

Future Scope and Strategies for Preservation of Health through Ayurveda

Atreya Award Winner essay in first international essay competition on health' 2020

organized by

Charak Samhita Research, Training and Skill Development Centre (CSRTSDC)

in collaboration with

Institute of Teaching and Research in Ayurveda, Jamnagar, India

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All human endeavors, in the long run, are persistently performed to attain health. Health is wealth. So, health needs proper nurturing, garnering, perseverance, protection, and maintenance. Preservation of health has been the sole goal of humans since its existence. This quest led to the development of different health care systems based on their specific fundamental principles and definition of health.

Elaboration of the concept of health in Ayurveda classics and other contemporary healthcare systems

Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity.^[1] This definition of health by WHO is the most accepted one in contemporary science.

The world health organization defines traditional and complementary medicine as “ a broad set of health care practices developed over a long period and may be used in conjunction with allopathic medicines for the maintenance of health as well as ins the prevention, improvement, diagnosis or treatment of physical and/or mental illness.”^[2] Various traditional and complementary systems comprising herbal and natural products have had a significant impact in treating diseases and promoting health throughout the world, especially in Asia. It has been estimated that 11% of the total 252 drugs found in the essential medicine list of WHO are exclusive of plant origin.^[3,4] In 2013, WHO developed and launched 'WHO Traditional Medicine Strategy 2014-2023' and emphasized integrating traditional and complementary

medicine to promote universal healthcare and ensure the quality, safety, and effectiveness of such medicine.^[5]

Ayurveda, a major component of TIM, developed around 1500 BC.^[6] Ayurveda has defined objective for the preservation of health of the healthy and alleviation of the disease. [Cha. Sa. Sutra Sthana 30/26]^[7]

Unani Medical System, based on the principle that the human body comprises four basic elements; Earth, Air, Water, and Fire, originated in Greece.^[8] Yoga, a 5000-year-old TIM, aims to create a disease-free and strong body.^[9] Siddha System of Medicine mostly belongs to Tamil Nadu's religious groups, which began around 1600AD century but had similarities with Ayurveda.^[10,11] Homeopathy based on the doctrine of “like treats like” was developed around 400BC.^[12] Traditional Chinese Medicine is a medical system developed based on Taoist philosophy.^[13] The primary aim of treatment is to restore the balance and replenish *Qi* or blood. Herbal medicines, acupuncture, and massage are used to restore the balance in clinical practice in TCM.^[14] Traditional Korean Medicine originated through traditional Chinese medicine more than 3,000 years ago (around 984BC).^[15,16] Naturopathy originated around 1892AD in Germany and stated that nature is the ultimate cure for any human malady.^[17] Amchi Medical System, developed around 1116AD, is based on the principle of the "three humours"-wind, bile, and phlegm.^[18] Chiropractic treatment, 120 years since inception^[19], is based on the concept that neurologic dysfunction caused by impinged nerves at the spinal level is the cause of most disease; and spinal manipulation (adjustment) removed the interference to a full and healthy expression of life.^[20]

All the healthcare systems majorly focus on maintaining equilibrium among the various fundamental components. Though the concepts may vary, all healthcare systems inevitably have been initiated due to the persistent zeal of attaining better health. Hence, health is the total of complex dynamic interactions of different aspects, which can be summarised as in figure 1.



Figure 1: Dynamic aspects of health

Components of health and their importance

Health is the art of balancing different aspects. Health in itself has the integration of different individually essential components. Health is a state of equilibrium in *Dosha* (entity regulating bodily functions), *Agni* (bio-fire), *Dhatu* (structural component including seven tissues), *Mala* (metabolic wastes), and overall bliss of *Aatma* (soul), *Indriya* (senses) and *Mana* (contented mind). [Su. Sa. Sutra Sthana 15/3]^[21] Western society was able to incorporate the psychological and spiritual aspects into the definition of health much later. The concept of health of WHO propounded in the modern era is in close approximation with the concept of health defined in Ayurveda.^[22] Proportionate musculature, ideal body mass index (BMI), strong senses, able to bear hunger, thirst, temperature fluctuation, good metabolism are essential features of a healthy being. [Cha. Sa. Sutra Sthana 21/18-19]^[7]

