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Research Article

A CROSS-SECTIONAL SURVEY STUDY AMONG *PANCHAKARMA* PRACTITIONERS ON THE PRACTICES OF *NASYA KARMA* WITH *GOKARNA*

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ABSTRACT

Nasya karma (medication through the nasal route) is one of the *Panchakarma* in which medicine is delivered through the nose for various purposes, which include eliminating excess *Doshas* (regulatory functional factors of the body) or pacifying them. This study explored the various practices of *Nasya karma* with *Gokarna* (a hand-held instrument that can hold a small amount of liquid) among *Panchakarma* practitioners. A descriptive cross-sectional survey was conducted in the form of a self-administered questionnaire containing 28 questions through Google forms among 125 *Panchakarma* practitioners of India. The questionnaire was validated and pretested before being circulated. A total of 125 *Panchakarma* practitioners participated in the survey. Considering some of the usage conveniences, 107 of 125 participants raised the requirement for an innovative device for *Marsha Nasya* to overcome the ambiguities. The study could provide some valuable insights into the current practices and detailed perspectives of *Panchakarma* practitioners regarding the practices of *Nasya Karma* with *Gokarna.* The findings shed some light on the scope of future research on a device that incorporates modern technology to ensure precise temperature control, accurate dosage measurement, hygienic application and controlled delivery, aligning with the principles of Ayurveda.

INTRODUCTION

Nasya Karma (medication through the nasal route) is one among the *Panchakarma*, where medicine is delivered through the nose.[1] Medication through the nasal route spreads into different parts of the head and cures diseases located there.[2,3] The detailed description of the preoperative procedures, dosages[4-6], temperature of the medicine, instillation specifications and post-operative measures are all given meticulously in classical textbooks.[7][8] Currently, various instruments are used for medicine administration, like *Gokarna* (a hand-held instrument that can hold small amounts of liquid) [Fig. 1], dropper, cotton, etc.

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Fig.1- *Gokarna*

Intranasal administration is an emerging attractive option for local and systemic delivery of many therapeutic agents.[9] Compared to other mucosae, the nasal mucosa is easily accessible. Intranasal drug administration is non-invasive, essentially painless, and particularly suited for children.[10] Over the past 10 years, the interest in intranasal drug delivery in pharmaceutical research and development has increased.[11,12,13,14]

In Ayurveda, *Nasya Karma* is performed for different purposes, including eliminating excess *Doshas* (regulatory functional factors of the body), pacifying *Doshas*, or nourishing them.[15,16] According to the purpose, the drug of choice and the amount of

medication changes.[17,18] So currently, when the dosage differs, we use the available instruments for instillation.

The current *Panchakarma* post-graduates need to be encouraged to adopt the latest medical research in their work so that it becomes fruitful. This includes modifying the existing instruments in practice into more user-friendly and efficient ones. Reducing the waste of precious resources while performing treatment shall also be one of the purposes. Scholars have immense opportunities to explore this area and do collaborative research with biomedical engineers to bring solutions to the requirements we face in *Panchakarma* especially related to the standardization of procedures.[19] There are numerous areas in *Panchakarma* where the role of instruments can make a huge impact on the patient care system, making it more hygienic and uniform. The syllabus proposed by NCISM (National Commission for Indian System of Medicine) for Post-Graduation also gives importance to this area. It is important to collect the practical insights of the existing methods before we look into the scope for a modified method or instrument. As there are no data on this perspective, this study holds its value.

The objective of the study was to explore the perceived benefits and challenges practically encountered by *Panchakarma* practitioners of India during the administration of *Nasya* with *Gokarna*.

MATERIALS AND METHODS

An online survey study was carried out using self-administered questionnaire through Google forms among 125 *Panchakarma* Practitioners of India, taking guidelines from CHERRIES checklist on EQUATOR network, which is specific for online surveys.

