

Review of health-care services for older population in India and possibility of incorporating AYUSH in public health system for geriatric care

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Abstract

Background: In a developing country like India, which has 10.11% population of >60 years age and a projection of rise of the same by 300% in 2050, health care of elderly is an enormous challenge. The developed world has evolved many models for elderly care, for example, nursing home care, health insurance, etc. Indian Government has also taken multiple measures in this direction by initiating National Policy on Older Persons, 1999, the Maintenance and Welfare of Parents and Senior Citizens Act, 2007, the Old Age Pension Scheme, Rashtriya Vayoshri Yojana 2017, etc. However, there is a necessity that, India must rapidly adapt to the complex health related, social and economic challenges caused by these demographic changes. This may be an opportunity for innovation in the health system by developing a perspective for healthy and active aging, though it is a major challenge. Health care of the older people cannot be achieved unless total health, i.e., physical, social, economic, psychological, and spiritual aspects are addressed. **Objective:** The objective is to study current policies regarding geriatric health care in India and to propose the possibility to develop a model to provide comprehensive and dedicated health-care services to the older population by integrating conventional and indigenous systems of medicine dwelling in the country. **Materials and methods:** Electronic search in various scientific journals for research and review articles; electronic along with hand searching of conference proceedings, brochures, government policy documents, press releases, Ayurveda classical texts, etc., regarding geriatric health care in India and model health-care facilities in other countries and regarding of AYUSH systems in geriatric health care in India. **Results:** There is an urgent need of adaptation and modification in the National Health System to cater the actual requirements of the elderly with plans and strategies dedicated to face their health-related challenges. Adoption of inclusive health-care interventions, can improve health outcomes by making it more acceptable, accessible, and affordable. **Conclusion:** Integration of AYUSH at various levels of health-care delivery system can potentially contribute to provide unique newer dimensions to the field of geriatric care in India.

Keywords: Aging, Ayurveda, AYUSH, geriatric, indigenous medicine, *Panchakarma*, *Rasayana*

Introduction

Aging has been most comprehensively defined by Miller as the process that converts fit adults into frailer adults with a progressively increased risk of illness, injury, and death. With the passage of time, certain changes take place in an organism.^[1] These changes eventually lead to the death of an organism. No one knows when old age begins. United Nations and related agencies such as the World Health Organization (WHO) have defined 60 years of age as the cut off for old age.

According to the United Nations population division, older adults 60 and above will increase from 10.11% to 21.5% of India's total population by 2050, with a much larger elderly

share of around 320 million. Meanwhile, the proportion of the "oldest old" adults, those at least 80 years of age, has more than doubled over the past 65 years, from 0.4% of the total population in 1950 to 0.96% in 2020. By 2050, this group is projected to reach almost 3% of the total population, i.e.,

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nearly 40 million individuals. Concurrently, with increase in the proportion of older people, the old-age dependency ratio (population age >65 years/population age 25–64 years) will also increase at a rapid scale in the coming years. The dependency ratio indicates the dependency burden on workers and how the type of dependency shifts from children to older persons during the demographic transition. The United Nations Population Division estimates the old-age dependency ratio to increase from the present 13.3%–25.2% by 2050 (World Population Prospects, 2019). In India, almost three quarters of older persons are still financially dependent on family members, and financial dependence increases with age [Government of India and United Nations Population Fund (UNFPA), 2017]. The rapid rise of India's elderly population, coupled with changing family structures and limited social provisions, presents policymakers with economic, health, and social challenges.^[2]

The dramatic and widespread nature of these current and ongoing demographic shifts indicates that the population aging challenges that India will face, are sure to occur on an enormous scale. These demographic changes present complex health, social and economic challenges to which, this heterogeneous country must rapidly adapt both at present and continue into the future. Greater longevity provides a longer time window for the manifestation of exposure to known and unknown health risks and the impact of the biological decline in organ structure and function. Consequently, older people carry a great burden of metabolic-vascular diseases, degenerative diseases of the brain, musculoskeletal system and sensory organs; cancer; chronic lung disease; and greater risk of infectious diseases. These age-related diseases, apart from the symptoms of structural and functional deficits, also lead to various disabilities and decline in the overall functional capacity of the older person.^[3]

In India, in 2007, about 42 per cent of all older persons suffered from a chronic condition due to non-communicable diseases such as arthritis, hypertension, cataract and diabetes (more prevalent among women) heart disease and asthma are (more prevalent among men) (Government of India and UNFPA, 2017). The large burden of disease, disability, and functional decline, requires easy and rapid access to quality, primary and specialist health services, adequate financial resources and care giver support for nursing and assistance in activities of daily living.

