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RES ARTICLE

A Randomized, Open-Label, Controlled Clinical Study to Evaluate the Efficacy of *Guduchi Pindi* in the Management of *Anjananamika*

N. Ramya,* Naveen B.S., Geethakumari B.

[1]Department of PG Studies in Shalakya Tantra, Sri Sri College of Ayurvedic Science and Research Hospital, Bengaluru, Karnataka, India

KEY WORDS

Anjananamika
Guduchi Pindi
Nimba Lodhra Pindi
Eyelid swelling
Stye
Chalazion

ABSTRACT

Background: *Anjananamika* is one of the *Vartmagata, Raktapradhana, Sadhya Netra Vikaras*. These symptoms resemble nodular swelling on the eyelid. A stye, also known as hordeolum, is a common condition of the eye seen in ophthalmology and general medicine OPDs. Classically, a hordeolum usually appears as a little pustule on the edge of the eyelid. One of the most prevalent forms of eyelid lesions observed in the ophthalmology clinic is chalazion. It is a long-lasting, lipogranulomatous inflammatory lesion brought on by the Meibomian gland obstruction. Management of *Anjananamika* in Ayurveda classics consists of *Swedana*, *Bhedana* and *Pratisarana*. Although *Pindi* is not mentioned directly in the treatment modality of *Anjananamika*, *Pindi* can be taken as a form of *Swedana*. It works by absorbing substances through the transdermal route. Since the appendages are not notably present over the eye lid skin, the thinner stratum corneum of the eye lid skin indicates lower resistance, which may be the cause of higher drug absorption through the eye lid skin. The majority of absorption happens through the skin.
Method: Study type is a Randomized comparative clinical study, the timing was prospective. Masking was open label, and grouping was double arm. Randomization was done by lottery method and group intervention method was parallel. The nature of Subjects presenting with the classical features of *Anjananamika* as described under diagnostic criteria. Subjects between the ages of 21 and 60, regardless of gender, occupation, religion, socioeconomic back-ground, or duration of illness. Subjects willing to participate with written informed consent, which is conveyed in the language which the subject can understand.
Result: 40 patients registered for the study were randomly allocated to two groups A and B with 20 patients each. Within the group anal-ysis shows that both the groups have highly significant results i.e., progressive decrease in symptoms. The comparative analysis between the groups showed no significant results except for *Kandu* (p = 0.047). Yuvraj Sutar, Ajitkumar S Herwade, Late Kedari Redekar. To study efficacy of *Rasanjantrikatu lepa* on *Anjannamika* with special reference to Hordeolum externum. Total 60 patients were selected for study. Two groups, 30 patients in each group having *Lakshanas* of *Anjananamika* were selected. Though significant relief provided by drugs of both groups, in *Lakshanas* like *Kandu* (itching), the *Rasanjantrikatu Lepa* turns more effective.The primary Objective of the study was to evaluate the efficacy of *Guduchi Pindi* in the management of *Anjananamika* based on treatment outcome related to swelling, pain, burning sensation, itching and pricking sensation and thereafter, to re-evaluate the efficacy of *Nimbadi Pindi* in the management of *Anjananamika* based on treatment outcome related to swelling,pain, burning sensation, itching and pricking sensation.The secondary objective of the study was to compare the efficacy of *Guduchi Pindi* with that of *Nimbadi Pindi* in the management *Anjananamika*.
Conclusion: In the present study no adverse drug reaction was reported thus no rescue medications were given. *Guduchi* has *Rakta* and *Pittahara* properties, and is also present in the *Daha* Prashamana Gana, due to which it may have reduced *Daha*. *Kandu* may have reduced due to its *Kandughna* and Tridoshahara properties, whereas *Toda* and *Ruja* may have reduced by its Ushna Veerya and Tridoshahara properties. Swelling may have reduced by theTridoshahara, *Krimihara* properties of *Guduchi*.