Development of survey questionnaire

A structured questionnaire was systematically developed following an extensive review of relevant literature and underwent rigorous face and content validation by a panel of esteemed *Panchakarma* experts. Revisions were implemented following their recommendations, resulting in a thoroughly validated instrument hosted on Google Forms. Prior to dissemination, the finalised questionnaire was subjected to a pilot study involving 15 *Panchakarma* experts to assess its reliability. The reliability coefficient was calculated at 0.721, reflecting an acceptable level of internal consistency.[20] Notably, the responses obtained during the pilot study were excluded from the final analysis to maintain the integrity of the findings.

Study type

Descriptive cross-sectional study

Study setting

The survey was carried out online

Population

Inclusion criteria

Registered *Panchakarma* practitioners in India who had completed their Post-graduation in *Panchakarma.*

Exclusion criteria

Those who have not completed Post-graduation in *Panchakarma* or those with BAMS degree were excluded.

Sampling and sample size

Considering the dispersed nature of the population, a convenient non-probability snowball sampling technique was chosen. The sample size was calculated using Cochran's formula, as the population size was unknown. The sample size was obtained as 118.567. (Rounded off to 120) [21]. The data was accumulated from 125 participants.

Structure of the Questionnaire

The questionnaire used to gather the data from the *Panchakarma* practitioners included 5 closed-ended multiple-choice questions. The rest of the questions followed a 5-point Likert scale.

The finalised questionnaire was framed into 6 sections as given in Table 1.

Table 1: Details Included in the Final Questionnaire

S.No	Domain	Number of questions	Specification
1.	General	3	To identify which instrument was used to perform *Nasya karma* by the physician.
2.	*Poorvakarma* (pre-operative procedures)	8	Related to the pre-operative procedure like warming and measuring of medicine while using *Gokarna.*
3.	*Pradhana karma* (main procedure)	7	How *Gokarna* was used for instillation of medicine while performing *Nasya karma*.
4.	*Paschath karma* (post-operative procedures)	4	Related to post-operative procedures like cleaning etc.
5.	Rating for *Gokarna*	6	To gather the rating for *Gokarna* on the different

			aspects while performing *Nasya.*
6.	Prime question	1	To understand the scope of biomedical engineering in *Nasya karma*

Fielding of the questionnaire

The survey link (Google form) was disseminated among the *Panchakarma* practitioners and was confirmed initially via personal contacts and professional networks. Snowball sampling facilitated participant referral among peers and contacts. The participants' informed consent was obtained voluntarily, after which they were informed that their data would be used exclusively for research purposes while their confidentiality and anonymity would be preserved. The survey link was open till the target of 125 responses was achieved which stretched from January 23rd to February 13th, 2024. The non-participation data was not considered as the data collection was stopped once the sample size was achieved.

Data management and analysis

The survey data was scrutinised question by question and only descriptive statistics (percentages) were used for analysis using MS Excel.

Ethical considerations

1. Approval of the Institutional Ethics Committee was obtained (PGT/7/-A/Ethics/2023-24/760 (issued by IEC, ****, ********) dated 03/07/2023
2. The confidentiality and anonymity of the respondents were protected.

Results of Survey

The general domain results revealed that 78.4% of respondents use *Gokarna* as the instrument to perform *Nasya* for patients at their hospital. Dropper is the next most common instrument used at 16.8%. Only 1.6% use other instruments like syringe, *Gokarna* with wick and others. The top reasons documented for not using a *Gokarna* were that it requires skilled personnel to administer properly, difficulty in measuring accurate doses, and 22.45% stated it was due to the non-availability of the same.

Table 2: Questions Included in the General Domain

1.	Which instrument is used to perform *Nasya* for patients in your hospital?	*Gokarna* (78.4%)	Dropper (16.8%)	Syringe (1.6%)	*Gokarna* with wick (1.6%)	Other (1.6%)
2.	*Gokarna* made from which of the below mentioned material is used in your hospital?	Bronze (40%)	Steel (54.167%)	Others (5.8%)		
3.	If you are not using *Gokarna*, kindly choose the reason for the same	Non-availability (22.45%)	Administration requires skilled personnels (30.61%)	Measuring dose is difficult (30.61%)	Others (16.33%)	

The complete description of the participant's responses to the *Poorvakarma* domain, *Pradhana karma* domain and *Paschath karma* domain is shown in Tables 3, 4, and 5, respectively.

