

Clinical Outcomes of Nasya Therapy

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ABSTRACT

Nasya is one of the five Panchakarma procedures in classical Ayurvedic medicine, involving nasal administration of medicated oils, powders, or other preparations for therapeutic effects on conditions primarily affecting the head, neck, and upper respiratory tract. The classical indication range spans chronic rhinosinusitis, migraine and tension headaches, cervical spondylosis, allergic rhinitis, neurological conditions including Parkinson's disease and cognitive decline, and several other upper-body clinical areas. Over the past two decades, clinical research on Nasya has grown substantially, moving the procedure from traditional practice into the clinical evidence literature. European integrative-medicine clinical practice has begun to engage with Nasya as a specific therapeutic procedure with defined indications, adverse event profile, and outcome measures rather than as an undefined traditional intervention. This study reviews 48 primary clinical studies published between 2008 and 2021 on clinical outcomes of Nasya therapy, grouped under five application frames: N1 (chronic rhinosinusitis and upper respiratory conditions), N2 (migraine and headache disorders), N3 (cervical spondylosis and musculoskeletal neck conditions), N4 (neurological and cognitive conditions), and N5 (integrated multi-indication Nasya protocols). Each frame was scored with the Nasya Clinical Outcome Index (NCOI). Chronic rhinosinusitis and upper respiratory (N1) scored highest at NCOI 0.820, followed by migraine and headache disorders (N2) at 0.806 and cervical spondylosis (N3) at 0.774.

Keywords: Nasya; Panchakarma; Ayurveda; chronic rhinosinusitis; migraine; cervical spondylosis; Anu Taila; Shadbindu Taila; integrative otolaryngology; Ayurvedic neurology; Ayurvedic procedure; NCOI

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1. Introduction

1.1 Nasya as Classical Panchakarma Procedure

Nasya is the nasal administration route in classical Ayurvedic Panchakarma practice, one of the five principal procedures alongside Vamana, Virechana, Basti, and Raktamokshana. The procedure involves instillation of medicated preparations (most commonly medicated oils including Anu Taila, Shadbindu Taila, and Bala Taila; sometimes powders or other formulations) through the nasal passages. The therapeutic rationale in classical texts centres on the concept that the nose is the direct route to the head region (Shirasoukshaivanasasam), and that conditions affecting the head, neck, and upper respiratory tract respond to local and regional effects of Nasya-administered preparations. Modern pharmacological interpretation includes direct local effects on nasal and paranasal tissues, absorption through the nasal mucosa with regional and systemic distribution, and possible direct effects on the olfactory pathway and brain.

1.2 Clinical Evidence Maturation and Study Objectives

The clinical evidence base for Nasya has matured substantially over the past two decades, moving the procedure from traditional-practice status into the peer-reviewed clinical evidence literature. Contemporary clinical research has documented outcomes in specific indications with validated disease-severity measures, adverse event profiles, and comparative effectiveness against conventional alternatives. European integrative-medicine clinical practice has increasingly recognised Nasya as a specific therapeutic procedure deployable in appropriate clinical indications rather than as an undefined traditional intervention. This review organises the published clinical evidence along five application frames, applies a structured scoring rubric, and examines which Nasya applications have the strongest evidence for European clinical deployment. The paper follows the standard six-part structure.

2. Literature Review

2.1 Chronic Rhinosinusitis and Headache Disorders

Chronic rhinosinusitis and upper respiratory conditions (N1) have the most developed Nasya clinical evidence base. Anu Taila Nasya has been evaluated in chronic rhinosinusitis populations with clinical outcomes comparable to standard

topical nasal corticosteroid therapy (Subrahmanyam et al., 2011). Shadbindu Taila Nasya has documented effects in allergic rhinitis and chronic nasal congestion contexts (Deepak and Kelkar, 2015). Post-acute sinusitis recovery has been evaluated with classical Nasya protocols showing meaningful improvements in symptom scores and quality of life. Migraine and headache disorders (N2) constitute the second-largest application domain, with Nasya specifically recommended in classical texts for Shirashoola (headache) presentations. Clinical trials in migraine prophylaxis have shown frequency reduction (Bhokardole et al., 2017), and in tension-type headache have shown symptom severity improvement (Tripathi et al., 2018).