**Corresponding Author:*

N. Ramya
Department of PG Studies in Shalakya Tantra, Sri Sri College of Ayurvedic Science and Research Hospital, Bengaluru, Karnataka, India
Contact no: +91-9353106625
E-mail: ramyapoorna@gmail.com

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Introduction

Sarvendriyanam Madhye Nayanasya Pradhanatvam (1). Of all the senses that human beings are equipped with, the eyes are considered as the foremost. The eyes are perhaps the most expressive part of the face, giving a good indication of how a person is feeling. *Acharya Vagbhata* clearly mentioned that, we should make an effort to safeguard our eyes throughout our lives because, for a blind person, day and night are the same regardless of their wealth (2). Therefore, it is important to maintain the health of the eyes. But, due to various reasons, the eyes are affected by numerous disorders. *Anjananamika* is one of the *Vartmagata* (eyelid disorder), *Raktapradhana*

(mainly have a pathology stemming from *Rakta*), *Sadhya netra vikaras* (treatable disorder of eye) (3). According to *Acharya Sushrutha*, the signs and symptoms of *Anjananamika* are *Daha* (burning sensation), *Toda* (pricking sensation), *Tamra Pitaka* (coppery red swelling) which are *Mridu* (soft) with *Manda Ruja* (mild pain) (4).

The symptoms resemble nodular swelling on the eyelid. A stye, which is also known as a hordeolum, is a common condition involving the eye seen in ophthalmology and general medicine OPDs. It is a painful, acute infectious condition that primarily affects the sebaceous glands of the upper or lower eyelid. A hordeolum typically manifests as a little pustule around the edge of the eyelid (5).

One of the most prevalent kinds of eyelid lesions observed in the ophthalmology clinic is chalazion. It is a chronic, lipogranulomatous inflammatory lesion brought on by the Meibomian gland obstruction, with a prevalence rate of 0.57% or 5,686/million population (6). Chalazia occur as a result of meibomian gland malfunction and mechanical blockage, which causes stasis and prevents sebum from being released. A painless lump inside the eyelid or at the edge of the lid is the typical presentation of this subacute to chronic illness (6).

Management of *Anjananamika* in Ayurveda classics consists of *Swedana, Bhedana* and *Pratisarana*. *Pindi* is chosen as it is a form of *Chikitsa* where the medications are placed on the eyelids for a longer duration. It works by absorbing substances through the transdermal route. Since the appendages are not notably present over the eye lid skin, the thinner stratum corneum of the eye lid skin indicates lower resistance, which may be the cause of higher drug absorption through the eye lid skin. The majority of absorption happens through the skin (7). In the present clinical study, *Guduchi Pindi* is taken as trial group and *Nimbadi Pindi* is taken as control group. *Nimba* and *Lodhra*, used as the control, both have *Chakshushya* and *Krimighna* properties. *Guduchi*, used as the trial, also has *Chakshushya* and *Krimihara*, along with *Kandughna* and *Dahaprashamana* properties.

Saranya M. S and Pradeep Kumar K. A comparative study to evaluate the efficacy of *Manashiladi Vidalaka* and *Nimbadi Pindi* in *Anjananamika* (External Hordeolum). 40 patients registered for the study were randomly allocated to two groups A and B with 20 patients each. Within the group analysis shows that both the groups have highly significant results i.e., progressive decrease in symptoms. The comparative analysis between the groups showed no significant results except for *Kandu* (p = 0.047). Yuvraj Sutar, Ajitkumar S Herwade, Late Kedari Redekar. To study efficacy of *Rasanjantrikatu lepa* on *Anjannamika* with special reference to Hordeolum externum. Total 60 patients were selected for study. Two groups, 30 patients in each group having *Lakshanas* of *Anjananamika* were selected. Though significant relief provided by drugs of both groups, in *Lakshanas* like *Kandu* (itching), the *Rasanjantrikatu Lepa* turns more effective.

The primary Objective of the study was to evaluate the efficacy of *Guduchi Pindi* in the management of *Anjananamika* based on treatment outcome related to swelling, pain, burning sensation, itching and pricking sensation and thereafter, to re-evaluate the efficacy of *Nimbadi Pindi* in the management of *Anjananamika* based on treatment outcome related to swelling, pain, burning sensation, itching and pricking sensation. The secondary objective of the study was to compare the efficacy of *Guduchi Pindi* with that of *Nimbadi Pindi* in the management *Anjananamika*.

Methods

Study design

Study type is a Randomized comparative clinical study, the timing was prospective. Masking was open label, and grouping was double arm. Randomization was done by lottery method and group intervention method was parallel. The nature of the study was explained to each subject in detail and informed consent was taken.

Participants

(a) Inclusion Criteria:

Subjects presenting with the classical features of *Anjananamika* as described under diagnostic criteria. Subjects between the ages of 21 and 60, regardless of gender, occupation, religion, socioeconomic background, or duration of illness. Subjects willing to participate with written informed consent, which is conveyed in the language which the subject can understand.