According to Ayurveda, imbalance in Dosha or *Vikriti* (a precursor to disease) occurs whenever there are excessive environmental, dietary, and lifestyle changes. Imbalance in *Tridosha* (i.e., *Vata*, *Pitta* and *Kapha*) can be correlated with an imbalance in the ratio of oxidant and antioxidant molecules/radicals in the cells.^[23] *Agni* corresponds to enzymes, chemicals, hormones, neurotransmitters, and cytokines known to modern science.^[24] A study has shown that the three levels of action of *Agni* are similar to the three steps of metabolism understood in contemporary biochemistry: digestion (hydrolysis), intermediary metabolism

(preparatory phase) and Krebs's cycle, which take place at a cellular level. This similarity can help to understand the action and significance of *Agni*.^[25]

Due to lifestyle disorders, the depletion in *Agni*, unethical and erratic behavior results in the production and aggregation of unwanted by-products called *Aama*. *Aama*, in turn, block the *Srotas* (macro and micro transport channels). [Cha. Sa. Vimana Sthana 5]^[7] This results in different pathological events and diseases according to the blockade's site and degree.

When *indriya*, *mana*, and *indriyārtha* (object of perception) communicate appropriately, they cause knowledge. [Cha. Sa. Sutra Sthana 8/15]^[7] Hence, the proper functioning of each of these components of health is equally necessary.

Practical guidelines for implementing the concept of health in today's society

Ayurveda has provided various guidelines for maintaining a healthy lifestyle that is still relevant and practical even today. Ayurveda is not limited to chronic patients alone but emphasizes more on primary prevention, immunity building, and strengthening public health in general.

The concepts of *Dina Charya* (daily regimen), *Ratri Charya* (nocturnal regimen), *Ritu Charya* (seasonal regimen), *Ritu Sandhi Charya* (regimen during seasonal junction), *Sadvritta*, and *Achara Rasayana* (ideal code of conduct) need to be followed to maintain health. Disease progression occurs when the guidelines are not followed accordingly. *Adharaneeya Vegas* are the urges that should not be suppressed and help in the excretion of toxins. Negative thoughts have been included in the *Dharaneeya Vega* list and advised to restrict negativity to attain an optimal level of positive mental outlook.

The routine practice of Yoga helps in regaining strength, combating diseases, correcting deformities, toning structure, and improving posture. In a study, *Trataka* (Yogic visual concentration technique) showed better performance on the Stroop color-word test, suggesting increased selective attention, cognitive flexibility, and response inhibition.^[26]

Vriksha Ayurveda (plant well being), *Ashwa* Ayurveda (horse well being), *Gaja* Ayurveda (elephant well being) etc., are the extensions of Ayurveda into botany and veterinary science. Many methods were given in Ayurveda to maintain a healthy environment. For example, since the Vedic period *Homa-Havana* and *Yagnya*, sterilization of air, house & place around it by *Dhoopana*, is going on traditionally.^[27] Ayurvedic fumigation therapy is an example of drug delivery through inhalation having ease of drug administration, higher bioavailability and high potential to penetrate the blood-brain barrier.^[28,29,30] These practical yet straightforward guidelines are given in the treatise to maintain health.

Applied researches on preservation and protection of health

Health protection is an array of practices performed to shield individuals and communities from acquiring diseases and deteriorating their health. Health preservation is a broader term that encompasses measures to maintain health; protect, prevent, restrict, minimize, limit or decelerate the course of a disease; and ensure optimal health and longevity. It also includes having a positive frame of mind and striking a moderate balance between the tranquillity of mind and dynamic activities of the body.

Ayurvedic concepts of *Rasayana* (Ayurvedic nootropics) *Shat Kriya Kala*, *Tridosha*, *Agni*, *Srotas*, *Prakriti* (constitution) etc., involve minute detailing of patients that result in overall dynamic changes of the body. These concepts help prevent the aggravation, symptoms, complications, and manifestations of diseases.

A healthy life has three main pillars—a balanced diet, proper sleep, and healthy sex, and conjugal life. [Cha. Sa. Sutra Sthana 11/35]^[7] Ayurveda has given more priority to *Pathya Ahara Vihara* (wholesome diet and activities) and lifestyle modification over medication. A wholesome diet is one of the foundations for the growth and well-being of humans, while unwholesome food is the root of all diseases. *Pathya* (wholesome) has been used as a synonym for treatment, which shows its significance in Ayurveda. [Cha. Sa. Chikitsa Sthana 1/1/3]^[7] Even trivial things and habits accumulate to affect a person's health. Negative thoughts, worry, anger, fear, stress, lack of sleep etc., can lead to indigestion, even after following *Pathya*. [Cha. Sa. Sutra Sthana 8/15].^[7]