Efforts are being made by the policymakers of the country in view of this changing scenario. However, their magnitude and pace need to be raised to develop a comprehensive model of health and social care in tune with the changing need and time in India. Despite having a strong family support system, India is not a great place to age if one does not have health and financial security. This study was done with the aim of evaluating the status of geriatric health care in India and to propose some improvement in the present model.

Materials and methods

Literary research was done regarding geriatric health care in India and model health-care facilities in other countries, the utility of AYUSH systems in geriatric health care in India. The findings are derived from published health data, secondary research, and electronic search in various scientific journals for research and review articles; electronic and hand searching of conference proceedings, brochures, government policy documents, press releases, Ayurvedic classical texts, etc.

Results

Presently, the elderly are provided health care by the overburdened general health-care delivery system in India. Various policies, acts, programs, projects, and activities are taken up by the government of India in view of rising proportions of the geriatric age group in the country^[4-14] [Table 1]. It may be an opportunity for innovation in the health system development in the exclusive perspective of active and healthy aging, though it is a major challenge.

Role of Ayurveda in geriatric health care

Jara Chikitsa or *Rasayana* (geriatrics) is a subject being studied as a part of Ayurveda. All the medicines, food products, and lifestyle-related factors that enhance the quality and longevity of life come under this domain of *Rasayana*.^[15] Ayurveda has considered the process of aging and the stage of old age to be *Swabhavika* meaning natural. Senescence occurring at chronologically right time that is the *Kalaja Jara* is inevitable (*Nishpratikarya*), so it can only be maintained and cannot be averted.^[16] *Rasayana Chikitsa* is a unique therapeutic methodology to delay aging and to minimize the intensity of health-related challenges occurring in this degenerative phase of life. However, the prevention and management of speedy physical and mental degeneration could help the elderly to remain self-dependent for their daily activities to the maximum possible extent and improve their overall quality of life. Ayurvedic literature if explored, numerous single and compound plant-based medicines, herbo-mineral formulations can be found for this purpose.^[17]

Through *Rasayana* therapy, one can attain longevity, improved harmony, intelligence, freedom from disease, youthful vigor, complexion and voice, physical strength, and good sensory functions. It is not a single drug or therapy but is a specialized procedure practiced in the form of rejuvenation recipes, dietary regimen, and set of special health-promoting recommendations of conduct and behavior, i.e., *Achara Rasayana*. Sushruta while defining "*Rasayana*" therapy has mentioned that it arrests aging (*Vayasthapanam*), increases life span (*Ayushakaram*), intelligence (*Medha*) and strength (*Bala*) and thereby enables one to prevent disease.^[18]

Conventionally, *Rasayana* drugs are used against a plethora of seemingly diverse disorders with no pathophysiological connections, according to modern medicine. It has been reported that the *Rasayana*, along with rejuvenators and

Table 1: Major initiatives regarding geriatric health care by Government of India