(b) Exclusion Criteria:

Subjects suffering from

1. Blepharitis
2. Eyelid tumours
3. Eyelid swelling dues to any trauma
4. Eyelid swelling due to systemic causes

Assessment criteria

Signs and symptoms of *Anjananamika* are evaluated.

SUBJECTIVE PARAMETERS

Grading of subjective parameters of assessment criteria

Sl. no	Symptoms	Score			
		0	1	2	3
1	*Toda*	Absent	Occasionally	Intermittent	Continuous
2	*Daha*	Absent	Occasionally	Intermittent	Continuous
3	*Kandu*	Absent	Occasionally	Intermittent	Continuous

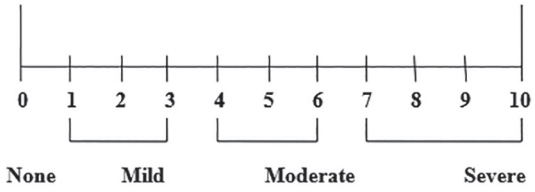
4) Numeric Pain Rating Scale (8)

A respondent chooses a whole number (0–10 integers) on the NPRS, a segmented numerical version of the visual-analog scale (VAS), that most accurately represents the degree of their pain.

0 – No pain at all

10 – As bad as it can be

Showing Numeric Pain Rating Scale (8)



Objective parameters

1. Measurement of the swelling with vernier callipers.

SAMPLE SOURCE

30 patients, aged 21 to 60 years, of both genders, who met the diagnostic requirements were chosen from the OPD and IPD of the Sri Sri College of Ayurvedic Science & Research Hospital in Bengaluru. They were divided into two equal groups, A and B. Every patient provided their informed permission.

Drug source

***Guduchi Pindi*: (Trial drug)** The *Guduchi Patra* were procured from herbal garden of Sri Sri College of Ayurvedic Science & Research Hospital. The fresh leaves of *Guduchi* (10g) were crushed and made into a *Kalka* using a *Khalva Yantra*. It was then be wrapped in a gauze piece.

***Nimbadi Pindi*: (Control drug)** *Nimbadi Pindi* consists of two ingredients – *Nimba Patra* and *Lodhra. Nimba Patra* were procured from herbal garden of Sri Sri College of Ayurvedic Science & Research Hospital, while *Lodhra Churna* was obtained from a GMP certified company (Pavaman pharmaceuticals, GMP Lic. No: AUS-895, Batch No – CH-721). *Nimba Patra* were collected freshly for each procedure. Fresh leaves of *Nimba* were crushed and made into a *Kalka* using a *Khalva Yantra.* The powder of *Lodhra* was made into *Kalka* by adding water. Equal quantity of both *Kalkas* (5g each) was wrapped in a gauze piece.

Interventions

Group	Treatment	Duration	Assessment	Follow up Period	Study Period
A (TRIAL)	*Guduchi Pindi*	Continuously 5 days	0th day 3rd day 6th day	10th day 15th day	15 days
B (CONTROL)	*Nimbadi Pindi*	Continuously 5 days	0th day 3rd day 6th day	10th day 15th day	15 days

Results

Numbers randomized – 15 subjects randomized to each group. Recruitment – 30 subjects Numbers analysed – 15 subjects in Group-A and 14 subjects in Group-B were analysed.

Outcome

Daha

Table 1: *Daha* at various intervals (Data: Median, 25th, and 75th percentiles of data).

Group	*Daha* at various intervals (Data: Median, 25th, and 75th percentiles of data)									
	Right eye					Left eye				
	Day 0 (D0)	Day 3 (D3)	Day 5 (D5)	Day 10 (D10)	Day 15 (D15)	Day 0 (D0)	Day 3 (D3)	Day 5 (D5)	Day 10 (D10)	Day 15 (D15)
Group A	3.00 (2.50–3.00)	1.50 (0.50–2.50)	0.50 (0.00–1.50)	0.50 (0.00–1.50)	0.50 (0.00–1.00)	2.00 (1.25–2.75)	1.00 (0.25–1.75)	0.00 (0.00–0.75)	0.00 (0.00–0.00)	0.00 (0.00–0.00)
Group B	2.00 (2.00–2.75)	0.00 (0.00–1.50)	0.00 (0.00–0.00)	0.00 (0.00–0.00)	0.00 (0.00–0.00)	2.50 (2.00–3.00)	0.50 (0.00–1.00)	0.00 (0.00–0.00)	0.00 (0.00–0.00)	0.00 (0.00–0.00)

In Group A and group B, right eye and left eye no statistically significant change was observed on D3, D5, D10 and D15 (Table 1). Thus, Both the Groups, i.e.: A and B had no statistically significant difference in *Daha*. Comparison shows that the difference between the groups was statistically non – significant on all points of time i.e.; D3, D5, D10 and D15.