The permutation and combination of inappropriate quantity, quality, processing and timing of specific diet, activities, and medications can lead to untoward interactions. Such incompatibilities have been kept under the umbrella term of *Viruddha Ahara* and *Vihara*. [Cha. Sa. Sutra Sthana 26/80].^[7] *Viruddha Ahara* (incompatible diet) taken regularly could induce inflammation at a molecular level, disturbing the eicosanoid pathway creating more arachidonic acid leading to increased prostaglandin-2 and thromboxane. Such food combinations can prove harmful to the immune system, cellular metabolism, growth hormone, and Dehydroepiandrosterone sulfate (DHEAS).³¹

The ample choice of *Rasayana* (antioxidants) has been mentioned meticulously to ensure healthy aging. *Rasayana* retard brain aging and help in the regeneration of neural tissues besides producing anti-stress, adaptogenic, and memory-enhancing effects. *Rasayana* drugs play a role in immunity and exhibit anti-stress, inotropic, and antioxidant activities that improve quality of life (QOL).^[32]

Ayurgenomics, *Prakriti*-based classification shows a genomic and biochemical correlation of specific *Prakriti* types.^[33] A correlation between specific *Prakriti* and HLA-DRB1 polymorphism^[34] as well as dominant *Prakriti* to the place of birth and body mass index^[35] has been demonstrated. Research on the PGM1 gene linked with energy production showed that it could be correlated with the Pitta *Prakriti* that shows the constitution has a genetic basis.^[36] These kinds of studies help to explore the principles of Ayurveda.

Vajikarana augments and rejuvenates the reproductive system and enhances sexual function. It helps to attain contentment, happiness, vitality, and most importantly a healthy progeny. It enhances potency and is a part of noble birth. *Vajikarana* also claims to have anti-stress and adaptogenic actions, which help alleviate anxiety associated with sexual desire and performance. A study showed that the administration of ethanolic extracts of *vajikarana rasayana* herbs modulate the level of the follicle stimulating hormone and luteinizing hormone secreted by the pituitary. This in part, can explain the positive effect of the herbs on sexual functioning.^[37]

Prevention of disease occurrence and recurrence

The distortion of the equilibrium of *Doshas* both *Sharirika*(physical) and *Manasika*(mental), a weakened immune system, *Janpadodhwansa* (epidemics due to air, water, habitat, and season) etc. can trigger the onset of a disease. Three factors can broadly cause any disease:

- 1 *Nija* (imbalance of body humors),
- 2 *Agantuja* (Exogenous factors like trauma, burns etc.) and
- 3 *Manasa* (psychological reasons) [Cha. Sa. Sutra Sthana 11/45]^[7]

Diseases may sometimes subside and recur in the same or different sites with similar or different clinical manifestations. The recurrence of any disease is its periodic reappearance or resurgence. Some diseases may be opportunistic and will easily hamper a person with weakened immunity. As any disease progresses, the disease's strength also increases, so it is better to treat it the earliest possible.

Shat Kriya Kala shows the natural progression of any disease and provides us with the knowledge of ways to halt the disease's course. It emphasizes maintaining homeostasis by taking proper measures in the initial stages of the disease. [Su. Sa. Sutra Sthana 21]^[21]