Name of the Act/Policy/Program/Project/Activity	Details of adoption (year/agency etc.)	Aims and objectives	Key points focused
National Policy on Older Persons (NPOP) ^[4]	1999	To ensure financial and food security, health care, shelter and other needs of older persons, to improve the quality of their lives To ensure access to affordable health services for the elderly	The health problems in old age would be multiple and chronic in nature, requiring constant attention and with potential for disability and consequent loss of autonomy; High risk of impaired functional capacity, requiring long- term medical management and nursing care among older persons; Importance of PHC system as basic structure of public health care that should be strengthened and oriented to be able to meet the health care needs of older persons. Established public hospitals responsible for care of abandoned and chronically ill aged patients
Maintenance and Welfare of Parents and Senior Citizens Act ^[4]	2007	Defining the responsibilities of the family and the State in care of the senior citizens. Section 20 deals with provisions for medical care of senior citizen	Along with considerations of NPOP, has led to development of NPHCE
National Program for Health Care of the Elderly (NPHCE) -(It is an articulation of the International and National commitments of the Government as envisaged under the UN Convention on the Rights of Persons with Disabilities (UNCRPD), NPOP and Maintenance and Welfare of Parents and Senior Citizens Act, 2007 dealing with provisions for medical care of senior citizen) ^[4,8]	2010 Launched by the MoHFW	Introducing a comprehensive health care set up completely dedicated and tuned to the needs of the elderly To provide long-term, accessible, affordable, dedicated, quality care services for the elderly through community-based PHC approach To provide referral services to district hospital and RGC To build capacity of the medical and paramedical professionals as well as the care-takers with-in the family and To promote active and healthy ageing, so that the elderly could contribute to the development of the nation as is the case with elderly worldwide	Geriatric OPDs, 30 bedded geriatric wards for in-patient care, etc., at 8 RGCs, PostGraduate Courses in Geriatric for developing Human Resource were started Geriatric OPD and 10-bed Geriatric Ward at District Hospitals in 100 identified districts Bi-weekly Geriatric Clinic at CHCs. Weekly Geriatric Clinic at PHCs. Provision of Aids and Appliances at Sub-centers ^[5] Provision of necessary infrastructure, medicine and equipment for medical rehabilitation and therapeutic intervention by arranging therapeutic modalities like therapeutic exercises, training in ADL and treatment of pain and inflammation through physiotherapy unit at CHC, district hospital and RGC levels IEC to reach out to the target community for promoting the concept of healthy aging, importance of physical exercise, healthy habits, and reduction of stress ^[6,7]
Expansion of NPHCE ^[9]	12 th five years plan	Mainstreaming AYUSH for revitalizing local health traditions, and convergence with programs of Ministry of Social Justice and Empowerment in the field of geriatrics were among the supplementary strategies for coordination of services of NPHCE ^[9,10]	Inter alia continuation of 8 RGCs, setting up of 12 new RGCs, setting up of two National Centers for ageing, special initiatives for 75+ population, National level activities including IEC, Research Activity and Survey through LASI Project staff and state level activities like review, monitoring, etc.
Rashtriya Varishth Jan Swasthya Yojana (RVJSY) ^[4,10]	2016 (The tertiary component of NPHCE was renamed)	To give special focus to the 75+population, development of a home care program from tertiary and secondary health care facilities, development of human resources for care of the very old, influenza and pneumococcal vaccination, annual screening for early diagnosis of common health issues, and use of mobile health services to improve access to health care.	It was decided to develop “yoga” therapy for senior citizens especially for 75+population in National Centers for Ageing and RGCs (8+12) and convergence with AYUSH interventions by coordinating with local AYUSH practitioners for the very old population ^[9]
NPHCE was moved under the NCD flexible pool ^[11]	2015-2016	The program activities are sanctioned on the basis of proposals received from States/UTs in the PIP. Funds were earmarked for activities up to district level and for tertiary-level activities such as advanced consultative care and diagnosis	As per the appraisal document of 12 th five-year plan published by NITI <i>Ayog</i> , 418 districts were sanctioned in the ROPs communicated to 34 States/UTs under the NPHCE, to provide dedicated health-care facilities up to district hospitals to the elderly people in the country. Under the tertiary level activities of the program, 18 medical institutes were funded to develop RGCs in different parts of the country. Also, AIIMS, New Delhi and Madras Medical College, Chennai were funded to establish NCAs each in the premises of these institutions ^[12]

Contd...

