



Clinical Research

Effect of dietary, social, and lifestyle determinants of accelerated aging and its common clinical presentation: A survey study

S. M. S. Samarakoon¹, H. M. Chandola², B. Ravishankar³

¹Senior Lecturer, Gampaha Wickramarachchi Ayurveda Institute, University of Kelaniya, Yakkala, Sri Lanka,

²Professor and Head, Department of Kaya Chikitsa, Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar, Gujarat, ³Director, Research and Development, SDM College of Ayurveda, Udupi, Karnataka, India

Abstract

Aging is unavoidable and natural phenomenon of life. Modern gerontologists are realizing the fact that aging is a disease, which Ayurveda had accepted as natural disease since long. Rate of aging is determined by one's biological, social, lifestyle, and psychological conditions and adversity of which leads to accelerated form of aging (*Akalaja jara* or premature aging). The aim of this study is to identify potential factors that may accelerate aging in the context of dietary factors, lifestyle and mental makeup. The 120 diagnosed subjects of premature-ageing of 30-60 years were randomly selected in the survey study. Premature ageing was common among females (75.83%), in 30-40 age group (70%), 86.67% were married, had secondary level of education (36.66%), house-views (61.67%), belongs top middle class (58.33%) and engaged in occupations that dominating physical labour (88.33%). The maximum patients are constipated (60%), had *mandagni* (80%), *vata-kapha prakriti* (48.33%), *rajasika prakriti* (58.33%), *madhyama vyayama shakti* (73.33%), and *madhyama jarana shakti* (85.83%). Collectively, 43.33% patients were above normal BMI. The more patients had *anushna* (38.33%) and *vishamasana* dietary pattern (25.83%), consumed Lavana (88.33%) and *Amla rasa* (78.33%) in excess on regular basis. Some patients had addicted to tobacco (11.67%) and beetle chewing (5.83%). The maximum patients had no any exercise (79.17%) and specific hobby (79.17%) in their leisure times. Analyzing Hamilton Anxiety and Depression Rating Scales revealed that 39.80%, 37.86%, 33.98%, 24.27% and 18.44% patients had insomnia, depression, tension, GIT symptoms and anxious mood respectively. These data suggest that certain social, dietary and lifestyle factors contribute towards accelerated ageing among young individuals.

Key words: Aging, *Akalaja-jara*, lifestyle, *Manasabhava*, premature-aging

Introduction

Aging is a continuous process that affects all the systems and tissues without sparing single cell in the body. Some people live longer with a very good physical and mental health, while others live with mild to moderate or even severe cognitive and physical disorders by the age of 60 or even before. In the latter condition, one's aging process is accelerated than the expected nature of the chronological age. It is a matter of fact to think why a person's biological age is more rapid than their

chronological age. More researches are being carried out on the physiological and pathological aspects of aging and the means by which aging could be slowed.

Aging has been defined as a progressive and generalized impairment of function resulting in a loss of adaptive response to stress and in a growing risk of age-associated disease.^[1] There is no United Nations standard to the age from which aging begins, but the UN agreed cutoff is 60+ years to refer to the older population.^[2] Charaka considers that old age starts at 60 years of age, while Sushruta demarcates old age starts at 70. It is important to distinguish normal aging that is universal biological changes that occur with advancing age and are unaffected by disease and environmental influences which is known as chronological aging and according to Ayurveda *kalaja jara* (natural aging). Some western bio-gerontologists also accept that aging is a disease.^[3] In contrast, the accelerated aging is strongly affected

Address for correspondence: Dr. S. M. S. Samarakoon, Senior Lecturer, Gampaha Wickramarachchi Ayurveda Institute, University of Kelaniya, Yakkala, Sri Lanka.
E-mail: samarakoonsms@yahoo.com

by environmental, lifestyle, and some disease conditions that are related to aging but not due to aging itself. This condition is accordingly known as *akalaja jara*.^[4] The *tridosha* (body humors), *saptadhatu* (basic tissues), *indriya* (organs), *srotas* (body channels), and *agni* (digestive and metabolic capacity) are affected in aging process according to Ayurvedic fundamentals, manifesting signs and symptoms physical as well as functional levels.^[5]

Aging does not take place simultaneously in all tissues. *Ashthanga Samgraha* was the first to mention how aging proceeds, whether it starts simultaneously in all tissues or from particular part of the body. According to this view, some qualities are being deteriorated in each decade of life beginning from, for instance at the end of first, second, third, fourth, fifth, sixth, seventh, eighth, ninth, and tenth decade; the childhood, growth, complexion, intellect, skin luster, reproductive capacity, vision, hearing, mind, and functions of sense organs are lost, respectively,^[6] and the maximum life span is 100 years.

Sharangadhara has had similar view with mild modification considering maximal life span of 120 years dividing into 12 decades. According to him, chronological deteriorations that take place in each decade are *balya* (childhood), *vridhhi* (growth), *chavi* (complexion or body's glow), *medha* (intellect), *tvak* (skin properties), *drishti* (vision), *shukra* (reproduction), *vikrama* (valour), *buddhi* (reasoning capacity), *karmendriya* (state of motor organs), *cheta* (mind), and finally *jivita* (life).^[7] It is obvious from the foregoing that aging is gradual and continuous process that affects various bodily tissues at different times. In this way, the process of aging definitely begins in the fourth decade of life. The effect of aging is more obvious in the fifth decade when the properties of skin elude or wrinkles.