Kandu

Table 2: *Kandu* at various intervals (Data: Median, 25th, and 75th percentiles of data).

Group	*Kandu* at various intervals (Data: Median, 25th, and 75th percentiles of data)									
	Right eye					Left eye				
	Day 0 (D0)	Day 3 (D3)	Day 5 (D5)	Day 10 (D10)	Day 15 (D15)	Day 0 (D0)	Day 3 (D3)	Day 5 (D5)	Day 10 (D10)	Day 15 (D15)
Group A	2.00 (2.00–3.00)	1.00 (0.00–1.25)	1.00 (0.00–1.00)	0.00 (0.00–1.00)	0.00 (0.00–2.50)*	2.50 (1.00–3.00)	1.00 (0.00–1.00)	0.00 (0.00–0.00)*	0.00 (0.00–0.00)*	0.00 (0.00–0.00)*
Group B	2.00 (1.75–2.00)	0.00 (0.00–1.00)	0.00 (0.00–0.00) Nil	0.00 (0.00–0.00) Nil	0.00 (0.00–0.00) Nil	1.50 (1.00–2.50)	1.00 (0.50–1.50)	0.00 (0.00–0.50)*	0.00 (0.00–0.00)* Nil	0.00 (0.00–0.00)* Nil

*p<0.05 in comparison to the D0 values. Nil no *Kandu* (complete relief) (Friedman and One Way Repeated Measures Analysis of Variance test)

Only one subject in Group B left eye, had Grade 0 *Kandu* on D0, had grade 1 *Kandu* on D3, which again came down to Grade 0 on D5, D10 and D15. It was not considered for statistics. Group A right eye – showed statistically significant decrease in *Kandu* on D15. Group A left eye – showed statistically significant decrease in *Kandu* on D5, D10 and D15.

Group B right eye – no statistically significant change could be observed on D3, D5, D10 and D15 Group B left eye – shows statistically significant decrease in *Kandu* on D5, D10 and D15. Comparison shows that the difference between the groups was statistically non – significant on all points of time i.e.; D3, D5, D10 and D15 (Table 2).

Toda

Table 3: *Toda* at various intervals (Data: Median, 25th, and 75th percentiles of data).

Group	***Toda* at various intervals (Data: Median, 25th, and 75th percentiles of data)**									
	Right eye					**Left eye**				
	Day 0 (D0)	**Day 3 (D3)**	**Day 5 (D5)**	**Day 10 (D10)**	**Day 15 (D15)**	**Day 0 (D0)**	**Day 3 (D3)**	**Day 5 (D5)**	**Day 10 (D10)**	**Day 15 (D15)**
Group A	2.00 (1.25–2.75)	0.00 (0.00–1.50)*	0.00 (0.00–0.75)*	0.00 (0.00–0.75)*	0.00 (0.00–0.75)*	2.00 (1.25–2.00)	0.00 (0.00–0.75)	0.00 (0.00–0.75)	0.00 (0.00–0.75)	0.00 (0.00–0.75)
Group B	2.50 (2.00–3.00)	0.00 (0.00–1.00)	0.00 (0.00–0.00) Nil	0.00 (0.00–0.00) Nil	0.00 (0.00–0.00) Nil	2.00 (1.25–2.75)	1.00 (0.25–1.75)	0.00 (0.00–0.75)	0.00 (0.00–0.00)* Nil	0.00 (0.00–0.00)* Nil
*p<0.05 in comparison to the D0 values. Nil- no *Toda* score (complete relief) (Friedman and One Way Repeated Measures Analysis of Variance test)										

Group A right eye – showed statistically significant decrease in *Toda* on D3, D5, D10, D15. Group A left eye – no statistically significant change could be observed on D3, D5, D10 and D15. Group B right eye – no statistically significant change could be observed on D3, D5, D10 and D15

Group B left eye – shows statistically significant decrease in *Toda* on D10 and D15. Comparison shows that the difference between the groups was statistically non – significant on all points of time i.e.; D3, D5, D10 and D15 (Table 3).