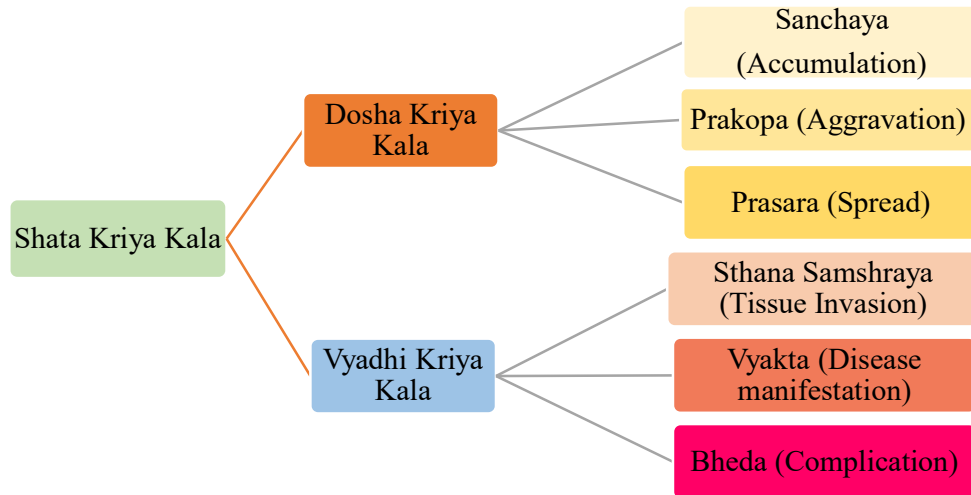


Chart 1 shows a brief insight on *Shat Kriya Kala*

The first method of treatment of disease as described in Ayurveda is *Nidana Parivarjana*, which is, to avoid aetiological factors. Provision of antagonistic factors of the cause of disease is advised in the first stage of *Shata Kriya Kala*. *Prakriti Vighata*, breaking the pathogenesis of a disease, is a way of breaking the vicious cycle of disease course. The treatment after the onset of the disease is through *Shamana* and *Shodhana*. *Shamana* includes measures to bring vitiated *Doshas* into their natural state through appropriate medicine, diet and activities. For preventing *Prameha*, walking of 100 *yojans* in 100 days i.e. 1 *yojan* per day (1 *yojan* is ~ 7.5 km) has been advised. [Su. Sa. Chikitsa Sthana 11/6-12]^[21] A research reported that brisk daily walk of 7.5 km (at a speed of at least 5 km/hr) for 100 days could reverse Glucose Tolerance Test to normal limits.^[38,39] A meta-analysis showed that exercise reduces HbA1c levels by an amount expected to reduce diabetic complications, without a mean effect on body weight.^[40] Hence, the proper regimen of *Pathya Vihara* also has a vital role in preventing and managing the disease.

Shodhana includes therapeutic procedures to remove toxins from the body. *Panchakarma* is a treatment modality that includes different steps to detoxify the body, treat a disease, remove accumulated toxins, rejuvenate oneself. It is planned exclusively according to the season and condition of the patient. It is advised to undergo *Panchakarma* before consuming *Rasa aushadhis* (mercurial medicines).^[41] These help to restore the energy of the body and help in the removal of toxins.

The occurrence and reoccurrence of a disease is also related to an individual's strength to combat the causative factors. *Ojas*, the essence of all the *Dhatus*, is responsible for natural strength, vitality, and immunity in the body, making a person physically active. [Su.

Sa. Sutra Sthana 15/24]^[21] This provides ability to identify and resist large numbers of diseases and abnormalities; to minimize and resist harm caused by disease, and inhibit organ and tissue damage.

Model healthcare system and its propagation

In this era of medical pluralism, the general public is fully aware that a single health system may not give them optimal health. The Swot analysis of both conventional and complementary and alternative medicine needs to be done to analyze and fortify each system to increase its productivity.

It is a well-known fact that though each medicine system is based on variable concepts, the sole purpose of each is the well-being of humankind. Striking a balance of understanding Ayurveda and contemporary medicine systems is required to cater to the public better. So with proper integration and interdisciplinary approaches, a patient-centric model health care system can be developed. Ayurveda, with its holistic, individualized approach, can heal diseases from the root cause. The customized treatment protocol to patients is the main strength of Ayurveda. Information technology, pathology, biomarkers, and even diagnostic tools can help Ayurveda practitioners assess patients better. This may help in making Ayurveda health services more accessible and affordable to people. Self-assessment tools, apps for quick remedies, benchmarks need to be developed with an expert panel. Dietary and lifestyle modification, basic Yoga, and Asana can be given on a regular counseling basis through trained community Ayurveda health workers.

Likewise, skilled Panchakarma therapists can help provide a better service to both healthy and diseased persons. Ayurveda pharmacists can help in providing information on proper *Anupana* (vehicle) for medicine, unwholesome diet, and general contradictions for medicines. A practitioner should assess *Prakriti*(constitution), *Vikriti*(pathological condition), *Saara*(tissue quality), *Samhanana*(individual proportion), *Pramana*(bodily measures), *Satmaya*(homologation), *Satva*(mental constitution), *Aahara Shakti*(digestive capacity), *Vyayama Shakti*(capacity of physical activities), *Vaya*(age) as well as document them.[Cha. Sa. Vimana Sthana 8/94]^[7]

