**Research article (Award paper)**

# A comparative study of *balamoola kashayam pana* with and without *karpasyadhi taila nasya* on *apabhabuka* with a special reference to frozen shoulder

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## ABSTRACT

**Introduction and Aim**: When changes in lifestyle, environment, and social structure occur throughout time with a predominance of certain symptoms and virulence, diseases arise. Whatever the illness, it becomes a serious issue for society and affects both social and professional activity. One such symptom that has afflicted people since the dawn of time is pain. There are many distinct places where pain can appear and come from. An estimated 16% to 26% of shoulder discomfort cases are self-reported. The goal is to find a treatment that will lessen a person's discomfort, decrease their level of dependency, and improve their quality of life by increasing their mobility and reducing their disability. Frozen shoulder is one of these clinical conditions where *nasya* with oral medication can be prescribed.

**Materials and Methods:** In this study patients in Group B received *balamoola kashaya pana* with *karpasyadhi taila as nasya*, in contrast to those in Group A who received *balamoola kashaya pana* only.

**Results:** After completion of 30 days, it was observed that the effect of treatment in Group B is more significant against most of the clinical parameters taken to assess the efficacy of treatment with p value <0.001.

**Conclusion:** After trial it can be concluded that *nasya* along with *balamoola kashaya pana* is more effective in the management of *Apabahuka* (Frozen shoulder).

**Keywords:** *Apabahuka*; frozen shoulder; *karpasyadhi taila*; *nasya*.

## INTRODUCTION

Ayurveda aims to protect the human beings from various diseases to have a disease-free healthy society. *Samshodhana chikitsa* (Biopurification) followed by *Samshamana* (Palliative) *Chikitsa* has been explained to cure as well as to prevent recurrence is unique in Ayurveda.

Administration of medicine through the nose is known as *nasya*. In the context of *nasya* the importance of *shiras* is also having to be considered as mentioned in *Ashtanga Sangraha*, '*Nasa hi shiraso dwaram*'.

Shoulder pain is thought to be self-reported in between 16% and 26% of people. About 1% of adults visit a general practitioner each year with new shoulder pain, making it the third most frequent reason for musculoskeletal consultation in primary care. A shoulder clinic sees 5% of new patients per month with complaints of glenohumeral problems like frozen shoulder.

In this study, a clinical trial has been carried out in two groups, having 20 patients in each. *Balamoola kashaya* has been administered orally in the Group A patients whereas *Karpasyadhi taila* has been administered as *nasya* along with *bala moola kashaya pana* in Group B with an objective to compare the efficacy of the treatment in both the groups. After completion of 30 days, it was observed that the effect of treatment in Group -B is more significant against all the clinical parameters taken for the study. It can be concluded that *Nasya* along with *Balamoola kashaya pana* is more effective in the management of *Apabahuka* (Frozen shoulder).

## MATERIALS AND METHODS

Registration of forty-five patients was done from the OPD and IPD of S.V.M. Ayurvediac Medical College and research center, Ilkal, Karnataka. Out of which 5 were dropouts as they were unable to attend the follow-up and 40 patients were subjected for clinical trial excluding dropouts.

Both *Balamoola Kashayam* and *Karpasyadhi Taila* were prepared in the teaching pharmacy of *Rasashastra* and *Bhaisajya Kalpana* Department of S.V.M. Ayurvedic Medical College, Ilkal.

### Data collection

40 patients fulfilling the inclusion criteria were selected using random sampling technique.

### Study design

It is an open, random sampling, comparative clinical trial, where 40 patients were divided in two groups A & B having 20 patients in each group. Clinical trial

has been initiated after obtaining the ethical clearance from institutional ethical committee. Patients were diagnosed on basis of following features:

- *Bahushoola* (pain in arm)
- *Bahusthamba* (Stiffness in arm)
- *Bahupraspanditahara* (Restricted flexon and extension of the arm)

**Inclusion criteria**

- Age group between 16 to 60 years of both the sex. Patients presented with cardinal features of *apabahukam* vis – a- vis frozen shoulder as mentioned in diagnostic criteria.

