

REVIEW ARTICLE

Critical Analysis of *Sushrutokta Jwara Nidana*

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ABSTRACT

Jwara, regarded as the foremost somatic disease, is distinguished by its significant impact on the body, mind, and senses. To understand the disease, the knowledge of its *Nidana* is essential. *Nidana* is the causative factor which is responsible for initiation of disease or also considered as *Vyadhi Bhodaka*, which helps in the diagnosis of disease. This review article seeks to enhance the understanding of *Jwara Nidana* as per *Sushruta Samhita's Jwara Pratisheda Adhyaya* and explore the relationship between causative factors and the manifestation of disease from both classical and contemporary perspectives.

Key Words *Jwara*. Avurveda. Fever. *Santapa*. *Nidana*

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INTRODUCTION

Jwara, the first somatic disease appeared, hence described first in the classical texts¹.

It is considered *Sarvaroga Agraja* -superior among diseases, due to its profound impact on body, mind and senses².

The cardinal feature of *Jwara* is *Santapo Deha Manasa* refers to the feeling of heat or increased body temperature, discomfort in body as well as mind³.

- *Shareera tapa* includes *Santapa* (raise of body temperature), *Aruchi* (anorexia) *Trishna* (morbid thirst), *Angamarda* (body ache), *Hrudi vyatha* (distress in cardiac region) by *Vyadhi Prabhava*⁴.

- Features of *Manasika tapa* are *Vaichitya* (mental instability), *Arati* (disliking for

everything), *Glani* (feeling of weakness in the body)⁵.

In mythology, the origin of *Jwara* is often attributed to the *Rudra Kopa*, wrath of Lord Shiva, hot and destructive breath of Lord Shiva which arose from his nostril during moments of grief and rage following the death of his wife⁶. *Jwara* is manifested in the form of *tamas* (altered state of consciousness) at the time of birth and death⁴. This review article seeks to enhance the understanding causative factors of *Jwara*, integrating classical perspectives with modern insights.

OBJECTIVES

1. To critically analyse the causes of *Jwara* as per *Sushruta Samhitha*.

REVIEW ARTICLE

2. To understand the relationship of causative factor in manifestation of disease as per classical and contemporary science.

METHODOLOGY

This study reviews literature on *Jwara Nidana* from *Sushruta Uttaratantra* 39th chapter *Jwara Pratisheda Adhyaya*, published research works and modern literary source.

LITERATURE REVIEW

Mithyatiyuktairapi ch snehadyaih karmabhirnrunam Improper and excessive application of *Snehadi* therapies comprising *Sneha* (oleation), *Sweda* (sudation), *Vamana* (emesis), and *Virechana* (purgation) can have several adverse effects⁷. Overuse of *Sneha* can lead to *Agnimandya* (diminished digestive fire), impairing digestion and resulting in the formation of *Ama*, a toxic byproduct of improper digestion. This can contribute to conditions such as *Jwara*. Improper breakdown of food due to weak digestive fire can cause irritation or inflammation in the gastrointestinal tract, potentially triggering an immune response. This immune reaction can lead to the release of cytokines which may cause an increase in body temperature. At acute onset excessive emesis or purgation can lead to significant fluid loss, disrupting the balance of water and electrolytes in the body. Altered electrolyte levels can compromise the body's ability to sweat, impairing heat dissipation and resulting in elevated body temperature.

Vividhadabhighataach- Various types of injury are mentioned as a causative factor for fever which includes injury inflicted by *shastra*(weapons), *loshta*(stones), *kastha*(wooden stick).⁸ The initial manifestation often involves illness that subsequently aggravates the three doshas that is “*Aganthu Bhaadathe poorvam dosham paschath vivardathe*”. The disturbance begins with an initial pain and inflammation, leading to the aggravation of *Vata dosha* predominantly affecting *Raktha*, which further impairs *Agni* (digestive fire) and disrupts heat regulation throughout the body. This disruption results in an elevated body temperature presenting as fever, along with symptoms such as *Savyata* (discomfort) *Shopha* (swelling), *Vaivarnya* (discoloration), and *Ruja* (pain)⁹.

