



SCOPE OF RESEARCH IN *NASYA KARMA* (NASAL INSTILLATION OF MEDICINE) AS AN EMERGENCY MANAGEMENT TOOL – A CRITICAL REVIEW

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ABSTRACT

Background: In routine Ayurvedic clinical practice, the scope of *nasya*, many a time, restricted as a procedure with excretory action alone. But, *Acarya* indicates it in pathologies ranging from *jatrurdhva vikara* (pathologies of head and neck) to *pumsavana* (treatment module to get a healthy progeny).

Aim: The present article aims at exploring the scope of research in *nasya karma* to upgrade it to the level to meet an emergency medical situation.

Review results: Clinically, *nasya* has been effective in a wide range of clinical entities with faster action, supported by Ayurvedic classics.

Discussion: *Nasyakarma* owing to its excretory, stimulative and absorptive action at a very high speed, can be administered as emergency tool to tackle wide variety of pathological conditions like trigeminal neuralgic attack, migraine, non-stopping bleeding in Dysfunctional Uterine Bleeding etc.

Conclusion: The present article summarizes current state of understanding and tries to upgrade arena of *nasya* research.

KEYWORDS : *Nasya*, Emergency management tool, *Jatrurdhva vikara*

Background :

Pancakarma procedures form the basis of *samsodhana* therapy (Purificatory therapy) in Ayurveda. Among them, *nasya* is having a unique role since it is the only *Pancakarma* procedure aiming at *uttamanga sodhana*^[1] (head and neck purification). Even in the classics, the range of action of *nasya* is not at all limited to *jatrurdhva*. *Acarya* indicates it in pathologies ranging from *jatrurdhva vikaara* to *pumsavana*^[2].

Clinically, *nasya* is proved to be effective in a wide range of clinical entities with faster action. Also, it has been believed to have actions at neuro-endocrine levels.

Naso- brain route has now become most promising fastest drug-delivery route. *Nasya karma*, being the only *Pancakarma* which is believed to be having direct action on brain, researches has to be performed in this arena exploring the totality of this process. So, it is very high time, to view the procedure of *nasya karma* as an emergency management measure exploring it through the following arena.

Aim:

The present article aims at exploring the scope of research in *nasya karma* to upgrade it to the level to meet an emergency medical situation.

Materials and Methods :

Includes critical analysis of *Brhat-trayi* (Caraka samhita, Susruta samhita, Ashtanga hridaya) and other classical literatures like *Kasyapa samhitha*, *Sarngadhara samhitha* along with contemporary research works done in the arena of *nasya karma*. Along with that, modern research works exploring the possibilities of naso-brain route are also thoroughly analyzed to arrive at possible conclusions.

Review results:

Emergency conditions utilizing the excretory (*virecana*) action of *nasya karma*:

Acute exacerbation of chronic sinusitis

Nasal airway inflammation and association of rhinitis symptoms is characteristically seen in cases of chronic sinusitis. As per American Academy of Otolaryngology – Head and Neck Surgery multidisciplinary Rhinosinusitis Task Force (RTF), chronic sinusitis is characterized by facial pain on pressure, nasal discharge, hyposmia or anosmia, post nasal drip, purulence in nasal cavity and fever^[3]. Also, the initial stage involves only one type of aerobic bacteria. In later stages, with persistence of infection, anaerobic bacteria may also predominate^[4]. So, *nasya karma* aims at pacifying nasal block in order to relieve the cascade of succeeding symptoms. The drug administered for emergency management of acute exacerbation of chronic sinusitis should be also capable of relieving nasal airway inflammation and should be anti-bacterial in nature. Eugenol (70%), beta –caryophyllene (8%), beta – elemene (11%) are some of the constituents present in

thulasi^[5]. Eugenol has powerful anti-inflammatory action which help to remove nasal airway inflammation^[6]. Beta – elemene has unique power to induce apoptosis and induce cell cycle arrest at different stages which help to manage proliferation caused by inflammation^[7].

Further more, beta –caryophyllene has anti-inflammatory, anti-bacterial, neuro-protective and analgesic action^[8].

Thulasi swarasa is indicated in *peenasa* by *Aacarya Sarngadhara*^[9] owing to the carminative action of its chemical constituents. This carminative action of its constituents is augmented by adding one-fourth of *madhu* (honey)^[10] and *saindhava* (salt)^[11] in *nasya karma* in acute exacerbation of sinusitis by traditional *Keraleeya Vaidyas* as an emergency management. This carminative action contributes to the excretory action of *nasya karma*.

Fever associated with heaviness of head.