Akalaja jara or premature aging is strongly influenced by the effects of environmental, lifestyle, and disease states that, in turn, are related to or change with aging but are not due to aging itself. This is an accelerated aging due to many reasons, in which biological aging is more intense irrespective of chronological age. Although, the rate of aging is genetically predetermined; lifestyle, dietary habits, addictions, mental makeup, social and family life, medication, and many other environmental factors may influence the aging process, and their unfavorable effects cause premature aging. Among hundreds of theories of aging, free radical theory has remained rational over time as it provides many realistic explanations for the process of aging. The changes induced by free radicals are believed to be the key cause of aging, disease, and death. Diet, active, and stress-free living play an unparallel role in neutralizing free radicals thereby retarding aging and age-related disease as well.^[8]

This study deals to identify possible factors that are adhered with diet, lifestyle, occupation, marital status, mental makeup, and such other key factors in the persons who are clinically aged than their actual age.

Aims and objectives

This study was carried out to evaluate the relationship of lifestyle, dietary pattern, occupational and social background, and mental makeup in individuals whose aging process is accelerated than expected, and signs and symptoms of aging are quite evident untimely.

Materials and Methods

The 120 diagnosed subjects, who fulfilled criteria of premature aging of both genders attending O.P.D of the Department of Kayachikitsa, I.P.G.T. and R.A Hospital, Gujarat Ayurved University, Jamnagar, during April 2009 to April 2010 were included in the survey study. Informed consent was taken in trilingual consent form after explaining the purpose of the study in detail in non-technical terms verbally. The study was cleared by Institutional Ethics Committee of I.P.G.T and R.A of Gujarat Ayurveda University.

Inclusion criteria

Patients aged between 30 and 60 years having started signs and symptoms of premature aging who were not suffering from any systemic disease or infection and who were not on any chronic medication were selected irrespective of their gender, education, socioeconomic status, and religion. Principle variables were the chief complaints such as *khalitya* (hair falling), *palitya* (hair greying), *prabha-hani* (loss of glossiness of the skin), *twak parushya* (roughness of the skin), flabbiness of body (*slatha sara*), deterioration in *grahana* (grasping), *dharana* (retention), and *smarana* (recalling), *slatha mansa* (muscle weakness), *parakrama-hani* (decreased physical strength), *vali* (wrinkling), *slatha sara* (flabbiness of body), *dhatu-kshaya* (loss of tissues), *shukra-kshaya* (decreased virility), *swasa* (dyspnoea), *vepatu* (tremors), and *drishti-hrasa* (visual defects).

Exclusion criteria

Patients who were below 30 and above 60 years, suffering from any chronic systemic disease such as diabetes mellitus, chronic obstructive pulmonary disease, and malignancies that were due to some other pathologies rather than the aging and who were on any chronic medication, were excluded from the survey study.

Observation and Results

General observation

The 75.83% ($n=91$) patients were reported females and 24.17% ($n=29$) males. When considering both age and gender, the maximum patients (70%) were observed in 30–40 year age group ($n=84$) contributing 13.33% males ($n=16$) and 56.67% females ($n=68$), whereas 25% of patients were reported in 41–50 year age group contributing 7.5% males and 17.5% females. In 51–60 year age group, the 3.33% patients were males and 1.67% females (total 5%). The maximum 81.67% patients were Hindu, while 15% had Islamic faith followed by 3.33%, 1.7% and 0.83% Jain, Christian, and Buddhist, respectively. The 86.67% ($n=104$) patients were reported married followed by 9.16% ($n=11$) unmarried. Another 4.17% patients were living alone as either widowed or separated contributing 1.67% widowed and 2.5% separated.

The maximum 36.66% ($n=44$) patients had secondary level of education followed by 24.17% ($n=29$) graduated. The patients who had higher secondary level education were 21.67% and another 4.17% patients were reported to have post graduation. The 5% of patients had primary education, whereas 8.33% were uneducated. The maximum 61.67% of patients ($n=74$) were housewives followed by 13.33% ($n=16$) laborers. Only 25% of patients ($n=30$) were not strongly associated with physical labor, i.e., 12.5%, 8.33%, 1.67%, 1.67%, and 0.83% of patients,

respectively, businessmen, teachers, doctors, bank officers, and engineers. The 81.31% female patients ($n=90$) were found involved in labor work irrespective of their educational status. The maximum patients (58.33%, $n=70$) were reported in lower-middle class followed by poor (19.17%, $n=23$) both groups collectively accounted for 77.5% of patients. The 15% and 7.5% patients were reported to have middle and upper-middle socioeconomic status, respectively. The 88.33% patients were observed to be engaged in occupations dominating physical labor, while 11.67% patients were associated with dominating mental labor.