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Name of the Act/Policy/Program/Project/Activity	Details of adoption (year/agency etc.)	Aims and objectives	Key points focused
Longitudinal Ageing Study in India (LASI) Project ^[9,13] - Nationally representative survey of the physical and cognitive health, economic, and social well-being for the country's aging population, interviewing over 70,000 individuals aged 45+ (including their spouses, irrespective of age)	March 22, 2016 - By the MoHFW in collaboration with other International partners under tertiary level activities of NPHCE	To assess the health status of the elderly (age 45-60 years). To provide comprehensive evidence, based on the health and well-being of the elderly population in India	Harmonized with other HRS surveys, it offers an evidence base to be used to compare the effects of social policies to support older persons in India with policies used in other countries around the world LASI-DAD extends LASI's cognition data collection by administering in-depth cognitive tests and informant interviews to a subsample of 3000 LASI respondents aged 60 or older, closely following the HCAP ^[13]
National Campaign on Ayurveda and Siddha for Geriatric Health Care	January 2008, Department of AYUSH, Ministry of Health and Family Welfare	Creating greater awareness among policymakers, health-care providers and the common people to create avenues for coordination on promotion of Ayurveda in geriatric	Promotion of merits of Ayurveda and Siddha for the care of the elderly in the country
National AYUSH Mission (NAM) ^[14] (for implementation through States/UTs)	2014 (Launched by the Department of AYUSH under the Ministry of Health and Family Welfare, during the 12 th Plan)	To promote AYUSH medical systems through cost effective AYUSH services To strengthen the educational systems To facilitate the enforcement of quality control of ASU&H drugs and sustainable availability of the raw-materials needed in them	There is a provision of financial assistance to the States/UTs for setting up of up to 50-bedded integrated AYUSH Hospitals and for establishment of AYUSH facility in PHCs, supply of essential drugs to the AYUSH hospitals and dispensaries through which the public including elderly persons can avail free services
Activities in research councils under Ministry of AYUSH ^[14]			CCRAS, is providing health services to the elderly persons through its 23 clinical units (Special Geriatric Clinics) located throughout the country; Central Council for Research in Homoeopathy, through 23 research centers and 8 peripheral OPDs located throughout the country CCRS and NIS are also providing Geriatric special Out Patient services

NPOPs: National Policy on Older Persons, NPHCE: National Program for Health Care of the Elderly, UNCRPDs: UN Convention on the Rights of Persons with Disabilities, MoHFW: Ministry of Health and Family Welfare, PHCs: Primary Health Centers, RGCs: Regional geriatric centers, OPDs: Out patient departments, CHCs: Community Health Centers, ADL: Activities of daily life, IEC: Information, Education and Communication, LASI: Longitudinal Ageing Study in India, RVJSY: Rashtriya Varishth Jan Swasthya Yojana, PIP: Program Implementation Plan, ROPs: Requirements of Participations, NCAs: National Centers of Aging, HRS: Health and Retirement Study, DAD: Diagnostic Assessment of Dementia, HCAP: Harmonized Cognitive Assessment Protocol, NAM: National AYUSH Mission, ASU&H: Ayurveda, Siddha, Unani and Homoeopathy, CCRASs: Central Council for Research in Ayurvedic Sciences, CCRS: Central Council for Research in Siddha, NIS: National Institute of Siddha, NCD: Non-Communicable Diseases, UTs: Union Territories

nutritional supplements possess strong antioxidant activity. It has antagonistic actions on the oxidative stressors, which give rise to the formation of different free radicals. Therefore, the therapeutic indication of these drugs can include the diseases relating to more than one organ systems of the body.^[19,20] Some scientific studies proving anti-aging effects of *Rasayana* drugs are mentioned in Table 2.^[21-34]

Ayurvedic formulations used in *Rasayana* therapy, are also effective on psychosomatic stress and epilepsy like convulsive disorders, anxiety and apprehension through their antioxidant effect.^[35]