**Exclusion criteria**

- The patient having fractures and dislocation in the shoulder region.
- Pain in shoulder due to other systemic illness like emphysema, cardiac problems, hemiplegia.

**Duration of treatment**

Trial drug was given for 30 days followed by 30 days of follow-up.

Total duration of treatment was 60 days. The patients were assessed before treatment, on $15^{th}$, $30^{th}$ and $60^{th}$ day after administration of trial drug.

**Grading standards**

*Apabahuka's* cardinal clinical characteristics, including subjective symptoms and objective indicators, were graded according to severity. According to the guidelines of Constant and Murley, where the points are transformed into grades for the study's convenience, the functional evaluation and pain of the shoulder joint were performed.

**Table 1:** Posology

| Groups | Sample Size | Intervention | Duration |
|---|---|---|---|
| Group A | 20 | *Balamoola kashay*am (96 ml) bd before food with *Saidhavam*(1.25gm) | 1 month |
| Group B | 20 | *Karpasyadhi tailam nasyam* (8 bindus) with *balamoola kashayam* bd before food. | 7 days (alternative days*) nasyam.*1-month *kashayam.* |

Written consent was taken from each patient before subjecting to clinical trial.

**Table 1:** Assessment of cardinal features of *apabahuka*

| Sl. no | Parameter | Finding | Points |
|---|---|---|---|
| **1.** | Rigidity | No Rigidity | 15 |
| | | Mild Rigidity – ability to carry on with ordinary tasks, especially during shoulder movements. | 10 |
| | | Moderate Rigidity – With difficulty, one can carry on with ordinary tasks after shoulder motions. | 5 |
| | | Severe Rigidity – Rigidity that is felt when moving and while at rest that interferes with daily tasks | 0 |
| **2.** | **Range of joint motions: Goniometry is used to measure actual range of joint movements.** | | |
| | Flexion | The arm resting on the side of the body with the palms facing medially is treated as 0 degrees when measuring the range of flexion when supine. | |
| | Extension | The arm resting on the side of the body with the palms facing medially is at 0 degrees of extension when measuring the range of extension in the prone position. | |
| | Abduction | The arm resting on the side of the body with the palms facing medially was taken as 0 degrees when measuring the range of abduction while the subject was lying on their back. | |
| | Internal rotation | The elbow was in 90 degrees of flexion with the palms pointing medially, and the range of internal rotation was measured while the subject was lying on their back with their shoulders abducted by 90 degrees. | |
| | External rotation | The range of external rotation was measured while the subject was lying flat on their back, their shoulders were abducted by 90 degrees, and their elbows were bent 90 degrees with their palms facing medially. | |

**Table 2:** Functional assessment of shoulder joint

| Criteria | | Observation | Grade Points |
|---|---|---|---|
| **1.** | **Pain** | **No pain** | 15 |
| | | Mild pain | 10 |
| | | Moderate pain | 05 |
| | | Severe pain | 00 |
| **2.** | **Positioning of hand (ADL)** | Over the head | 10 |
| | | Right to the top of the head | 08 |
| | | To the neck | 06 |
| | | To the xyphoid | 04 |
| | | To the waist | 02 |
| | | Unable to lift to waist | 00 |
| **3.** | **Elevation in forward plane** | 151° to 180° | 10 |
| | | 121° to 150° | 08 |
| | | 91° to 120° | 06 |
| | | 61° to 90° | 04 |
| | | 31° to 60° | 02 |
| | | 0° to 30° | 00 |
| **4.** | **In the lateral plane elevation** | 151° to 180° | 10 |
| | | 121° to 150° | 08 |
| | | 91° to 120° | 06 |
| | | 61° to 90° | 04 |
| | | 31° to 60° | 02 |
| | | 0° to 30° | 00 |
| **5.** | **Rotating internally** | hand's dorsum to the interscapular area | 10 |
| | | hand's dorsum to the twelfth dorsal vertebra | 08 |
| | | from the dorsum of the hand to the third lumbar vertebra | 06 |
| | | hand's dorsum to the lumbosacral junction | 04 |
| | | hand's dorsum to the buttocks | 02 |
| | | hand's dorsum to the side of the thigh | 00 |
| **6.** | **External Rotation** | elbow held forward and handheld behind the head | 02 for Yes; 00 for No |
| | | with elbow held back and hand behind head | 02 for Yes; 00 for No |
| | | elbow held forward and hand placed on top of head | 02 for Yes; 00 for No |
| | | elbow held back and hand on top of head | 02 for Yes; 00 for No |
| | | complete elevation of the head | 02 for Yes; 00 for No |
| 7. | **Daily Life Activities** | able to do full work | 4 for Yes; 0 for No |
| | | able to do full recreation and sport | 4 for Yes; 0 for No |
| | | sleep unaffected | 2 for Yes; 0 for No |
| Power = Pounds held at a 90-degree angle up to 25 pounds equals power points (pounds held at a 90-degree angle / 25) * 25. Daily Life Activity | | | |
| •The amount of pull that the patient can withstand during abduction up to a maximum angle of 90 degrees is used to measure power.<br>• A 25-year-old man's normal shoulder can easily withstand 25 pounds and receives 25 points.<br>• Less weight lifted results in correspondingly fewer points being scored. | | | |
| Sum of scores = Addition of all points used for the assessment | | | |
| • Minimum score is 0 and maximum score is 100. The greater the score, the more functional the shoulder is. | | | |