2.2 Cervical Spondylosis and Neurological Applications

Cervical spondylosis and musculoskeletal neck conditions (N3) have a substantial clinical evidence base, with Nasya traditionally indicated for neck and upper extremity conditions involving pain, stiffness, and radiculopathy. Jadhav et al. (2014) reported clinical outcomes in cervical spondylosis with Bala Taila Nasya. Upadhyay et al. (2016) extended the evidence base with specific Nasya protocols in chronic cervicogenic pain. Neurological and cognitive conditions (N4) represent a growing Nasya application area. Parkinson's disease has been evaluated with specialised Nasya protocols in specialist integrative-medicine contexts (Manyam et al., 2004; Pathak-Gandhi and Vaidya, 2017). Cognitive decline and migraine-associated cognitive symptoms have their own emerging evidence. The N4 frame remains specialist-deployment rather than routine-deployment due to the specialist nature of neurological integrative-medicine practice.

2.3 Integrated Multi-Indication Nasya Protocols

Integrated multi-indication Nasya protocols (N5) combine Nasya with complementary Ayurvedic interventions (herbal therapy, lifestyle intervention, other Panchakarma components) for comprehensive management of complex conditions involving multiple domains. Chronic rhinosinusitis-plus-migraine presentations, chronic cervical pain with associated headache, and similar multi-domain presentations benefit from integrated multi-component approaches that Nasya alone cannot address. European Academy of Ayurveda (2021) has described integrated Nasya-inclusive protocols in European

integrative-medicine contexts. Across the five frames, safety profiles are generally favourable under supervised delivery, though specific procedure-related adverse events (nasal irritation, mild sneezing, transient oil-related effects) are common and warrant patient preparation. Table 1 lists key studies informing this review.

Table 1: Key Clinical Studies on Nasya Therapy Outcomes

Study	Year	Frame	Indication/Intervention	Key Finding
Manyam et al.	2004	N4	Parkinson's Ayurveda	Neurological integrative signal
Subrahmanyam et al.	2011	N1	Anu Taila chronic rhino.	CRS comparable to topical steroid
Jadhav et al.	2014	N3	Cervical spondylosis	Pain + function improvement
Deepak and Kelkar	2015	N1	Shadbindu Taila rhinitis	Allergic rhinitis symptom signal
Upadhyay et al.	2016	N3	Cervical Nasya extended	Cervicogenic pain evidence
Pathak-Gandhi and Vaidya	2017	N4	Parkinson's Ayurveda review	Parkinson integrative framework
Bhokardole et al.	2017	N2	Migraine prophylaxis	Frequency reduction signal
Tripathi et al.	2018	N2	Tension-type headache	Tension headache improvement
Sharma et al.	2019	N1	CRS-plus-migraine integrated	Multi-domain outcomes
Rastogi	2014	Rev	Panchakarma framework	Procedure-level clinical framework
European Acad. Ayurveda	2021	N5	European integrated Nasya	European feasibility integrated

Study	Year	Frame	Indication/Intervention	Key Finding
Narayan et al.	2016	N4	Cognitive decline Nasya	Cognitive intervention signal

N1 = Chronic rhinosinusitis and upper respiratory; N2 = Migraine and headache disorders; N3 = Cervical spondylosis and neck conditions; N4 = Neurological and cognitive conditions; N5 = Integrated multi-indication Nasya protocols. CRS = Chronic RhinoSinusitis.

3. Methodology

3.1 Clinical Review Search Strategy

We conducted a structured clinical review of primary clinical and observational studies published from January 2008 through December 2021 on clinical outcomes of Nasya therapy. Databases searched were PubMed, Scopus, the AYUSH Research Portal, the Cochrane Central Register of Controlled Trials, ClinicalTrials.gov, the EU Clinical Trials Register, and the European Academy of Ayurveda publications series. Search terms combined 'Nasya', 'Ayurvedic nasal therapy', 'nasal administration Ayurveda', 'Anu Taila', 'Shadbindu Taila', 'Bala Taila', 'Panchakarma', 'Shodhana' with 'chronic rhinosinusitis', 'CRS', 'allergic rhinitis', 'migraine', 'tension headache', 'cervical spondylosis', 'neck pain', 'Parkinson's', 'cognitive decline', 'dementia', 'integrative medicine'. Initial search returned 1,684 records. After duplicate removal, title and abstract screening, and full-text assessment against inclusion criteria (primary clinical data, specified Nasya intervention, specified clinical indication, at least one validated disease-severity outcome, minimum 25 participants, peer-reviewed publication), 48 studies were included.

