



Research Article

STANDARDIZATION OF BINDU PRAMANA OF MEDICINE FOR KSHEERA-NAGARA NASYA

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ABSTRACT

Ayurveda, the science of life, emphasizes health through *Shodhana* (purification) and *Shamana* (pacification) therapies. *Panchakarma* focuses on *Shodhana*, with *Nasya* (nasal administration) being the premier treatment for disorders of the head and neck. As the nose is considered the gateway to the head, *Nasya* effectively eliminates vitiated *Doshas* from the supra-clavicular region. **Objectives:** Therapeutic efficacy in *Panchakarma* depends heavily on precise dosage. Traditional texts use *Bindu* as the unit of measurement for liquid medicines. However, a *Bindu*- defined as the quantity of liquid dripping from an index finger dipped up to the proximal interphalangeal joint- varies based on the liquid's viscosity. This study aims to standardize the *Bindu Pramana* (measurement) and the total dose of *Ksheera-nagara Nasya*, as indicated for *Shirasula* (headache) in the *Yogaratanakara*. **Materials and Methods:** Before clinical application, it is essential to convert traditional units into metric measures. Following *Vagbhata's* guidelines for *Avapeedaka Nasya*, a dose of 8 *Bindu* was selected. The study was conducted on 60 healthy volunteers (aged 18–60 years) to determine the average volume of a single *Bindu* and the subsequent total dose for *Ksheera-nagara Nasya*. **Results:** The study standardized the volume of one *Bindu* of *Ksheera-nagara Nasya* at 0.131ml. Consequently, the therapeutic dose of 8 *Bindu* was calculated to be 1.048ml. **Conclusion:** Standardizing traditional measurements into metric units ensures accuracy and reproducibility in clinical practice, bridging the gap between ancient methodology and modern pharmacological standards.

INTRODUCTION

The unique feature of the *Panchakarma* therapy is to remove the disease from the root level. Among *Panchakarma*, *Nasya* is one of the most important therapies, as it is used for the treatment of disease of head and neck. According to *Acharya Caraka*, nose is the gateway of head. The drug administered through nose reaches the *Sringadakarma* and eliminates the morbid bio-humors responsible for the disease^[1]. *Nasya* can be performed with various forms of medicines such as *Swarasa*, *Kalka*, *Kwatha*, *Ksheera*, *Choorna*, and *Sneha* to manage different clinical conditions.

In the classical Ayurvedic texts, *Bindu* is mentioned as the traditional unit used to measure the volume of liquid used for *Nasya*. In *Nasya karma*, *Acharyas* have prescribed specific doses for each type, and the unit commonly used for measuring the dose of *Dravadravya* is *Bindu*. A *Bindu* is defined as the quantity of liquid that falls after dipping the index finger up to two *Parvas* (joints) into the liquid. *Hemadri* further elaborates this definition by stating that *Bindu* does not refer merely to the first drop, but to the entire amount of liquid that dribbles from the finger after immersion^[2].

This quantity is not constant, as it changes according to the characteristics like viscosity, density, specific gravity and flow characteristics of the particular liquid being used. In contemporary clinical practice, *Nasya Karma* is commonly administered based on measurable volume (ml) rather than the classical *Bindu* concept, owing to