## RESULTS

The mean difference percentage between BT and AF was 333.33% for Group B shows the medication prescribed for Group B worked effectively on reducing pain when compared to Group A (Fig. 1). With respect to flexion, the p-values for BT and AF between Group A and Group B obtained using the Paired Sample t-Test were 0.0093 and 0.0017, which is statistically significant (Table 4), The p-values for abduction AT30 and AF were (0.0017 and <0.0001) between Group A and Group B that is statistically significant (Table 5), The p-values with respect to internal rotation for AT15, AT30, and AF (0.016,

<0.0001, and <0.0001) between Group A and Group B which was a significant mean difference between Group A and Group B (Table 6), The external rotation AT15, AT30, and AF p-values between Group A and Group B show that there was a significant mean difference between Group A and Group B (0.016, 0.0001, and 0.0001, respectively) (Table 7), The patients in Group B performed well on the power test, as seen by the higher percent mean difference for Group B (164.96%) compared to Group A. (Fig. 2). On the whole task, there were no discernible mean differences between Group A and Group B for BT, AT15, AT30, and AF (Table 8), The entire leisure and sports AT30 and AF p-values between Group A and Group B were less than 0.05, indicating that the means were substantially different (Table 9), The AT30 and AF p-values between Group A and Group B were less than 0.05, indicating that there were significant mean stiffness differences between the two groups (Table 10).