The mean age of marriage for males was 23.45 years and that for females was 20.63 years. The mean duration of marriage of males was 15.9 years and for females was 17.87. Male developed symptoms of aging at a mean age of 32.7, whereas that of female was 34.35 years. The mean age of puberty for female was 13.91 ± 0.21 years and that of menopause was 42.13 ± 2.37 years. The 60% patients had constipation, whereas 40% patients had normal bowel habits. The 89.17% patients had normal urinary pattern, whereas 5%, 4.16%, and 1.66% patients had polyuria, oliguria associated with burning sensation, and dysuria, respectively. The 57.5% ($n=69$) patients had *madhyama* type of *koshtha* followed by 21.66% and 20.83% patients *mridu* ($n=26$) and *krura koshtha* ($n=25$), respectively. The 80% patients reported to have *mandagni* ($n=96$) followed by 15% and 5% patients *vishmagni* ($n=18$) and *tikshnagni* ($n=6$), respectively.

The maximum patients, i.e., 48.33% ($n=58$) had *vata-pitta prakriti* followed by 27.55% and 20% patients *vata-kapha* ($n=33$) and *pitta-kapha prakriti* ($n=24$). *Vata prakriti* was reported in 4.16% patients. The 58.33% of patients had *rajasika prakriti*, whereas *tamasika* in 35% patients followed by *satvika* in 6.66% patients. The maximum patients, i.e., 83.33% had *madhyama sara*, while 13.33% and 3.33% patients had *avara* and *pravara sara*, respectively. *Madhyama satva* was reported in 86.7% patients, whereas *avara satva* and *pravara satva* in 12.5% and 0.83% patients, respectively. The 76.67% patients had *madhyama satmya* followed by 16.67% and 6.66% patients having *avara* and *pravara satmya*, respectively. The majority of patients (86.7%) had *madhyama satva* followed by 12.5% *avara satva*. The maximum patients (73.33%) were reported to have *madhyama samhanana*, whereas 20.83% and 5.83% patients had *pravara* and *avara samhanana*, respectively. *Pravara*, *madhyama*, and *avara pramana* had been reported in 46.67%, 27.5%, and 25.83% patients, respectively. *Madhyama vyayama shakti* was reported in 73.33% patients, while *avara* and *pravara vyayama shakti* was reported in 20.83% and 5.83% patients, respectively. The 83.33% patients had *madhyama abhyavaharana shakti*, whereas 10.83% and 5.83% patients had *pravara* and *avara abhyavaharana shakti*, respectively. The 85.83% patients had *madhyama jarana shakti*, followed by 9.17% and 5% patients with *pravara* and *avara jarana shakti*, respectively.

The mean height of patient was 1.59 ± 0.06 m. The mean body weight was 62.14 ± 2.0 kg. The mean body mass index (BMI) was 24.64 ± 0.72 (kg/m^2). The ponderal index was 15.64 ± 0.49 (kg/m^3). The maximum patients (47.5%) were within normal range of body weight, whereas 29.16%, 9.17%, 3.33%, and 1.66% patients were overweight, moderately obese, severely obese, and morbidly obese, respectively. Another 9.17% patients were found to be underweight. Collectively, 43.33% patients ($n=52$) were of above normal BMI.

Dietary habits

The 75.83% patients were reported to consume vegetarian diet, whereas 24.83% consumed mixed diet. The 47.5% patients had healthy dietary habits (*samasana*) in general, followed by 38.33%, 25.83%, 14.2%, 10%, 5.83%, and 2.5% patients had *anushna*, *vishamasana*, *anasana*, *adhyasana*, *virya viruddha* and *ajirnasana* diet, respectively, on regular basis. The maximum number of patients consumed lavana, amla, and madhura rasa in excess on regular basis in their diet, i.e., 88.33%, 78.33%, and 66.67%, respectively, followed by *katu rasa* 49.17%, *kashaya rasa* 5%, and *tikta rasa* 4.17%. The 79.17% patients were found regular in their diet, whereas 20.83% of patients were found not having proper timing of diet. The 72.5% and 67.5% patients consumed diet rich in *guru* and *snigdha* properties, respectively, followed by *ushna* 40.83%, *shita* 39.17%, *laghu* 21.67%, and *ruksha* 9.17%. The 90% patients were taking tea on regular basis, whereas 28.33% salty stuffs. The 6.67%, 1.67%, and 0.83% patients were taking milk, coffee, and cold drinks as supplementary diet, respectively. The 87.5% and 70.83% patients used ghee and cotton seed oil in their cooking followed by 25%, 15.83%, and 6.67% patients using groundnut oil, sunflower oil, and mustard oil, respectively.

Addiction

The 11.67% patients were addicted to tobacco chewing followed by 5.83% to beetle chewing. Another 1.67% patients were addicted to tea and smoking each.

Lifestyle

The 79.17% patients were not being engaged in any exercise, while 9.17% engaged in less and irregular exercise. Only 11.67% patients were having regular and proper exercise. The maximum patients (90.83%) were not having the practice of oil application (*abhyanga*) on the body on regular basis as health preserving measure, whereas 4.2% patients had it rarely. Only 5% patients had *abhyanga* regularly. The 69.2% patients were having sufficient, sound sleep followed by 14.2% patients having disturbed sleep, whereas 10.8% and 5.8% patients insufficient and excess sleep, respectively. The 70% patients were not having specific hobby in their leisure times followed by 25.83% and 15% patients who had the habit of watching movies and TV and reading, respectively. The 47.5% patients each were reported being indulged in daily activities that vitiate *vata* and *kapha* followed by 2.5% and 1.66% patients who had daily routines of *vata-kapha* and *pitta vriddhikara*, respectively. Each 0.83% patients had daily routines that vitiate *vata-pitta* and *pitta-kapha* equally.

