



Original Article

An open labeled randomized double armed controlled clinical study on Nava Kashaya and Shirisha Twak Lepa on Dadru Kustha w.s.r Tinea corporis

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ABSTRACT

Background: Dadru Kuṣṭha, described in Ayurveda as a Kapha–Pitta pradhāna Kuṣṭha, closely resembles Tinea corporis, a superficial dermatophytic infection characterized by pruritus, erythema, papules, and annular lesions. Increasing recurrence and chronicity necessitate evaluation of effective Ayurvedic management strategies.

Aim: To evaluate the efficacy of Nava Kaṣhāya and Śhīrīṣha Twak Lepa in the management of Dadru Kuṣṭha with special reference to Tinea corporis.

Materials and Methods: An open-label, randomized, double-armed controlled clinical study was conducted on patients diagnosed with Dadru Kuṣṭha/Tinea corporis. Subjects were randomly allocated into two groups:

- Trial group: treated with internal administration of Nava Kaṣhāya with external application of Śhīrīṣha Twak Lepa

- Control group: treated with external application of Śhīrīṣha Twak Lepa

Assessment was done based on grading of clinical features (*kandu*, *rāga*, *piḍakā*, *maṇḍala*), body surface area involvement using the Wallace Rule of Nines, and Dermatology Life Quality Index (DLQI), KOH mount with fungal culture. Pre- and post-treatment data were statistically analyzed.

Results: The trial group showed statistically significant improvement in all major clinical parameters, with marked reduction in symptom severity, body surface area involvement, and DLQI scores, KOH mount & fungal culture. The control group also demonstrated improvement, particularly in itching, redness and erythema, but the extent of improvement was comparatively less. Overall, the trial group exhibited superior and more sustained clinical outcomes.

Conclusion

The study concludes that Nava Kaṣhāya is an effective and safe internal therapeutic intervention in the management of Dadru Kuṣṭha (Tinea corporis). Śhīrīṣha Twak Lepa solitarily is beneficial as an external supportive therapy. A combined approach addressing both systemic and local pathology offers a comprehensive Ayurvedic management strategy for Tinea corporis.

Keywords: Dadru Kuṣṭha; Tinea corporis; Nava Kaṣhāya; Śhīrīṣha Twak Lepa; Dermatophytosis

INTRODUCTION

Skin being the foremost organ of the body which invariably encounters various physical, chemical, biological and environmental agents and undoubtedly gets damaged. It acts as a first line of external defense system preventing the entry

of microorganisms. Skin consists of keratin, saturated & unsaturated fatty acids in sweat & sebum, acidic pH (5.2 – 5.9) which are inhibitory to bacteria & fungi¹. Study in the recent past India, involving many tropical & sub-tropical countries have been beholding marked increased incidence of skin disorders due to various reasons- poverty, malnutrition, improper skin care, unhygienic environmental conditions etc. Study with a prevalence of Dermatophytosis in South India revealed 6.09- 27.6%². Ayurvedic classics describes all the skin diseases underneath Kustha. Dadru (Tinea corporis) is one among the frequently manifesting Kshudra Kustha. The etiological factors of Dadru are practice of Viruddha Ahara(Incompatible food), Mithya Ahara(Unsuitable/Untimely food), Mithya Vihara(Inappropriate physical conduct), Aupasargika Nidana(Epidemic root), Krimi(Microbial infiltration) etc. associated with poor hygiene, malnutrition, debilitating diseases etc. portray a substantial position in the manifestation of the disease. The clinical features of Dadru are Kandu(Pruritis), Raga(Erythema), Pidaka(Papules), Mandala(Circinate lesions) owing to involvement of Kapha and Pitta Dosha(functional elements of body) in pathogenesis. The Sapta Dravya(7 body element) involved in manifestation of the Dadru are Tridosha, Twak(Skin with underlying appendages), Rakta(Blood), Mamsa(Muscle), Ambu(Body fluid), owing to the intensity of Dadru the condition is challenging to cure³.

In contemporary science Dadru Kustha is equated to Tinea Corporis which is a fungal origin disease due to Dermatophytosis (Ring Worm) which spreads through direct/ indirect bodily contact. The skin lesions are distributed over waistline, axillae, buttocks, trunk, extremities. Laboratory diagnosis of skin scraping is done by KOH solution and fungal culture by Sabouraud's medium. Treatment protocol of Tinea corporis includes antifungal, immune suppressants, topical and systemic corticosteroids⁴. Patients of Tinea corporis are prone to experience physical, emotional, and socio-economical embarrassment in the society due to disfigured appearance.

Dadru is very tenacious in nature, hence the treatment should be continuous through for an interval of two months if not relapses are frequent. Analyzing the above-mentioned factors considering the arduous subjects of Dadru Kustha (Tinea corporis) besides Ayurveda treatment principle the present study is proposed, to evaluate the clinical and statistically significant effect on administration of Shirisha Twak Lepa and Nava Kashaya on Dadru Kustha (Tinea corporis) by minimizing the relapse of Dadru Kustha(Tinea Corporis), reduced usage of anti-fungal & immune suppressant load and its adverse effects on the subjects by improving the physical, psychological and socio-economical quality of life.

METHODOLOGY

• **Source of Data** – Patients attending OPD and IPD of the hospital were screened for the complaints of Dadru Kustha (Tinea corporis) & enrolled for the study. Camps were conducted, and screening was done for the study.

2. Diagnostic Criteria

- Patients of either sex aged between 21- 60yrs were assessed/ diagnosed thoroughly based on the Ayurvedic classics & contemporary science signs & symptoms.
- Potassium Hydroxide (KOH) examination of skin scraping and fungal culture by Sabouraud's medium was done
- Screened patients were provided with patient information sheet.
- Informed written consent were taken from the subjects who were willing to participate in the study trail (Annexure 4).
- Case detail was recorded in detail as per the planned case record format.