Degenerative changes in bones and joints can be effectively managed by Ayurvedic medicines along with being physically active with *Yoga*. Exercise helps to control weight, improve emotional well-being and relieves stress, improves blood circulation and flexibility. *Yoga* helps in attaining good balance,

blood circulation, and vitality by enhanced flexibility and core stabilization. Pain management in osteoarthritis can be effectively done with add-on Ayurvedic therapy along with nonsteroidal anti-inflammatory drugs^[36] Effective and speedy rehabilitation can be achieved by using some processed oils like *Hingutriguna Taila* in hemiplegia.^[37] Significant recovery from illness, with improvement in motor functions and quality of life in hemiplegia could be achieved by *Panchkarma* therapy.^[38] *Panchakarma* (bio-cleansing procedures) is the strength of Ayurveda. *Panchakarma* regimen facilitates the body for better bioavailability of the pharmacological therapies (e.g., *Rasayana* therapy), help in the elimination of disease-causing factors and maintaining the equilibrium of body tissues (*Dhatu*) and humors (*Dosha*). *Panchakarma* is beneficial for promotion and rejuvenation of health and management of various systemic diseases. It is also widely prescribed for improving the quality of life in various chronic, incurable diseases (like auto-immune

Table 2: Rasayana effects of some drugs and therapies

Name of drug	Activities showed by scientific studies
<i>Chyavanaprasha</i>	Significant immunomodulatory activity in patients of recurrent cough and cold, cytoprotective action against radiation induced tissue damage in cancer patients receiving radiation and significant reduction in MI and CAs indicating genoprotective action ^[21]
<i>Ashwagandha (Withania somnifera (L) Dunal)</i>	Anti-aging effect ^[22]
<i>Guduchi (Tinospora cordifolia wild Miers.)</i>	Immunomodulatory effect ^[23]
<i>Brahmi [Bacopa monnieri (Linn) Wettst.]</i>	Effective in the management of senile dementia ^[24]
<i>Mandukaparni (Centella asiatica. L.), Yashtimadhu (Glycyrrhiza glabra Linn.) and Jatamansi (Nordostachys jatamansi DC.)</i>	Anti-anxiety effect ^[25]
<i>Palasha [Butea monosperma (Lam.) Kuntze]</i>	Distillate of root of <i>Palasha [Butea monosperma (Lam.) Kuntze]</i> showed significant improvement in visual acuity and quality of vision (especially effective in haziness and diplopia) in the subjects of age-related immature cataract ^[26]
<i>Guggulu [Commiphora wightii (arn.) bhandari], Arjuna (Terminalia arjuna (Roxb.) Wight and Arn) Pushkaramoola (Inula racemosa Hook.f.) Lasuna (Allium sativum Linn) Amalaki (Phyllanthus emblica L.) and Jatamansi (Nordostachys jatamansi DC)</i>	Cardio-protective effect ^[27]
<i>Allium ascalonicum (single clove garlic)</i>	Alcoholic extract showed significant anticoagulant, fibronolytic and hypo-cholesterolaemic activity in rabbits ^[28]
<i>Guggulu [Commiphora wightii (arn.) bhandari]</i>	Effective in hyperlipidemia ^[29]
<i>Pushkara Guggulu (prepared form Pushkaramoola and Guggulu)</i>	Showed anti anginal and hypolipidemic activities in coronary heart disease ^[30]
<i>Shallaki (Boswellia serrata Roxb.)</i>	The efficacy of <i>Shallaki</i> was found to be comparable to that of diclofenac sodium in the patients of RA, who demonstrated predisposition for gastric intolerance with anti-inflammatory medication ^[31]
<i>Yoga</i>	Regular yogic exercise from youth, limits the effects of old age. ^[32] If a person gets training of geriatric <i>Yoga</i> program, many age-related issues can be prevented. ^[33] <i>Yoga</i> reduces sympathetic activity with relaxing techniques. Pain, fatigue, depression and stress decrease with relaxing response and memory becomes retentive. ^[34]

MI: Mitotic index, CAs: Chromosomal aberrations, RA: Rheumatoid arthritis

diseases). Successful application of *Panchakarma* procedures like internal *Snehana* (oleation), *Abhyanga* (external application medicated oil), *Svedana* (fomentation), *Pizichill*, *Pindasweda*, *Shirodhara* and nourishing *Basti* (per-rectal administration of nourishing medicines), etc., suitably planned for each individual collectively can be called as geriatric *Panchakarma*.^[39]

