



## Clinical Research

# Observational study on external social and lifestyle related factors and their role in pathogenesis of premature ageing and stress

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### Abstract

In the present era of stress, when lifestyle disorders are high on rise, premature ageing is also one of the most prevalent disorders. It is needed to study the external environmental psychological causative factors in premature ageing and stress. An observational study was carried out to evaluate the relationship of lifestyle, occupational and social factors and mental makeup in individuals diagnosed with premature ageing. A total of 108 patients of premature ageing and stress fulfilling the criteria of inclusion as per ageing scale were selected from outpatient Department of *Panchakarma* and *Manasa Roga*, Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar. The diagnosed patients of premature ageing were subjected to specialized proforma enlisting all the factors as well as ageing scale, *Manasa Bhava Pariksha*, and *Manasa Vibhrama Pariksha*. The method of survey was by a questionnaire about the points regarding the lifestyle causative factors. Maximum patients had shown signs of premature ageing with *Mana-Buddhi-Smriti-Bhakti Vibhrama* (100% each) and involvement of negative *Manasa Bhava*. The 78.70% patients in this study felt of having excess responsibility on them in family. The 52.77% patients had average good relationship with their family members, while remaining 47.22% narrated history of disturbed relationship. The center of stress was found to be at personal level in all patients; at family level in 73.14%; at professional or work level in 64.81%. Various external, occupational, social and familial factors play significant role in the pathology of premature ageing by disturbing the overall psychological status. This proves the link of *Manasa* affecting *Sharira* and vice versa with reference to modern contemporary concept of psycho-neuro endocrinology.

**Key words:** *Akalaja Jara*, external social factors, *Manasa Bhava*, premature ageing, stress, *Vibhrama*

## Introduction

Premature ageing is a commonly observed disorder due to various improper dietary as well as lifestyle factors. Although it seems a relatively less dangerous disease, it adversely affects the overall productivity of the individual. The causative factors of *Akalaja Jara* (premature ageing) can be divided into *Aaharaja Hetu* (dietary causes) and *Viharaja Hetu* (lifestyle causes). Beside the dietary causes, there are ample external factors involved in the

patho-physiology of any disease; as in premature ageing. Therefore it is worthy to note the external lifestyle causes mentioned in Ayurvedic classics and formulate the cause-effect relation. Among the lifestyle causes, daily routine, personal, familial, social, professional environment of the individual, relationship with others, and negative things happening in the day to day life affect the overall quality of life of individual. These factors, if in excess, adversely influence psychological development and lead to distress. Sustained distress can negatively influence growth and nutrition of the cells leading to their premature exhaustion. Thus the link is related with the pathology of premature ageing. In Ayurveda, some procedures like *Abhyanga* (Massage), *Snana* (bath), *Shodhana* (body purification) are enlisted to prevent the pathogenesis of premature ageing and stress. In the present article, external factors are investigated to assess their role in the pathogenesis of premature ageing and stress.

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## Aims and Objectives

Present study was carried out to evaluate the relationship of lifestyle, occupational and social factors and mental makeup of individuals diagnosed with premature ageing.

## Materials and Methods

### Patients

The 108 subjects diagnosed with premature ageing attending the Outpatient department of *Panchakarma* and *Manasa Roga*, Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar fulfilling the criteria of inclusion were selected for the present 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 being part of Ph.D. study was approved by Institutional Ethics Committee of Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar.

### Inclusion criteria

Patients between the ages 16 to 60 years complaining of premature ageing and not suffering from any major systemic disease or infection and who were not on any chronic medication were selected irrespective of their gender, education, socioeconomic status, and religion. The chief complaints as principle variables were *Twak Parushya* (roughness of the skin), *Khalitya* (hair falling), *Palitya* (hair graying), *Prabha-Hani* (loss of glossiness of the skin), *Shlatha Sara* (flabbiness of body tissues), deterioration in *Grahana* (grasping), *Dharana* (retention), and *Smarana* (recalling), *Shlatha Mamsa* (muscle weakness), *Parakrama-Hani* (decreased physical strength), *Vali* (wrinkling), *Shlatha Sara* (flabbiness of body), *Dhatu-Kshaya* (loss of tissues), *Shukra-Kshaya* (decreased virility), *Shwasa* (dyspnoea), *Vepathu* (tremors), and *Drishti-Hrasa* (visual defects).

### Exclusion criteria

Patients suffering from serious systemic diseases such as diabetes mellitus, chronic obstructive pulmonary disease, and malignancies as well as those suffering from any chronic systemic disease and pathologies other than aging and on any chronic medication, were excluded from the survey study.

### Study design

The method of survey was by a questionnaire about the points regarding the enlisted lifestyle causative factors. The chief complaints, *Manasa Bhava* and *Manasa Vibhrama* were assessed as per specialized scales.<sup>[1]</sup> The subjects were free to withdraw from survey or they had the right to not to answer any question at any given time and were assured of confidentiality of data. The data recorded and further analyzed with suitable statistical tests.