2.a Inclusion Criteria

- Patients of age group between 21-60yrs fulfilling diagnostic criteria irrespective of gender, religion, and socio-economic status. Sub categorization of age from 21-30yrs, 31-40yrs, 41-50yrs, 51-60yrs were undertaken for the study
- Patients having signs & symptoms of Dadru Kustha(Tinea corporis).
- Patients having chronicity less than 3yrs
- Distribution of skin lesions on waistline, axillae, buttocks, other parts of the trunk, extremities.
- Patients having positive results for Potassium Hydroxide (KOH) examination of skin scraping & fungal culture by Sabouraud's medium
- Patients willing to participate in the study

2.b Exclusion Criteria

- Patients aged below 21yrs & above 60yrs were excluded
- Patients having chronicity of more than 3yrs
- Distribution of skin lesions on palms, soles, groins
- Patients of Psoriasis, Discoid Eczema, Atopic Dermatitis, Pityriasis Rosea, Secondary Syphilis, Tinea Versicolor, Tuberculoid Leprosy, Intertrigo with Scabies, Diabetes Mellitus, Multiple Sclerosis, Arthritis, AIDS, Obesity were excluded based on clinical features
- Currently on medications- usage of recurrent immune suppressants (corticosteroids)
- Pregnant women & lactating mothers

1. Research Design – Open label comparative randomized clinical trial.

2. Sampling Method – Simple random sampling method

3. Sample Size – 40

4. Study Design – Total of 80 patients aged between 21-60yrs fulfilling the inclusion criteria of Dadru Kustha (Tinea corporis) and willing to participate in the study with the informed & written consent were screened and recorded through the case sheet proforma by personal communication and examination.

Group A- Control group- external application of Shirisha Twak Lepa, Morning and evening (Twice daily) Sukhoshna Jala (Lukewarm water) for 30 days and follow up on 45th day

Group B- Trail group – internal administration of nava kahasya with external application of Shirisha Twak Lepa, Morning and evening (Twice daily) ,Sukhoshna Jala (Lukewarm water) for 30 days and follow up on 45th day

·Pathya & Apathya as described in Ayurveda classics was recommended for both the groups. Follow up medicines was prescribed if necessary.

·The dose of Kashaya as per the classical reference is 2 Pala= 96 g/ 103.12ml, & has to be consumed after the digestion of previous meals, based on which the dose of Nava Kashaya is divided into 50ml twice daily in the present study ⁹.

·The dose of Pralepa as mentioned in the classics is external application thickness is correlated with the thickness of buffalo skin & based on the previous work 1/3rd of Anguli (1 Anguli = 1.905cm) Pramana is applied, which was used in the present study ¹⁰.

6.a Drug Procurement & Processing- The raw drugs required for preparation of Kashaya and Lepa were procured from the local market & authenticated by the experts of Dravyaguna , Rasashastra & Bhaishajya Kalpana Department.

6.b Method of Drug Preparation

Nava Kashaya

| Sl. No. | Drug (Ayurvedic Name) | Botanical Name | Part Used |
|---------|-----------------------|-----------------------------|------------------|
| 1 | Harītakī | <i>Terminalia chebula</i> | Fruit (Pericarp) |
| 2 | Vibhītakī | <i>Terminalia bellirica</i> | Fruit (Pericarp) |
| 3 | Āmalakī | <i>Emblica officinalis</i> | Fruit |
| 4 | Nimba | <i>Azadirachta indica</i> | Bark / Leaves |
| 5 | Paṭola | <i>Trichosanthes dioica</i> | Leaf |
| 6 | Mañjiṣṭhā | <i>Rubia cordifolia</i> | Root |
| 7 | Rohiṇī (Kaṭukī) | <i>Picrorhiza kurroa</i> | Rhizome |
| 8 | Vacā | <i>Acorus calamus</i> | Rhizome |
| 9 | Rājanī (Haridrā) | <i>Curcuma longa</i> | Rhizome |

Each 1 part of the drug was taken. The final drug was pulverized in the form of Kwatha Churna and packed in 50gram airtight packets. Subjects were informed to take 1 part of Kwatha Churna with 8 parts of water and boiled and reduced to 1/4th part for the preparation of Kashaya

Shirisha Twak Lepa

| Sl. No. | Drug (Ayurvedic Name) | Botanical Name | Part Used |
|---------|-----------------------|----------------|-----------|
|---------|-----------------------|----------------|-----------|

| | | | |
|---|---------------|-------------------------|-------------|
| 1 | Śhīrīṣha Twak | <i>Albizia lebbbeck</i> | Bark (Twak) |
|---|---------------|-------------------------|-------------|

The drug was pulverized and sieved. The final drug was packed in 100gram airtight packets. Subjects were informed to take required amount of Churna with sufficient quantity of Sukhoshna Jala to make a paste form for external application.

Both the drugs were processed as per the standard operating procedures. The prepared medicines were labelled and dispensed under the guidance of teaching pharmacy of Rasashastra & Bhaishajya Kalpana Department.

6.c Duration of Study

Study on the previous works related to randomized controlled drug trails to examine the drug effect were done for 45days, hence in the present study the duration of intervention is for 30days. Total number of visits for each subject was on day 0, day 15, day 30 and day 45 respectively. 2 weeks after the treatment follow up was advised to assess the recurrence of the symptoms & over all well-being (i.e., on day 45) ¹¹.