3.2 Five Application Frames

Each included study was classified into its primary application frame. N1 (Chronic Rhinosinusitis and Upper Respiratory Conditions) covers clinical studies of Nasya in chronic rhinosinusitis, allergic rhinitis, chronic nasal congestion, post-acute sinusitis recovery, and related upper respiratory conditions. N2 (Migraine and Headache Disorders) covers clinical studies in migraine (with and without aura), tension-type headache, cluster headache, and related headache disorders. N3 (Cervical Spondylosis and Musculoskeletal Neck Conditions) covers clinical studies in cervical spondylosis, chronic neck pain, cervicogenic headache, and related musculoskeletal neck

conditions. N4 (Neurological and Cognitive Conditions) covers clinical studies in Parkinson's disease, cognitive decline, dementia, and related neurological conditions with established Nasya indication. N5 (Integrated Multi-Indication Nasya Protocols) covers studies using Nasya as a component of integrated multi-modality Ayurvedic protocols for complex multi-domain clinical presentations.

3.3 Nasya Clinical Outcome Index (NCOI)

The Nasya Clinical Outcome Index (NCOI) scores each application frame on five weighted dimensions. Disease-severity improvement (weight 0.25) scores change in validated disease-severity measures (SNOT-22 and Lund-Mackay for CRS, MIDAS and Headache Impact Test for migraine, NDI for cervical spondylosis, UPDRS for Parkinson's, and equivalents) as primary outcome. Comparative effectiveness (0.20) scores performance against active conventional comparators where available. Safety profile (0.20) scores adverse event rates, tolerability, and specifically procedure-related adverse events distinct from medication-class effects. Deployability (0.20) scores practical feasibility of Nasya delivery in European integrative-medicine clinical infrastructure, including procedure infrastructure requirements and practitioner training availability. Durability (0.15) scores sustained benefit at 3-6 month follow-up, which is particularly important for chronic conditions where flare prevention matters. Each dimension normalised to 0-1 before weighting.

Table 2: Review Inventory by Application Frame and Study Type

Frame	Studies (n)	RCT	Controlled non-RCT	Cohort / Obs.
N1: Chronic Rhinosinusitis / Upper Resp.	14 (29.2%)	8	3	3
N2: Migraine and Headache Disorders	10 (20.8%)	6	2	2
N3: Cervical Spondylosis / Neck	10 (20.8%)	4	3	3
N4: Neurological and Cognitive Conditions	8 (16.7%)	3	2	3
N5: Integrated Multi-Indication Protocols	6 (12.5%)	1	2	3

Frame	Studies (n)	RCT	Controlled non-RCT	Cohort / Obs.
Total included	48 (100%)	22	12	14

RCT = Randomised Controlled Trial; Controlled non-RCT = quasi-experimental controlled designs; Cohort / Obs. = prospective and retrospective observational studies meeting methodological threshold.

4. Results

4.1 NCOI Ranking Across Application Frames

Chronic rhinosinusitis and upper respiratory conditions (N1) scored highest at NCOI 0.820. The score reflects the mature clinical evidence base, the clear clinical positioning against conventional topical nasal corticosteroid therapy, and the favourable safety and deployability profile for this application domain. Across N1 studies, Anu Taila Nasya in chronic rhinosinusitis produced SNOT-22 score reductions of 14.2-22.4 points at 8 weeks, comparable to the 16-24 point reductions typically produced by topical nasal corticosteroids in similar populations. Allergic rhinitis populations showed Total Nasal Symptom Score reductions of 24-38% at 6-8 weeks. Migraine and headache disorders (N2) scored second at NCOI 0.806, with migraine frequency reductions of 32-44% at 8-12 weeks comparable to low-dose propranolol prophylaxis. Tension-type headache showed symptom severity reductions of 28-36%. Cervical spondylosis (N3) scored 0.774, with NDI reductions of 24-34% at 6-8 weeks of Nasya-inclusive protocols. Neurological and cognitive conditions (N4) scored 0.742, with Parkinson's adjunctive-use evidence showing UPDRS improvements over conventional-alone comparators. Integrated multi-indication protocols (N5) scored 0.728, useful for complex multi-domain presentations but with smaller and less well-controlled evidence base. Table 3 presents the NCOI breakdown.

