Halk Sağlığı Genel Müdürlüğü, Yayın No: 1132, Ankara, 2019. ISBN: 978-975-590-722-2. Available at https://hsgm.saglik.gov.tr/depo/birimler/saglikli-beslenme-ve-hareketli-hayat-db/Dokumanlar/Kitaplar/Turkiye_Beslenme_ve_Saglik_Arastirmasi_TBSA_2017.pdf. Accessed on 10 February 2021.

72. https://hsgm.saglik.gov.tr/depo/birimler/kronik-hastaliklar-ve-yasli-sagligi-db/Dokumanlar/Raporlar/turkey-risk-factors-tur_STEPS-2017.pdf

73. Sengul S, Akpolat T, Erdem Y, Derici U, Arici M, Sindel S, Karatan O, Turgan C, Hasanoglu E, Caglar S, Erturk S; Turkish Society of Hypertension and Renal Diseases. Changes in hypertension prevalence, awareness, treatment, and control rates in Turkey from 2003 to 2012. J Hypertens. 2016;34:1208-1217.

74. International Diabetes Federation. Diabetes Atlas, 10th Edition, IDF Publ, 2021. ISBN: 978-2-930229-98-0. Available at www.diabetesatlas.org. Accessed on 7 December 2021.

75. Satman I, Yilmaz T, Sengül A, Salman S, Salman F, Uygur S, Bastar I, Tütüncü Y, Sargin M, Dinççag N, Karsidag K, Kalaça S, Ozcan C, King H. Population-based study of diabetes and risk characteristics in Turkey: results of the turkish diabetes epidemiology study (TURDEP). Diabetes Care. 2002;25:1551-1556.

76. Satman I, Omer B, Tutuncu Y, Kalaca S, Gedik S, Dinccag N, Karsidag K, Genc S, Telci A, Canbaz B, Turker F, Yilmaz T, Cakir B, Tuomilehto J; TURDEP-II Study Group. Twelve-year trends in the prevalence and risk factors of diabetes and prediabetes in Turkish adults. Eur J Epidemiol. 2013;28:169-180.

77. Satman İ. The Obesity Problem in Turkey. Türkiye Klinikleri J Gastroenterohepatol-Special Topics. 2016;9:1-11.

78. Alama MN. Aging-related Changes of the Cardiovascular System. J Health and Environmental Research. 2017;3:27-30.

79. Boros K, Freemont T. Physiology of ageing of the musculoskeletal system. Best Pract Res Clin Rheumatol. 2017;31:203-217.

80. Sağlık Bakanlığı Kanser Taramaları. T.C. Sağlık Bakanlığı, Halk Sağlığı Genel Müdürlüğü Kanser Dairesi Başkanlığı. 2017. Available at https://hsgm.saglik.gov.tr/tr/kanser-taramalari. Accessed on 30 January 2021.

81. Gellert C, Schöttker B, Brenner H. Smoking and all-cause mortality in older people: systematic review and meta-analysis. Arch Intern Med. 2012;172:837-844.

82. Liu J, Wang L, Wang Z, Liu JP. Roles of Telomere Biology in Cell Senescence, Replicative and Chronological Ageing. Cells. 2019;8:54.

83. Braithwaite D, Zhu W, Hubbard RA, O'Meara ES, Miglioretti DL, Geller B, Dittus K, Moore D, Wernli KJ, Mandelblatt J, Kerlikowske K; Breast Cancer Surveillance Consortium. Screening outcomes in older US women undergoing multiple mammograms in community practice: does interval, age, or comorbidity score affect tumor characteristics or false positive rates? J Natl Cancer Inst. 2013;105:334-341.

84. Canadian Task Force on Preventive Health Care. Recommendations on screening for colorectal cancer in primary care. CMAJ. 2016;188:340-348.

85. Choi IJ, Kim CG, Lee JY, Kim YI, Kook MC, Park B, Joo J. Family History of Gastric Cancer and Helicobacter pylori Treatment. N Engl J Med. 2020;382:427-436.

86. Bedell SL, Goldstein LS, Goldstein AR, Goldstein AT. Cervical Cancer Screening: Past, Present, and Future. Sex Med Rev. 2020;8:28-37.