6.d Assessment Criteria – (Annexure 2)

Assessment of the following parameters was done for each subject on day 0, day 15, day 30 and day 45 of the study

· **Clinical features of Dadru Kustha(Tinea corporis)**- The clinical features - Kandū, Raga, Pidaka, Mandala were graded from 0- 3 . ¹²

· **Wallace Rule of Nines** – The involvement of body surface as mentioned in forensic medicine was used with certain modifications. The interpretation of the score 0(no area involved) – score 4(> 50% of the area involved) ¹³

· **Dermatology Life Quality Index (DLQI)** -The Dermatology Life Quality Index questionnaire is designed for use in adults, i.e., patients over the age of 16. The aim of this questionnaire is to measure how much the skin problem has affected the patient's life over the last week. The values are measured from 0- not relevant to 3-very much. The interpretation of the score from 0 - 1 no effect at all on the patient's life to 21-30 extremely large effect on the patient's life was assessed

Etiological Factors Assessment – Questionnaire is prepared by using 4 point Likert Scale to analyze the Nidana as explained in the classics, to revalidate its contribution in the manifestation of Dadru Kustha ¹⁵. The values were measured from 0- never to 4 – every day based on the frequency of etiological factors consumption and was assessed on day 0 of the study

• **Laboratory Assessment** - Potassium Hydroxide (KOH) examination of skin scraping & fungal culture by Sabouraud's medium was done on day 0 & day 45 of the study to assess the intensity & progression of Dadru Kustha (Tinea corporis) infection.

Statistical analysis – was done by using SPSS (Statistical package for social sciences) version 31.0. and the data were expressed by mean, standard deviation, percentage. Comparison of data within the group were analyzed by paired-t test. Comparison of data between two groups were analyzed by unpaired-t test. Nominal & ordinal data were analyzed by non-parametric tests- Chi-square Test. The differences within the group were analyzed using repeated period ANOVA test for parametric data. The Standardized effect size was evaluated by Cohen's D ^{16 17}. The changes with p value <0.05 was considered as statistically significant.

OBSERVATION & RESULTS

1. **Age-** For analytical purposes, age was sub-categorised into 21-30yrs, 31-40yrs, 41-50yrs, 51- 60yrs to understand the expression of the disease. The highest incidence was observed in the age group of 21-30years and 31-40years.
2. **Gender-** Among the participants, 56.3% were female while 43.8% were male, reflecting a slightly higher proportion of female respondents.
3. **Etiological Factors of Dadru Kustha(Tinea corporis)** – The etiological assessment of Dadru (Tinea corporis) among the study participants included evaluation of key risk factors, such as faulty dietary intake, excessive sweating, poor hygiene practices, use of occlusive clothing, close contact with infected individuals, occupational exposure, and any underlying systemic conditions. These factors were documented and analyzed to understand their contribution to disease occurrence .

N1.Sheeta Ushna Vyatasa Sevana - In the present study, 87.5% subjects did not practice the nidana, 12.5% subjects had the habit of consuming several times a month.

N2.Santarpana - Apararpana Abhyavaharana – In the present study , 85% subjects did not practice the nidana, 15% subjects had the habit of consuming several times a month.

N3.Madhu- In the present study, 58.8% subjects did not practice the nidana, 35% subjects had the habit of consuming several times a month, 6.3% subjects had the habit of consuming once a week.

N4.Phanita - In the present study , 75% subjects did not practice the nidana, 21.3% subjects had the habit of consuming several times a month, 3.8% subjects had the habit of consuming once a week.

N5. Matsya- In the present study , 62.5% subjects did not practice the nidana, 15% subjects had the habit of consuming several times a month, 11.3% subjects had the habit of consuming once a week, 7.5% consumed several times a week, 3.8% consumed everyday.

N6.Lakucha- In the present study, 62.5% subjects did not practice the nidana, 17.5% subjects had the habit of consuming several times a month, 11.3% subjects had the habit of consuming once a week, 7.5% consumed several times a week, 1.3% consumed everyday.

N7. Mulaka- In the present study, 77.5% subjects did not practice the nidana, 22.5% subjects had the habit of consuming several times a month.

N8. Kakamachi- In the present study, 67.5% subjects did not practice the nidana, 28.7% subjects had the habit of consuming several times a month, 1.3% subjects had the habit of consuming once a week, 1.3% consumed several times a week, 1.3% consumed everyday.

N9. Ajirne Bhojana- In the present study, 67.5% subjects did not practice the nidana, 30.0% subjects had the habit of consuming several times a month, 2.5% subjects had the practice once a week.

N10. Chilichima Matsya+ Ksheera- In the present study, 92.5% subjects did not practice the nidana, 1% subjects had the habit of consuming several times a month

N12. Yavaka- In the present study, 67.5% subjects did not practice the nidana, 15.0% subjects had the habit of consuming several times a month, 12.5% subjects had the habit of consuming once a week, 5% consumed several times a week

N13. Chinaka- In the present study, 61.3% subjects did not practice the nidana, 31.3% subjects had the habit of consuming several times a month, 6.3% subjects had the habit of consuming once a week, 1.3% consumed several times a week

N14. Uddalaka - In the present study, 82.5% subjects did not practice the nidana, 17.5% subjects had the habit of consuming several times a month

N15. Koradusha(Kodomillet/ Hraka Akki)- In the present study, 91.3% subjects did not practice the nidana, 8.8% subjects had the habit of consuming several times a month

N16. Ksheera(milk)- In the present study, 55% subjects did not practice the nidana, 6.3% subjects had the habit of consuming several times a month, 25.0% subjects had the habit of consuming several times a week, 13.8% consumed everyday

N17. Dadhi- In the present study, 18.8% subjects did not practice the nidana, 5% subjects had the habit of consuming several times a month, 18.8% subjects had the habit of consuming once a week, 33.8% practiced several times a week, 23.8% consumed everyday

N18. Takra- In the present study, 21.3% subjects did not practice the nidana, 17.5% subjects had the habit of consuming several times a month, 21.3% subjects had the habit of consuming once a week, 21.3% practiced several times a week, 18.8% consumed everyday

N19. Kola- In the present study, 61.3% subjects did not practice the nidana, 1.3% subjects had the habit of consuming several times a month, 13.8% subjects had the habit of consuming once a week, 11.3% practiced several times a week, 12.5% consumed everyday

N20. Kulatha- In the present study, 85% subjects did not practice the nidana, 15.0% subjects had the habit of consuming several times a month

N21. Masha- In the present study, 35.0% subjects did not practice the nidana, 15.0% subjects had the habit of consuming several times a month, 20.0% subjects had the habit of consuming once a week, 16.3% practiced several times a week, 13.8% consumed everyday

N22. Atasi- In the present study, 25.0% subjects did not practice the nidana, 12.5% subjects had the habit of consuming several times a month, 26.3% subjects had the habit of consuming once a week, 18.8% practiced several times a week, 17.5% consumed everyday

N23. Kusumbha Taila- In the present study, 77.5% subjects did not practice the nidana, 20.0% subjects had the habit of consuming several times a month, 2.5% subjects had the habit of consuming once a week.