## Observations and Results

Totally 108 patients were registered for the present study. The data shows that majority of the patients, i.e., 39.81% were in the age group of 31-40 years followed by 29.62% in the age group of 41-50 years and 26.85% in the age group of 21-30 years. Maximum numbers of patients, i.e., 57.40% were male while 42.60% patients were female. Maximum 89.81%

were Hindu in religion. The 35.18% patients were graduates, while 22.22% educated up to higher secondary level and 17.59% up to secondary level. The 95.37% patients were belonging to urban habitat and remaining 04.62% were from rural habitat. Maximum 37.03% patients were house wives, followed by 33.33% doing service and 21.29% engaged in business. Majority of the patients, i.e., 80.55% were married, while 14.81% unmarried and 03.70% divorced.

In the socio-economic status, it was found that maximum, i.e., 87.96% were from middle class while 10.18% from upper middle class. Maximum patients, i.e., 74.07% were reported with chronicity between 1 to 5 years, followed by 16.66% reported symptomatic since less than or equal to 1 year. As per the involvement of psyche and soma while doing the work, the 95.37% reported that their work as of more physical type, while 86.11% reported that psyche was also involved in performing their work. When the patients were asked about whether they feel excess responsibility on them in family, 78.70% replied positively, 21.30% nodded their head in negative way. On analyzing the frequent emotional make up of immediate family members of stressed patients, it was observed that the family members of 46.29% patients were unsatisfied, those of 36.11% were supportive and 29.62% patients had irritable family members. The 52.77% patients had average good relationship with their family members, while remaining 47.22% narrated history of disturbed relationship. The 46.29% patients had nuclear family, while remaining 53.70% were living with extended family or joint family.

### Prevalence of stress and other lifestyle factors

On analysis of the core of underlying stress, the center of stress was found to be at personal level in all patients; at family level in 73.14%; at professional or work level in 64.81% and at social level in 9.25% patients. With respect to work satisfaction history, 49.07% were not at all satisfied with the work they were doing, 38.88% were partially satisfied and 12.03% were content with their work. The 85.18% patients were not doing any type of exercise, while almost all, i.e., 99.07% had not taking *Abhyanga* (massage). It was also observed that 94.44% were taking regular bath, but among all 30.55% reported that there is occasional irregularity in taking bath. The 67.59% patients believed to follow religious rituals regularly and remaining 32.40% irregularly followed rituals. The maximum 90.74% patients had improper sleep pattern and was disturbed in 65.14%, less in 26.85% and excess in 3.73% patients. Majority, i.e., 51.85% reported to have regular daily routine activities; 45.37% had followed irregular daily routine; 48.14% had not adopting lifestyle as per season; 45.37% adopting seasonal lifestyle properly; 49.07 felt that they don't have proper life style; and 42.59% followed proper lifestyle. The 57.40% patients reported not to be having late nights/night shifts regularly in their schedule. Almost all (99.07%) patients had not followed *Shodhana* like body purification procedure previously. The 72.22% patients narrated history of proper psycho-sexual education. Overall it was revealed that the *Vihara* of 96.29% patients was prone to vitiate *Vata Dosha*; while it was *Pitta* vitiating in 93.51% patients and *Kapha* vitiating in 7.40% patients. *Rasavaha* and *Manovaha Srotasa* was vitiated in all the patients, followed by *Annavaaha Srotasa Dushti* in 79.62% cases and *Asthivaha Srotodushti* in 75.92% patients.

## Chief complaints

All the patients in the present study complained of being stressed out or burnt out or feeling tense and feeling aged/old to an extent to disturb their daily life. The observations on occurrence of chief complaints, *Manasa Vibhrama* and *Manasa Bhava Pariksha* are shown in Tables 1-3 respectively.

## Discussion

The majority of the cases seeking treatment from the source of data center are reported to be from lower and middle socio-economic class. Stressful people are already engaged in different activities. Moreover, ageing is a silent phenomena which is not considered as an important health factor unless until it affects the daily routine of the patients with severity. To create awareness about preventive measures for premature ageing and stress in middle class stressful community is challenge to Ayurveda professionals

### Age–gender–religion

Maximum patients (39.81%) were in the fourth decade of life, i.e., between 31 and 40 years age. This indicates the dual attack of stress and ageing in this age. On one side, stress affects due to increased responsibilities, expectations for maximum productivity, and on other side the body begins to show changes of ageing declining adaptability. Therefore maximum preventive care can be taken in this particular age. Patients of either sex were included in the present study. It is a matter of debate whether stress and premature ageing is influenced by gender factor. Although Madhava opined, there will be less signs of ageing in females due to monthly purification of body through menstruation.<sup>[2]</sup> In this study almost equal number of females were having premature ageing symptoms. This may be due to the change in diet and lifestyle due to urbanization. Feminine gender is described to have *Anavasthita* (unstable), *Mridu Vivruta* (tender), and *Viklava Hridaya* (weak mind). In case of crisis situation, they need external support to handle the stress.<sup>[3]</sup> Therefore being *Alpa Sattva* by nature may be considered as having less endurance to stress. It seems that the modernized lifestyle and extra responsibilities can be stemmed at the causation of disease and not be influenced by gender in today's era.

The location of data source is occupied with majority of Hindu population. Therefore it is obvious that the patients seeking treatment are majorly Hindu. Religion as grossly doesn't seem to affect stress and ageing. However, the religious rituals and cultural events may play role on the overall psyche of the person influencing the stress and ageing phenomena. Researchers suggest the positive relation between religion, prayer, happiness, satisfaction and belief.<sup>[4]</sup> It also has an effect on the lifestyle of the person, which in turn affect mind and body.