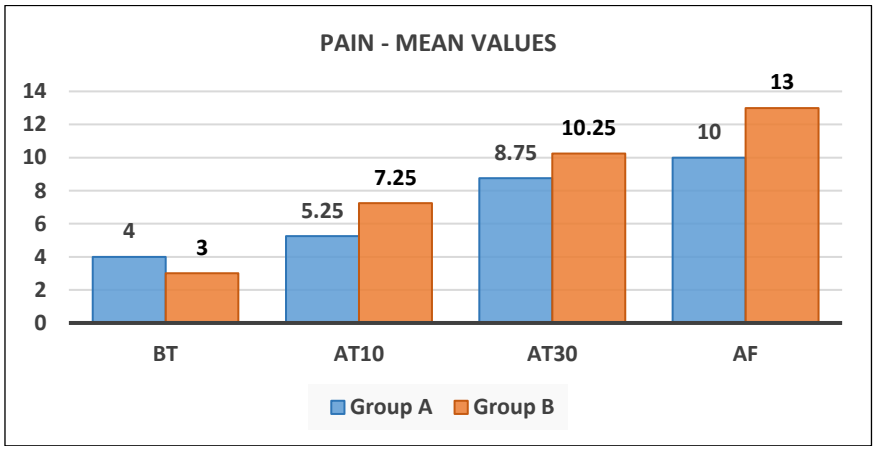


**Fig. 1:** Mean values for the impact of pain throughout and after the course of therapy

**Table 4:** The treatment's impact on flexion both during and after treatment

| Flexion | Trial A | | Trial B | | p-value from t-test @ 95% CL |
|---|---|---|---|---|---|
| | Mean | Standard Deviation (SD) | Mean | Standard Deviation (SD) | |
| BT | 5.7 | 2.08 | 4 | 1.84 | **0.0093** |
| AT15 | 5.8 | 2.04 | 5.7 | 1.49 | 0.8606 |
| AT30 | 6 | 1.72 | 6.9 | 1.37 | 0.0753 |
| AF | 6.1 | 1.65 | 7.6 | 1.04 | **0.0017** |
| % Mean Difference (BT-AF) | 7.01% | -- | 90% | -- | -- |

**Table 5:** Efficacy of trial drugs on abduction

| Abduction | Trial A | | Trial B | | p-value from t-test @ 95% CL |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | |
| BT | 4.6 | 1.6 | 4.7 | 2.07 | 0.8657 |
| AT15 | 4.9 | 1.77 | 5.8 | 1.57 | 0.0982 |
| AT30 | 5.6 | 1.39 | 7 | 1.21 | **0.0017** |
| AF | 5.7 | 1.34 | 7.8 | 0.89 | **<0.0001** |
| % Mean Difference (BT-AF) | 23.91% | -- | 65.95% | -- | -- |

**Table 6:** Efficacy of trial drugs on internal rotation

| Internal Rotation | Trial A | | Trial B | | p-value from t-test @ 95% CL |
|---|---|---|---|---|---|
| | Mean value | SD | Mean value | SD | |
| BT | 3.7 | 1.62 | 3.9 | 1.65 | 0.7016 |
| AT15 | 4.1 | 1.52 | 5.3 | 1.49 | **0.016** |
| AT30 | 4.7 | 1.34 | 6.6 | 1.14 | **<0.0001** |
| AF | 5.4 | 0.94 | 7.7 | 0.98 | **<0.0001** |
| % Mean difference (BT-AF) | 45.94% | -- | 97.43% | -- | -- |

**Table 7:** Efficacy of treatment on external rotation

| External Rotation | Trial A | | Trial B | | p-value from t-test @ 95% CL |
|---|---|---|---|---|---|
| | Mean value | SD | Mean value | SD | |
| BT | 3.8 | 1.7 | 4 | 1.71 | 0.7136 |
| AT15 | 4.1 | 1.51 | 5.3 | 1.49 | 0.016 |
| AT30 | 4.7 | 1.34 | 6.7 | 1.17 | <0.0001 |
| AF | 5.3 | 0.97 | 7.7 | 0.97 | <0.0001 |
| % Mean Difference (BT-AF) | 39.47% | -- | 92.5% | -- | -- |

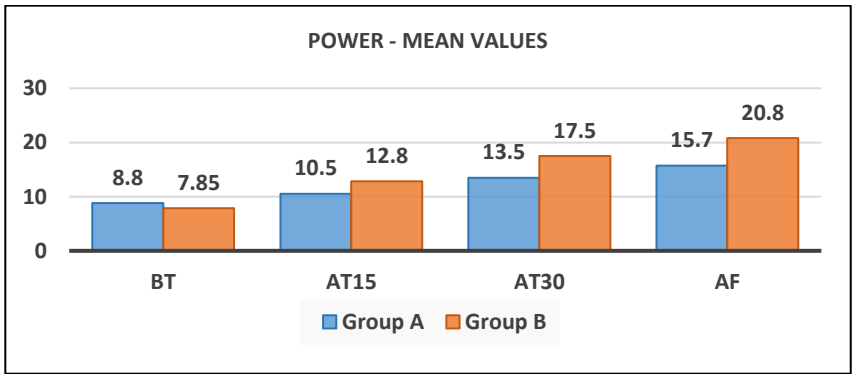


**Fig. 2:** Treatment's impact on power both during and after its course: Mean values

**Table 8:** Effect on full work

| Full Work | Trial A | | Trial B | | p-value from t-test @ 95% CL |
|---|---|---|---|---|---|
| | Mean value | SD | Mean value | SD | |
| BT | 0.4 | 1.23 | 0 | 0 | 0.1625 |
| AT15 | 0.2 | 0.89 | 0 | 0 | 0.3299 |
| AT30 | 2.8 | 1.88 | 3 | 1.77 | 0.7315 |
| AF | 3.2 | 1.64 | 3 | 1.77 | 0.7137 |