N24. Vyayamat Upasevyamana - In the present study, 76.3% subjects did not practice the nidana, 21.3% subjects had the habit of consuming several times a month, 1.3% subjects had the habit of consuming once a week, 1.3% subjects practiced several times a week

N25. Vyavayat Upasevyamana - In the present study, 86.3% subjects did not practice the nidana, 10% subjects had the habit of consuming several times a month, 3.8% subjects had the habit of consuming once a week

N26. Santapauapahata Upasevyamana- In the present study, 82.5% subjects did not practice the nidana, 3.8% subjects had the habit of consuming several times a month, 5.0% subjects had the habit of consuming once a week, 3.8% of the subjects practiced several times a week, 5.0% of the subjects practiced daily

N27. Shramauapahata Upasevyamana- In the present study, 45.0% subjects did not practice the nidana, 17.5% subjects had the habit of consuming several times a month, 18.8% subjects had the habit of consuming once a week, 13.8% of the subjects practiced several times a week, 5.0% of the subjects practiced daily

N28. Bhayauapahata Upasevyamana - In the present study, 66.3% subjects did not practice the nidana, 15.0% subjects had the habit of consuming several times a month, 12.5% subjects had the habit of consuming once a week, 3.8% of the subjects practiced several times a week, 2.5% of the subjects practiced daily

N29. Vidagdha ahara- In the present study, 53.8% subjects did not practice the nidana, 16.3% subjects had the habit of consuming several times a month, 15.0% subjects had the habit of consuming once a week, 15.0% of the subjects practiced several times a week

N30. Chardi & Anya vegadharana- In the present study, 55.0% subjects did not practice the nidana, 11.3% subjects had the practice several times a month, 17.5% subjects had the practice once a week, 13.8% of the subjects practiced several times a week, 2.5% practiced daily

N31. Viruddha Ahara- In the present study, 85.0% subjects did not practice the nidana, 3.8% subjects had the practice several times a month, 3.8% subjects had the practice once a week, 3.8% of the subjects practiced several times a week, 3.8% practiced daily

N32. Drava Ahara- In the present study, 62.5% subjects did not practice the nidana, 11.3% subjects had the practice several times a month, 8.8% subjects had the practice once a week, 8.8% of the subjects practiced several times a week, 8.8% practiced daily

N33. Snigdha Ahara- In the present study, 30.0% subjects did not practice the nidana, 25.0% subjects consumed several times a month, 21.3% subjects consumed once a week, 21.3% of the subjects consumed several times a week, 2.5% consumed daily

N34. Guru Ahara- In the present study, 22.5% subjects did not practice the nidana, 20.0% subjects consumed several times a month, 28.7% subjects consumed once a week, 26.3% of the subjects consumed several times a week, 2.5% consumed daily

N35. Navanna- In the present study, 61.3% subjects did not practice the nidana, 11.3% subjects consumed several times a month, 11.3% subjects consumed once a week, 16.3% of the subjects consumed several times a week

N38. Pistanna- In the present study, 13.8% subjects did not practice the nidana, 21.3% subjects consumed several times a month, 22.5% subjects consumed once a week, 30.0% of the subjects consumed several times a week, 12.5% consumed everyday

N39. Divaswapna- In the present study, 37.5% subjects did not practice the nidana, 11.3% subjects consumed several times a month, 26.3% subjects consumed once a week, 21.3% of the subjects consumed several times a week, 3.8% consumed everyday

N40. Prasanga- In the present study, 40.0% subjects did not practice the nidana, 31.3% subjects consumed several times a month, 20.0% subjects practiced once a week, 8.8% of the subjects practiced several times a week

N41. Gatra Samsparsha- In the present study, 22.5% subjects did not practice the nidana, 42.5% subjects consumed several times a month, 17.5% subjects practiced once a week, 10.0% of the subjects practiced several times a week, 7.5% practiced everyday

N42. Saha Bhojana- In the present study, 40% subjects did not practice the nidana, 20.0% subjects consumed several times a month, 23.8% subjects practiced once a week, 8.8% of the subjects practiced several times a week, 7.5% practiced everyday

N43. Saha Shaya- In the present study, 17.5% subjects did not practice the nidana, 13.8% subjects consumed several times a month, 26.3% subjects practiced once a week, 20.0% of the subjects practiced several times a week, 22.5% practiced everyday

N44. Vastra- In the present study, 26.3% subjects did not practice the nidana, 13.8% subjects consumed several times a

month, 28.7% subjects practiced once a week, 21.3% of the subjects practiced several times a week, 10.0% practiced everyday

N45. Malya- In the present study, 83.8% subjects did not practice the nidana, 1.3% subjects consumed several times a month, 5.0% subjects practiced once a week, 5.0% of the subjects practiced several times a week, 5.0% practiced everyday

N46. Anulepana- In the present study, 78.8% subjects did not practice the nidana, 6.3% subjects consumed several times a month, 7.5% subjects practiced once a week, 3.8% of the subjects practiced several times a week, 3.8% practiced everyday

4. **Dermatology Quality of Life Index-** The questionnaire is designed for use in adults to measure how much the skin problem has affected the patient's life over the last week

DLQI1- 31.3% of the subjects experienced a little, 46.3%, experienced a lot, 22.5% experienced very much

