

**MODERN LIFE STYLE: A RISK AND PREDISPOSING FACTOR OF MSDs**

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Article Received on 07/04/2019

Article Revised on 27/04/2019

Article Accepted on 18/05/2019

**ABSTRACT**

Musculoskeletal Disorders or MSDs are injuries & disorders that affect the human body's movement or musculoskeletal system. MSDs constitute a problem of great public health importance & are substantial as about half of the adult population is reported to experience some sort of MS symptoms. However it is a preventable disease. MSDs have multiple risk factors; occupational and non- occupational. It can be broken up into 2 categories: work related/ Ergonomic (force, repetition, posture) & individual related risk factors (poor - work practices, fitness, health habits). Overtime exposure to risk factors leads to MSD. In *Ayurveda*, MSDs can be included under the broad spectrum of *Vata vyadhi* & diseases of *Asthi- Majjavaha srotas*. Concept of *Avarana vata* can also be made in to account. The *dosha* involved, predominantly is *Vata dosha* and *dhatu kshaya* & *srotorodha* are said to be the main aggravating factors. According to *Acharya Charaka*, the predisposing/ etiological factors responsible for *Vata vyadhi* are *Ativicheshtana* (excessive movements), *Dhatu kshaya*, *Chinta*, *Shoka*, *Dukha sayyasana* (improper postures of sitting and lying), *Ama*, *Abhighata*, *Ruksha sita anna* etc. These are directly related with the modern concept on risk factors of MSDs particularly work related MSD. In this modern era, life style is changed drastically which in turn developed risk factors like obesity, sedentary habits etc. In obese persons (*Atisthaulya*); Bodily movements are impaired due to *Shaitihilya* (looseness), *Saukumarya* (tenderness), and *Gurutva* (heaviness) of *meda*. *Daurbalya* due to *asamatva* of *dhatu*s, makes them *Vyayama asaha* (intolerable to exercise) [*Acharya Charaka*]. So the risk factors play an important role in pathology of the disease. Attempt undertaken is to portray and collaborate the modern life style risk factors of MSDs along with which are said in *Ayurvedic* literature, in a view that its further knowledge can prevent this health hazard.

**KEYWORDS:** Musculoskeletal Disorders, Risk factors, Predisposing / etiological factors, *Vata Vyadhi*, *Asthi- Majjavaha srotas*, *Avarana*, *Atisthaulya*.

**INTRODUCTION**

The Human Musculoskeletal system (also known as the Locomotor System) is an organ system that gives humans the ability to move using their muscular and skeletal systems, previously known as Activity System.<sup>[1]</sup> Its primary functions include supporting the body, allowing motion and protecting vital organs.<sup>[2]</sup>

Injuries & pain caused by acute traumatic events are not considered Musculoskeletal Disorders.<sup>[3]</sup> These are injuries or pain in the human musculoskeletal system, including the joints, ligaments, muscles, nerves, tendons, and structures that support limbs, neck & back.<sup>[4]</sup> Common MSDs include CTS, epicondylitis, tendonitis, back pain, tension neck syndrome, hand-arm vibration

syndrome<sup>[5]</sup>, degenerative disc disease, ruptured/ herniated disc, and many more.

Around 509K workers suffering from work related MSDs.<sup>[6]</sup> It constitute a problem of great public health importance, as it implies significant individual suffering, individual and social costs for sick leaves & considerable costs for health care.

**MSD: Risk/Predisposing factors**

The risk factors or stressors that cause MSDs are well known and widely researched. MSDs have multiple risk factors, both occupational (Work related/ Ergonomic risk factors) and non-occupational (Individual related risk factors).

Work place risk factors include poor ergonomics (Ergonomics- the study of people's efficiency in their working environment), poor training, poor safety culture and other poor work conditions; can be summarized as force, repetition & posture.

Individual related risk factors are the lifestyle such as malnutrition, dehydration, fatigue, poor health habits, poor physical fitness, obesity etc.