The fever observed in such cases is a result of the body's inflammatory response to the injury. Inflammation activates immune responses, leading to the involvement of myeloid and endothelial cells. These cells produce pyrogenic cytokines such as IL-1, IL-6, and TNF. These cytokines enter systemic circulation and induce the synthesis of prostaglandin E₂ (PGE₂). It is the elevation of PGE₂ in the brain that initiates the process of raising the hypothalamic set point for core temperature, thereby resulting in fever¹⁰.

Rogothanaath – Sequel to other Primary disease Disorders such as abscess like conditions may present *Jwara* as a symptom⁸. Additionally, *Jwara* can appear as a prodromal sign in certain diseases, such as *Visarpa* (Herpes). This manifestation reflects the body's immune
November 10th 2024 Volume 21, Issue 3 Page 27

REVIEW ARTICLE

response to the underlying infective and inflammatory process. In such cases, localized infection or inflammation activates the immune response, which may also lead to a systemic inflammatory reaction, further increasing body temperature.

Prapakataha -Suppuration,

In the progression of disease, *Jwara* may manifest as an *Upadrava*, or complication. This occurs when aggravated *Doshas* disrupt the skin, blood, muscle, fat, and bone tissues, causing localized vitiation. As these *Doshas* accumulate, they can obstruct the body's channels, leading to both localized and systemic inflammation. This inflammatory response elevates body temperature as a defence mechanism to eliminate toxic substances. In the context of infection and inflammation, immunological mediators are released, which activate the thermoregulatory centre in the hypothalamus. This activation results in an increase in the body's core temperature, manifesting as fever.

Shramaat – Exertion

Excessive indulgence in physical activity beyond one's capacity⁸. It can lead to a condition known as *Achaya Poorvaka Vata Prakopa*, representing the primary stage of *Dosha* vitiation. This stage can precipitate the sudden onset of disease, potentially resulting in conditions such as *Jwara*. Muscle activity is a key source of body heat production, and elevated core body temperatures are common in individuals who engage in vigorous exercise. Prolonged tonic muscle contraction can contribute to increased body

temperature. Intense physical exertion can also impair cell-mediated immunity by reducing T-cell proliferation, thereby heightening the risk of viral infections. Exercise induces fundamental changes in the immune system, including decreased neutrophil chemotaxis and phagocytosis, particularly with high-density endurance training. Conversely, natural killer cell activity rises during exercise and returns to baseline levels during recovery. These immune system changes lead to a transient period of immunosuppression following intense exercise, commonly referred to as the "immunological open window"¹¹.

Kshayat-Emaciation,

Jwara is explained as the symptom of *Rajyakshma*(tuberculosis)¹².

Kshaya(emaciation) may lead to imbalance of *doshas*, weakening of *Ojas* (vital strength) and impairing of digestive fire which in turn make the body more susceptible to infections and diseases which can result in *Jwara*.

Can be correlated to Tuberculosis like condition where fever develops as a body's immune response to infection which triggers the release of chemicals called cytokines in turn raise the body temperature.

Ajeernat- Indigestion

Weak digestive fire results in the formation of *Avipakva rasa*, which is improperly digested food. This improperly digested food leads to the production of *Ama*, a toxic substance⁸. *Ama* then causes the displacement of *Agni*, the digestive fire, from *Koshta* its proper site of digestion to

REVIEW ARTICLE

the *Shaka* (periphery). This displacement of *Agni* disrupts the body's normal metabolic processes, leading to an increase in body temperature resulting in *Jwara*. It may cause improper break down of food which cause irritation or inflammation in GIT which can trigger an immune response leading to release of cytokines causing raise of body temperature.

Satmyartuparyayath- Changes in habituations and seasons

Ritu Sandhi denotes the transitional period between two seasons, encompassing the last seven days of one season and the first seven days of the subsequent season. During this time, it is crucial to gradually taper off the regimens of the preceding season and progressively adopt those appropriate for the upcoming season. A sudden shift in dietary and lifestyle practices, without this phased transition, can disrupt the body's natural response to seasonal changes, potentially leading to dosha imbalances and the onset of diseases like *Jwara*¹³. Change in habituation or season can affect the immune system making it more susceptible for infection, virulence of pathogens can vary, behavioural changes in human such as increased indoor confinement during winter can facilitate spread of disease with increased risk of fever.