DLQI2- 18.8% of the subjects experienced a little, 61.3%, experienced a lot, 20.0% experienced very much

DLQI3- 22.5% of the subjects experienced a little, 65%, experienced a lot, 12.5% experienced very much

DLQI4- 30% of the subjects experienced a little, 60%, experienced a lot, 8.8% experienced very much

DLQI5- 37.5% of the subjects did not experience at all, 38.8% of the subjects experienced a little, 22.5%, experienced a lot, 1.3% experienced very much

DLQI6- 75% of the subjects did not experience at all, 25% of the subjects experienced a little

DLQI7- 92.5% of the subjects did not experience at all, 7.5% of the subjects experienced a little

DLQI8- 50% of the subjects did not experience at all, 27.5% of the subjects experienced a little, 22.5%, experienced a lot

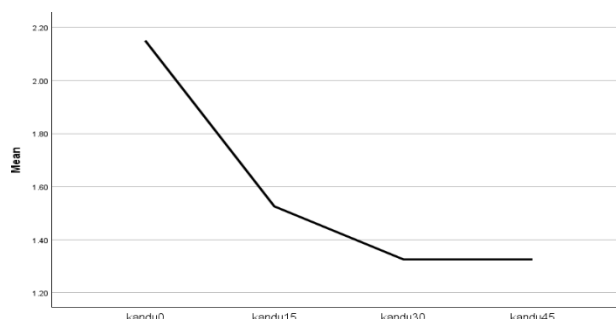
DLQI9- 33.8% of the subjects did not experience at all, 41.3% of the subjects experienced a little, 25%, experienced a lot

DLQI10- 77.5% of the subjects did not experience at all, 22.5% of the subjects experienced a little,

5. Clinical features of Dadru Kustha(Tinea Corporis)

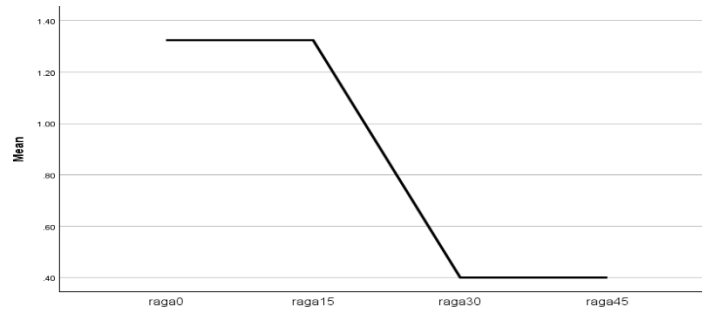
Group B- Trial Group- following observation of clinical features on day 0, 15, 30, 45 of the study in 40 study participants and the results were observed by applying means, standard deviation, T test, chi square test and cohen's d

Kandu- The following values were observed in the subjects complaining of kandu on day 0, day 15, day30 and day 45



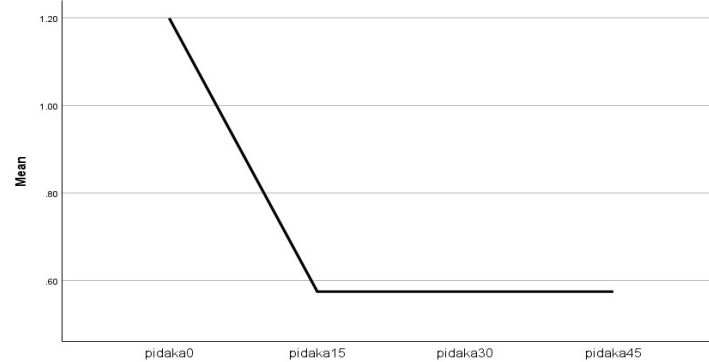
Graph 1. Kandu In trial group

Raga- The following values were observed in the subjects complaining of raga on day 0, day 15, day30 and day 45



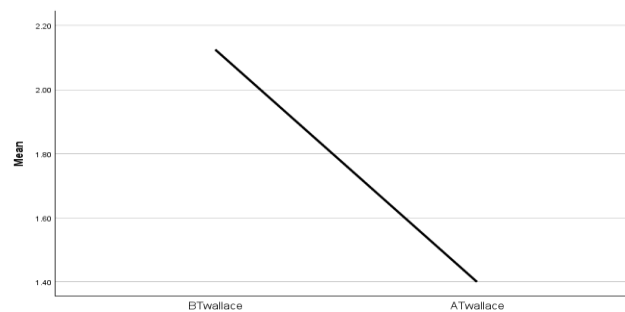
Graph 2. Raga In trial group

Pidaka - The following values were observed in the subjects complaining of pidaka on day 0, day 15, day30 and day 45



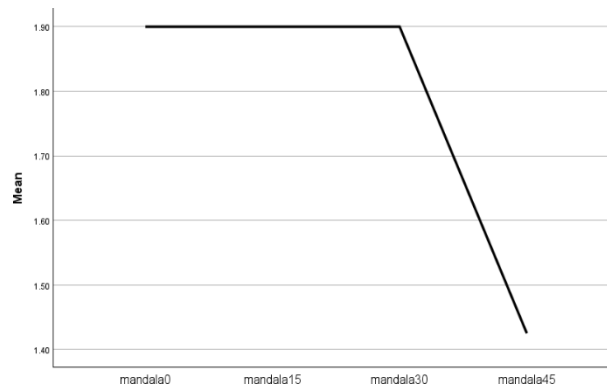
Graph 3. Pidaka in trial group

Mandala - The following values were observed in the subjects complaining of mandala on day 0, day 15, day30 and day 45



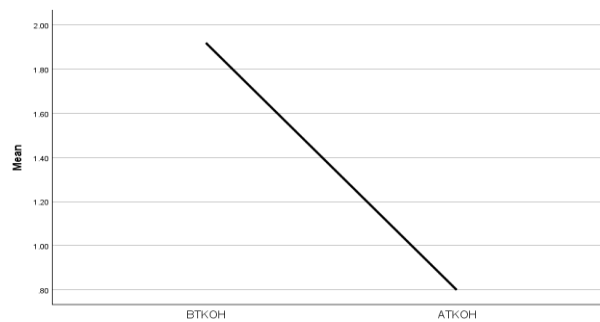
Graph 4. Mandala in trial group

6. Wallace rules of nine – The percentage of area involved in 27.5% of the subjects was 1, 37.5% was 2, 30% was 3 and 2.5% was 4.