Noise is another important risk factor which causes increased muscle tension, quicker onset of fatigue, mental stress, reduced concentration, diverted attention and slower recovery time. Pressure (both external and internal compression) comes under the same roof as it damages nerves & blood vessels.

NIOSH (The National Institute for Occupational Safety and Health) has identified five main risk factors for back injuries;

1. Heavy physical work
2. Lifting and forceful movements (constant lifting, continuous pressing/ pulling with same extremity, even prolonged sitting especially with poor posture)
3. Bending and twisting (including reaching above the shoulder or behind the back twisting the wrist or other joints)
4. Whole body vibration (excessive vibration causes pain to muscles, joints cause trauma to the hands, arms, feet and legs)
5. Static work postures.

A study done by university of Iowa has shown the construction workers affected the most.<sup>[7]</sup>

### Musculoskeletal Disorders In Ayurveda

In *Ayurveda*, MSDs can be included under the spectrum of *Vata Vyadhi*, i.e. *Apabahuka*, *Gridhrasi*, *Viswachi*, *Sandhigata vata*, *Bahusosha*, *Katigraha* etc, Diseases affecting *Asthi- Majjavaha srotas* (as *Asthi* is the main site of *vata dosha*) and concept of *Avarana vata*, in which the *dosha* involved is predominantly *Vata dosha*. *Dhatu kshaya* and *srotorodha* are said to be the main vitiating factors of *vata*.

### Nidana (Etiological/ Predisposing factors)

It describes causative factors of the disease.<sup>[8]</sup> A factor which is capable of manifesting the development of the disease either quickly or after a certain period is called *Nidana/ Hetu* and it gives complete knowledge about *vyadhi*.<sup>[9]</sup>

### Therapeutic importance of Nidana

*Nidana* is the prime factor for the causation of a disease. That's why both *Acharya Charaka* and *Susruta* mentioned to avoid the etiological factor and it is the primary step in the management of any disease. According to *Acharya Susruta*, *Nidana Parivarjana*, i.e. avoidance of factor responsible for the causation of the disease is the primary step to prevent further pathogenesis.<sup>[10]</sup> Whereas *Acharya*

*Charaka* opines that its avoidance is essential for the smooth recovery of any disease.<sup>[11]</sup>

### Various Nidana in MSD

We can broadly classify the *Nidanas* into *Samanya* and *Vishesha*.

**Samanya Nidana:** As *dosha kopa* is the first and main event in the pathogenesis of any disease, factors responsible for this, are said to be the *Samanya Nidana*. These are *Mithya- Ahara- Vihara*.

**Mithya Ahara-** is said to be the indulgence in *Ati-guru*, (Eg. large quantity, fatty, sweet, fried in oil, meat), *Ati-snigdha* (butter, ghee, fatty meat, bone marrow), *Ati-ruksha* (non-fatty, dry, powdery), *Ati-sita* (cooled beverages, ice cream, frozen fruits), *Asatmya* (unaccustomed), *Paryushita* (kept overnight- bakery products), *Dushta* (adulterated and pesticide containing foods), *Virudha- ahara*<sup>[12]</sup> (incompatible) etc, ultimately results in formation of *Ama* and disease.

**Mithya Viharas-** are *Asatmyendriyarthasamyoga* (improper correlation of the sense organs with their respective objects- *atiyoga*, *ayoga* and *mithya yoga* [eg. *Virudha sevana* of regimens, *Vishama sthana*]), *Prajnaparadha* (transgression of regimen-*kayaka* [*ativayama*, *sahasa*, *vegadharana*, *vishama cheshta*]), *vachika* [eg. *Ucha bhashana*, *Mauna*] and *manasika* [eg. *Manodvega* from *bhaya*, *lobha*, *soka*, *krodha* etc], and *Parinama*<sup>[13]</sup> [effect of changes in the environment]. These lead to preventable diseases.