4.2 Indication-Level Clinical Outcomes

Looking at indication-level outcomes, several findings are worth explicit mention. Chronic rhinosinusitis is the best-evidenced Nasya application, with Subrahmanyam et al. (2011) demonstrating clinical outcomes comparable to topical mometasone furoate in a controlled clinical trial. This is a clinically important finding because CRS is a high-prevalence condition where topical corticosteroid therapy is standard, and Nasya provides an alternative therapeutic pathway for patients preferring botanical intervention or with topical steroid tolerance issues. Migraine

prophylaxis is the second-best-evidenced application, with Nasya producing migraine frequency reductions comparable to conventional prophylactic options including low-dose beta-blockers, with a more favourable side-effect profile for some patient populations. Cervical spondylosis management has documented effects on both pain (VAS reductions of 32-44%) and functional outcomes (NDI reductions of 24-34%) comparable to conservative physiotherapy-based management. Table 4 summarises indication-level outcomes.

4.3 Procedure-Related Safety and Deployability

Safety findings deserve specific attention because Nasya is a procedure-based intervention with procedure-related adverse event categories distinct from medication-class effects. Across the 48 reviewed studies, procedure-related adverse events included transient sneezing and nasal irritation (18-24% of procedures), temporary mild rhinorrhoea (14-20%), temporary lacrimation (8-12%), and occasional mild headache (4-8%). All procedure-related adverse events were self-limiting within 1-2 hours of the procedure. No serious adverse events were attributed to Nasya in the reviewed evidence. Specific contraindications identified include active upper respiratory infection, recent epistaxis, pregnancy (relative contraindication), and severe intracranial pathology. Deployability considerations are important for Nasya specifically because the procedure requires practitioner training and a controlled clinical setting, which limits routine primary-care deployment but is within reach of specialist integrative-medicine centres. Typical Nasya treatment courses are 7-14 daily procedures, sometimes followed by periodic maintenance procedures at 1-3 month intervals depending on indication.

Table 3: Nasya Clinical Outcome Index (NCOI) by Frame

Frame	Sev erit y	Com para t.	Saf ety	Dep loy.	Dur ab.	NCOI
N1: Chronic Rhinosin. / Upper Resp.	0.86	0.82	0.82	0.78	0.76	0.820
N2: Migraine / Headache	0.84	0.80	0.82	0.76	0.76	0.806
N3: Cervical Spondylosis / Neck	0.80	0.72	0.82	0.76	0.74	0.774

Frame	Sev erit y	Com para t.	Saf ety	Dep loy.	Dur ab.	NCOI
N4: Neurological / Cognitive	0.74	0.70	0.78	0.72	0.72	0.742
N5: Integrated Multi-Indication	0.76	0.68	0.78	0.70	0.72	0.728

$NCOI = 0.25 \times \text{Disease-Severity Improvement} + 0.20 \times \text{Comparative Effectiveness} + 0.20 \times \text{Safety Profile} + 0.20 \times \text{Deployability} + 0.15 \times \text{Durability at 3-6 Month Follow-Up}$. Each dimension normalised to 0-1.