Graph 5. Area of body involved in trial group

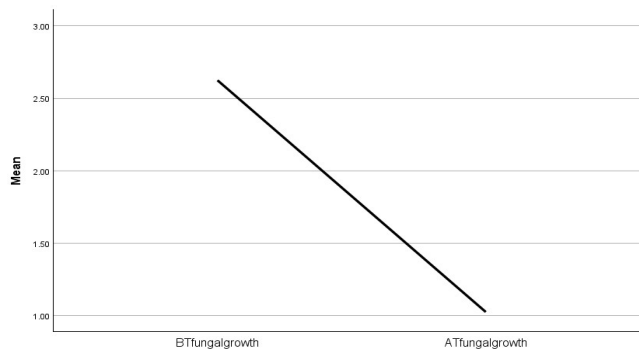
6. Laboratory Diagnosis



a. KOH Mount-the following values were observed in the patients subjected to KOH mount on day 0 and 45 of the study

Graph 6.KOH mount in trial group

b. Fungal Culture- the following values were observed in the patients subjected to fungal culture on day 0 and 45 of the study



Graph 7. Fungal growth in trial group

Images of study apticipants on day 0 and day 30 of the trial group

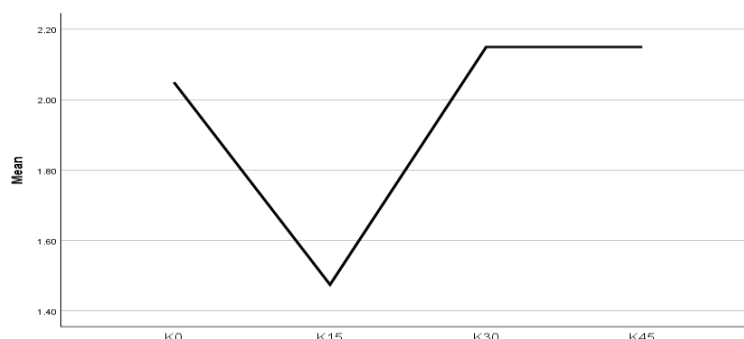


Image 1. before & after treatment



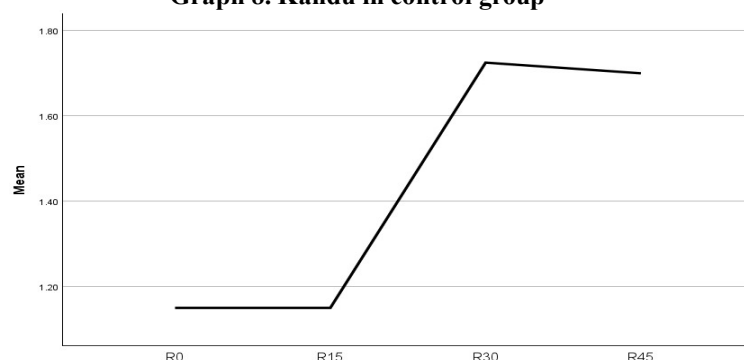
Image 2. before & after treatment

Group A- Control Group- following observation of clinical features on day 0, 15, 30, 45 of the study in 40 study participants was done following observation of clinical features on day 0, 15, 30, 45 of the study in 40 study participants and the results were observed by applying means, standard deviation, T test, chi square test and cohen's d



Kandu- The following values were observed in the study subjects complaining of kandu on day 0, 15, 20 and 45 of the study trial

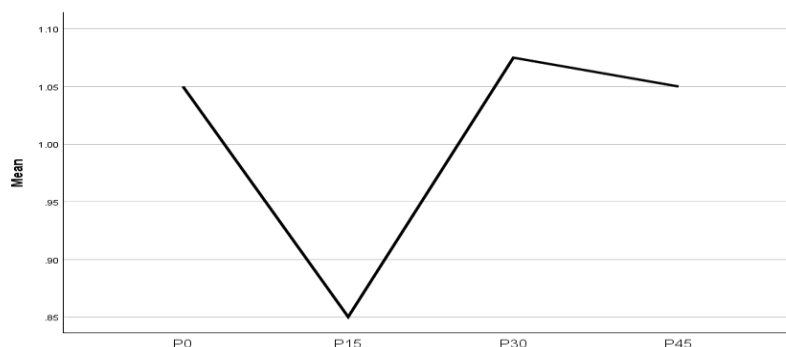
Graph 8. Kandu in control group



Raga- The following values were observed in the study subjects complaining of raga on day 0, 15, 20 and 45 of the study trial

Graph 9. Raga in control group

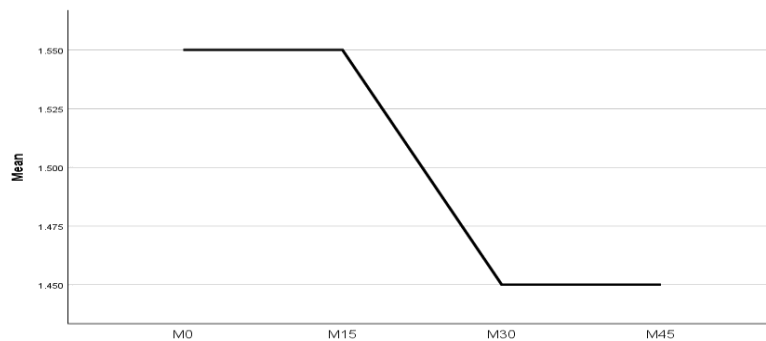
Pidaka- The following values were observed in the study subjects complaining of pidaka on day 0, 15, 20 and 45 of the study trial