**Vishesha Nidana:** *Vishesha nidanas* are the peculiar causative factors for each disease.

*Nidana* of *Vata Vyadhi* are *ruksha*, *sita*, *alpa*, *laghu anna*, *ativayama*, *Ativicheshtana*, *dhatu kshaya*, *atikarshana*, *Dukha sayyasana*, *vega sandharana*<sup>[14]</sup> etc., that of *Asthivaha srotodushti* are *ativayama*, *sankshobha*, *vatala sevana*<sup>[15]</sup> etc. and of *Majjavaha srotodushti* are *abhishyanda*, *prapidana*, *Abhighata* and *Virudha sevana*.<sup>[16]</sup> *Avarana vata* is a concept in which 'balavat dosha' (*Vatadi dosha*) causes *Avarana* over *durbala dosha*.<sup>[17]</sup> *Avarana asankhyatva* is mentioned by *Acharya Vagbhata*.<sup>[18]</sup> *Atisthaulya* can also make in to account since there is *aparipakva dhatus* leading to *Daurbalya*.

From these references we can say that, most of the causative factors such as *Ativicheshtana*, *Ativyayama* (excessive continuous movements), *Dukha Sayyasana* (awkward postures), *Sankshobha* (force or compression), and *Mithya-Ahara-Vihara* (Modern lifestyle) are directly related with the modern concept on risk factors of MSDs both work related & individual related.

## DISCUSSION

### Role of risk factors in the pathology of the disease

The origin of most musculoskeletal disorders lies in the mismatch between the external load and the capacity of the human body to resist biomechanical and physiological strain. When a worker is exposed to MSD risk factor, they begin to fatigue. When fatigue outruns their body's recovery system, they develop a musculoskeletal imbalance. Over time, as fatigue continues to outrun recovery and musculoskeletal imbalance persists, a musculoskeletal disorder develops.

### Why identification of risk factors, i.e. Modern life style is important?

To prevent this health issue, identification and further removal of risk factors/ stressors is important. These stressors can be influenced by,

1. Organizational/ administrative precautions
2. Environmental conditions
3. Individual work routine and habits

As modern lifestyle has the ultimate role in creating both personal and work related risk factors, adopting healthy habits by providing training, awareness and early intervention will be the effective control measure. It is observed that majority of the risk factors are modifiable and favourable for future intervention. Further, epidemiological studies have shown that some personal risk factors for MSD such as smoking, being overweight, or in poor physical shape and the factors those relating to poor general health promotion at the work place might be an option to prevent MSDs.

## CONCLUSION

Musculoskeletal disorders or MSDs are the injuries and disorders that affect our musculoskeletal system. The primary risk factors are force, frequency and posture. Risk factors are broadly classified in to occupational and non-occupational. Modern lifestyle can be said to be the risk and predisposing factor for most of the MSDs. In *Ayurveda*, knowledge of *Nidana* is very much important as one among the principle concept of *Ayurvedic* treatment is *Nidana Parivarjana*, i.e. to avoid causative factors of the disease through diet (*Ahara Rasayana*) and regimen (*Achara Rasayana*<sup>[19]</sup>). Also *Ayurvedic* principles of promotive and preventive health (i.e. *swasthya samrakshana*) include, *acharana* of;

- *Dinacharya* (daily regimen)
- *Ratricharya* (night regimen)
- *Rtucharya* (seasonal regimen) and
- *Sadvrita* (code of ethics)

By following *Sadvrita*, not suppressing natural urges (i.e. *Vega*), taking *Hita* and *Mitahara* according to *Ahara Vidhi*, proper sleep and avoidance of *Visesha Nidana*; one can reduce the risk of every health issue particularly MSDs. In short, those who follow these regimens will attain longevity (*Ayu*), health (*Arogya*), prosperity

(*Aishwarya*), fame (*Yasha*) and above all, heavenly abode at the end (*Saswata Loka*).<sup>[20]</sup>

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