Ruja

Table 4: *Ruja* at various intervals (Data: Median, 25th, and 75th percentiles of data).

Group	***Ruja* at various intervals (Data: Median, 25th, and 75th percentiles of data)**									
	Right eye					**Left eye**				
	Day 0 (D0)	**Day 3 (D3)**	**Day 5 (D5)**	**Day 10 (D10)**	**Day 15 (D15)**	**Day 0 (D0)**	**Day 3 (D3)**	**Day 5 (D5)**	**Day 10 (D10)**	**Day 15 (D15)**
Group A	5.00 (4.75–6.50)	2.00 (1.50–5.25)*	1.00 (0.00–4.50)*	0.00 (0.00–4.25)*	0.00 (0.00–3.50)*	3.50 (3.00–4.00)	0.50 (0.00–2.00)	0.00 (0.00–1.00)	0.00 (0.00–0.00)* Nil	0.00 (0.00–0.00)* Nil
Group B	4.00 (4.00–4.00)	2.00 (0.50–2.00)	0.00 (0.00–0.00) Nil	0.00 (0.00–0.00) Nil	0.00 (0.00–0.00) Nil	3.50 (2.00–4.50)	0.50 (0.00–3.00)	0.00 (0.00–0.50)	0.00 (0.00–0.00) Nil	0.00 (0.00–0.00) Nil
*p<0.05 in comparison to the D0 values. Nil- no *Ruja* (complete relief) (Friedman and One Way Repeated Measures Analysis of Variance test)										

Only one subject in Group A left eye, had Grade 0 *Ruja* on D0, Grade 2 *Ruja* on D3, Grade 3 on D5, Grade 2 *Ruja* on D10, which again came down to Grade 0 on D15. It was not considered for statistics. Group A right eye – showed statistically significant decrease in *Ruja* on D3, D5, D10, D15. Group A left eye – showed statistically significant decrease in *Ruja* on D10, D15.

Group B right eye – no statistically significant change could be observed on D3, D5, D10 and D15. Group B left eye – no statistically significant change could be observed on D3, D5, D10 and D15. Comparison reveals that at all time points (D3, D5, D10, and D15), the difference between the groups was statistically non-significant (Table 4).

AREA OF BASE OF THE SWELLING

Table 5: Area at various intervals (Data: Median, 25th, and 75th percentiles of data)

Group	Area at various intervals (Data: Median, 25th, and 75th percentiles of data)									
	Right eye					Left eye				
	Day 0 (D0)	Day 3 (D3)	Day 5 (D5)	Day 10 (D10)	Day 15 (D15)	Day 0 (D0)	Day 3 (D3)	Day 5 (D5)	Day 10 (D10)	Day 15 (D15)
Group A	3.00 (2.00–3.75)	2.00 (1.25–3.00)	2.00 (1.00–2.75)	1.00 (0.25–2.00)*	1.00 (0.25–2.00)*	3.00 (2.50–4.00)	1.00 (0.50–3.00)*	0.50 (0.00–2.00)*	0.00 (0.00–0.50)*	0.00 (0.00–0.50)*
Group B	2.00 (1.00–3.00)	0.50 (0.00–2.00)*	0.00 (0.00–1.00)*	0.00 (0.00–0.00)*	0.00 (0.00–0.00)*	2.50 (1.50–4.00)	1.00 (0.50–2.50)	1.00 (0.00–1.50)	0.50 (0.00–1.00)*	0.00 (0.00–1.00)*
*p<0.05 in comparison to the D0 values (Friedman and the One Way Repeated Measures Analysis of Variance test)										

Group A right eye – showed statistically significant reduction in Area of base of the swelling on D10, D15. Group A left eye – showed statistically significant reduction in Area of base of the swelling on D3, D5, D10, D15.

Group B right eye – showed statistically significant reduction in Area of base of the swelling on D3, D5, D10, D15. Group B left eye – showed statistically significant reduction in Area of base of the swelling on D10, D15.

Comparison shows that the difference between the groups was statistically non – significant on all points of time i.e.; D5, D10 and D15 (Table 5).