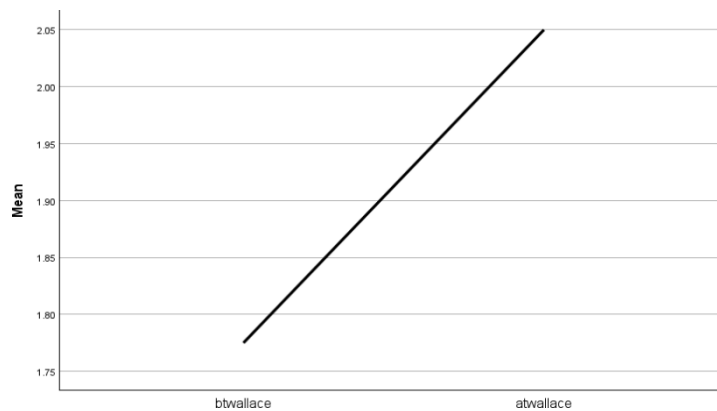
a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .70.

Graph 10. Pidaka in control group

Mandala- The following values were observed in the study subjects complaining of mandala on day 0, 15, 20 and 45 of the study trial.



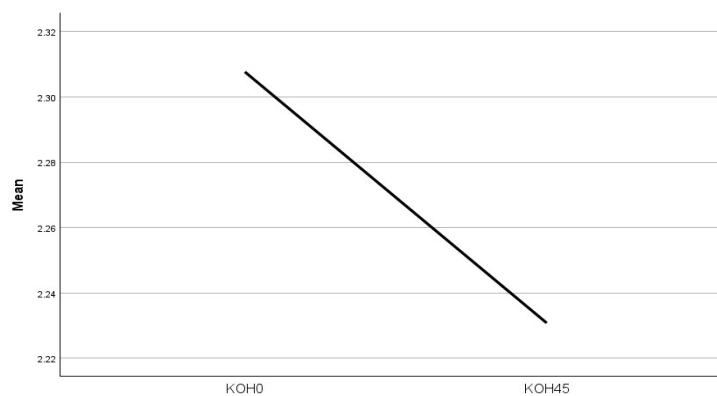
Graph 11. Mandala in control group



Wallace rules of nines- the percentage of area involved in 22.5% of the subjects was 1, 16.3% was 2, 11.3% was 3.

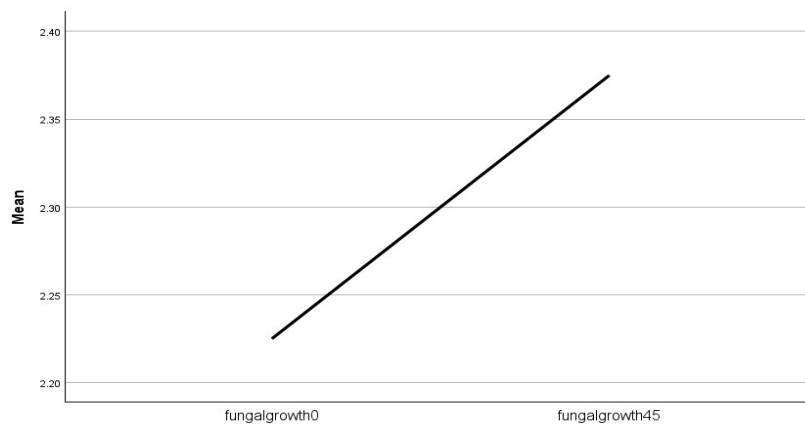
Graph 12. Area of body involved in control group

KOH mount- the following values were observed in the patients subjected to KOH mount on day 0 and 45 of the study



Graph 13. KOH mount in control group

Fungal culture-the following values were observed in the patients subjected to fungal culture on day 0 and 45 of the study



Graph 13. Fungal growth in control group

Images of study subjects on day 0 and day 30 of the control group:



Image 3. before & after treatment



Image 4. before & after treatment

Based on the above observation and results alternate hypothesis is established with significant difference before & after treatment across the two groups i.e., Group A- external application of Shirisha Twak Lepa & Group B - oral administration of Nava Kashaya with external application of Shirisha Twak Lepa. Where the trial group with internal administration of Nava Kashaya and external application of Shirisha Twak Lepa is proved statistically significant based on the assement of clinical features of Dadru Kustha(Tinea Corporis), Wallace rules of nines, Dermatology quality of life index(DLQI) with p value <0.05 and standardised effect size of Cohen's d – medium(d=0.5).

DISCUSSION

Influence of Etiological Factors on Dadru Kustha Samprapti

| Category of Nidāna | Examples of Nidāna | Predominant Doṣa Involved | Pathological Effect in Dadru |
|---|---|---------------------------|--|
| Āhāraja Nidāna | Guru, Snigdha, Drava āhāra | Kapha | Increases kleda, heaviness, and moist environment favoring lesion spread |
| | Navāṇṇa, Piṣṭāṇṇa | Kapha | Leads to āma formation and srotorodha |
| | Viruddha āhāra | Pitta, Rakta | Causes rakta duṣṭi, inflammation, erythema |
| | Kṣīra, Dadhi, Takra (improper use) | Kapha–Pitta | Aggravates itching, redness, and chronicity |
| | Madhu, Phāṇita (excess) | Kapha | Enhances stickiness and fungal persistence |
| Vihāraja Nidāna | Divāsvapna | Kapha | Causes agnimāndya and kleda vṛddhi |
| | Bhojana after Vyāyāma, Śrama, Pitta Santāpa | | Leads to inflammatory skin reactions |
| | Bhojana after Bhaya | Vāta–Pitta | Disturbs metabolism and immunity |
| | Vegadhāraṇa (Chardi, etc.) | Tridoṣa | Results in systemic doṣa imbalance |
| | | | |
| Āhāra–Vihāra Combined Saṅkrāmika Nidāna | Vidagdha āhāra | Pitta | Produces burning sensation and erythema |
| | Gātra saṁsparśa | Kapha | Direct transmission and lesion spread |
| | Saha śayā | Kapha | Sustains moisture and infection |
| | Saha bhojana | Kapha | Indirect contamination |
| | Vastra, Mālya | Kapha | Fomite-mediated transmission |
| | Anulepana (shared cosmetics) | Kapha–Pitta | Aggravates infection and inflammation |