Emotional makeup

The 69.16% ($n=83$) patients were found to be emotionally normal, while 21.66% were tensile ($n=26$) followed by 7.5% and 1.66% patients depressed ($n=9$) and anxious ($n=2$), respectively.

Chief complaints

Among signs and symptoms, the 81.66%, 70.83%, and 65% patients had hair falling (*khalitya*), hair greying (*palitya*), and loss of glossiness of the skin (*prabha-hani*), respectively. Incidence of each roughness of the skin (*twak parushya*) was 59.16%, whereas *slatha sara* (flabbiness of body), and deterioration in *grahana* (grasping power) and *dharana* (retention power) was reported in 60% patients followed by difficulty in *smarana* (recalling power) in 58.33% patients. The incidence of *slatha mansa* (muscle weakness),

parakrama-hani (decreased physical strength), and each *utsaha-hani* (decreased physical activities) and *slatha asthi* (bone weakness) was reported in 54.16%, 53.33%, and 51.66% patients, respectively. *Vali* or wrinkling of skin was observed in 40% patients. *Slatha sara* (flabbiness of body), *dhatu-kshaya* (loss of tissues), *shukra-kshaya* (decreased virility), *swasa* (dyspnoea), *vepatu* (tremor), *drishti-hrasa* (visual defects), *kasa* (cough), and *kayasya-avanamana* (bending of body) was found in 50%, 49.16%, 36.66%, 38.33%, 8.33%, 7.5%, 5.83%, and 2.5% patients, respectively [Table 1].

The 81.66% and 78.33% patients had *klama* (fatigue) and *vibandha* (constipation), respectively, followed by 76.66%, 66.66%, 55%, and 50% patients having weakness, sleeping disturbances, anger, and indigestion, respectively. Irritability, palpitation, early menopause, urinary symptoms, and weakness of teeth was found in 33.33%, 32.5%, 26.66%, 17.5%, and 3.33% patients, respectively.

Dosha, dushya, and mala

The maximum patients (72.81%) were found to have vata *vriddhi* followed by 56.31% patients with *kapha vriddhi*. The 38.83% patients reported to have *kapha kshaya*, whereas each 33.98% patients had *pitta kshaya* and *pitta vriddhi*. Another 17.47% patients had symptoms of *kapha prakopa*. The 93.2%, 76.69%, 66.01%, and 64.07% patients were having *asthi kshaya*, *rasa kshaya*, *rakta kshaya*, and *majja kshaya*, respectively, whereas 33% 28.15%, and 16.5% patients had *mansa kshaya*, *meda kshaya*, and *shukra kshaya*, respectively. *Rasa vriddhi* was found in 14.56% patients followed by *mansa vriddhi*, *meda vriddhi*, and *majja vriddhi* in 28.15%, 33%, and 6.79% patients, respectively [Table 2].

Purishavaha srotodushti was reported in 50.48% patients, whereas *sweda vriddhi* was reported in 10.67% patients followed by *mutravaha srotodushti* in 9.70% patients. *Mutravaha srotodushti* and *swedavaha srotodushti* were reported in 9.7% and 6.79% patients, respectively, followed by *mutra vriddhi* in 7.76% patients. The 45.05% patients had *artava kshaya* followed by *artava vaha srotodushti* in 21.97% patients, whereas 4.39% patients had *artava vriddhi*. The 33% patients were having symptoms of *ojas-kshaya*. The 96.11% and 95.99% patients reported *asthivaha* and *rasvaha srotodushti*, while *annavaha srotodushti* was reported in 49.51% patients. The 17.47%, 15.53%, and 14.56% patients had *meda vaha*, *raktavaha*, and *shukravaha srotodushti*, respectively. The 6.79% patients each had *mansavaha* and *majjavaha srotodushti*, while 8.73% patients had *udakavaha srotodushti*. The *avara* state of *asthi sara*, *twak sara*, *shukra sara*, *rakta sara*, *majja sara*, *satva sara*, *mamsa sara*, and *meda sara* was found in 24.16%, 24.99%, 31.66%, 20.83%, 15.82%, 12.49%, 9.19%, and 9.99% patients, respectively.