Table 3: Questions included in the *Poorvakarma* domain (pre-operative procedures)

		Always	Often	Sometimes	Rarely	Never
4.	Do you measure and take the dose for each nostril in *Gokarna*?	63.415%	7.32%	17.07%	5.7%	6.5%
5.	Do you use two separate *Gokarnas* for taking the dose of medicine for each nostril?	26.613%	2.42%	10.48%	7.26%	53.23%
6.	Do you warm the medicine before performing *Nasya*?	88%	8.8%	3.2%	0%	0%
7.	Do you check the warmth of the medicine before administering the same?	77.6%	6.4%	5.6%	4.8%	5.6%
8.a	Do you notice left over medication in the *Gokarna*, heating vessel and measuring vessel?	20.8%	30.4%	22.4%	13.6%	10.4%

8.b.	Do you take more medication to keep your dosage consistent after making up for losses from heating vessels, etc.?	19.51%	21.14 %	17.89%	16.26%	25.20%
9.	How is the dose for each nostril measured and taken into the *Gokarna*?	Using syringe (61.6%)		Without instrument (15.2%)		Other (23.2%)
10.	When do you warm the medicine before performing *Nasya*?	Before taking in the *Gokarna*? (65.85%)		After taking in the *Gokarna*? (34.15%)		

Table 4: Questions included under the *Pradhana karma* domain (main procedure)

		Always	Often	Sometimes	Rarely	Never
11.	Do you pour the medicine directly from *Gokarna*?	69.105%	13.01%	6.504%	2.44%	8.94%
12.	Do you use wick in *Gokarna* while instilling the medicine into nostril?	7.377%	4.098%	8.943%	9.84%	69.106%
13.	Does the entire medicine get instilled in a single stream into the nostril?	34.96%	35.77%	13.82%	5.69%	9.756%
14.	Is it hard for beginners to execute *Nasya* with *Gokarna*?	15.32%	25.81%	37.1%	9.677%	12.1%
15.	Are there chances of medicine spillage to other areas while performing *Nasya*?	4.8%	12.8%	48%	24.8%	9.6%
16.	Have you observed that there are chances of a patient getting injured because of mishandling of *Gokarna*?	0%	4%	28.8%	32%	35.2%
17.	Have you noticed that during performance of *Nasya* using *Gokarna*; the person should be skilled to instill the dose in a single stream (*Avichinna dhara*) into the nostril?	Yes (96.77%)			No (3.2%)	

Table 5: Questions included under the *Paschath karma* domain (post-operative procedures)

		Never	Rarely	Sometimes	Often	Always
18.	Do you sterilize the *Gokarna* before using?	13.93%	7.38%	7.38%	15.57%	55.74%
19.	Have you dealt with any other hygiene issues when the same *Gokarna* was used for different patients?	50.41%	19.01%	20.66%	6.61%	3.31%
20.	Does using *Gokarna* make the entire procedure time consuming (Cleaning, warming, measuring)?	17.36%	9.92%	29.75%	26.45%	17.36%
21.	Do you think a new instrument is required instead of *Gokarna* which is easy to use?	9.17%	5%	31.67%	15.83%	38.33%

Table 6: Questions asked for rating the *Gokarna*

		Poor	Bad	Average	Good	Excellent
22.	How much do you rate the convenience of using *Gokarna* to perform *Nasya*	3.25%	0.81%	40.65%	45.53%	9.76%
23.	How do you rate the accuracy of measurement taken in *Gokarna*?	4.88%	9.76%	50.41%	31.71%	3.25%
24.	How do you rate *Gokarna* for its direct instilling of medicine without wastage?	6.50%	7.32%	56.10%	25.20%	4.88%