Dermatology Quality of Life Index - In Dadru, patients commonly report sleep disturbance, embarrassment due to visible lesions, social withdrawal, reduced productivity, and discomfort during physical activities, reflecting moderate to severe DLQI scores. Persistent itching and lesion spread contribute to emotional stress and reduced self-confidence. Higher DLQI scores correlate with greater disease severity, poor treatment adherence, and increased risk of chronicity. Thus, incorporating DLQI in Dadru assessment provides a holistic understanding of disease burden beyond clinical symptoms, enabling clinicians to tailor treatment plans, monitor therapeutic response, and address patient-specific psychosocial needs.

Clinical features of Dadru Kustha(Tinea corporis)- reduction in Kandu, Raga, Pidaka Mandala were observed after internal administration of Nava Kashaya and external application of Shirisha Twak Lepa after a period of 30 days of the clinical trial

| Aspect | Nava Kāṣāya | Śirīṣa Tvak Lepa |
|-----------------|----------------------|---------------------|
| Level of action | Systemic | Local |
| Doṣa | Kapha–Pitta | Kapha–Pitta Key |
| symptom relief | Controls spread | Relieves itching |
| Role | Disease modification | Symptomatic control |

Wallace rules of nines- is used to objectively estimate body surface area (BSA) involvement in Dadru(Tineacorporis).It helps classify disease severity as mild, moderate, or severe, beyond symptoms like *kandu* and *rāga*. Higher BSA involvement correlates with chronicity, recurrence, poor topical response, and higher DLQI scores. Extensive BSA reflects generalized doṣa prakopa, rakta duṣṭi, and kleda vṛddhi.Reduction in BSA on follow-up indicates lesion regression and effective therapeutic response.

Laboratory Diagnosis

KOH Mount- The Potassium Hydroxide (KOH) mount is a simple, rapid, and cost-effective diagnostic technique used to

demonstrate fungal hyphae in skin scrapings obtained from the active margins of lesions. KOH dissolves keratin, allowing clear visualization of fungal elements under microscopy. Clinical Significance Confirms the presence of active fungal infection, Supports clinical diagnosis of Dadru/Tinea corporis, Useful for baseline assessment and post-treatment evaluation. In Dadru patients, KOH mount positivity reflects active fungal proliferation, which correlates clinically with intense kandu, spreading maṇḍala, and erythema. Conversion from KOH-positive to KOH-negative status following treatment indicates mycological response and disease regression.

Fungal culture- is considered the gold standard for definitive diagnosis and species identification. Skin scrapings inoculated on suitable media (e.g., Sabouraud Dextrose Agar) help identify dermatophytes such as *Trichophyton*, *Microsporum*, or *Epidermophyton* species. Clinical Significance Confirms dermatophytic infection, Identifies causative species, Assesses fungal viability and burden, Useful in recurrent or treatment-resistant cases. Culture positivity often correlates with chronicity and extensive disease involvement. Clearance of fungal growth on culture after treatment indicates complete mycological cure, which is important for preventing recurrence.

Outcome In the present study even though the control and trial group exhibited statistically significant after the completion of the trial. Trial group with internal administration of Nava Kashya with external application of Shirisha Twak Lepa exhibited pronounced reduction in disease pathogenesis and reduced recurrence after day 45 of the study. Whereas control group with external application of Shirisha Twak Lepa exhibited reduction in the clinical features by day 15 but the disease pathogenesis remained stagnant and slightly aggravated after day 45 suggesting that combined effect of Nava Kashya and Shirisha Twak Lepa is a better line of modality in mitigation of Dadru Kustha Samprapti.

CONCLUSION

The present open-label, randomized, double-armed controlled clinical study was conducted to evaluate the efficacy of Nava Kaṣhāya and external application of Śhīrīṣha Twak Lepa in the management of Dadru Kuṣṭha with special reference to Tinea corporis. The findings of the study demonstrate that both treatment modalities were effective in reducing the clinical manifestations of Dadru Kuṣṭha.

Administration of Nava Kaṣhāya in the trial group produced significant clinical improvement, evidenced by marked reduction in the severity of symptoms, decrease in body surface area involvement, and improvement in Dermatology Life Quality Index (DLQI) scores, KOH mount & Fungal culture. The internal administration of Nava Kaṣhāya effectively along with Shirisha Twak Lepa addressed the underlying doṣic imbalance, āma, and kleda, thereby providing comprehensive disease control and reducing recurrence tendency.

The control group treated with Śhīrīṣha Twak Lepa also showed appreciable improvement in clinical features, particularly in kandu and rāga, highlighting the effectiveness of external therapy in symptomatic relief and local disease management. However, when compared to the trial group, the magnitude and sustainability of improvement were relatively lesser, indicating the limitation of external therapy when used alone.

Comparative analysis revealed that the trial group demonstrated superior outcomes in terms of symptom reduction, extent of lesion clearance, and quality of life improvement. This underscores the importance of systemic intervention along with external application in the effective management of Dadru Kuṣṭha.

Overall, the study concludes that Nava Kaṣhāya along with Shirisha Twak Lepa is effective and safe in the management of Dadru Kuṣṭha, and Śhīrīṣha Twak Lepa serves as a beneficial supportive external therapy. The findings support the Ayurvedic principle that combined internal and external treatment, along with nidāna parivarjana, offers a rational and holistic approach in the management of Tinea corporis.

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