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time limitations, convenience in administration and measurement. Because the word *Bindu* literally means a drop, many practitioners mistakenly use standard medicinal droppers to measure *Nasya* dosage and this leads to suboptimal treatment outcomes. But, as per the Ayurvedic Formulary of India, one drop is equivalent to 0.05ml, which is considerably lower than the classical dosage. And measurement of *Bindu* for oils as 10 drops equivalent to 0.5ml.^[3] Earlier studies on the standardization of *Bindu Pramana* using *Murcchita Tila Taila*, carried out among 30 participants aged 21–70 years, reported an average volume of 0.55ml as one *Bindu*.^[4] In another study assessing *Sneha Nasya matra* based on *Bindu Pramana* for *Taila* and *Ghrita* in 20 subjects aged 21–30 years, the measured value for *Taila* was found to be 0.34ml and *Ghrita* was of 0.4ml.^[5] A large-scale study involving 80 healthy volunteers between 18 and 80 years of age, evaluated the *Bindu Pramana* for *Nasya* using *Ksheerabala Taila*, *Karpasastyadi Taila*, *Shadbindu Taila*, and *Anu Taila*, and standardized *Bindu pramana* of these *Taila yogas* as 12 drops equal to 0.6ml.^[6] Further, a separate study on *Panchendriyavivardhana Taila*, conducted in 10 subjects, determined the mean volume of one *Bindu* to be 0.52ml.^[7] There was another study on standardization of *Bindu Pramana* for *Prathimarsha Nasya* conducted in 405 individuals between the age group of 18 to 60 years with *Anu Taila*, *Tila Taila*, and *Sarshapa Taila*. In this, the mean value for *Bindu Pramana* is 0.55ml, which is 12.4 drops for *Tila Taila*; 0.57ml, 12.4 drops for *Anu Taila*; and 0.56ml, 11.8 drops for *Sarshapa Taila*.^[8] A study on the standardization of *Bindu* for *Nasya* was conducted on 90 volunteers aged between 16 and 60 years, who were divided into three groups of 30 participants each, irrespective of age and sex. Group A received 32 drops of *Tila Taila* administered from the *Anguli*, Group B received 32 drops using a dropper, and Group C received 32 *Bindu* of *Tila Taila* following the method described by Acharya Hemadri, wherein a *Bindu* represents the total quantity of oil that dribbles down from the index finger after immersion, rather than a single drop. The mean volume obtained from 32 drops from the *Anguli* was 1.5ml, while the same number of drops administered by a dropper measured 1.2ml. In contrast, the average volume corresponding to 32 *Bindu* as per Acharya Hemadri's method was 14.34ml, indicating that the *Bindu* method delivers a comparatively much larger quantity of oil for *Nasya* administration.^[9] In a separate study aimed at

standardizing the *Nasya* dose based on *Bindu Pramana*, *Karpasastyadi Taila* was evaluated in 60 individuals aged 20–60 years, regardless of sex, height, or weight, and it was determined that one *Bindu* equals 0.45ml; consequently, the *Madhyama Matra* of *Marsha Nasya* (8 *Bindu*) corresponds to a total dose of 3.6ml.^[10] Another study named, a critical analysis on need of standardization of doses in *Panchakarma* has been carried out for the standardization of quantity of 1 *Bindu*. It was observed that mean *Bindu* is 0.49ml. Thus, it was established that *Sharangadhara's Bindu* 0.5ml is relevant in the present period.^[11]

Collectively, these studies on standardization of *Bindu pramana* for different *Taila* and *Gritha yogas* indicate that determination of the appropriate dose of oil and ghee is influenced by multiple factors beyond the concept of *Bindu* alone. Variations in formulation consistency and viscosity, fluctuations in the temperature of the *Taila*, seasonal and diurnal differences, as well as the specific stage of *Paka* of the *Taila*, play a significant role in altering the measurable quantity and consequently the standardization of dosage.

Also, standardization of *Bindu pramana* for different *Kalpanas* of *Nasya* with 30 subjects between age group of 18 to 40, found quantity of *Goksheera*, *Thulasi swarasa* and *Dasamoola kwatha kalpana* calculated here is 0.12375ml, 0.11ml, 0.09875ml respectively which is very less than the *Sneha kalpana*.^[12]

The reference of *Ksheera-nagara Nasya* is from the text book of *Yogaratanakara*, 66th chapter, naming *Shirorogadhikara*. Acharya *Yogaratanakara* explained that the nasal administration of the paste of *Nagara* mixed with milk cures severe headache caused due to vitiation of all *Doshas*.^[13] This *Nasya* can be included under the *Avapeedaka*, owing the presence of *Nagara kalka*. There are different opinions regarding the dosage of *Nasya* for different *Nasyadravyas*. However, for *Avapidaka Nasya*, all *Acharyas* have prescribed the following dosage.