**Table 9:** Effect on full recreation and sports

| Full Recreation and Sports | Trial A | | Trial B | | p-value from t-test @ 95% CL |
|---|---|---|---|---|---|
| | Mean value | SD | Mean value | SD | |
| BT | 0 | 0 | 0 | 0 | -- |
| AT15 | 0 | 0 | 0 | 0 | -- |
| AT30 | 0.2 | 0.89 | 1.8 | 2.04 | **0.0035** |
| AF | 0.2 | 0.89 | 1.8 | 2.04 | **0.0035** |

**Table 10:** Effect on stiffness

| STIFFNESS | Trial A | | Trial B | | p-value from t-test @ 95% CL |
|---|---|---|---|---|---|
| | Mean value | SD | Mean value | SD | |
| BT | 7 | 2.51 | 5.75 | 3.35 | 0.1908 |
| AT15 | 7 | 2.51 | 8.5 | 2.85 | 0.086 |
| AT30 | 8.5 | 2.35 | 10.5 | 3.2 | **0.0308** |
| AF | 9.5 | 3.2 | 12.5 | 2.56 | **0.0024** |
| % Mean Difference (BT-AF) | 35.71 % | -- | 117.39% | -- | -- |

## DISCUSSION

The line of treatment for *Apabahuka* suggests the importance of *Nasya* in its management. Being a *Nanatmaja Vatavyadhi*, *brimhana* or *Snehana* line of treatment will have more efficacy in pacifying the disease stage. Based on these facts *Karpasastyadi taila* had been selected for *Nasya karma*. The *taila* contains *Karpasa, Bala, Masha, Rasna, Pippili moola* etc., drugs which having *Vata* as well as *Kapha hara* properties. Along with *Nasya, Balamoola kashayam* contains *bala moola* selected for oral intake as

*Shamana oushadhi*. *Saidhavam* has been added which possesses properties like *anabhishyandi*, *snigdha*, *srotoshudhikaraka* and *Rasayana* and it is considered as the best drug in the management of *Avarana vata.* All the ingredients of these two drugs used in this study are having either *vatahara* or *Vata Kaphahara* properties. The overall effect of the *laghu masha taila nasya* studied by Das *et al.*, was significant with p value <0.05 (1). In a study conducted by Costa *et al.*, Significant results were acquired on pain and other symptoms where *Nasya* with *Pinyaka/Panchamula Taila* and *Swalpa Masha Taila* were used for a comparative study (6).

## CONCLUSION

It can be said that the present study shows significant remission in signs and symptoms of *Apabahuka.* Therefore, it is imperative that the selected medicines help in management of the disease. The primary pathology of the *Apabahuka* is morbid *vata dosha*. The causes of this illness are either *dhatukhsaya* or *kapha avarana*. The *sira, snayu, kandara, mamsa*, and *asthi dhatus* at the shoulder joint are always affected by morbid *vata dosha*. *Nasya* with *Karpasastyadi taila* helps to pacify the *Vataprakopa* due to its *Snehana* and *brimhana* qualities, whereas *Balamoola kashyayam* helps in relieving the symptoms like *shoola*, *sthambha* by decreasing the rigidity. The assessment of symptoms before and after therapy, which included shoulder discomfort, stiffness, and limited movement in the afflicted area indicated a clear reduction in intensity. However, Improvement after treatment was observed to be statistically significant. This study required to be carried in a big sample size and follow up should be taken for a longer period to know the efficacy and to develop confidence among clinicians.

## ACKNOWLEDGEMENT

We extend our gratitude to Dr. K. C. Das, Principal, S. V. M. Ayurvedic Medical College, Karnataka for providing all the facilities required to conduct the study.

## CONFLICT OF INTEREST

The authors have declared no conflict of interest in this research work and publication.

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