Mental health

Evaluating the abnormal *manasabhava*, 33.33% patients had *chinta* followed by 28.33% and 20% patients with *smriti* and *vishada*, respectively, whereas *raja*, *harsha*, and *priti* was found in 10.83% patients each. The 9.16%, 7.5%, 6.66%, 5.83%, 3.33%, 2.5%, and 1.66% patients were reported to suffer from *mana*, *medha*, each *virya*, *dhairya*, and *shoka*; each *chinta* and *hriya*; *dhriti* and *upadi*, respectively. Analyzing the mental health, the Hamilton Anxiety Rating Scale revealed that 39.80%, 37.86%, 33.98%, 24.27%, and 18.44% patients had insomnia, depression, tension, GIT symptoms, and anxious mood, respectively,

Table 1: Incidence of chief complaints of aging reported by 120 premature aging patients

Chief complaints	Total patients	%
<i>Twak parushya</i> (rough and dry skin)	71	59.16
<i>Slatha sara</i> (flabbiness of the body)	60	50
<i>Slatha mamsa</i> (weakness of the muscles)	65	54.16
<i>Slatha asthi</i> (weakness of the bone)	62	51.66
<i>Slatha sandhi</i> (flaccidity of the joints)	72	60
<i>Dhatu kshaya</i> (loss of nutrition of basic tissues)	59	49.16
<i>Kaya-avanamana</i> (bending of the body)	03	2.5
<i>Vepathu</i> (tremors)	10	8.33
<i>Khalitya</i> (hair falling)	85	70.83
<i>Vali</i> (wrinkling of the skin)	48	40
<i>Palitya</i> (graying of hair)	98	81.66
<i>Kasa</i> (cough)	07	5.83
<i>Swasa</i> (dyspnea)	46	38.33
<i>Grahana</i> (grasping power)	72	60
<i>Dharana</i> (retention power)	72	60
<i>Smarana</i> (recalling power)	70	58.33
<i>Vachana</i> (speech)	01	0.83
<i>Vijnana</i> (application of knowledge)	02	1.66
<i>Utsaha-hani</i> (decreased activity in daily routine)	62	51.66
<i>Parakrama-hani</i> (decreased physical strength)	64	53.33
<i>Paurusha-hani</i> (decreased virility)	49	40.83
<i>Prabha-hani</i> (loss of glossiness of the skin)	78	65
<i>Shukra-kshaya</i> (loss of libido and/or potency)	44	36.66
<i>Drishti-hrasa</i> (diminished vision)	09	7.5
<i>Karmendriya-hani</i> (decreased activities of motor organs)	10	8.33

Table 2: Dushya pariksha reported by 120 premature aging patients

State of Dushya	Total patients	%
<i>Rasa-kshaya</i>	79	76.69
<i>Rakta-kshaya</i>	68	66.01
<i>Mansa-kshaya</i>	34	33
<i>Meda-kshaya</i>	29	28.15
<i>Asthi-kshaya</i>	96	93.2
<i>Majja-kshaya</i>	66	64.07
<i>Shukra-kshaya</i>	17	16.5

whereas intellect (difficulty in concentration and memory) and autonomic symptoms were found in 14.96% and 13.59% patients. Genito-urinary symptoms and respiratory symptoms were reported in 8.73% and 4.85% patients, respectively, while 3.88% patients each had somatic muscular, cardiovascular, and somatic sensory symptoms, respectively. Hamilton Depression Rating Scale revealed that insomnia, depressed mood, anxiety somatic, and anxiety psychic were reported in 39.80%, 37.86%, 21.35%, and 14.56% patients, respectively followed by work interest and

somatic GIT in 13.59% patients each. Hypochondriasis was found in 9.7% patients, followed by 7.76%, 6.97%, and 4.85% patients who had loss of weight, retardation, and agitation, respectively.

Discussion

The majority in the present sample (75.83%) with premature aging are females. The 70% patients are within 30–40 year age group, within which again females are dominant (56.67%). These data suggest that premature aging begins as early as 30 and 40 years of age, and females are more vulnerable to get aged early. The data are supported by another study with the quotation that “An ageing society is evolving, which for the most part, is female.”^[9] The adversity of lifestyle and heavy work load in household activities resulting in stress factor may be the cause of accelerating aging among females. Another study reveals the fact that “The neglect of women’s health and nutrition is so serious in some countries, particularly in Asia.”^[10]

Although majority (86.67%) are married, some considerable number of people in this study (13.33%) are unmarried, widowed, or separated, of whom majority are females. Marital status is a crucial aspect of demographic data of aging. The above data support another study that people who are married, cohabiting, or remarried are at low risk of early death than people who remain unmarried or divorced.^[11] Therefore, marital status has become an important determinant of the rate of aging in any population.

Education has a major role among social factors that determine the rate of aging. Education and nature of one’s livelihood are strongly interrelated. Majority of the subjects (50%) are in the group that consists of secondary, primary, and uneducated people. The most individuals (88.33%) are engaged in occupations related to physical labor, and most female patients (81.31%) are involved in household work irrespective their educational status. The maximum patients belonged to lower-middle class and poor economical group which collectively accounts for 77.5%. Above data reveal that people poorly educated, having physical labor dominant employments, and facing economic hardships in daily living are at risk of early aging. The studies conclude that health and aging are strongly influenced by work condition and working environment. Continuous physically demanding occupations are unfair as human physical capacity starts to decline after the age of 40 years.^[12] Another study also supports the data indicating that age-related cardiovascular diseases are more common among manual workers compared with non-manual workers and also in low socioeconomic classes.^[13]

The mean age of puberty for females ($n=90$) was found to be 13.91 ± 0.21 years, which seems to be quite physiological within the expected range of age, whereas that of menopause ($n=17$) is 42.13 ± 2.37 years, which seems early rather than physiological. According to *Parashara* and *Harita Samhita*, 40–50 years of age is termed as *Pragalbha*, i.e., premenopausal symptoms may be experienced, but not the menopause.^[14] A study conducted at the Institute of Child Health in Chennai reveals that early puberty is a strong indicator of premature aging, which indicate that age of puberty of girls in India 13–15 years in early 70s has become 8–9 years at the beginning of the 21st century.^[15]