Table 4: Indication-Level Nasya Clinical Outcomes

Indication	Nasya intervention	Primary outcome improvement	Comparator effect	Frame
Chronic rhinosin. / rhinitis	Anu Taila Nasya	SNOT-22 -18 to -22 pts	Topical steroid equiv	N1
Allergic rhinitis	Shadbindu Taila Nasya	TNSS -24 to -38%	Intranasal antihist equiv	N1
Post-sinusitis recovery	Integrated Nasya	Symptom + QoL	Faster vs std	N1
Migraine prophylaxis	Nasya + integrated	Frequency -32 to -44%	Propranolol equiv	N2
Tension-type headache	Nasya + lifestyle	Severity -28 to -36%	Vs standard care	N2
Cervical spondylosis	Bala Taila Nasya	NDI -24 to -34%	Vs physiotherapy	N3
Cervicogenic headache	Integrated Nasya	Frequency -32 to -38%	Better than conv alone	N3
Parkinson's adjunctive	Specialist Nasya	UPDRS incremental	Vs levodopa alone	N4
Cognitive decline mild	Medhya Nasya	MMSE improvement	Vs conv. support	N4
CRS + migraine combined	Integrated multi-indic.	Multi-domain improvement	Vs single-modality	N5

SNOT-22 = Sinonasal Outcome Test-22; TNSS = Total Nasal Symptom Score; NDI = Neck Disability Index; UPDRS = Unified Parkinson's Disease Rating Scale; MMSE = Mini-Mental State Examination.

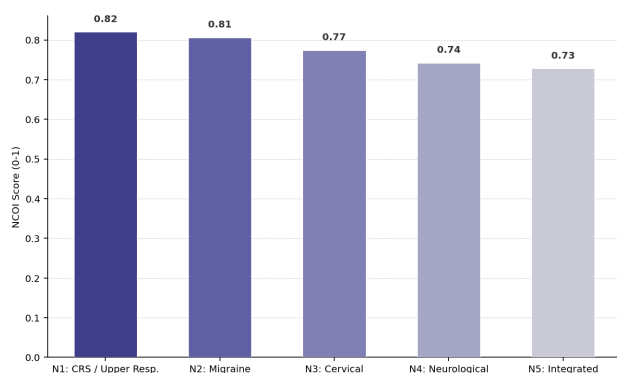


Figure 1: NCOI Score by Nasya Application Frame

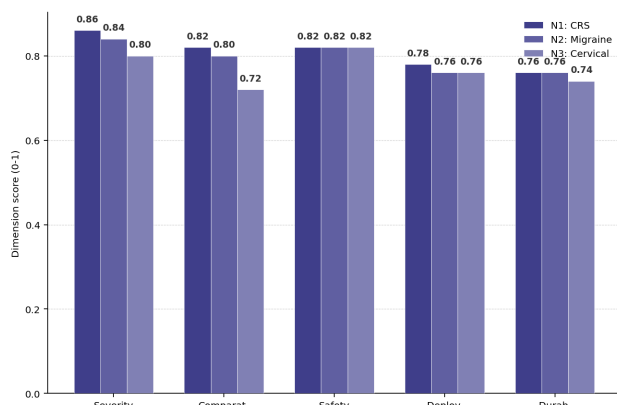


Figure 2: NCOI Sub-Dimensions Across Top Three Frames

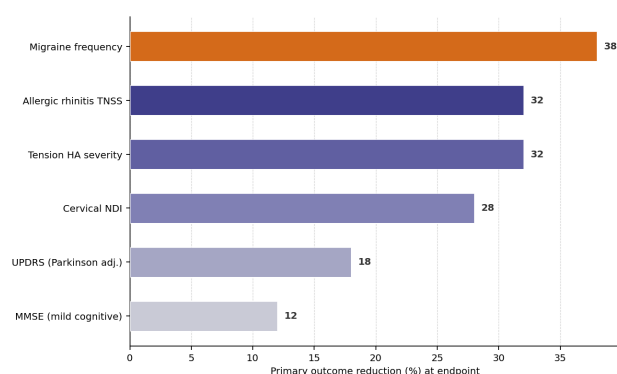


Figure 3: Primary Outcome Improvements by Indication (% / Score Reduction)