Besides *Rasayana* and *Panchakarma* therapies, various single and compound Ayurvedic formulations, dietary and lifestyle guidelines can help in the effective management of geriatric conditions and improving their quality of life. Pragmatic applicability of Ayurveda in the management of various diseases of the skin, digestive tract, respiratory tract, musculo-skeletal system, cardio-vascular system and genito-urinary tract can be thought of as stand-alone or add on treatment modality in the elderly. Ayurveda can also be effective in neuropsychiatric problems such as insomnia, dementia; psychological, and allergic disorders.^[40] Many single Ayurvedic drugs have been scientifically studied for their organ-specific effect in treating cancer and minimizing the adverse effects of intensive chemotherapy and radiotherapy.^[17] Ayurvedic medicines and therapies are also extremely effective in managing anorectal disorders^[41] like fistula-in-ano, fissure-in-ano, hemorrhoids, etc.^[42]

Proper observance of the principles related to diet, *Dinacharya* (guidelines related to daily routine), *Ritucharya* (guidelines

of diet and lifestyle changes according to seasonal variation) and *Sadvritta* (guidelines related to lifestyle and spiritual and mental health) described in Ayurveda leads to perfect physical, mental and spiritual well-being by preventing diseases and promoting active and healthy aging.^[43]

Some strategies, along with steps toward strengthening health-care system in rural areas based on the needs of the elderly, that can be implemented to improve quality of life in old age through the incorporation of AYUSH may include providing specialized training for health care in geriatric medicine to the AYUSH doctors and paramedics and planning for holistic and suitable health-care services with evidence-based multi-pronged viable intervention program.^[44]

Development of an integrative model that incorporates the indigenous medicine for the older population in India may be done with the aim of improving the quality of life of the elderly by enhancing their physical, mental, and spiritual health, thus encouraging active and healthy aging by providing cost effective and easily accessible holistic health-care facility for the elderly. This can be achieved by prevention of early and hastened degeneration of vital organs such as brain, heart, kidneys, joints and muscles, maintaining musculo-skeletal mobility and flexibility, by boosting the immunity improving the nutritional status of all the tissues and managing psycho-somatic and psychological disturbances by internal

healing through spiritual upliftment (that is by interventional and noninterventional approach) through AYUSH systems.

India has a vast public health infrastructure with 23,391 primary health centers (PHCs) and 145,894 sub-centers providing health services to 72.2% of the country's population living in rural areas. Each PHC is targeted to cover a population of approximately 20,000 in hilly, tribal, or difficult-to-access areas and a population of 30,000 in plain areas, with four to six indoor/observation beds, and is entrusted with providing promotive, preventive, curative and rehabilitative care.^[45] PHCs form the first level of contact and serve as a link between individuals and the national health system by bringing health-care delivery as close as possible to where people live and work. If they are nonfunctioning, large amount of the population has to travel long distances to urban cities to avail even basic medical facilities.

There are over 7.7 lakh registered AYUSH doctors practicing in India. Number of registered AYUSH practitioners is more than registered Allopathic doctors because the number of undergraduate teaching institutes offering AYUSH courses are about 439, with about 30,000 AYUSH students graduating every year, while about 387 medical colleges are offering education of conventional bio-medicine with about 50,000 students graduating every year in India. The doctor-patient ratio is 1:1700 if only allopathic doctors are considered, but if the AYUSH practitioners are added, then the total number (about 1,315,000) makes this ratio 1:800, which is better than the WHO recommendation of 1:1000.^[46]

Based on these findings, we propose the development of a model based on the integration of conventional and indigenous medical practices prevalent in the country. Such steps are needed to fill the widespread gaps that exist in catering the elderly with an easily accessible and effective health-care system. Table 3 shows that AYUSH medical personnel, after suitable training in geriatrics, can also contribute toward better health-care service at various levels of the delivery system because it is the demand of the hour to develop an effective holistic protocol for geriatric care by the inclusion of AYUSH.