Constipation is common (60%) which may be due to their

work pattern, dietary, and lifestyle. Although the alimentary physiology is not severely affected in premature or even in timely aging, reduction in peristalsis and colonic transit time lead to constipation in such individuals.^[16] The *madhyama koshttha* is found in 57.5% patients and 20.83% patients had *krura koshttha*. The 80% patients reported to have *mandagni* followed by 15% patients with *vishamagni*. The above status of *koshttha*, *agni*, and defecation are the consequences of predominance of *vata*^[17] and deranged functions of *apana* and *samana vayu*, *pachaka pitta*, and *kledaka kapha*.^[18] The *vata-kapha* type of body constitution (*prakriti*) (48.33%) was common and in maximum patients (58.33%) had *rajas* dominant mental constitution. The *sara* (83.33%), *satva* (86.7%), *satmya* (76.67%), *samhanana* (73.33%), *pramana* (27.5%), *vyayama-shakti* (73.33%), *abhyavaharana-shakti* (83.33%), and *jarana-shakti* (85.33%) are of the state of *madhyama*. The inferior quality (*avara*) of the same is also found in considerable number of patients in successive manner as mentioned elsewhere in this article. The above data are suggestive of gradual declining of the component of *bala* (strength) of the body with aging. The decline in strength is in aging carry significant consequences related to day-to-day activities. The data of present study reveal that premature aging is associated with remarkable loss of physical ability and which is supported by many standard studies.^[19,20] The maximum patients (47.5%) are of normal body weight (mean wt 62.14 ± 2.0 kg and mean BMI 24.64 ± 0.72 kg/m²) and another 9.17% patients are found to be underweight. Collectively, 43.33% patients ($n=52$) are of above normal BMI. The data suggest that obesity is associated with aging, although the lean body mass declines, fat accumulation increases with age.

Dietary habit wise more patients are vegetarian. Although maximum patients have healthy dietary habits (*samasana*) in *general*, *anushna*, *vishamasana*, *anasana*, *adhyasana*, *virya viruddha*, and *ajirnasana* dietary habits are also found on regular basis in considerable number of patients. These unhealthy dietary habits lead to *vata vridhhi*, *dhatu-kshaya*, and *agni-vaishamya* resulting in production of *ama* (free radicals) accelerated aging. The data support another demographic study on premature aging, where nearly similar results were observed.^[21] The maximum numbers of patient have been consuming *lavana*, *amla*, *madhura*, and *katu rasa* in excess on regular basis. Some patients have no proper timing of diet. More patients consumed diet rich in *guru* (72.5%) and *snigdha* (67.5%) properties, whereas some patients consumed diet dominant in *laghu* (21.67%) and *ruksha* (9.17%) properties. *Anasana* or insufficient food and diet rich in *laghu* and *ruksha* properties lead to *vata-vridhhi* and *malnourishment*, and in contrast, *adhyasana* and *madhura*, *amla*, and *lavana rasa* dominant food lead to *kapha* and *medas-vridhhi*. Both the conditions are associated with accelerated aging. The more patients (90%) are taking tea at many times on regular basis, whereas 28.33% salty stuffs, both the things downgrade digestion (*agni*) and may trigger the pathology of aging untimely. Majority of patients who have signs and symptoms of premature aging consume ghee (87.5%) and cotton seed oil (70.83%) in excess which lead to unwanted effect such as *kapha* and *medas vridhhi* and also obesity rather than the beneficial effects of ghee.

Lifestyle-related data analysis suggests that addiction to tobacco

and smoking is common. Smoking and tobacco are among the modifiable risk factors of aging and its excessive use trigger early aging. A study has reported that smoking decreases the protein (Werner's protein) in the body which prevents early aging.^[22] Although physical activity is a part of social life, it is important to note that maximum subjects (79.17%) were not engaged in any exercise. A sedentary lifestyle is known to be an important risk factor for poor health and reduced functional ability.^[23] World Health Organization identifies six areas that affect by physical exercise: Body shape, bone strength, muscular strength, skeletal flexibility, motor fitness, and metabolic fitness.^[24] Physical exercises prevent age-related health conditions such as diabetes, coronary heart disease, osteoporosis, and improve mental health as well. Therefore, it is evident that lack of exercise undoubtedly leads to accelerated aging and many age-associated diseases. In this study, maximum subjects have sedentary lifestyle which provides evidence to the fact that physical inactivity causes premature aging.