Effect size difference

Effect size difference (ESD) on Friedman Test for repeated measures was calculated using W = Q/n (k-1)

Parameters	Group	Laterality	Day 0–3 ESD	Day 0–5 ESD	Day 0–10 ESD	Day 0–15 ESD
Daha	**A**	**R.E**	0.285 Small	0.664 Large	0.664 Large	0.759 Large
		L.E	0 – No	0 – No	0 – No	0 – No
	B	**R.E**	0.470 Medium	0.626 Large	0.626 Large	0.626 Large
		L.E	0 – No	0 – No	0 – No	0 – No
Kandu	**A**	**R.E**	0.509 Large	0.622 Large	0.735 Large	0.820 Large
		L.E	0.361 Medium	0.826 Very Large	0.826 Large	0.826 Large
	B	**R.E**	0.576 Large	0.818 Large	0.818 Large	0.818 Large
		L.E	0.237 Small	0.644 Large	0.746 Large	0.746 Large
Toda	**A**	**R.E**	0.584 Large	0.584 Large	0.584 Large	0.584 Large
		L.E	0 – No	0 – No	0 – No	0 – No
	B	**R.E**	0.508 Large	0.508 Large	0.678 Large	0.678 Large
		L.E	0.391 Medium	0.548 Large	0.704 Large	0.704 Large
Ruja	**A**	**R.E**	0.453 Medium	0.679 Large	0.679 Large	0.735 Large
		L.E	0.387 Medium	0.594 Large	0.800 Large	0.800 Large
	B	**R.E**	0.352 Medium	0.665 Large	0.665 Large	0.665 Large
		L.E	0.271 Small	0.576 Large	0.678 Large	0.678 Large

(*Continued*)

(*Continued*)

Area of base of the swelling	**A**	**R.E**	0.167 Small	0.430 Medium	0.598 Large	0.598 Large
		L.E	0.358 Medium	0.738 Large	0.962 Large	0.962 Large
	B	**R.E**	0.609 Large	0.775 Large	0.968 Large	0.968 Large
		L.E	0.431 Medium	0.815 Large	0.887 Large	0.982 Large

Effect size difference (ESD) on Mann-Whitney test with 95% confidence limit was calculated using r = Z/√N ±1.96/√N

Parameters	**ESD with 95% CL on D5 (After treatment)**	**ESD with 95% CL on D10 (Follow up 1)**	**ESD with 95% CL on D15 (Follow up 2)**
Daha **R.E**	0.245 ± 0.364 Medium	0.245 ± 0.364 Medium	0.249 ± 0.364 Medium
Daha **L.E**	0.151 ± 0.364 Small	0 ± 0.364 No	0 ± 0.364 No
Kandu **R.E**	0.364 ± 0.364 Medium	0.278 ± 0.364 Medium	0.186 ± 0.364 Small
Kandu **L.E**	0.057 ± 0.364 Small	0.151 ± 0.364 Small	0.151 ± 0.364 Small
Toda **R.E**	0.214 ± 0.364 Medium	0.214 ± 0.364 Medium	0.214 ± 0.364 Medium
Toda **L.E**	0 ± 0.364 No	0.186 ± 0.364 Small	0.186 ± 0.364 Small
Ruja **R.E**	0.285 ± 0.364 Medium	0.217 ± 0.364 Medium	0.217 ± 0.364 Medium
Ruja **L.E**	0.073 ± 0.364 Small	0 ± 0.364 No	0± 0.364 No
Area R.E	0.359 ± 0.364 Medium	0.378 ± 0.364 Medium	0.378 ± 0.364 Medium
Area L.E	0.021 ± 0.364 Small	0.206 ± 0.364 Medium	0.120 ± 0.364 Small

Effect size difference (ESD) on Mann Whitney test with 95% of confidence limit was calculated using r = Z/√N ± 1.96/√N
< 0.1 – Small; <0.3 – Medium; >0.5 – Large; >0.8 – Very Large

Overall assessment

Parameter	**Group A**	**Group B**
	Percentage	**Percentage**
Daha	70.84	100
Kandu	82.50	93.75
Toda	77.78	91.65
Ruja	70.83	96.88
Area of base of the swelling	50.72	72.29
Total	**70.53**4	**90.91**4

Effect size is found to be small which is clinically significant in favour of Group A.