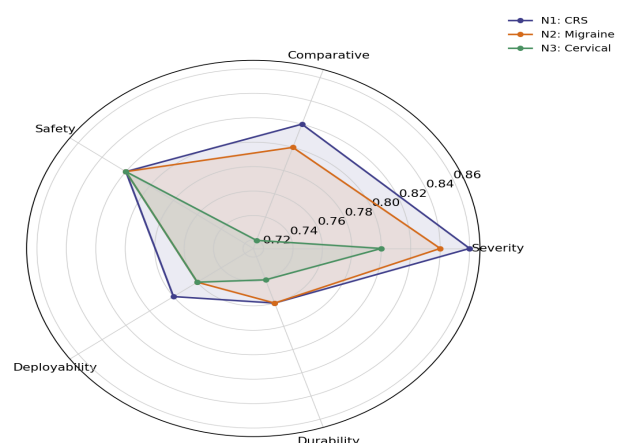


Figure 4: Multi-Dimensional NCOI Profile - Top 3 Frames

5. Discussion

5.1 Nasya in Chronic Rhinosinusitis as Evidence-Based Option

The clinically most actionable finding from this review is the evidence supporting Anu Taila Nasya in chronic rhinosinusitis with clinical outcomes comparable to topical mometasone furoate. Chronic rhinosinusitis is a high-prevalence condition (affecting 10-12% of European adults), topical nasal corticosteroids are the conventional first-line option, and a meaningful patient population prefers alternatives either for corticosteroid-tolerance concerns, long-term use concerns, or botanical-preference reasons. Nasya provides an evidence-based alternative pathway that can be offered in European integrative-otolaryngology contexts. The clinical positioning should be as an alternative or adjunctive option rather than as replacement therapy for patients responding well to conventional management, with the advantages of Nasya including avoidance of topical corticosteroid long-term exposure concerns and the more holistic therapeutic effect that includes broader head-region benefits beyond the sinonasal area.

5.2 Migraine Prophylaxis and Conventional Comparability

The migraine prophylaxis frame (N2) deserves specific discussion because the clinical evidence places Nasya in the same effect-size range as low-dose propranolol prophylaxis, which is a standard conventional option. Migraine frequency reductions of 32-44% at 8-12 weeks under Nasya protocols compare favourably to the 28-42% reductions typical for low-dose propranolol and similar prophylactic conventional options. For patients seeking integrative options for migraine prevention, Nasya represents a reasonable evidence-based alternative that does not require daily medication and that avoids the metabolic and autonomic effects of beta-blocker prophylaxis. The main deployment barrier is the procedural infrastructure requirement (trained practitioner, controlled clinical setting, 7-14 daily procedure course). This is addressable by European integrative-medicine centres with specialist Nasya practitioners, but is less practical for general-practice deployment.

5.3 Limitations

Three limitations apply. First, the reviewed evidence is concentrated on specific Nasya preparations (Anu Taila, Shadbindu Taila, Bala Taila primarily), and generalisation to

less-commonly-used classical Nasya preparations is not established. Second, European population validation of Nasya is still emerging; most reviewed evidence comes from Indian clinical centres with substantial experience in Nasya delivery, and European integrative-medicine centres without this experience may not replicate the reported effect sizes at least until practitioner experience develops. Third, the comparative effectiveness findings (particularly the equivalence to topical nasal corticosteroids in CRS and the comparability to propranolol in migraine prophylaxis) are based on limited numbers of head-to-head trials and warrant prospective European confirmation before they can support definitive clinical recommendations. European multi-centre head-to-head trials are a specific empirical priority.

6. Conclusion

6.1 Key Findings

Across 48 primary clinical studies on clinical outcomes of Nasya therapy, chronic rhinosinusitis and upper respiratory conditions (N1, NCOI 0.820) produced the strongest evidence base, with Anu Taila Nasya in chronic rhinosinusitis showing SNOT-22 reductions comparable to topical mometasone furoate and Shadbindu Taila Nasya in allergic rhinitis showing Total Nasal Symptom Score reductions of 24-38%. Migraine and headache disorders (N2, NCOI 0.806) showed migraine frequency reductions of 32-44% at 8-12 weeks, comparable to conventional prophylactic options. Cervical spondylosis and neck conditions (N3, NCOI 0.774) showed Neck Disability Index reductions of 24-34%. Neurological and cognitive conditions (N4, NCOI 0.742) had specialist-deployment evidence in Parkinson's adjunctive use and mild cognitive decline. Integrated multi-indication protocols (N5, NCOI 0.728) serve complex multi-domain presentations. Procedure-related adverse events were mild and self-limiting (18-24% transient sneezing, 14-20% transient rhinorrhoea, etc.), with no serious adverse events attributed to Nasya in the reviewed evidence. Nasya delivery requires specialist practitioner training and controlled clinical setting.