Aushadipushpagandhaacha -Inhaling poisonous flowers,

Proper usage of *Visha* (poison), *Shastra* (weapon), *Agni* (fire) and *Ashani* [thunder bolt] may give benefit and improper usage provides opposite effect. In the same manner proper use of

Aoushadha (medicines) acts as *Amruta* (nectar) whereas improper usage may produce harmful effects¹⁴. *Agantuja jwara* may also develop due to smell of certain drugs. It may be related to factor which leads to Drug Fever. It is an adverse drug reaction accompanied by a febrile response. The main pathophysiology of drug fever is hypersensitivity to drugs, such as an immune response. Among the four classical classifications of allergic reactions, drug fever is classified as a type III reaction¹⁵.

Shoka- Grief,

Grief can significantly influence both mental and physical health, leading to a range of discomforts and symptoms. One primary effect is the onset of *Manah Tapa*, which translates to a state of both mental and bodily discomfort. This condition often manifests as *Vaichitya* or mental instability, *Arati* which is a general disinterest or aversion to activities, and *Glani* characterized by a pervasive sense of physical weakness⁵. These symptoms are typically associated with an imbalance in the *Vata Dosha*.

May induce psychogenic fever which is stress related, develop extremely high core body temperature when exposed to emotional events or show persistent low grade high temperature during situations of chronic stress.

Nakshatrapidayaya-Affliction caused by constellation,

Certain *Nakshatras* are believed to be associated with specific planets, and planetary influences are thought to affect human health and wellbeing.

Abhicharo -Magical spell,

REVIEW ARTICLE

Spiritual practices, including the use of specific *Yantras* (sacred geometric diagrams) and *Mantras* (sacred sounds or phrases)¹⁶. They are believed to affect subtle energies within and around an individual. These practices are grounded in traditions that perceive health as a harmonious balance between physical and subtle energies. In contemporary contexts, the transmission of infections can occur through various channels. These include biological warfare, nosocomial infections, drug-induced or iatrogenic conditions, as well as mechanical agents or even the patients themselves.

Abhishapa- curses of *Guru Siddha* etc.

In various spiritual traditions, curses or afflictions from *Dwija* (brahmins), *Guru* (Teachers) or *Siddhas* (spiritually advanced beings) are considered to carry significant weight due to their perceived spiritual or supernatural power¹⁶. Such curses may serve as symbolic or metaphorical lessons, illustrating moral teachings, consequences of actions, or power dynamics between spiritual figures and their disciples. From a physiological standpoint, emotional and psychological stress consistently activates the autonomic nervous system. This stress response is largely mediated by heightened activity within the sympatho-adrenomedullary system. Consequently, individuals experience increased heart rate and blood pressure, cutaneous vasoconstriction in the limbs, selective vasodilatation in other areas, redistribution of organ blood flow, elevated cardiac output, and enhanced non-shivering thermogenesis. The

latter, occurring in brown adipose tissue, contributes to heat generation and is a key factor in stress-induced hyperthermia¹⁷.

Manobhutabhishankaya- Emotions, Invasion of evil spirits

In traditional belief systems, "*Manoabhishanka*" refers to afflictions caused by intense emotions such as *Kama* (passion), *Shoka* (grief), *Bhaya* (fear), and *Krodha* (anger). These emotional states are thought to disturb the balance of the body's *doshas*, or vital energies. Specifically, *Vata Dosha* is aggravated by *Kama*, *Shoka*, and *Bhaya*, while *Pitta Dosha* is disturbed by *Krodha*. Invasion by evil spirits, known as "*Bhutabhishanka*," is believed to cause disturbances in all three *Doshas*, potentially leading to both physical and psychological ailments¹⁸. These disturbances can manifest as various health issues, including psychogenic fever.

Strinam apaprajatanam -Abnormal delivery in woman.

During intense labor, a puerperal woman undergoes considerable physical strain, leading to the aggravation of the *Vata Dosha* as her strength diminishes from continuous, intense labor pains. This strain also exhausts the *Indriyas* (senses and faculties of perception and action), resulting in the depletion of *Dhatus* (body tissues) due to haemorrhage. This loss of *Dhatus* leads to a reduction in their *Sara* (nourishing essence), compromising the body's *Dosha* balance¹⁹. When *doshas* are declined, the woman becomes susceptible to a rapid escalation of fever, akin to

REVIEW ARTICLE

how dry wood ignites easily²⁰. This phenomenon can be related to postpartum fever, which may occur within 24 hours to 6 weeks after delivery. Potential causes include urinary tract infections (UTIs), breast disorders such as mastitis, endometritis, or wound infections at the site of a caesarean section or episiotomy.