Discussion

The maximum number of subjects in this clinical trial, that is, 76.67% (23) belonged to the age group of 21–30 years, followed by 20% (6) belonged to the age group of 31–40 years, while 3.33% (1) belonged to the age group of 41–50 years and no subjects were in 51–60 years age group. There incidence of stye is the said to be slightly higher in subjects of 30–50 years of age, whereas for chalazion, it is 21–30 years of age (5,6).

This could be because the people in Madhyama Vaya have more Pradhanya of Pitta, and have a higher tendency to develop the related disorders. *Anjananamika* is a Raktaja condition. Due to the Ashraya Ashrayee Bhava of *Rakta* and *Pitta*, we can consider that *Anjananamika* has a higher incidence in Madhyama Vaya. Maximum number of subjects, that is, 56.67% (17) were students, followed by 10% each of therapists (3), home makers (3) and people with administrative work/desk jobs (3) and 3.33% of subjects being farmer (1), beautician (1), doctor (1), cook (1). The incidence of chalazion is said to be highest in students. The predisposing factors for *Anjananamika* include eye strain, which is probably seen more in students, when compared to those of other professions, leading to a higher incidence.

Maximum number of subjects, that is, 73.33% (22) had *Anjananamika* on the upper eyelid, whereas 26.67% (8) had it in the lower eyelid. The glands of the eyelids are present more in the upper eyelid than in the lower eyelids. Pathologies in these glands are a major cause for eyelid swellings, therefore leading to a higher incidence in the upper eyelids (9). *Pindi* is a procedure where preparation is told to be placed on a strip of cloth, which has to be placed on the eyes of the subjects. Detailed explanation regarding the time duration has not been explained in the Ayurveda classics. In the present study, the duration was fixed as per the control group (10). *Pindi* acts through the transdermal pathway of absorption because it is applied externally to the eye lids. Because the stratum corneum of the eye lid skin is thinner, it exhibits lower resistance, which may account for the increased drug penetration through it. Over the skin of the eye lid, the appendages are not notably visible. The epidermal pathway accounts for the majority of absorption (7). In *Guduchi Pindi*, the fresh leaves of *Guduchi* were pounded into a *Kalka*, and in *Nimbadi Pindi*, the fresh leaves of *Nimba* were ponded, added with *Lodhra Churna* along with water is added to make a proper *Kalka*. Hence, in both preparations, the medium is water. Hydrophilic absorption happens through intra cellular domain and enters into the micro circulation. That is, medial and the lateral palpebral arteries forming the arterial arcades of eye lids. Thus, the medicine reaches the target.

Sorption of a penetrant molecule on the surface layer stratum corneum.
↓
Diffusion through it and viable epidermis and finally it reaches dermis.
↓
The molecule enters the microcirculation and spreads throughout the body.

Daha may have reduced by the Pitta and Raktahara properties of *Guduchi* and its presence in *Daha* Prashamana Gana (11–13). *Guduchi* has chemical constituents including alkaloids (tinosporine, magnoflorine) sesquiterpenoids, phenolics, which have anti-inflammatory action, which may have helped in reduction of *Daha* (14–18). *Daha* may have reduced by the qualities of Sheeta Veerya, *Pitta* Raktanut of *Nimba* and *Lodhra*, Apakvam pachayet shopham quality seen in *Nimba*. *Nimba* has chemical constituents including azadirachtin, gedunin, nimbolide, triterpenoids which have anti-inflammatory actions (19,20). *Lodhra*, has chemical constituents including alkaloids, flavonoids, tannins, phenols, which have anti-inflammatory action, which may have helped in reduction of *Daha* (21–26). *Kandu* may have reduced by the *Kandughna* and Tridoshahara properties of *Guduchi*. *Guduchi* has chemical constituents including alkaloids, sesquiterpenoids, phenolics, which have anti-microbial action, which may have helped in reduction of *Kandu*.

Kandu may have reduced by the *Kandughna* and Shleshmasrapittanut properties of *Nimba*, Kaphapitta, Raktahara properties of *Lodhra*. *Nimba* has chemical constituents including azadirachtin, gedunin, nimbolide, triterpenoids which have anti-microbial actions *Lodhra*, has chemical constituents including alkaloids, flavonoids, tannins, phenols, which have anti-microbial action, which may have helped in reduction of *Kandu*. *Toda* and *Ruja* may have reduced by the Ushna Veerya and Tridoshahara properties of *Guduchi*. *Guduchi* has chemical constituents including alkaloids, sesquiterpenoids, phenolics, which have anti-inflammatory and analgesic action, steroids like giloinsterol, ß-Sitosterol, which may have helped in reduction of *Toda* and *Ruja*.