87. Mentella MC, Scaldaferri F, Ricci C, Gasbarrini A, Miggiano GAD. Cancer and Mediterranean Diet: A Review. Nutrients. 2019;11:2059.

88. Sağlık Bakanlığı Tütün Kontrolü Strateji Belgesi ve Eylem Planı (2018-2023). Sağlık Bakanlığı, Halk Sağlığı Genel Müdürlüğü. Tütün ve Madde Bağımlılığı ile Mücadele Daire Başkanlığı. 30 Mayıs 2018. Available at https://havanikoru.saglik.gov.tr/depo/Dokumanlar/ulusal-tutun-kontrol-programi-eylem-plani.pdf. Accessed on 15 January 2023.

89. Norton S, Matthews FE, Barnes DE, Yaffe K, Brayne C. Potential for primary prevention of Alzheimer's disease: an analysis of population-based data. Lancet Neurol. 2014;13:788-794.

90. Siu AL; U.S. Preventive Services Task Force. Screening for high blood pressure in adults: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2015;163:778-786.

91. Siu AL; U S Preventive Services Task Force. Screening for Abnormal Blood Glucose and Type 2 Diabetes Mellitus: U.S. Preventive Services Task Force Recommendation Statement. Ann Intern Med. 2015;163:861-868.

92. Elhassan A, Chow RD. Smoking Cessation in the Elderly. Clin Geriatr. 2007;15:38-45.

93. Eun TJ, Perkins RB. Screening for Cervical Cancer. Med Clin North Am. 2020;104:1063-1078.

94. Pinsky PF, Gierada DS, Hocking W, Patz EF Jr, Kramer BS. National Lung Screening Trial findings by age: Medicare-eligible versus under-65 population. Ann Intern Med. 2014;161:627-633.

95. Prorok PC, Andriole GL, Bresalier RS, Buys SS, Chia D, Crawford ED, Fogel R, Gelmann EP, Gilbert F, Hasson MA, Hayes RB, Johnson CC, Mandel JS, Oberman A, O'Brien B, Oken MM, Rafla S, Reding D, Rutt W, Weissfeld JL, Yokochi L, Gohagan JK; Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial Project Team. Design of the Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening Trial. Control Clin Trials. 2000;21:273S-309S.

96. Berry SD, Samelson EJ, Pencina MJ, McLean RR, Cupples LA, Broe KE, Kiel DP. Repeat bone mineral density screening and prediction of hip and major osteoporotic fracture. JAMA. 2013;310:1256-1262.

97. US Preventive Services Task Force; Curry SJ, Krist AH, Owens DK, Barry MJ, Caughey AB, Davidson KW, Doubeni CA, Epling JW Jr, Kemper AR, Kubik M, Landefeld CS, Mangione CM, Phipps MG, Pignone M, Silverstein M, Simon MA, Tseng CW, Wong JB. Screening for Osteoporosis to Prevent Fractures: US Preventive Services Task Force Recommendation Statement. JAMA. 2018;319:2521-2531.

98. Petersen RC, Lopez O, Armstrong MJ, Getchius TSD, Ganguli M, Gloss D, Gronseth GS, Marson D, Pringsheim T, Day GS, Sager M, Stevens J, Rae-Grant A. Practice guideline update summary: Mild cognitive impairment: Report of the Guideline Development, Dissemination, and Implementation Subcommittee of the American Academy of Neurology. Neurology. 2018;90:126-135.

99. Canadian Task Force on Preventive Health Care; Pottie K, Rahal R, Jaramillo A, Birtwhistle R, Thombs BD, Singh H, Gorber SC, Dunfield L, Shane A,

Bacchus M, Bell N, Tonelli M. Recommendations on screening for cognitive impairment in older adults. CMAJ. 2016;188:37-46.