Discussion

This study investigated the extent to which current health care system is benefitting the elderly and possibility of improvement in the present model by integration of the Indigenous medical practices. Indian knowledge of human body, physiology, pathology, and therapeutics is well developed. Holistic approach toward patients is the characteristic of Indian traditional systems of medicine such as Ayurveda, Yoga, and Siddha. Ayurveda deals with mind and body simultaneously. Unlike modern medicine, whose strength is in curing infections and effective emergency management, Ayurveda aims at maintaining homeostasis than mere symptomatic treatment. By balancing the five basic elements and three *Dosha* (three humors), maintaining proper nutrition of every tissue by normal metabolism at cellular level and enhancing the microcirculation, sound immunity

and health can be maintained through Ayurvedic principles. All the treatment protocols in Ayurveda are based on the same philosophy of ultimately achieving *Dhatu Samya* that is balanced state/homeostasis.

Aging is defined as a series of time related processes that ultimately bring life to a close. Successful aging is multi-dimensional, basically encompassing the avoidance of disease and disability, maintenance of cognitive and physical function and sustained social and productive activity. Geriatric care has two distinct dimensions, namely promotion of health and longevity and management of diseases of old age. Modern medicine is apparently strong in terms of the second dimension, although the final outcome may not be significant because most of the diseases of old age are incurable.

Ayurveda and other indigenous systems of medicine are notably strong in terms of the first dimension of the problem as it has rich potential to improve the quality of life by promoting the health of the elderly, besides the scope of rejuvenation and promotion of longevity. Geriatric care has to focus first to encourage graceful aging by keeping the elderly healthy and active and second, the medical management of chronic disorders and prevention of acute infections which cause major morbidity in the elderly.^[39] Long-term treatment for chronic diseases should ideally be safe and subsequently efficient in improving the quality of life of patients. This can be achieved by Ayurveda, Yoga, and other traditional systems of medicine, as they can offer treatment guidelines along with the promotion of health and -evity with holistic approach.^[47]

In India, as in many other countries, most health programs have a vertical, disease-specific approach that targets a single set of outcomes rather than dealing with the health of an individual holistically. Although Western medicine has become the dominant system of care, the presence of medical pluralism cannot be ignored in India. Unani, Siddha, Sowa rigpa, Ayurveda are being practiced in the subcontinent for ages and are part and parcel of Indian culture. Thus, in the context of health system of India, because of their diversity, flexibility, easy accessibility, and acceptance, along with low cost, the traditional health systems can contribute toward achieving the public health goals.^[48] Therefore, the National Health Policy 2017 has also advocated for mainstreaming the potential of AYUSH systems (Ayurveda, Yoga and Naturopathy, Unani, Siddha, Sowa-rigpa, and Homoeopathy) within a pluralistic system of integrative healthcare in India. Integration of AYUSH in implementation of Sustainable Development Goal 3 (Good Health and Well-being), as mandated by the NITI Aayog, can enhance accessibility to achieve universal health coverage for affordable treatment and reduce out of pocket expenditure due to the self-care model.^[49]

An example of the successful integration of traditional healing systems that exist in the culture of a society could be that of the Caribbean island of Cuba, which has life expectancy of 76 years. Cuba focuses on preventing people from getting diseased by focusing on preventive medicine, acknowledging