### Education–habitat

The present study illustrates that maximum 35.18% patients were graduates, while 22.22% educated up to higher secondary level. Education can modify and develop the personality at gross level, but the ageing cell does not know how much educated its master is. They only know what they are getting to survive at par. Education can define the diet and lifestyle pattern in order to prevent disease, and through its philosophical aspect

**Table 1: Observations of chief complaints**

Chief complaints	Total no. of patients	%
<i>Twak Parushata</i> (Dryness of skin)	104	96.29
<i>Slatha sara</i> (Flabbiness of the body)	105	97.22
<i>Shlatha Mamsa</i> (Decreased muscle tone)	104	96.29
<i>Shlatha Asthi</i> (Bone weakness)	104	96.29
<i>Shlatha Sandhi</i> (Flaccid joint)	103	95.37
<i>Dhatu Kshaya</i> (Loss of tissues)	106	98.14
<i>Vepathu</i> (Tremors)	50	46.29
<i>Khalitya</i> (Falling of hairs)	107	99.07
<i>Vali</i> (Wrinkling)	107	99.07
<i>Palitya</i> (Graying of hairs)	107	99.07
<i>Kasa</i> (Coughing)	88	81.48
<i>Shwasa</i> (Short breath)	92	85.18
<i>Grahana</i> (Grasping power)	104	96.29
<i>Dharana</i> (Retention Power)	104	96.29
<i>Smarana</i> (Memory power)	103	95.37
<i>Vachana</i> (Speech)	104	96.29
<i>Vijnana</i> (Knowledge)	104	96.29
<i>Utsaha hani</i> (Decreased enthusiasm)	108	100
<i>Parakrama hani</i> (Decreased physical strength)	107	99.07
<i>Paurusha hani</i> (Decreased virility)	99	91.66
<i>Prabha hani/Chhavi Hras</i> (Changes in complexion)	103	95.37
<i>Shukra Kshaya</i>	88	81.48
<i>Dristi Hras</i> (Diminished vision)	13	12.03
<i>Karmendriya hani</i> (Decreased loco motor activities)	108	100
<i>Buddhi hani</i> (Deterioration in wisdom)	107	99.07

**Table 2: Observations of *Manasa Vibhrama Pariksha***

<i>Manas Vibhrama</i>	Total no. of patients	%
<i>Mana Vibhrama</i> (perversion of mind)	108	100
<i>Buddhi Vibhrama</i> (perversion of intellect)	108	100
<i>Sanjna Vibhrama</i> (perversion of alertness)	7	6.48
<i>Smriti Vibhrama</i> (perversion of memory)	108	100
<i>Bhakti Vibhrama</i> (perversion of desire)	108	100
<i>Shila Vibhrama</i> (perversion of manners)	108	100
<i>Cheshta Vibhrama</i> (perversion of behavior)	23	21.29
<i>Aachara Vibhrama</i> (perversion of conduct)	60	55.55

it can prepare the person to cope up with stress. Ayurvedic classics state that *Vidya* (knowledge) is the foremost factor for *Brimhana* (nourishing the mind).<sup>[5]</sup> Thus education in terms of knowledge may be useful mean to relieve stress. In a research,

**Table 3: Observations of Manasa Pariksha Bhava**

<i>Manasa Bhava</i>	No. of patients	%
<i>Mana</i>	108	100
<i>Vijnana</i>	108	100
<i>Rajah</i>	108	100
<i>Moha</i>	108	100
<i>Krodha</i>	108	100
<i>Shoka</i>	108	100
<i>Harsha</i>	108	100
<i>Priti</i>	108	100
<i>Bhaya</i>	108	100
<i>Dhairya</i>	108	100
<i>Viryam</i>	108	100
<i>Avasthana</i>	108	100
<i>Shraddha</i>	108	100
<i>Medha</i>	108	100
<i>Sanjna</i>	9	8.33
<i>Smriti</i>	108	100
<i>Hriya</i>	44	40.74
<i>Shila</i>	108	100
<i>Dweshya</i>	101	93.51
<i>Upadhi</i>	46	42.59
<i>Dhriti</i>	107	99.07

highly educated people show high happiness scores (than those with low education) and are enlisted in the list of most happy persons,<sup>[6]</sup> which means they have least stress. However, the present study seems limited to establish any relation between stress, ageing and level of education. The data collection center was in urban habitat; obviously the population visiting the hospital were urbanite at maximum. The urban versus rural lifestyle has some basic differences in terms of timings of diet and work schedules. Rural life is observed to be less stressful, more nature and eco-friendly, which may minimize the adverse effects of stress and ageing. Urban life is probably more stressful and less eco-friendly; moreover environmental pollution has had an impact on ageing. Further epidemiological research may focus some interesting outcomes.

### Marital status–socio-economic status

The data shows that majority of the patients (80.55%) were married. This prevalence is due to social structure and the age group selected in the study. Marriage is one of the positive stressors enlisted. But it can act in both positive and negative way on overall human being. Some reports state that married people look younger and are happier with less stress. Positively, this provides physical and mental satisfaction and support throughout the adversities which is most important in coping with stress. Negatively, it bears increased responsibilities and requires significant adaptations to other human being in sharing the life moments, which may drain psychological energy.