Similarly, disease-specific protocols, including Yoga, needs to be offered by practitioners. Specialized wards like pediatric, geriatric, toxicology etc., need to function. Virtual counseling, palatable and consumer-friendly medicines need to be brought into the light. National Ayurveda Referral centers equipped and integrated with modern artificial intelligence-based contact technology, diagnostic tools, and skilled emergency staff should be

established. Ayurveda sanatoriums for chronic and convalescent patients should be formed. Proper training and accreditation of all levels of Ayurveda health workers need to be done. As good health practices start from home, the plantation of immunity booster and antimicrobial plants in the community can be encouraged to promote individual and public health. Proper use of mass media and the internet needs to be done to spread awareness regarding Ayurveda. Virtual interactive sessions can be organized to disseminate knowledge to the larger mass. Rational choice of drug and therapy needs to be done to avoid a burden on the consumer economy and the misuse of natural resources. Responsible production, consumption, disposal, and sustainable utilization of plants and animal products and minerals will help sustain and flourish biodiversity. Resource-efficient approach is required to ensure optimal benefit from limited resources. A model healthcare system providing quality service and goods at an affordable price that is progressing towards health equity can be achieved through proper utilization of Ayurveda.

Future strategies for preservation of health

The post COVID era has made people more health-conscious. Canvassing the greatest strength of Ayurveda is in its power to prevent rather than cure is essential. The preservation of health can only be achieved successfully by the combined work at various levels. Some of the future strategies are addressed below.

1 Government Level

- Inclusion of practical uses of Ayurveda in the primary and secondary educational curriculum
- Provision of basic knowledge of local herbs and *Sadvritta* Yoga etc. to public
- Integration of Yoga in physical education globally
- National Ayurveda Reference and Speciality centers. Chart 2 shows a possible outline of specialized Shalakya hospital

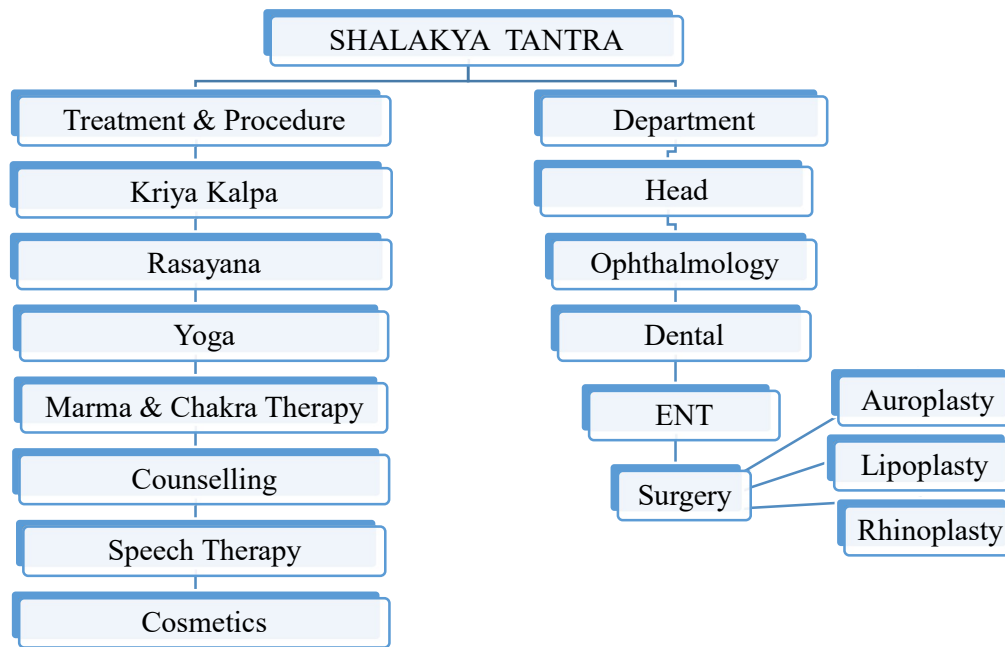


Chart 2: A possible outline of specialized Shalakyia hospital

- Short term courses, training to make Ayurveda more accessible and approachable
- Appropriate training of farmers. Good Agricultural Practice, Good Manufacturing Practice, Good Harvesting practices, Good Storage Practice, Smart farming is to be taken into account to ensure potent herbal products, which assure effective medicines and overall good health and generate a well-deserved revenue.
- Raising health tourism with public-private participation
- Extensive insurance coverage
- Low taxation for Ayurvedic products, services, and goods
- Practical and effective policies
- Promotion of access to innovations and Intellectual Property Rights
- Strategies to globalize Ayurveda by expanding trade and establishment of legal status

2 Practitioner level

- Development of screening methods, risk assessment profiles, validated questionnaires, health indices, and scales to assess individuals
- ADR reporting including SAE (Serious Adverse Event), SUSAR (Suspected Unexpected Serious Adverse Reaction), and pharmacovigilance.