25	How do you rate *Gokarna* for its direct instilling of medicine without spillage?	1.63%	13.01%	45.53%	31.71%	8.13%
26.	How do you rate *Gokarna* for its hygiene concerns?	5.69%	8.13%	46.34%	34.96%	4.88%
27.	How easy is it to clean *Gokarna?*	Very difficult -----	Difficult 11.38%	Moderate 41.46%	Easy 37.40%	Very Easy 9.76%

Table 7: Prime question

How much you are indent to develop a new instrument to overcome all drawbacks of existing one?				
Hardly required 9.6%	Little required 4.8%	Moderate 19.2%	Required 45.6%	Most required 20.8%

Thereby 85.83% of *Panchakarma* practitioners intend to develop a new instrument to overcome all the said issues of the existing one. (Fig.2)

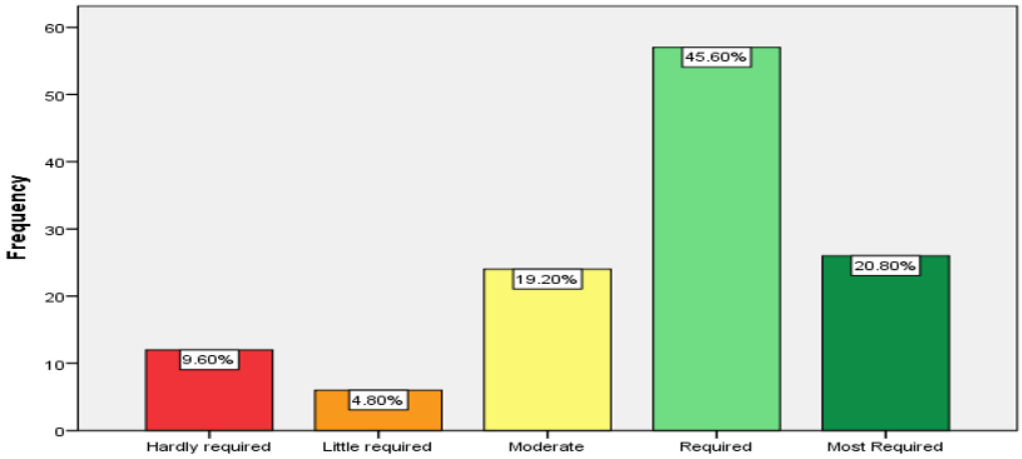

Fig.2 Response to the prime question, how much do they intend to develop a new instrument to overcome the drawbacks of the existing one.

DISCUSSION

To the extent of our knowledge, this is the first survey conducted in India available on an open platform that inspects the various aspects of performing *Nasya karma* with *Gokarna* by *Panchakarma* practitioners. A total of 125 *Panchakarma* post-graduates, who practise *Panchakarma* participated in this survey.

The present study revealed that 78.4% of practitioners used *Gokarna* as the instrument to perform *Nasya* for patients at their hospital. 65.85% of them warmed the medicine before taking it in *Gokarna* for performing *Nasya,* possibly because most medicines *Avartita taila's* (a *samskara* or procedure done for *Sneha* which has a great role in making the formulation better with increased therapeutic efficiency) like *Ksheerabala (101*), *Ksheerabala*[21] *Ksheerabala*[7] etc. comes in plastic dropper bottles. Moreover, some medicines like *ghrita* preparations solidifies in plastic bottle making it necessary to warm them to bring them out. So, the entire procedure of taking the medicine after warming, checking the temperature and instillation goes through a certain amount of resource wastage as well as time. To avoid this, if one attempts to do it from the medicine dropper bottle, measurement of dose and instillation in a continuous stream (*Avichinna dhara*)[22] is not possible. Also, heating these plastic dropper bottles doesn't seem safe unless they are of high quality. Ideally, if the medicines are available in glass bottles, it will be more convenient to warm and take out the medicine. About 73.6% of participants noticed leftover medication in the *Gokarna* after instillation which can be a great concern regarding our resources, and hence, 58.54% of physicians take more medication to keep the dosage consistent after making up for losses from heating vessels etc.