Table 1: Dose of Avapeedaka Nasya^[14]

Type of Matra	Dose in Bindu pramana
Uttama	8 Bindu
Madhyama	6 Bindu
Heena	4 Bindu

So based on this 8 *Bindu* was selected as the dose of *Ksheera-nagara nasya*. This study was conducted to standardize the dose prior to the

clinical study. This quantitative study aims to standardize the *Bindu pramana* of *Ksheera nagara Nasya*. By establishing a uniform dosage, this research seeks to enhance the global accountability and clinical acceptability of Ayurvedic therapeutic procedures.

While there is existing research on standardising various Ayurvedic preparations like *Taila*, *Kashaya*, *Ghrita*, *Swarasa* and *Ksheera*, there is a lack of standardisation specifically for *Ksheera* with *Kalka* form. To address this gap, work was done to standardise *Ksheera-nagara kalka*, focusing on its use in *Nasya*. Given these natural variations, determining a uniform, scientifically reliable volume for one *Bindu* of *Ksheera nagara* would help achieve consistency and accuracy in *Nasya* procedures.

AIM

To standardize the dose of *Ksheera-nagara nasya* in *Bindu pramana*.

MATERIALS AND METHOD

MATERIALS

- *Nagara kalka* (paste of dry ginger -*Zingiber officinale*)
- *Ksheera* (cow's milk)
- Motor and pestle
- Cotton cloth
- Beaker
- Watch glass
- Micropipette-Single channel variable volume micropipette

METHODOLOGY

Nasya Dravya Preparation

- The quantity of *Ksheera* and *Nagara*, required for the preparation of *Nasya dravya* is calculated according to the opinion of *Acharya Sarngadhara*. *Acharya* mentioned that the dose of *Ksheera* for *Nasya* should be 8 *Sana* (24ml) and that of *nagara* should be 1 *Sana* (3gm).^[15] The dose of *Nasya* is selected as per the opinion of *Vagbhata*, mentioned in *Ashtangahridaya*, *Suthrasthana*, 20th chapter, named as *Nasyavidhi*. According to him, *Uttamamatra* (maximum dose) of *Nasya* using *Kalka dravya* is specified as 8 *Bindu*.^[16]
- To ensure safety and minimize the risk of microbial infection, commercially available pasteurized milk was utilized for the study. For consistency and feasibility, homogenized, bacteria-free toned milk with a standardized fat content of 3.5% was selected as the medium for the preparation.
- Healthy, authentic ginger samples were harvested from their natural habitat using strict protocols to

prevent contamination. The rhizomes were peeled, sliced into small pieces, and sun-dried.

- *Ksheera-Nagara nasya dravya* was prepared in the *Panchakarma* kitchen under sterile conditions.
- *Ksheera* (milk) was boiled in a clean vessel over a controlled flame. A 24ml aliquot of the boiled milk was then measured using a syringe. Simultaneously, 3gm of *Nagara* (*Zingiber officinale*) was weighed and added to the 24ml of milk. The mixture was transferred to a sterile mortar and systematically triturated with a pestle to produce a fine, homogeneous *Kalka* (paste), ensuring the uniform dispersion of *Nagara* particles throughout the *Ksheera* medium.
- The resulting mixture was filtered through a sterile cotton cloth to remove coarse residues and undissolved particles. This process ensured a homogenous and refined *Nasya Dravya*, optimized for safe and effective intranasal administration.

Standardization of *Bindu Pramana*

The study enrolled 60 healthy volunteers (aged 18–60 years) to standardize the volumetric measurement of one *Bindu*. Each participant was instructed to immerse the index finger of their right hand into the *Ksheera-nagara* medicinal preparation up to the proximal interphalangeal joint. Upon withdrawal, the whole quantity of liquid that naturally dripped from the fingertip was designated as one *Bindu*. The total volume of each *Bindu* was collected and measured in microliters, using a calibrated Single Channel Variable Volume Micropipette. To ensure accuracy and account for intra-individual variability, the procedure was performed in triplicate (three consecutive measurements) for each participant. The average of these three trials was recorded as the individual's *Bindu Pramana*. Subsequently, the grand mean across all 60 participants was calculated to establish the standardized metric value for one *Bindu* of *Ksheera-nagara Nasya*.