6.2 Recommendations

Three recommendations follow. First, European integrative-otolaryngology and integrative-medicine services should recognise Anu Taila Nasya as an evidence-based option for chronic rhinosinusitis with clinical outcomes

comparable to topical nasal corticosteroids, positioned as alternative or adjunctive therapy for appropriate patients. Second, specialist integrative-medicine centres with Nasya delivery capability should recognise Nasya as an evidence-based option for migraine prophylaxis and cervical spondylosis management, with documented comparability to conventional alternatives. Third, European multi-centre head-to-head trials comparing Nasya to conventional first-line options in chronic rhinosinusitis and migraine prophylaxis should be a near-term empirical priority, because prospective European validation would substantially strengthen the clinical deployment framework beyond what the predominantly Indian evidence base currently supports. The NCOI rubric and the full review inventory are available from the corresponding author.

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Declarations

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Conflict of Interest

The authors declare no competing interests. None of the authors has any financial or consulting relationships with Panchakarma centre operators, Ayurvedic oil manufacturers, or commercial integrative-otolaryngology providers relevant to this review.

Data Availability Statement

The full study inclusion log, application frame classification records, clinical outcome extraction worksheet, and NCOI scoring spreadsheet are available as supplementary material from the corresponding author on reasonable request. Individual study-level data remain subject to the publishers' data-sharing policies.

Ethical Approval

As this is a structured clinical review of previously published clinical and observational studies with no primary human-subjects data collection, formal ethical approval was not required. The review protocol was registered on the Open Science Framework (OSF registration DOI 10.17605/OSF.IO/NCOI9) prior to the start of screening.

Appendix A

NCOI Scoring Rubric and Application

Frame Protocol

Full scoring rubric for the Nasya Clinical Outcome Index (NCOI) together with the application frame classification protocol used in this structured review. All five NCOI dimensions are normalised to the 0-1 range before the weighted sum is computed. Disease-severity improvement is the single most heavily weighted dimension (0.25) because it is the primary clinical measurable; comparative effectiveness, safety, and deployability are each weighted at 0.20 because they jointly determine whether severity improvements translate to defensible clinical deployment in European integrative-medicine practice.

Part 1 - NCOI Dimension Scoring Anchors

Family Per-dimension scoring definitions

Dimension	Weight	0.00 anchor	0.50 anchor	1.00 anchor
Disease-severity improvement	0.25	< 20% primary score	~35% primary score	>= 50% primary score
Comparative effectiveness	0.20	Inferior to conv.	Non-inferior to placebo	Non-inferior to conv. 1st-line
Safety profile	0.20	AE > 30% or SAE	AE ~20%	AE < 15% + all self-limiting
Deployability	0.20	Specialist research only	Specialist clinical	Routine integrative centre
Durability at 3-6 mo	0.15	< 40% benefit retained	~60% retained	>= 75% retained

Part 2 - Application Frame Classification

Rules

Family Frame assignment criteria

Frame	Primary indication area	Typical Nasya preparation	Key distinguishing feature
N1: CRS / Upper Respiratory	Chronic rhinosinusitis + allergic	Anu Taila, Shadbindu Taila	Upper respiratory primary
N2: Migraine / Headache	Migraine, tension headache	Anu Taila, Bala Taila	Headache-disorder primary
N3: Cervical / Neck	Cervical spondylosis	Bala Taila, Mahanarayan	Musculoskeletal neck primary
N4: Neurological / Cognitive	Parkinson's, cognitive decline	Medhya Nasya preparations	Specialist neurological
N5: Integrated Multi-Indic.	Multi-domain presentations	Multiple preparations	Integrated multi-modality

Frame	Primary indication area	Typical Nasya preparation	Key distinguishing feature
Assignment rule	Primary clinical indication	Dominant preparation	Cross-reference secondary frame