In the socio-economic status, it was found that maximum (87.96%) were from middle class. Middle class is the strata in struggling and developing stage, which is expecting to work more and earn more, and has less for leisure. This stage is more prone to stress. Apparently, the time awareness and attention towards personal, physical, mental and spiritual health

is less to this community. This ultimately results in poor status of overall health and nutrition; worsening the condition of ageing. A study reports that the people in upper socio-economic status are happier, have less stress and ageing signs, because they can maintain the nutritional status, and spend time for hobbies nullifying stress.

### Family history in different perspectives

#### Major illness in family

In the present study, it was observed that family member of 14.81% patients had physical illness. As per Ayurvedic classics, growing age (*Vaya*) is *Rasaja Bhava* to determine growth as per heredity.<sup>[7]</sup> Modern researches show that many syndromes of premature ageing are determined by the genes.<sup>[8]</sup> *Pitta Prakriti* persons are having less endurance to stress (*Klesha Asahishnavah*) and show faster ageing process.<sup>[9]</sup> *Prakriti* is defined by the composition of parental genes at the time of conception. Therefore it can be stated that both premature ageing and stress are genetically determined disease. However, an extensive retrospective analysis of families of diseased is needed to find out the association between genes and the present ailment.

#### Excess responsibility, emotional make-up and relationship with family members and separation from family

Family is core to one's life as two third of adult life period (excluding work) is spent with family. As like marriage, spouse and significant others have positive and negative effects on human psyche. The environment in family also influence physical, mental growth and development of the individual and in turn affects well-being and quality of life of the person. Therefore family history is utmost important in cases of stress and premature ageing. It was reported that 14.81% had history of physical illness to family members and 7.40% had suffered from psychiatric illness to family members. The 78.70% patients in this study felt of having excess responsibility on them in family. The 52.77% patients had average good relationship with their family members, while remaining 47.22% narrated history of disturbed relationship. The 46.29% patients had nuclear family, while remaining 53.70% were living with extended family or joint family. On analyzing the frequent emotional make up of immediate family members of stressed patients, it was observed that the family members of 46.29% patients were unsatisfied, those of 36.11% were supportive and 29.62% patients had irritable family members.

Now the question arises whether there is any link between the emotional make-up, relationship and responsibility in family with stress and premature ageing. The answer will be largely positive in case of Indian families. Man is a social animal and he needs relationships to satisfy its basis instincts. His society begins with family as the history of human evolution points towards it.<sup>[10]</sup> The emotional bonding with family members is a type of symbiotic relation. Any disturbance in symbiosis will lead to stress and affect the health adversely. This also affects the psychological coping capacity of the individual to fight with the stressors. The above data supports these facts to positive association between physical and psychological health of family and that of the studied population.

#### Occupation, nature of work, work satisfaction

In the present study, variety of work types are studied, as it was not limited to a specific working group. Housewives, servicemen

and businessmen were found more incidents in studied population. As per the involvement of psyche and soma while doing the work, maximum reported to be engaged in physical and mental work. Maximum patients were performing sitting work, followed by those who stated to have standing work also. With respect to work satisfaction history, nearly half stated that not at all be satisfied with the work they were doing, followed by partially satisfied patients and the lesser were content with their work.

Work plays a great role in life as nearly one third of adult life is spent at work place, indulged in work. Being housewife, also involves the psyche and soma equally to maintain the family and perform duties within the stipulated time. In service and business professionals, the key holders are their bosses and customers to whom they have to satisfy for their bread and butter, which play the role of stressors in patient's life. Nature of work, whether physical and/or mental, accounts to the utilization of *Karmendriya* (locomotor organs) and/or *Jnanendriya – Buddhendriya* (sense and intellect) in a proper way. The improper exploit may lead to etio-pathology of *Prajnaparadha*.<sup>[11]</sup> The amount of physical activity and mental activity performed per day by the person is also important in terms of the physical and mental stress and ageing respectively. In case of physique, the wear and tear theory of ageing may work, which is true in case of psyche also. The work satisfaction directly relates with psychological and spiritual health, which has an impact on ageing process. The content of work shows positive influence on overall performance of the individual. In the present study, the data is indicative of negative influence of psycho-physical nature of work. Many studies have shown that stress at work place, discontent towards work lead to increasing stress and hastening process of ageing with ill effects on health.<sup>[12,13]</sup>

#### **Life-style, daily routine related to pathology**

In this view, some specific activities related with the ageing and relieving stress like exercise, massage, sleep, late night, body purification were observed in the present population. On analysis, it was found that maximum patients were not doing any type of exercise, almost none of the patients followed regular massage. Maximum were taking regular bath, but nearly one third reported that there is occasional irregularity in taking bath. The two third of total patients believed to follow religious rituals regularly and remaining irregularly followed rituals. The majority patients had improper sleep, with disturbed pattern in maximum. Nearly half reported to have regular daily routine activities; remaining with irregular daily routine; Less than half patients had not adopted lifestyle as per season and same number felt that they don't have proper life style. More than half patients reported not to be having late nights/night shifts regularly in their schedule. Almost none of the patients had followed *Shodhana* like body purification procedure previously. The majority patients narrated history of proper psycho-sexual education.