Acarya Vagbhata has indicated *nasya karma* in emergency management of symptoms like heaviness of head in *jeernajwara*^[12]. *Nasya karma* may be done with drugs promoting excretory action like *thulasi swarasa*, else will contribute to exacerbation of *amavastha* (*ama* stage) prevailing in the individual. This will help to manage even high temperatures by breaking the *samprapthi* (pathology) of *strothorodha* (blockage of channels). *Swedana* (sudation) which is a part of *nasya* procedure, as clearly told by *Acarya Susruta* act as *strothorodhaghna* (clearing of channels)^[13].

Pain in Cervical radiculopathy–

Cervical radiculopathy involves compression and inflammation of cervical nerve roots.

Arachnoid matter sleeve that extends along olfactory nerve^[14] also cover spinal cord from foramen magnum to the level of S2. Spinal nerve that originate from spinal cord to peripheral structures are in close contact with this meningeal layer. The drug used for *nasya* which is anti-inflammatory in character may spread quickly through meningeal arachnoid sleeve which extends to spinal cord and may stimulate cervical spinal nerves which has undergone inflammation or compression. The reduction of inflammation around cervical spinal nerves will automatically release nerve from acute compression leading to sudden relief from pain.

Importance of *Karpasasthyadi taila* in cervical radiculopathy:

Karpasasthyadi taila is described in Malayalam text, *Sahasrayoga* in *tailadhikara* chapter^[15]. It is one among the unique *yoga* mentioned for three mode of administration, that is, *paana* (oral intake), *navana* (nasal administration) and *abhyanga* (external application). The general indication mentioned include all *vata vikara*.

Emergency conditions utilizing the absorptive (*brhmana*) action of *nasya karma*:

Pain in Cervical spondylosis – highly degenerative stage:

Rasa taila, mentioned in *Keralaya cikitsa* book *Arogyakalpadruma* has *ajamamsa* (goat's meat) and *bala moola* (*Sida cordifolia*) along with *dugdha* (milk)^[16] has *brhmana* action. As per *Keralaya* traditional practice, the same *rasataila* is prepared by adding *ajamasthaka* (goat's head) to *Karpasasthyadi taila* is used or *nasya karma* to overcome the pain caused by cervical spondylosis. The utilization of formulations like *rasa taila* has to be further explored to bring out huge results through *nasya karma*.

Emergency conditions utilizing the stimulative (samana) action of nasya karma:**Coma stage – Sanyasa**

Sutheksma nasya is indicated in *sanyasa* by *Vagbhatacarya*^[17]. *Caraka* specifically indicates *theksma pradhama nasya* (*nasya* with medicated powder) for *sanyasa*^[18]. It will help to destroy strong *doshachaya* (accumulation of *dosha*) in *sanyasa samprapthi* due to *choorna bhaava* (powder form).

Coma state which is characterized by absence of neural activity and inability to react to external stimuli from which the person cannot be aroused. Coma always involves dysfunction of ascending arousal system or Reticular Activating System (RAS) and improper functioning of cerebral hemispheres^[19]. RAS include fibers and nuclei of upper pons, mid brain and posterior diencephalon which comprises thalamus, hypothalamus etc.

Drug administered through nasal route can have the stimulatory effect on terminal nerves which innervate areas of limbic system including hypothalamus^[20] which help the individual to regain the lost brain activities, thereby reversing the pathology.

DUB (Dysfunctional Uterine Bleeding):

Nasya karma during the time of menstrual cycle is strictly prohibited by all *Acarya*. *Kasyapa* has specifically told *nasyakarma* during this time will bring out *vyapath* (complications)^[21]. During the time of profuse un-controlled bleeding during DUB, there is a practice among leading traditional Gynecological practitioners in Kerala to conduct *nasya karma* with medicines which are not *rooksha* (not unctuous) in character like *ksheerabala taila*^[22] or *dhanwanthara thaila*^[23] for stoppage of bleeding. *Nasya karma* effectively stops bleeding faster than any other mode of drug administration again proving the potency of nasal-brain route has to be explored more, to tackle more pathologies.

This clearly indicates neuro- endocrinal action of *nasya karma* that should be further investigated and analyzed thoroughly. The nano particulate form of active ingredients of *nasyoushadha* (drug used for *nasya*) may have spread fastly through arachnoid matter sleeve which extend along with olfactory nerve^[14]. This may bring stimulation of hypothalamo-pituitary-ovarian axis reversing pathology of DUB. *Nasyakarma* bringing out terminal nerve stimulation that innervate hypothalamus,^[20] part of limbic system may also contribute to the action needed to be further studied.