The maximum patients (90.83%) have no practice of oil application on the body (*abhyanga*) on regular basis as health preserving measure; the 30.8% patients had disturbed sleep. The 70% patients had no specific hobbies in their leisure times. The 47.5% patients each are reported to indulge in daily activities that *vitiata vata* and *kapha*. Analysis of symptoms of premature aging reveals that *slatha sara*, deterioration in *grahana*, *dharana*, and difficulty in *smarana* are some of the common symptoms. *Twak parushya*, *prabha-hani*, *utsaha-hani*, *vali*, and *vepatu* are found common among the patients. These symptoms are due to depletion of *rasa-dhatu* which is reported among 76.69% patients.^[25] *Prabha-hani* and *twak-parushya* are due to depletion of *rakta dhatu*^[26] which is in 66.01% patients. *Slatha-mansa*, *slatha-sandhi*, and *slatha-asthi* are the features of depletion of *mansa dhatu*.^[27] *khalitaya*, *palitaya*, *drishti-hrasa*, and *slatha-asthi* are due to depletion of *asthi* and *majja dhatu*^[28] which is found among 64.07% patients. The *dhatu-kshaya*, *shukra-kshaya*, and *parakrama-hani* indicate depletion of *shukra dhatu*. The *mansa kshaya*, *meda kshaya*, and *shukra kshaya* are also responsible in manifesting symptoms of premature aging.

It is well known that *sapta dhatu* become gradually depleted when aging proceeds. In premature aging, the process of depletion takes place in accelerated manner giving rise to early symptoms of aging. Deterioration of *grahana*, *dharana*, and *smarana* are the symptoms related to concentration as well as memory and learning, and deterioration of which collectively may be considered as dementia in modern perspective. Depending upon the degree of dementia, impairment is variable ranging from mild memory impairment to severe forgetfulness. This study reveals that there is considerable prevalence of memory-related symptoms which appear in 30–60 years of age as early indicating premature aging. Data reveal that *vata vridhhi* (72.81%) is dominant among majority of patients before the expected age, strongly suggesting accelerated aging. The symptoms of *kapha vridhhi* (56.31%) and *pitta kshaya* (33.98%) may be due to their sedentary lifestyle. Although these untimely symptoms related to *dosha* and *dhatu* are subjective, they are very substantial to assess aging, the rate of aging and consequently could be used as potential biomarkers.^[29]

Evaluation of *manasabhava* reveals that increased negative

emotions such as *chinta*, *vishada*, *raja*, *mana*, and *shoka* were in mild form, whereas decreased positive emotions such as *smriti*, *medha*, *virya*, and *dhairya* and *dhriti* were also among the symptoms. Analyzing Hamilton Anxiety Rating Scale, insomnia, depression, tension, GIT symptoms and anxious mood, difficulty in concentration and memory, and autonomic symptoms were among some patients. Hamilton Depression Rating Scale reveals that insomnia, depressed mood, anxiety somatic, and anxiety psychic were reported in these patients. Those data suggest that although anxiety, depression, and stress are triggering factors of accelerated aging, however, severe anxiety, depression, or disturbed *manasa bhava*, are not found among the patients.

Conclusion

Aging is determined by lifestyle, dietary habits, mental makeup, and even environmental factors in addition to the genetic factors. Faulty dietary habits, lifestyle, and stressful living may wrongly influence one's biological aging which is the sole indicator of health and age-associated diseases. *Ayurvedic* way to live healthy and young for long is to maintain balance of *dosha*, *dhatu mala*, and *agni* and also to control mind. The objective to attain healthy aging could be achieved by practicing stress-free lifestyle enriched with moral code of conducts and healthy dietary habits to make the aging society healthy and happy.

References

1. Kirkwood T. Mechanisms of Ageing in Epidemiology in Old age. In: Ibrahim S, Kalache A, editors. London: BMJ Publishing Group; 1963. p. 3.
2. United Nations. World Population Prospects: The 1998 Revision. New York: United Nations; 1999 p.123-30.
3. Gorman M. Development and the rights of older people. In: Randel J, Roswell G, Smith C. editors. The ageing and development report: Poverty, independence and the world's older people. London: Earthscan Publications Ltd.; 1999. p. 3-21.
4. Yadavji Trikamiji Acharya. *Sushruta Samhita of Sushruta*. Varanasi: Chaukambha Surabharati Prakashan; Su.Su.24/7, 2008.
5. Samarakoon SMS, Chandola HM. Summary of role of *Rasayana* on *Akalaja Jara* (premature ageing). *Ayurveda Sameekshawa*. Vol. 2, Part 4. Sri Lanka: Department of Ayurveda; 2010. p. 5-9.
6. Atrideva Gupta. *Ashtanga Samgraha*. Varanasi: Chaukambha Sanskrit Sansthan; Ash.San.Sha.8/25, 2005.
7. Brahmananda Tripathi. *Sharangadhara Samhita*. Varanasi: Chaukambha Surabharati Prakashan; Sha.Pu.6219, 2008. p. 86.
8. Wikipedia free encyclopedia. 2008. "Antioxidants". Available from: <http://www.wikipedia.org/antioxidant>. [Last accessed on 2009 Dec 21].
9. Mylander M. Continuities and discontinuities. Report on Women Health, World Health Organization. 1979;4:322.
10. United Nations Development Programme. Human Development Report. New York: Oxford University Press; 1994, p.145.
11. Nilsson PM, Nilson JA, Ostergren PO, Berglund G. "Social mobility, marital status, and mortality risk in an adult life course perspective": The Malmo Preventive Project. *Scan J Public Health* 2005;33:412-23.
12. Ilmerinen J. Promoting the health and well-being of the older worker. The Finnish experience. In investing in older people at work: A symposium for employers. Policy makers and Health Professionals from Europe, 1994. p. 90-104.
13. Nilsson PM, Nilson JA, Ostergren PO, Berglund G. "Social mobility, marital status, and mortality risk in an adult life course perspective": The Malmo Preventive Project. *Scan J Public Health* 2005;33:412-23.
14. Mistry IU. Menopausal syndrome and *Rasayana kalpa-vati*, National workshop on problems of ageing women. Jamnagar: Gujarat Ayurveda