Each of the above activity is enlisted to have positive impact on slowing ageing process and preventing stress according to Ayurveda, as discussed one by one.

*Vyayama*, i.e., exercise is known to increase the physical and mental endurance to stress (*Dukkhaha, Kleshasahishnuta*).<sup>[14]</sup> It has got a positive psychological benefit as Ayurveda quotes that

it gives stability to body and mind. Many reports have noted the beneficial activity of exercise as anti-ageing and anti-stress through its impact on neuro-endocrinal axis. Moreover, it can show many health benefits on cardio-vascular system, immune system, brain functions, depression.<sup>[15]</sup> A study reports that frequent and regular aerobic exercise has been shown to help prevent or treat serious and life-threatening chronic conditions such as high blood pressure, obesity, heart disease, Type 2 diabetes, insomnia, and depression.<sup>[16]</sup>

In reference to *Abhyanga*, it has been stated as '*Abhyanga-alpajar-kleshavyayamasamsaha, Abhyangam aacharet nityam sa jara shrama vataha*'.<sup>[17]</sup> Thus *Abhyanga* is beneficial in slowing the ageing process, pacifying vitiated *Vata* and increasing relaxation of mind, stabilizing mind in order to adopt with stress. Recent study published in Evidence Based Complementary and Alternative Medicine narrated beneficial effects of massage on stress.<sup>[18]</sup> Therefore from this study, it can be stated that not following *Abhyanga* may have supported the causes to hasten ageing pathology and inadequate endurance to cope up with stress. It has prime importance in management of premature ageing and stress.

Sleep is essential for good health and considered as one of the three pillars of life. *Nidra* depends upon the natural retirement of mind and sense organs owing to fatigue.<sup>[19]</sup> Improper sleep is a cause as well as effect of stress pushing the person in vicious cycle. As per the quotation '*Ratro jagaranam ruksham*', inadequate sleep can vitiate *Vata-Pitta Dosha*, disturb *Kapha* at physical level and at mental level, it can disproportionate *Rajas, Tamas* and *Sattva* quality.<sup>[20]</sup> Various studies support the finding that improper sleep can adversely affect the physical and psychological functioning of body.<sup>[21,22]</sup> The present study emphasize on need of proper sleep to improve stress response and slow ageing.

*Snana* (bath) is quoted the best among those which relieves fatigue.<sup>[5]</sup> This may produce a relaxative effect on body and mind. However, in the present study, no adverse finding was noted to establish the relation between *Snana* and the disease pathology.

In Ayurveda, *Shodhana* (body purification) procedures are noted to be done before taking *Rasayana*, i.e., rejuvenation therapy. *Shodhana* may have an effect on cleansing up the channels to remove the waste products (*Mala*) from body. Moreover it has been referred to improve strength, complexion and promote longevity.<sup>[23]</sup> Almost no patient had undergone purification before enrolling. It is needed to create awareness for purification in order to prevent ageing disorders and improve quality of life.

#### **Stress center differentiation**

In the present study, an attempt was made to identify the core of stress, to detect the prevalence level of stressors. The stress was at mostly personal level in maximum patients followed by family, then professional/work and least to be at social level. Personal level included the disturbance in physical, psychological and spiritual level showing the inadequacy to cope up with stress. Family included the relationship, emotional make up in the family. Work/professional involved the relationship with the colleagues, work pressure, responsibilities. The social core includes the relatives, neighbors, relation with them, security and society in which the patient lives. Stress is the origin for

all mental and physical disorders. Knowing this horrible factor, Charaka quoted<sup>[5]</sup> “*Aayasaha Sarva Apathyanam Agraha P*”.

Which means stress is the foremost factor which is not to be followed. An earlier study reported positive history of psychological stress in 80.95% of patients diagnosed with depression.<sup>[24]</sup> This indicates the hazardous nature of stress in causing depression. Modern psychiatric research also shows the relation between stress and depression through disturbance of Hypothalamo-Pituitary-Adrenal axis releasing more amount of Cortisol-stress hormone in the blood.<sup>[25]</sup> Enlightening the candle of happiness to overcome the darkness of depression is only possible after removing the underlying stress in the subconscious. Therefore the present investigation can be useful in determining influence of endogenous and exogenous stressors, response and adaptability of individual. This is important in preventing and treating stress related disorders.

### Type of Vihara as per vitiation of Dosha

On careful observation and analysis of the above data related to Vihara, it was revealed that overall the Vihara was prone to vitiate Vata Dosha followed by Pitta Dosha in majority patients and pro-Kapha in small number of patients. This data indicate that the etiological factors vitiate Vata-Pitta Dosha and lead to stress and premature ageing. This also supports the theoretical aspect of Vata-Pitta vitiation and Kapha depletion in the patho-physiology of the disease as discussed in the conceptual part earlier.