OBSERVATION AND RESULT

The study was conducted on 60 healthy volunteers to quantify the volume of a single *Bindu* of *Ksheera-nagara Nasya dravya*. The primary objective was to establish a standardized metric equivalent for traditional liquid measurements. The data collected from the 60 participants were systematically compiled, statistically analyzed, and are presented in the following tables.

Table 2: Data of 60 Individuals for the Standardization of Bindu Pramana of Ksheera-Nagara Nasya

S.No.	Age	Mean value (Measurement with pipette in μl)
1.	36	150
2.	27	148
3.	30	140
4.	28	110
5.	47	232
6.	26	88
7.	26	90
8.	56	152
9.	32	115
10.	35	125
11.	19	70
12.	22	100
13.	21	130
14.	19	190
15.	21	150
16.	21	123
17.	19	150
18.	21	90
19.	21	120
20.	19	86
21.	21	124
22.	20	131
23.	21	160
24.	20	135
25.	20	100
26.	21	139
27.	27	122
28.	19	115
29.	21	91
30.	21	125
31.	20	150
32.	22	150
33.	23	120
34.	21	84
35.	21	133
36.	27	99
37.	26	85
38.	27	150
39.	30	62
40.	42	156
41.	27	126
42.	28	150

43.	26	110
44.	28	147
45.	48	150
46.	23	65
47.	29	148
48.	35	195
49.	49	262
50.	27	171
51.	25	102
52.	30	120
53.	29	105
54.	42	215
55.	41	156
56.	31	105
57.	31	148
58.	26	125
59.	29	148
60.	27	122
Total		7860

Total volume (60 volunteers): 7860 μ l

Mean volume of one *Bindu*: 131 μ l = 0.131 ml

Standard deviation (SD): +/- 35.91 μ l

Range: 62 μ l to 262 μ l

Standardized dose (8 *Bindu*): 0.131ml* 8 = 1.048ml

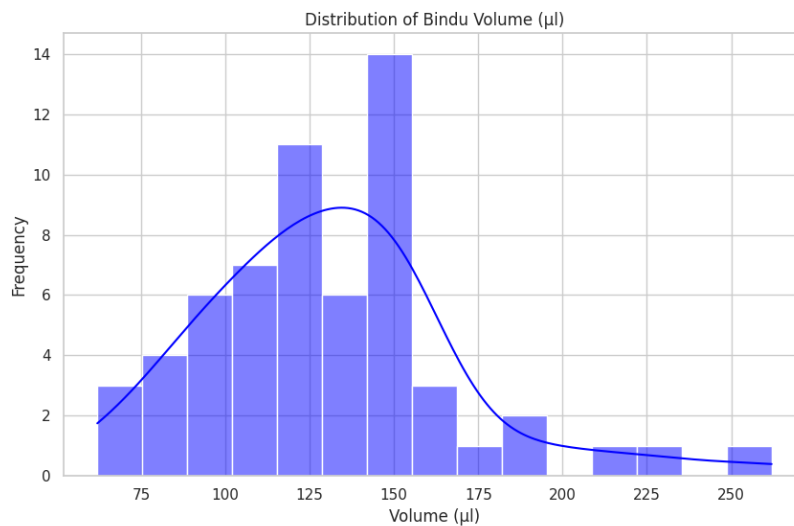
In the study, *Bindu pramana* for *Ksheera-nagara Nasya* is calculated and standardized as 131ml with a standard deviation of +/- 35.91 μ l. According to *Vagbhata, Uttamamatra* of *Nasya* with *Kalkadravya* is 8 *Bindu* and this dose was selected for intervention. The final calculated dose for standardized 8 *Bindu pramana* dosage for doing *Nasya karma* considered as 1.048ml.