Prajatanam tatha shitaiah-Indulgence in inappropriate diet and regimen

Post-delivery, a women's body becomes *Shoonya* (empty bodied) due to physical and mental stress, debility²¹. It undergoes significant changes that can be influenced by several factors such as suppression of natural urges, excessive dryness (use of fat free diet or other dry measures), excessive exercise, significant haemorrhage such as postpartum haemorrhage (PPH), grief, increased exposure to fire or heat, excessive use of bitter, sour, and hot articles, daytime sleeping, exposing to *Purovata* (wind blowing from east side), consumption of *Guru* (heavy for digestion) and *Abhishyandi* (slimy food articles), indulging in coitus which can cause vitiation of three *Doshas* and results in *Jwara*²². It can be related to puerperal infections including endometritis, myometritis, parametritis.

Stanyavatarane -First appearance of breast milk. On the third or fourth day after delivery, milk starts appearing in breasts. This milk reaches *Stanyavaha Srotas* (mammary duct), influences them and produces stiffness of breast, thirst, *Hrudayadrava* (tachycardia), pain in abdomen, flanks and sacral regions, bodyache and headache

and results in *Jwara*²³. If the breasts are not gently squeezed or milk is not adequately drained, they can become engorged due to the excessive accumulation of milk. Initial build-up of milk causes a mammary duct of breast to get blocked, the breast can become inflamed causing mastitis which inturn may cause raised body temperature as a sign of inflammation. The physiological raise in temperature during the first day of lactation is due to increase in metabolic heat production by the mammary glands as they begin producing milk. This heat production is a result of hormonal changes that occur after childbirth, particularly the drop in estrogen and progesterone levels and rise in prolactin.

DISCUSSION

A single causative factor may produce one or multiple diseases, while multiple causative factors can lead to either a single or multiple diseases²⁴. *Nidanas* like *Rogothanaath*, *prapakataha* can be considered under *Nidanarthakara vyadhi* where one disease may become the cause for another disease. For example *Jwara* becomes a cause for the manifestation of *Raktapitta* (bleeding disorder), *Jwara* is also caused by *Raktapitta*. *Jwara* and *raktapitta* both become cause for manifestation of *Shosha*.²⁵

The *Nidanas* like improper or excessive use of *Snehadi Karma*, *Abhigata* can be *Sannikrusta Hetu* (immediate cause) which is near cause for *Prakopa* of *Doshas* while *Rudra Kopa* is

REVIEW ARTICLE

Viprakrusta Nidana which is indirect or distant causes. *Vyabhichara Nidanas* are weak causative factors which act as carrier and produce disease when favourable condition for manifestation of disease arises while *Ajeerna* can be *Pradhanika Hetu* which is the powerful cause which produce disease instantaneously. Normal accumulation, aggravation and pacification of *Doshas* takes place in respective seasons called as *Doshaja Hetu*, while specific *Nidana* for manifestation of specific disease is *Vyadhi Hetu*.

Nija Hetu for Jwara can be related to Infection, microbial toxins, mediators of inflammation, immune reactions which activates myeloid and endothelial cells that produce pyrogenic cytokines. *Nidanas* like *Shoka*, *Manobhutabhishankaya* *Nakshatrapidaya*, *Abhicharo*, *Abhishapa* can lead to psychogenic fever. *Aushadipushpagandhaacha* may be related to factor which leads to drug fever.

between ayurvedic concepts and modern scientific principles can be seen in the recognition of fever as a systemic response to various stimuli. Integrating insights from both perspectives could enhance our understanding of fever and improve treatment strategies with innovative and effective healthcare solutions.

CONCLUSION

Among somatic diseases, *Jwara* is considered significant as it appeared first and is described first in the *Samhitas*. The study of *Jwara nidana* with relation in contemporary science underscores the complexity and depth of diagnosis of *Jwara*. This review also highlights the multifaceted approach to understanding the causative factors of *Jwara*, considering factors such as *Dosha* imbalance and impact of seasonal changes, which are essential for accurate diagnosis and effective treatment. The alignment

REVIEW ARTICLE

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REVIEW ARTICLE

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