### Personal history

The bowel habit was observed unsatisfactory in maximum patients, while the nature of stools was hard with strain full defecation in maximum patients. The data is suggestive of vitiation of Annavaha, Purishavaha Srotas with Apana Vata Dushti. This may be due to the improper dietary habits discussed earlier. The possibility of altering the gastro-intestinal (GI) physiology as the age advances cannot be denied. The adverse effect of stress on GI functioning is well documented in modern science as well as Ayurveda also. In patho-physiology of Udavarta, it is stated that the Pratiloma Gati of Apana leads to various disorders including psychiatric and psycho-somatic ones.<sup>[26]</sup> Thus the vicious cycle of stress disturbing bowel habit and disturbed bowel leading to disorders continues unless until it is properly treated.

On examination of Koshtha, it was revealed that the majority patients had Krura Koshtha and nearly one fourth had Madhyama Koshtha, this may be due to the incidence of majority of patients showing Vata-Pittaja Prakriti discussed later in this section. It is utmost important to take some Anulomana medicine for Krura Koshtha patients to channelize their Apana in proper direction. Otherwise the vitiated Apana can disturb the function of Samana impairing Agni.<sup>[27]</sup> However, Mutra Pravritti (micturition) was proper in all patients.

### Artava Pravritti and gynecological history

In gynecological history, out of total women, nearly half had regular menstrual cycle, and one third was in the phase of perimenopause. Menopause itself has an impact on ageing and stress due to disturbance in hormonal regulation.<sup>[28]</sup>

### Sharirika Prakriti Parikshana

The maximum patients were Vata-Pittaja Prakriti followed by Pitta Kaphaja Prakriti. This supports to classical reference

that Pitta plays vital role on ageing process.<sup>[29,30]</sup> Prakriti plays a pivotal role in determining the overall response of the person to all endogenous and exogenous stressors. Pitta Prakriti persons have naturally less endurance capacity to cope with stress as they are described as Mrudu, Sukumara, and Klesha-Asahishnuta. The mixing of Vata and Pitta in formation of Vata-Pittaja Prakriti can further disturb the composition leading to hastening of ageing process, and depleting the endurance to stress. The determination of Prakriti is important to advocate the preventive measures and prescribe management principles of disease.

### Manasa Prakriti Parikshana

Maximum patients showed of Rajas-Tamasika dominant Manasa Prakriti. This indicates that Rajo Tamasa Manasa Prakriti is more vulnerable to stress and premature ageing due to instability of mind. Classics narrate the involvement of Rajas and Tamas in Prajnaparadha.<sup>[31]</sup> Kashyapa quotes Rajas as the initiator for all activities and Tamas as the regulator of all activities.<sup>[32]</sup> The combination of Rajas and Tamas as psychic constitution leads to most unstable status of mind. Bhagavad Gita also describes in detail qualities of Rajas and Tamas in mind.<sup>[33]</sup> The composition disturbs mind and results into many psychiatric disorders.<sup>[34]</sup>

### Sarata - Samhananata - Pramanata - Satmya Parikshana

Madhyama Dhatu Sarata, Madhyama Samhanana, and Madhyama Pramana and Madhyama Satmya was observed in maximum patients. As per classics, Pramana is related with longevity.<sup>[35]</sup> Saara is related with quality of Dhatu (body tissues). The growth and development is directly related to Rasa as it is basically a Rasaja Bhava.<sup>[7]</sup> In general it is observed that ageing signs are less observed in Rasa Sara persons due to optimum quality of Rasa-the nourishing element. It is stated that Asthi Sara persons have more endurance to stress as they are characterized as Kleshasaha.<sup>[36]</sup> Samhanana and Satmya also have influence on stress bearing capacity and longevity.<sup>[37]</sup>

### Body mass index

In body mass index examination, it was observed that a slight less than half of patients had normal BMI. Having a high BMI leads to Sthaulya, in which loss of longevity (Aayusho Rhasa) is one of the adverse effect.<sup>[38]</sup>

### Sattva and psychological status

On examining the Sattva Bala, it was revealed that majority of the patients were having Madhyama Sattva, and remaining with Avara Sattva. In the examination of psychological status of patients at first visit, it was observed that all patients were distressed; followed by maximum in depressed state and nearly half in sentimental state. These were the mixed expressions of the patients. Madhyama Sattva persons have medium endurance and their stressors can be managed by counselling. Avara Sattva needs to be attended and managed by both counselling and drugs.<sup>[39]</sup> The Bala of Sattva is important in treating the disease and in fact can be improved by proper psychological care. The examination is also important in prescribing the medicine, dose of medicine and direction of psychotherapy.

### Vyayama Shakti

Maximum patients had Madhyama Vyayama Shakti, while nearly one third had Alpa Vyayama Shakti. As discussed earlier, the

physical capacity to perform exercise is significant in relation to capability to handle stress. There is ample evidence that physical capacity is directly proportional to ageing process.<sup>[40]</sup>

### Srotodushti involvement

In the present study, it was observed that all the patients showed signs of vitiation of *Rasavaha Srotasa* and *Manovaha Srotasa*, which was obvious as the disease under study owes to vitiation of these two *srotasa*. *Annavaha* and *Asthivaha Srotasa* were also found vitiated in maximum patients. As described earlier, *Rasavaha Srotasa* is vitiated due to excess thinking and worrying.<sup>[41]</sup> *Annavaha Srotasa* can be vitiated due to *Pavaka Vaigunya*, i.e., impaired *Agni*<sup>[42]</sup> and *Asthivaha Srotasa* gets vitiated due to *Ati-Vyayama*, *Ati-Samkshobha* and *Ati Vata* *Sevana*.<sup>[43]</sup> All the above mentioned causative factors are observed as etiological factors in the present study.