Trigeminal neuralgia:

The shooting acute pain of trigeminal neuralgia can be managed effectively by *nasya karma* with *vatapittahara oushadha* (drug which decreases vitiated *vata* and *pitta*).

Primary pathology behind trigeminal neuralgia is demyelination^[24]. This demyelination is attributed to vascular compression of trigeminal nerve root in one group of trigeminal neuralgia. Demyelination changes mainly occur in Root Entry Zone (REZ) of nerve ending. This leads to action potentials to jump from one nerve fiber to another. The decrease in sensory inputs which are inhibitory in nature contributes to the condition. In addition to this, scientists believe a re-entry mechanism play an important role in amplification of sensory inputs^[25].

Usually *ksheerabala taila* preparation is used for *nasya karma* in trigeminal neuralgia. Nano particles of active ingredients of *ksheerabala taila* may get absorbed into nasal vein and then into facial vein ultimately draining to cavernous sinus^[26] which may have some action in relieving the regional *pitta dushti* arising due to vascular compression. Also, by the procedural effect of *nasya karma*, in which *swedana* of head is an indispensable part, improve cerebral circulation thereby contributing to remove any vascular compressions and

subsequent demyelination. Also the most instantaneous brain stimulation provided by the stimulation of terminal nerve endings that run along olfactory nerve^[20] further may help to increase the inhibitory sensory inputs that help to limit excruciating pain in trigeminal neuralgia. The exact pathophysiological mechanism should be further meticulously analyzed by modern diagnostic techniques to arrive at solid conclusions.

Migraine:

Nasya karma is an important and unavoidable emergency management measure clinically as far as migraine or *ardhaavabhedaka* is concerned.

It is believed that pathophysiology of migraine involves three mechanisms. Activation of trigemino vascular system, cortical spreading depression and neuronal sensitization^[27]. Cortical spreading depression causes depressed bio-electrical activity of neurons and this ultimately causes inflammatory reactions in vasculature in brain which are pain sensitive ultimately leading to throbbing head ache^[28]. Further neuronal sensitization results in decreased pain threshold and there by increases magnitude of head ache^[29].

Lateral nasal veins from the ala of nose is received by angular veins which is upper segment of facial vein, linked with cavernous sinus so that there is a potential risk of spreading infections to brain fastly via this route^[26]. The same logic can be applied in case of *nasyoushadha* also.

Nasya karma with suitable *vatapittahara* drug used in migraine getting absorbed through nasal vein and facial vein into cavernous sinus may ultimately lead to decrease in inflammatory reactions happening in cerebral vasculature. The stimulatory effect provided by terminal nerve endings may also lead to decrease in depressed bio-electrical activity of neurons and altered brain function correcting neuronal sensitization which has to be proved undoubtedly by further research works.

Discussion :**Scope of Research:**

It has now become the need of the hour to provide evidence based explanations for *nasya karma* to be utilized to meet an emergency medical situation. The primary research to be initiated in this field is fundamental or basic research, nothing other than establishing mode of action of *nasya karma*.

Understanding destination of nasya drug:

Since *nasya karma* is the only *pancakarma* procedure believed to have direct action at brain level, it has to be thoroughly studied by modern diagnostic techniques like Functional MRI (F-MRI). This can provide information on the destination center in the brain in which *nasya* drug reach during *nasya karma*. In other words, this will provide knowledge about the centers in brain which are more stimulated during or after *nasya karma*.

This crucial knowledge can be utilized to find out extent of pathologies in which *nasya karma* can be utilized.

Understanding drug site – specific nasya action:

It has to be further meticulously explored and thoroughly studied whether *nasya* drug destination varies with the type of drug used. For example, region of the brain stimulated by using *Karpasasthyadi taila* for *nasya* may be different from the region stimulated by using *Ksheerabala taila*.

Understanding form of drug –specific nasya action:

Whether the region of brain *nasya* drug stimulates, varies with the form of drug used for *nasya* has also to be studied. That is, whether the region varies with *choorna nasya* (powder form of drug) or *marsa nasya* (oil form of drug) or *kwatha nasya* (decoction form of drug) has to be explored.

Conclusion:

It is now very high time to move forward exploring the potency of the fast acting naso-brain route by making it more evidence based by conducting fundamental research (exploring mode of action), efficacy studies (clinical trials) and safety studies. It will not only provide a more potential drug-delivery route, but also upgrade the procedure of *nasya karma* to meet emergency medical situations and there by redacting Ayurvedic medical sciences.

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