Table 3: Frequency Distribution of *Bindu Pramana* of 60 Participants

S.No	Measurement range(in μ l)	Total number of persons in corresponding value
1	60-69	2
2	70-79	1
3	80-89	4
4	90-99	4
5	100-109	5
6	110-119	4
7	120-129	11
8	130-139	5
9	140-149	6
10	150-159	11
11	160-169	1
12	170-179	1

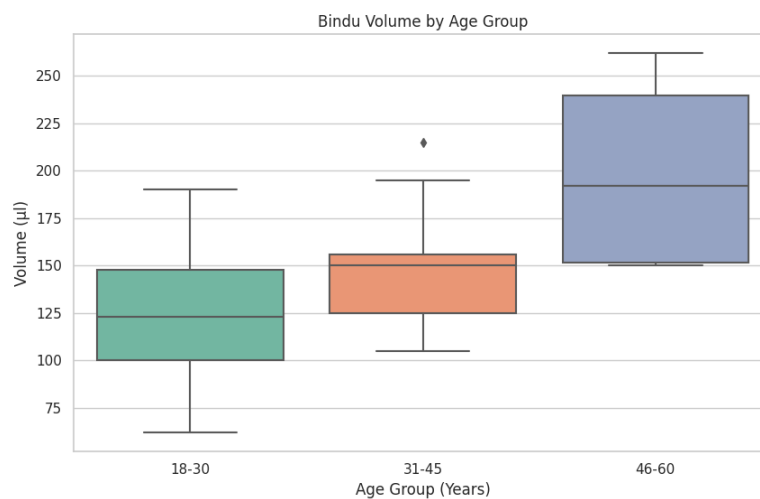
13	180-189	0
14	190-199	2
15	200-209	0
16	210-219	1
17	220-229	0
18	230-239	1
19	240-249	0
20	250-259	0
21	260-269	1

Graph 1: Histogram showing the frequency distribution of *Bindu pramana* of 60 participants



The histogram shows that the majority of participants had a *Bindu* volume concentrated between 100µl and 150µl.

Graph 2: Boxplot showing the *Bindu pramana* across the age groups



The bar chart highlights the progressive increase in mean *Bindu* volume across advancing age groups.



Figure 1: Ksheera



Figure 2: Nagara

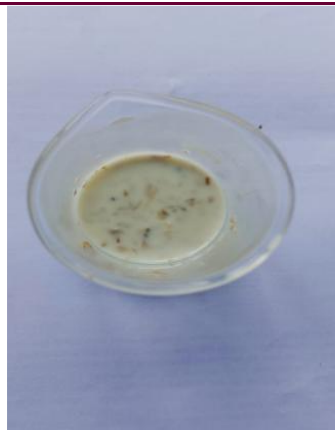


Figure 3: Boiled milk added with Nagara



Fig 4: Measuring the Bindu pramana using a micro pipette

DISCUSSION

The present study was undertaken to establish a standardized dose of *Bindu pramana* for *Ksheera-nagara Nasya*, which is essential for ensuring accuracy, reproducibility, and safety during clinical interventions, especially in conditions like *Shirasula*.

The method of dipping the right index finger up to the proximal interphalangeal joint provided a practical and uniform technique to measure one *Bindu*, aligning with classical references that describe *Bindu* as the whole amount of liquid that naturally drips off from the fingertip after immersion. To ensure high precision, measurements were recorded in microliters using a calibrated micropipette. By conducting three consecutive measurements for each of the 60 healthy volunteers and calculating the mean, intra-individual variability was minimized. The grand mean derived from all participants enabled the establishment of a reliable standard, one that is applicable across individuals, with minimal subjective variation. The final standardized value of 0.131ml for one *Bindu* closely aligns with the descriptions of *Bindu* as a small and consistent unit of liquid measurement.

The study observed that the majority of participants' *Bindu* volumes were concentrated between 100 and 150 microlitres. An interesting physiological trend was noted: a progressive increase in mean *Bindu* volume across advancing age groups. This suggests that age-related changes in skin texture or finger surface area may influence the volume of liquid retained, highlighting the necessity of a broad-based mean value for standardization.

Furthermore, according to *Vagbhata*, the *Uttama matra* of *Nasya* with *Kalka dravya* is 8 *Bindu*. Applying this classical reference to the standardized

Bindu value resulted in a final calculated dose of 1.048ml for administering *Ksheera-nagara Nasya*. This standardization supports uniform clinical practice and allows future studies to reproduce and compare outcomes more accurately. It also bridges the traditional qualitative measure of *Bindu* with a quantified scientific approach.