### Lakshanatmaka Parikshana

#### Prevalence of cardinal signs

All the patients in the present study complained of being stressed out or burnt out or feeling tense and feeling aged or old to an extent so as to disturb their daily life. This was the primary criteria for inclusion of studied population under trial and fulfils the diagnosis. These are the primary complaints of the patients at first visit and those willing to treat it were included. Feeling stressed and aged can be considered as the *Purvarupa* of the disease if in mild form and cardinal subjective symptoms if presented in severe form. The symptoms indicate *Vata-Pitta-Rajas-Tamas* vitiation and *Kapha-Sattva* depletion in the body and mind of the patient. Depending upon the severity, the physician should identify and treat the disease at the earliest in order to prevent further damage.

#### Observations of chief complaints

In the chief complaints described in the classics, *Twak Parushata* (dryness of skin), *Shlatha Sara* (flabbiness of the body), *Shlatha Mamsa* (decreased muscle tone), *Shlatha Asthi* (bone weakness), *Shlatha Sandhi* (flaccid joint), *Dhatu Kshaya* (Loss of tissues) were the most prevalent symptoms in the stressed and prematurely aged patients. *Khalitya* (falling of hairs), *Vali* (wrinkling), *Palitya* (graying of hairs) were also prevalent in majority of patients. Classics have defined these signs of ageing, when they are prevalent at early age, premature ageing is manifested. Skin ageing seems to be the first visible sign of ageing as it shows the signs like, *Twak Parushata*, *Vali*, *Prabha Hani/Chchavirhas*. *Twak* is the site of *Rasa Dhatu* which is mainly vitiated in the disease.<sup>[41]</sup> It also suggests the vitiation of *Vata-Ruksha Guna*, *Pitta-Tikshna Guna* and depletion of *Kapha-Snigdha Guna*. The other signs like *Shlatha Sara*, *Mamsa*, *Asthi*, *Sandhi*, and *Dhatu Kshaya* denote the severity of depth of disease. In Ayurveda, *Dhatugata Avastha* of various diseases like *Jwara*, *Kushtha* has been described. The present signs may denote the *Dhatugata avastha* of the disease pathological ageing. *Khalitya* and *Palitya* are also two main visible signs which drag the attention of the patient to seek treatment. Though these signs are enlisted in the signs of *Rasavaha Srotas* vitiation; hairs are quoted as *Mala* of *Asthi Dhatu*<sup>[44]</sup> and deranged in *Asthivaha Srotas Dushti*. The pathology of *Khalitya* and *Palitya* involves vitiation of *Pitta Dosha* to affect scalp.<sup>[45]</sup> Modern science reports that oxidative stress and depletion in melanocyte functioning in the hairs leads to graying of hair.<sup>[46]</sup>

All the above terms also indicate types of cells affected and involved as the site of disease, so that the treatment can be planned accordingly.

*Grahana* (grasping Power), *Dharana* (retention Power), *Smarana* (memory power) were also found impaired. The deterioration of intellectual functions as the age advances has been described nicely by these terms. Moreover, stress also has the potential to affect the intellect adversely in various ways. These are suggestive of *Prajnaparadha* as causative factor, leading to stress, ultimately result in ageing. This also indicates the cognitive impairment progress as per age.

Among other symptoms, *Utsaha Hani* (decreased enthusiasm), *Karmendriya Hani* (decreased loco-motor activities), *Parakrama hani* (decreased physical strength) and *Buddhi Hani* (deterioration in wisdom) were found in all patients. These four symptoms involve the somatic as well as psychic capacity of the patient at equal level. These are due to somato-psychological impact of the disease. These can also be attributed to the underlying cellular exhaustion to cope up extra stress and hormonal senescence advanced at the early age.

The above data suggests the physical and psychological decline in stress and premature ageing. These are also reported by modern researches.<sup>[47]</sup> This validates the classical texts describing the signs of ageing. Moreover this can be referred as most prevalent signs for premature ageing. However, *Kayasya Avanamana* and *Vepathu* were not observed prevalently. This may be due to fact that the anatomical changes in spine take place at late adulthood.

#### Observations of ManasVibhrama Pariksha

On examination of the perversion of eight mental faculties in depression was made, it is revealed that *Mana* (mind), *Buddhi* (intellect), *Smriti* (memory), *Bhakti* (desire) and *Shila* (manners) were perverted in all patients. *Aachara* (behavior) was also found impaired in slightly more than half cases. This data can be considered as prevalent signs of stress and ageing. The incidence may be rooted to *Prajnaparadha*, dietary, and lifestyle etiological factors. This is also indicative of psychopathology disturbed at physical and psychic level and treatment attention needed in this direction. Going through the psycho-pathogenesis of these perversions, it reveals the involvement of *Chintya* (thought process) which may be altered in negative way worsening the psychological status in stress. *Vicharya*, i.e., the discriminatory power of *Buddhi* to decide the right and wrong things also goes down. It is a well-known fact that stress covers the intellect and blocks all the way of recalling in memory, therefore the result of *Smriti* impairment is observed.<sup>[48]</sup> All these processes have a neuro-biological basis, being serotonin as a key player controlling the appetite, sex drive.<sup>[49]</sup> Imbalance of these neurotransmitters may lead to *Bhakti* (desire) *Vibhrama*. This leads to dis-satisfaction, improper fulfilling the desires leads to irritability and anger landing the patient into *Shila Vibhrama*. All these factors are regulated by psycho-neuro-endocrinal axis,<sup>[50]</sup> playing the main role in all this psychopathological tragedy of stress. Furthermore the ageing – physical and mental incapability of body and mind can add more fuel to this, worsening the overall *Vibhrama* (perverted) status of the patient. This also