78.23% of participants mentioned that it is hard for beginners to execute *Nasya* with *Gokarna,* as

there are greater than 50% chance of spillage of medicine to other areas while performing *Nasya*. The same chance is noticed for a patient getting injured because of the mishandling of *Gokarna* (if made with steel). 73.56% of participants stated that the *Gokarna* makes the entire procedure time-consuming (cleaning, warming, measuring). This is a major concern if there are more patients for *Marsha Nasya karma* in a day.

The rating for *Gokarna* included six questions, which revealed the following data. Regarding the usage convenience of *Gokarna,* it was revealed that 45.53% of participants rated it as good, whereas 40.65% rated it as average. It was observed that half of the participants (50.41%) reported the accuracy of measurement of medicine taken in *Gokarna* was average whereas, 3.25% of them said it was excellent. Regarding the view on direct instillation of the medicine without wastage, more than half the participants (56.10%) rated *Gokarna* as average whereas, 4.88% of individuals rated it as excellent. Often, the most difficult part of doing *Nasya* is the direct instillation of medicine without spillage, 8.13% of participants rated *Gokarna* as excellent and 45.5% rated it as average. For hygiene concerns, *Gokarna* was rated excellent by 4.88% of participants and average by 46.34%. Considering these difficulties, 107 of 125 participants raised the requirement for an innovative device for *Marsha Nasya* to overcome these ambiguities.

The survey put on view that the practice of *Nasya karma* is often compromised in certain areas, like the administration of the actual procedure. *Bindu* is the unit of dose as per classical textbooks [23], and 1 *Bindu* has been standardized into 0.5ml.[24] Some practitioners still misunderstand *Bindu* as drops and they instil *Nasya* as drops. However, measuring the dose in millilitres (ml) and delivering it in a continuous stream to each nostril may yield more results, as it is the correct way to administer it. This particular aspect is mostly compromised in *Marsha Nasya* because of the time it consumes in measuring and instilling.

Like any surgical procedure, *Panchakarma* practices need to be standardized step-by-step. [19] Not just the procedure, the instruments involved in these procedures need to be standardized after checking the efficiency with special regard to ease in administration, hygiene, reducing wastage of resources and primarily whether the purpose is served. This survey revealed that the procedures followed during the practice of *Nasya* and the instruments used in current practice vary among the practitioners. In conclusion, warming the medicine, measuring the same, instilling in a stream-like manner without spillage and cleaning are some of the prime practical difficulties practitioners face while performing *Marsha Nasya,* which a new instrument or an existing instrument can be modified to address. We could focus on the patient care delivery system, which will have a psychological influence on the healing process, for this, we could adopt new technologies to make the whole procedure comfortable.

Limitations

Since the study was a data collection on the perceived benefits and challenges practically encountered by *Panchakarma* practitioners of India during the administration of *Nasya* with *Gokarna*, no comparison was made to other methods. If only we had a comparison study, we could conclude the relative effectiveness. Non-probability convenience sampling was done, so the sample selected might not be a true representative of the population, raising the chances of selection bias in this study. Moreover, the responses were validated by individuals and not by observing their practices. There are possibilities of self-reporting bias. Hence, more ethnographic studies are needed to understand the differences in procedures followed at different places in India. Though it has all these limitations, it still holds value as this is one of the first attempts to record the various practices (refer to Q. No. 5, 10, 11, 12 in questionnaire) of *Nasya karma* with *Gokarna.*

CONCLUSION

The survey study provides findings that shed some light on the scope of future research on devices that incorporate modern technology to ensure precise temperature control, accurate dose measurement, hygienic application and controlled delivery aligning with the principles of Ayurveda. This shall assist in maintaining standard practices. There are remarkable opportunities for research in developing modified instruments for *Panchakarma*, as this area remains largely unexplored.

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