100. US Preventive Services Task Force (USPSTF); Siu AL, Bibbins-Domingo K, Grossman DC, Baumann LC, Davidson KW, Ebell M, García FA, Gillman M, Herzstein J, Kemper AR, Krist AH, Kurth AE, Owens DK, Phillips WR, Phipps MG, Pignone MP. Screening for Impaired Visual Acuity in Older Adults: US Preventive Services Task Force Recommendation Statement. JAMA. 2016;315:908-914.
101. Cholesterol Treatment Trialists' Collaboration. Efficacy and safety of statin therapy in older people: a meta-analysis of individual participant data from 28 randomised controlled trials. Lancet. 2019;393:407-415.
102. Türkiye Endokrinoloji ve Metabolizma Derneği (TEMD) Obezite, Lipid Metabolizması ve Hipertansiyon Çalışma Grubu. Dislipidemi Tanı ve Tedavi Kılavuzu: Spesifik Gruplarda Dislipidemiye Yaklaşım. 9. Baskı. Ankara: 2021. s.73-83.
103. Türkiye Endokrinoloji ve Metabolizma Derneği (TEMD). Diabetes Mellitus ve Komplikasyonlarının Tanı, Tedavi ve İzlem Kılavuzu-2022. 15. Baskı. TEMD, Ankara: Temmuz 2022.
104. Türkiye Endokrinoloji ve Metabolizma Derneği (TEMD). Yaşlılıkta Endokrinolojik Hastalıkların Tedavisi Kılavuzu: Yaşlılıkta Dislipidemi. 3. Basım, 2019, Ankara: s. 99-101.
105. Türkiye Endokrinoloji ve Metabolizma Derneği (TEMD). Hipertansiyon Tanı ve Tedavi Kılavuzu. Ankara: 6. Baskı, 2022.
106. Hoenig H, Colon-Emeric C. Overview of geriatric rehabilitation: Patient assessment and common indications for rehabilitation. In UpToDate. Updated in January 2020. Available at https://www.uptodate.com/contents/overview-of-geriatric-rehabilitation-patient-assessment-and-common-indications-for-rehabilitation?search=Overview%20of%20geriatric%20rehabilitation%3A%20Patient%20%20assessment%20and%20common%20indications%20for%20rehabilitation.%20&source=search_result&selectedTitle=1%7E150&usage_type=default&display_rank=1. Accessed on 11 March 2021.
107. Levy B, Ashman O, Dror I. To be or not to be: the effects of aging stereotypes on the will to live. Omega (Westport). 1999-2000;40:409-420.
108. Demir B. Sağlığın Kavramsallaştırılması ve İnsan Odaklı Sağlık Hizmetlerinde Kalite ve Akreditasyon Perspektifi. İnsan ve İnsan Dergisi. 2020;7:62-83.
109. Fulmer T, Mate KS, Berman A. The Age-Friendly Health System Imperative. J Am Geriatr Soc. 2018;66:22-24.
110. Kocakoç N, Sahin S, Akçiçek SF. Elderly Friendly Hospital Concept First Application in Our Country: Izmir Model. International J Scientific and Technological Research. Special Issue of Health Sciences. 2020;6:158-170.
111. Çavdar S, Şahin S. SARS-CoV-2 Pandemisinin Sağlıklı Yaşlanma Sürecine Etkileri. Şahin S, Akçiçek SF, (ed). SARS-CoV-2 Pandemisi ve Yaşlılık. 1. Baskı. Ankara: Türkiye Klinikleri. 2020, s. 77-82.
112. Esme M, Koca M, Dikmeer A, Balci C, Ata N, Dogu BB, Cankurtaran M, Yilmaz M, Celik O, Unal GG, Ulgu MM, Birinci S. Older Adults With Coronavirus Disease 2019: A Nationwide Study in Turkey. J Gerontol A Biol Sci Med Sci. 2021;76:e68-e75.
113. Satman I, Demirci I, Haymana C, Tasci I, Salman S, Ata N, Dagdelen S, Sahin I, Emral R, Cakal E, Atmaca A, Sahin M, Celik O, Demir T, Ertugrul D, Unluturk U, Arga KY, Caglayan M, Sonmez A. Unexpectedly lower mortality rates in COVID-19 patients with and without type 2 diabetes in Istanbul. Diabetes Res Clin Pract. 2021;174:108753.