suggested involvement of cognition, conation and affect along with memory in stress and premature ageing.

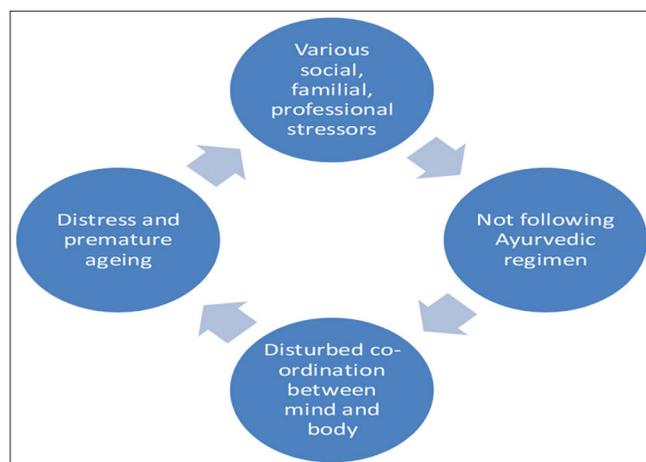
### Observations of Manas Pariksha Bhava

In examination of *Manas Bhava*, the beneficial factors *Mana*, *Vijanana*, *Harsha*, *Priti*, *Dhairya*, *Viryam*, *Shraddha*, *Medha*, *Smriti*, *Dhriti* found hampered in a negative way. The enemies of psyche like *Rajah*, *Moha*, *Krodha*, *Shoka*, *Bhaya*, were also found prevalently in stressed and prematurely aged cases. Ayurveda classics have elaborative tolls for examination of mental status. *Charaka* in *Vimana Sthana* detailed the mental examination using the inference tool. The abovementioned factors are indicators of disturbance at psychic level. In order to improve the mental work, one has to enhance the positive factors and on the other hand restrain the negative factors which are also enlisted as *Dharaniya Vega* and enemies of mind.<sup>[51]</sup> The prevalent data may be due to *Prajnaparadha* as cause and sign as well. The background players of *Manasa Vibhrama* mentioned earlier and hampered mental factors here are *Rajas* and *Tamas Manas Dosha*, which can cause this damage to psyche. As *Bhagavad Gita* states *Tamasa* is responsible for *Moha*, *Ajnana*. *Rajas* are originator of *Sanga*, *Krodha*, *Kama*. Similarly *Sattva* has the quality to produce all positive factors like *Harsha*, *Priti*, *Dhairya*, *Shraddha*.<sup>[52]</sup> These may be taken as the alarming signs of disastrous mental condition of patient. In stressed patients, it is needed to be attended and cared properly as the age increases in order to achieve positive well-being and successful ageing.

### Conclusion

On the basis of above observations, it can be concluded that variety of external, occupational, social and familial factors play significant role in the pathology of premature ageing by disturbing the overall psychological status. This proves the link of *Manasa* affecting *Sharira* and vice versa with reference to modern contemporary concept of psycho-neuro endocrinology. Therefore, for healthy ageing, it is essential to avoid these factors at maximum as well as manage the external social and familial influences in a positive way, so that they doesn't cross the threshold and affect body physiology in negative way.

Above discussion is summarized in Figure 1:



**Figure 1: Vicious cycle of relationship of lifestyle-stress-premature ageing**

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## हिन्दी सारांश

### अकालज जरा और तनाव की संप्राप्ति में जीवन शैली घटकों के प्रभाव का निरीक्षणात्मक अध्ययन

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आज के तनाव के युग में अनुचित जीवन शैली और आहार शैलीजन्य व्याधियाँ उत्तरोत्तर बढ़ती जा रही हैं। प्रस्तुत अध्ययन अकालज जरा के १०८ रूग्णों में अनुचित जीवन शैली, सामाजिक, पारिवारिक, व्यावसायिक घटकों के प्रभाव के मूल्यांकन के लिए किया गया। इन्हीं रूग्णों में मानस विभ्रम तथा मानस भावों का परीक्षण भी किया गया। प्राप्त परिणामों के अनुसार अधिकतर रूग्णों में अकालज जरा के लक्षण, मन-बुद्धि-स्मृति-भक्ति विभ्रम, नकारात्मक मानस भावों का आधिक्य देखा गया। अनेकविध अनुचित जीवन शैली, सामाजिक, पारिवारिक, व्यावसायिक घटक मन को विभ्रमित करके शरीर में अकालज जरा के लिए उत्तरदायी हैं।