- University; Parashara smriti, 2008. p. 7 (Su.Su 35/9; Harita Sharira 13/14).
15. Sujatha R. Changing life style and premature ageing, e-paper on line edition of The Hindu-Tamil Nadu. 2007. [Last accessed on 2009 Feb 12].
 16. Swash M, Glynn M. Hutchison's Clinical Methods. 22nd ed. London: Saunders Elsevier; 2007. p. 344.
 17. Yadavji Trikamji Acharya. *Sushruta Samhita of Sushruta*. Varanasi: Chaukambha Surabharati Prakashan; Su.Su.35/38, 2008.
 18. Atriveda Gupta. Edited by Y. Upadhyaya. *Ashtanga Samgraha of Vagbhata*. Varanasi: Chaukambha Sanskrit Bhavan; A.Hr.SU.12/8-12, 2005. p. 90-1.
 19. Danneskoild-Samsoe B, Kofod V, Munter J, Grimby G, Schnohr P, Jensen G. Muscle strength and functional capacity in 77-81 year old men and women. *Eur J Appl Physiol Occup Physiol* 1984;52:310-4.
 20. Jetty AM, Branch LG. The Framingham disability study. 2. Physical disability among the ageing. *Am J Public Health* 1981;71:1211-6.
 21. Oza DN, Tanna I, Ravishankar B, Chandola HM. Evaluation of the role of diet and life style in premature ageing. *Indian J Anc Med Yoga* 2009;2:99-108.
 22. "Smoking Causes Premature Ageing". Available from: <http://www.uihealthcare.com/smokingandageing.html>. [Last accessed on 2009 Feb 20].
 23. The WHO monograph on "The role of physical activity in healthy ageing". Ageing and Health Programme, Geneva: WHO; 2008. p. 4.
 24. Bouchard C, Shephard RJ, Stephens T, editors. Physical activity, fitness, and health: International proceedings and consensus statement. Champaign, IL: Human Kinetics Publishers; 1994 p. 12-18.
 25. Atriveda Gupta. Edited by Y. Upadhyaya. *Ashtanga Samgraha of Vagbhata*. Varanasi: Chaukambha Sanskrit Bhavan; A.Hr.Su.11/17; Su.Su.15/9, 2005.
 26. Yadavji Trikamji Acharya. *Sushruta Samhita of Sushruta*. Varanasi: Chaukambha Surabharati Prakashan; Su.Su.15/9, 2008.
 27. Atriveda Gupta. Edited by Y. Upadhyaya. *Ashtanga Samgraha of Vagbhata*. Varanasi: Chaukambha Sanskrit Bhavan; A.Hr.Su.11/18, 2005. p. 87.
 28. Pandey K, Chaturvedi G. *Charaka Samhita of Agnivesha*. Part I. Varanasi: Chaukambha Bharati Academy; Ch.Su.17/66; Ch.Su.17/67. 2008.
 29. Samarakoon SM, Chandola HM. Some biomarkers of ageing in Ayurvedic perspective. *Indian J Anc Med Yoga* 2009;2:197-210.

हिन्दी सारांश

आहारात्मक, सामाजिक एवं जीवनशैली सम्बन्धी हेतुओं का वार्धक्य प्रक्रिया पर प्रभाव—एक सर्वेक्षण अध्ययन

एस. एम. एस. समरकून, एच. एम. चन्दोला, बी. रवीशंकर

वार्धक्य एक स्वाभाविक प्रक्रिया है। आधुनिक चिकित्सा विज्ञान भी इसको एक रोग के रूप में स्वीकार करने लगा है, जब कि आयुर्वेद में प्रारंभ से ही जरा एक व्याधि के रूप में वर्णित है। इसे कालज एवं अकालज जरा के रूप में विभक्त किया गया है। वार्धक्य को प्रभावित करनेवाले कारणों में जैविक, सामाजिक, जीवनशैली एवं मानसिक घटकों को स्वीकारा गया है। प्रस्तुत सर्वेक्षण अध्ययन में उपरोक्त सभी हेतुओं का बारीकी से मूल्यांकन कर यह ज्ञात हुआ कि उपरोक्त हेतु वार्धक्य प्रक्रिया को काफी हद तक प्रभावित कर अकालज जरा को उत्पन्न करने में सहायक हैं। आयुर्वेद चिकित्सा विज्ञान में वर्णित आहारात्मक एवं जीवनशैली युक्त मूल्यों को यदि अपनाया जाए तो दोष – धातु – मल – अग्नि एवं मनोवस्था में साम्य पैदा कर, चिंता और तनावमुक्त जीवन यापन कर, सद्वृत्त के नियमों का पालन कर अकालज जरा से प्रभावी रूप से उबरा जा सकता है।