CONCLUSION

The study successfully standardized the *Bindu Pramana* for *Ksheera-nagara Nasya* using a simple, reproducible method validated in 60 healthy volunteers. The mean value of one *Bindu* was determined as 0.131ml, and based on the classical *Uttama matra* of 8 *Bindu* for *Ksheeranagara kalka dravya Nasya*, the final standardized dose for therapeutic administration was determined to be 1.048ml. This standardization provides a reliable dosing guideline for clinical practice and research, ensuring precision in *Nasya* therapy for the management of *Sirasula* and promoting consistency in Ayurvedic therapeutic protocols.

REFERENCES

1. Pattil Vasand C, Essentials of practical Panchakarma therapy, 1st edition, New Delhi-Chawkhamba publications, 2015, P:363
2. Harisastri Paraadakara vaidya, editor. Ashtaanga Hridaya by Vagbhata with Sarvaangasundara and Ayurveda Rasayana Commentary. 10th edition. Varanasi: Chaukhambha Orientalia, 2014. Sootra sthaana 20/9-10; p. 289
3. The Ayurvedic Pharmacopoeia of India. Delhi: The Controller of Publications Civil Lines; 2011. 291.

4. Nagalakshmi B, Vinaykumar KN. A study on standardization of Bindupramana in Nasya Karma. J Ayurveda Integr Med Sci 2020; 5: 48-54
5. Chaturvedi P, Borkar S, Baghel C. Standardization of Sneha Nasya Matra by Bindupramana of Taila and Ghrita. J AyuInt Med Sci 2022; 7: 13-7
6. Lakshmi BR, Yadahalli A, Desai SL. Standardization of Bindupramana of Nasya with respect to commonly used Tailayogas. Int J Ayu Pharm Chem 2020; 13: 167
7. Rani R, Purohit P, Vakil F, Kori VK, Patel KS. Standarization of Bindu as drop wsr Panchendriya Vivardhna Taila. Eur J Biomed 2017; 4: 633-5
8. Indian Journal of Ayurveda and Integrative Medicine KLEU 4(1): p 10-13, Jan-Jun 2023. | DOI: 10.4103/ijaim.ijaim_3_23
9. Yogeshwar R Chippa, Sachin S Chandaliya, Varsha N Sane, Pournima Daware, Mayura Jadhav. Standardization of Bindu for Nasya. International Journal of Advanced Research (2016), Volume 4, Issue 4, 895-901
10. Sreeja. V. S & Vikram Kumar: Standardization Of Nasya Dose By Bindu Pramana With Karpasastyadi Taila. International Ayurvedic Medical Journal {online} 2021 {cited June, 2021} Available from: http://www.iamj.in/posts/images/upload/1200_1204.pdf
11. Kalyani P. Kharat, Ganesh S. Barahate, A critical analysis on need of standardization of doses in Panchakarma, ADJIM 2018: 3(2), p. 07-11.
12. Pahwa Preeti, Negi Aman, Negi Sangyasri, Ashu. Standardization of Bindu Pramana for Different Kalpanas of Nasya. AYUSHDHARA, 2024; 11(3): 189-192.
13. Yogaratnagara, Asha Kumari, Tewari Premavati, 1st edition, A complete treatise on Ayurveda Yogaratnakara, Vol 2, Sirorogadhikaram-66, Verse-72, Varanasi, Chaukhambha viswabharati, 2010, P:1064.
14. Dr Jyothimitra Acharya editor, Astangasangraha by Vagbhata with Sasilekha Commentary by Indu; Varanasi Choukhambha Sanskrit series office; editors; sutrasthana 29/2; p.223
15. Sharngadhara, Pillai Gopala Anekkaleelil S., Sharngadhara Samhita Hridayapriya Vyakhya (Malayalam), Uttarakhand, Nasyavidhi: 8, Verses 9-10. 8th Reprint Edition, Kodungallur: Devi Book Stall; 2010. p.361.
16. Vagbhata, Sreekumar T, 9th edition Ashtanga hridaya of Vagbhata, Vol 2, Sutrastana, Nasyavidhi: 20, Verse: 9-10., Thrissur-Harisree Publications, 2021, P:107.

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