Toda and *Ruja* may have reduced by the Tridosha as well as Asranut properties of *Nimba* and *Lodhra Nimba* has chemical constituents including azadirachtin, gedunin, nimbolide, triterpenoids which have anti-inflammatory actions *Lodhra*, has chemical constituents including alkaloids, flavonoids, tannins, phenols which have anti-inflammatory action, which may have helped in reduction of *Toda* and *Ruja*. Swelling may have reduced by the Tridoshahara, *Krimihara* properties of *Guduchi*. *Guduchi* has chemical constituents including alkaloids, sesquiterpenoids, phenolics, which have anti-inflammatory and anti-microbial action, which may have helped in reduction of swelling Swelling may have reduced by the Vrananut, Apakvam Pachayet Shopham, Vranam Pakvam

Vishodhayet, Vrana and Shopha Shantaye, Asrk and Pittanut properties of *Nimba* and *Shophanashana*, Asranut properties of *Lodhra*. *Nimba* has chemical constituents including azadirachtin, gedunin, nimbolide, triterpenoids which have anti-inflammatory, anti-proliferative actions *Lodhra*, has chemical constituents including alkaloids, flavonoids, tannins, phenols which have anti-inflammatory, anti-microbial and anti-ulcer actions, which may have helped in reduction of swelling.

Conclusion

Anjananamika is one of the commonly seen eyelid disorders. It is more common in children and young adults (though no age is bar). *Anjananamika* is one of the *Vartmagata*, *Raktapradhana*, *Sadhya netra vikaras*. Majority of subjects had *Anjananamika* in the upper eyelid. In the present study no adverse drug reaction was reported thus no rescue medications were given. *Guduchi* has *Rakta* and *Pittahara* properties, and is also present in the *Daha* Prashamana Gana, due to which it may have reduced *Daha*. *Kandu* may have reduced due to its *Kandughna* and Tridoshahara properties, whereas *Toda* and *Ruja* may have reduced by its Ushna Veerya and Tridoshahara properties. Swelling may have reduced by the Tridoshahara, *Krimihara* properties of *Guduchi*.

Nimbadi Pindi may have shown reduction in *Daha* by the qualities of Sheeta Veerya, Pitta Raktanut of both the drugs and Apakvam pachayet shopham quality seen in *Nimba*. Reduction in *Kandu* may have been by the *Kandughna* and Shleshmasrapittanut properties of *Nimba*, Kaphapitta, Raktahara properties of *Lodhra*. *Toda* and *Ruja* may have reduced by the Tridosha as well as Asranut properties of *Nimba* and *Lodhra*. Swelling may have reduced by the Vrananut, Apakvam Pachayet Shopham, Vranam Pakvam Vishodhayet, Vrana and Shopha Shantaye, Asrk and Pittanut properties of *Nimba* and Shophanashana, Asranut proprerties of *Lodhra*. All the Dravyas used in the study are Chakshusya, and may have helped in the general betterment of the condition.

Pindi is an external treatment in which the medication is applied to the eyelids using a strip of cloth, known as gauze. It works by absorbing substances through the transdermal route. Since the appendages are not notably present over the eye lid skin, the thinner stratum corneum of the eye lid skin indicates lower resistance, which may be the cause of higher drug absorption through the eye lid skin. The majority of absorption happens through the skin. The effects of the treatment within the groups were assessed based on Friedman Repeated Measures Analysis of Variance on Ranks, One Way Repeated Measures Analysis of Variance test. Between the group assessment was done by Mann-Whitney rank sum test and paired t test.

Based on effect size difference, Group B showed better result than Group A clinically. When we compare the overall changes in between the Groups, Group B (90.91%) showed better result than Group A (70.53%), but statistically non-significant with p Value >0.05, which shows that alternate hypothesis is rejected and null hypothesis (H_0), that is, "*Guduchi Pindi* and *Nimbadi Pindi* have equivalent effect in management of *Anjananamika*." is accepted.

Trial registration

The study was prospectively recorded in CTRI with registration number – CTRI – CTRI/2022/09/045173, dated: 2-09-2022.

Authors' contribution

NR: collected data, analyzed the data, and wrote the manuscript; NBS, GB, Conceptualization, study design, Editing.

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Conflict of interest

No conflict of interest.

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