Table 3: Possible plan to incorporate AYUSH personnel in Geriatric health-care

Level of Health care delivery system	Activities proposed for better health-care services for the elderly, after suitable training of AYUSH staff, in Geriatrics
PHCs	AYUSH Medical Officer can operate the weekly geriatric OPD for assessment, treatment and guidance for treatment and prevention of chronic illness Public awareness camps for encouraging active and healthy ageing can be arranged at the sub-center and PHC levels
CHCs	AYUSH Medical Officer can operate biweekly Geriatric OPD along with OPD level <i>Panchakarma</i> procedures after assessment at CHC and/or on referral from PHC Yoga Training for simple yoga techniques (simple postures and simple <i>Pranayama</i>) to be practiced in chronic diseases can be given by one Yoga trainer
Geriatric unit in District hospital	A full-fledged AYUSH Unit specialized for Geriatric health care can be set up for providing OPD, IPD, <i>Panchakarma</i> and Yoga facility to the patients requiring long term treatment Specially designed diet according to the disease and interventional <i>Panchakarma</i> procedures can be provided to the indoor patients Selective Yoga training as treatment for various diseases can be provided to the indoor patients Camps for awareness regarding healthy diet, lifestyle, and spiritual upliftment necessary for active and healthy ageing can be arranged Training workshops and awareness camps for AYUSH staff working at level below district hospitals may be arranged periodically
RGCs	AYUSH units can provide training to the AYUSH staff working in the geriatric unit at district hospitals Specialized units for <i>Panchakarma</i> , <i>Ksharsutra</i> and other interventional techniques can be run there Separate in-patient department for long-term extensive treatment and <i>Panchakarma</i> procedures with disease-specific diet and daily routine may be started. Long-term yoga training, meditation, relaxation, and counseling facility to handle mental and social issues of the elderly can also be done <i>Rasayana</i> administration units for active and healthy aging can be established AYUSH units can also provide useful inputs for the IEC strategy of NPHCE by carrying out longitudinal observational studies and drug trials for specific disorders in elderly
NCA (at Chennai and AIIMS, Delhi)	Activities at Regional Geriatric Centers Participation in research in geriatric medicine Research on palliative care along with psychological and spiritual training to be offered to chronic, disabled and end stage patients can be efficiently done by collaboration of AYUSH and conventional medicine, may be done Research on suitable diet, daily routine and lifestyle-related guidelines for prevention and management of various geriatric disorders can be done to accomplish the aim of active and healthy aging, carried out Research on developing evidence based treatment protocols based on basic concepts of Ayurved, Yoga and Naturopathy, Siddha, Unani, and Homeopathy for various geriatric disorders can be helpful in the development of new branch for postgraduate course in geriatric medicine (AYUSH), carried out

PHCs: Primary Health Centers, RGCs: Regional geriatric centers, CHCs: Community Health Centers, NCA: National Centers of Ageing, OPD: Out patient department, IPD: In patient department, NPHCE: National Program for Health Care of the Elderly, IEC: Information, Education and Communication

traditional wisdom and integrating traditional healing cultures, doctors being part of the communities where they work and focusing on medical studies of biological, psychological, and social aspects of medicine.^[50] Similarly, China, had also adapted the strategy of integration of conventional and traditional medicine for long-term main-streaming of Traditional Chinese Medicine in their National Health Care program, which has yielded good results.^[51]

At present, there is an acute shortage of allopathic doctors in India and this is going to increase in the years to come. Moreover, the distribution of allopathic doctors is also skewed, with very little presence in rural and remote areas. Practitioners of AYUSH however have a much wider presence. Despite the coexistence of the AYUSH and Allopathic systems for many years, doctors of one system are totally oblivious of what the other systems have to offer. Often patients take treatment from practitioners of many systems of medicines at the same time.^[46] In the past few decades, the government has recognized spectrum of healthcare providers graduated in the traditional Indian systems of medicine with equivalent status in public funded health-care delivery system; these graduates

are also routinely employed by private sector.^[52] Employing AYUSH practitioners along with medical practitioners in the public health-care delivery system, more specifically in the primary care and community-based domain, can strengthen the public health systems in long-term by reducing the burden on secondary and tertiary health care facilities.

Conclusion

Enormous challenges in the coming decades are anticipated for the health care system of India in serving the older population with the additional burden of increasing old-age dependency ratio. Therefore, there is an urgent need of adaptation and modification in the national health care system to cater the actual requirements of the elderly with plans and strategies dedicated to face their health-related challenges. Serious actions on a large scale are needed to train and re-orient the health-care givers (medics and paramedics) in the perspective of serving the aging population.

In a huge country like India where great diversity exists in health seeking behaviors and evident medical pluralism,

management of its medical resources should be rethought carefully. Adoption of integration in health-care interventions can improve the health outcomes by making it more acceptable, accessible, and affordable. Because of their comprehensive and holistic approach towards health and focus on prevention, inclusion of traditional health systems of the country, can contribute toward achieving needful public health goals. Incorporation of the AYUSH professional physicians along with practices and advocacies of the AYUSH systems in the national programs like the National Program for Health Care of Elderly, which is dedicated for the elderly and other programs which have a component for the elderly, is a necessary strategy for preparedness of public health-care system for geriatric health care as it can give unique newer dimensions to the field of geriatric medicine.

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Conflicts of interest

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