- Feedback mechanisms both positive and negative by the practitioners, patients, and pharmacists as well.
- Consistent and rational prescriptions. Patient compliance, drug and diet regimen adherence [including the time of drug administration (*Aushada sevana kala*), drug adjuvant (*Anupana*) and diet/ regimen restrictions (*Pathya-apathya sevana*)] all should be considered for bringing the desired effect of the treatment as a whole. The misuse of allopathy medicines, commission and supplement-focused prescriptions need to be looked.

3 Student Level

- Student oriented classes, practical assessment tools, regular continuous medical education programs .
- Use of interactive web-based platforms, multimedia, community-based learning, and developing aptitude.
- Exposure to research works, open-source software technology, TKDL, open access journals, seminars, workshops to make scholars capable of critical analysis and reasoning.

4 Ayurveda fraternity level

- Proper accreditation of traditional practitioners and lineage healers
- Digitization of manuscripts
- Proper monitoring and supervision of Ayurveda universities and services in India and around the world (Eg. Ayurveda universities are operating in other countries like Nepal, Bangladesh, Sri Lanka etc.).
- Ensure and maintain qualitative products, service, and skilled human resources
- Optimal usage of information technology to develop apps and software, intact gadgets, etc.
- Cloud computing and data mining
- Check on the rampant use of over the counter (OTC) drugs

5 Pharmacy level

- Formation of Standard Operative Procedures and protocols with a panel of concerned Ayurveda experts

- Development of different quality standards and monographs to assess authenticity of raw drugs and minerals, formulations, profiling through HPTLC, HPLC, spectroscopy, FTIR, SEM, X-ray diffraction etc.
- Strict adherence to steps of drug discovery and post-marketing surveillance
- Approval of concerned bodies like CTRI, IEC before any trial
- Safety and efficacy of drugs and evidence-based medicine
- Modification of drug delivery system to ensure appropriate dose intake, portability and palatability
- Considering drug repurposing, repositioning, reprofiling, therapeutic switching etc.
- Global acceptance of Ayurvedic medicines through the assessment of shelf life, appropriate packing and labelling, insertion of informative leaflets.
- Easy provision of potent, accessible and cheap medicines.

6 Researcher Level

- Extensive researches in the field of literature review, pharmacological, pharmacognostical, clinical researches etc. to provide credible data and revalidate the concepts of Ayurveda in the context of contemporary scientific terms.
- Easily accessible researches to bridge the gap between researchers, practitioners and students to project knowledge of Ayurveda.
- Researches by enthusiastic Ayurvedic team with clear and specific research questions, unbiased research designs and methods, data analysis and interpretation based on AYUSH principles.
- Developing Ayurvedic standards and references. The confusion regarding multiple references of the same medicine has been solved to some extent with the introduction of Ayurvedic Pharmacopeia of India (API) and Ayurvedic Formulary of India (AFI). Such initiatives need to be increased.

7 Society level

- Maintaining hygiene
- Periodic use of natural disinfectants like *dhoopana dravyas* (fumigation)
- Social activities to engage people in physical, mental, and spiritual wellbeing. For example, plantation of trees like Neem with antimicrobial properties in free spaces of parks, schools, etc.

So, the future strategies for preserving health should be a combined multi-level effort to increase the quality of life. The strategies should be formed for both the short and long term to attain immediate yet sustainable benefits. Health, a fundamental right of people, can only be attained if affordable, convenient, and adapted to local conditions.

Conclusion

One of the major needs for the global acceptance of Ayurveda is to have a team of motivated well-versed Ayurvedic physicians and researchers that have the dedication to follow and upgrade the protocols of Ayurveda. In the modern science-dominated world, the struggles to cope with the intangible Ayurvedic doctrines and philosophy is likely. So, the provision of knowledge of Ayurveda from the primary level to help people grasp the ancient aspect of medicine is necessary. Global collaboration with interdisciplinary approaches should be highly welcomed to broaden the reach of Ayurveda. As Ayurveda resonates with the primary aim of leading a healthy life and deals with diseases only secondarily, it can evolve as the practical science that people embrace daily. This science can be fully used to revive the importance of a healthier life boosted with stronger immunity. Following an Ayurvedic lifestyle will eventually help to lead a healthy life and lessen morbidity and ultimately mortality. So, Ayurveda should be used to its full potential to upgrade public health and accomplish a healthier world.

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