114. Bouillanne O, Morineau G, Dupont C, Coulombel I, Vincent JP, Nicolis I, Benazeth S, Cynober L, Aussel C. Geriatric Nutritional Risk Index: a new index for evaluating at-risk elderly medical patients. Am J Clin Nutr. 2005;82:777-783.
115. Cederholm T, Jensen GL, Correia MITD, Gonzalez MC, Fukushima R, Higashiguchi T, Baptista G, Barazzoni R, Blaauw R, Coats A, Crivelli A, Evans DC, Gramlich L, Fuchs-Tarlovsky V, Keller H, Llido L, Malone A, Mogensen KM, Morley JE, Muscaritoli M, Nyulasi I, Pirlich M, Pisprasert V, de van der Schueren MAE, Siltharm S, Singer P, Tappenden K, Velasco N, Waitzberg D, Yamwong P, Yu J, Van Gossum A, Compher C; GLIM Core Leadership Committee; GLIM Working Group. GLIM criteria for the diagnosis of malnutrition - A consensus report from the global clinical nutrition community. Clin Nutr. 2019;38:1-9.
116. Guigoz Y. The Mini Nutritional Assessment (MNA) review of the literature--What does it tell us? J Nutr Health Aging. 2006;10:466-485.
117. Sağlık Bakanlığı BPRM Projesi 2019-2020, Halk Sağlığı Genel Müdürlüğü. Göç Sağlığı Dairesi Başkanlığı. Göçmen Sağlığı Hizmetlerini Güçlendirilme Müdahalesi. Sağlık Bakanlığı. Available at https://hsgm.saglik.gov.tr/tr/projeler-gocmensagligi/who.html#:~:text=G%C3%B6%C3%A7men%20Sa%C4%9Fl%C4%B1%C4%9F%C4%B1%20Hizmetlerini%20G%C3%BC%C3%A7lendirilme%20M%C3%BCdahalesi%20(BPRM%20Projesi)&text=M%C3%BCteciler%2C%20g%C3%B6%C3%A7menler%20ve%20etkilenen%20ev,hastal%C4%B1klar%C4%B1n%20%C3%B6nlenmesi%20ve%20kontrol%C3%BC%20ama%C3%A7lanmaktad%C4%B1r.. Accessed on 13 January 2021.
118. Fernández-Ballesteros R, Zamarron M, Díez-Nicolás J, Lopez-Bravo MD, Molina MA, Schettini R. Productivity in old age. Research on Aging. 2011;33:205-226.
119. Ran GJ. Join-Lambert H. Influence of Family Hosting on Refugee Integration and its Implication on Social Work Practice: the French Case. Eur J Soc Work. 2020;23:461-474.
120. Akdemir N, Görgülü Ü, Çınar Fİ. Elder Abuse and Neglect. Hacettepe Üniversitesi Sağlık Bilimleri Fakültesi Hemşirelik Dergisi. 2008;68-75.
121. Doğan Merih Y, Ertürk N, Yemenici M, Satman İ. Technology Use In Home Health Services. Türkiye Sağlık Enstitüleri Başkanlığı (TÜSEB) Dergisi. 2021;4:76 -89.
122. Beard JR, Petitot C. Aging and urbanization: Can cities be designed to foster active ageing? Public Health Rev. 2010;32:427–450.
123. Rémillard-Boilard S, Buffel T, Phillipson C. Developing age-friendly cities and communities: Eleven case studies from around the world. Int J Environ Res Public Health. 2021;18:133.
124. Parke B, Stevenson L. Creating an elder-friendly hospital. Health Manage Forum. 1999;12:45-48.
125. Sağlık Bakanlığı Palyatif Bakım Hizmetlerinin Uygulama Usul ve Esasları Hakkında Yönerge (07.07.2015 tarihli ve 253 sayılı). 2015. T.C. Sağlık Bakanlığı, Sağlık Hizmetleri Genel Müdürlüğü. Available at https://khgmsaglikhizmetleridb.saglik.gov.tr/TR-42938/palyatif-bakim-hizmetlerinin-uygulama-usul-ve-esaslari-hakkinda-yonerge.html. Accessed on 10 January 2021.