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Review Article

A COMPARATIVE CLINICAL EVALUATION OF *TILADI CHURNA* AND *POOTIKADI LEPA* IN THE MANAGEMENT OF *DADRU* W.S.R. TINEA CRURIS.

Dr. Priyanka yadav, Prof. O.P. Singh, Dr. J.P. Singh, Dr. Lokesh yadav

1. Junior Resident, Department of *Kayachikitsa*, Faculty of Ayurveda, IMS, BHU, Varanasi.
2. Professor, Head of the Department, Department of *Kayachikitsa*, Faculty of Ayurveda, IMS, BHU, Varanasi.
3. Associate Professor, Head of the Department, Department of *Panchkarma*, Faculty of Ayurveda, IMS, BHU, Varanasi.
4. P.G. Scholar, P.G. Department of Shalya-tantra, National Institute of Ayurveda, Jaipur.

Address for correspondence:

1. **Dr. Priyanka yadav** Junior Resident, Department of *Kayachikitsa*, Faculty of Ayurveda, IMS, BHU, Varanasi.

E-mail- drsamhebli@yahoo.in

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ABSTRACT

Kustha is the one, which causes vitiation as well as discoloration of the skin. All the skin diseases in *Ayurveda* have been classified under the broad heading of *Kustha* which are further categorized in to *Mahakustha* and *Kṣudrakustha*. *Dadru* is included in both categories due to its quick invading nature. As per modern perspective disease *Dadru* comes under ' Superficial fungal infections of the skin' or Tinea infections. According to Acharyas, *Lepa* is equally or more effective in skin disease rather than internal medicaments alone. That's why both preparations are used for present study. Aim of present clinical study is to study the efficacy of *Tiladi churna[i] &Pootikadi lepa[ii]* in the management of *Dadru* on clinical parameters and to establish the protocol.

KEYWORDS: *Dadru, Tiladi churna, Pootikadi lepa*

INTRODUCTION

All the skin diseases in *Ayurveda* have been classified under the broad heading of *Kustha* which are further categorized in to *Mahakustha* and *Kṣudrakustha*. *Dadru* is a type of *Kustha* that comes under both due to its quick invading nature. In broad sense *Kustha* is the one, which causes vitiation as well as discoloration of the skin. As per modern perspective disease *Dadru* comes under ' Superficial fungal infections of the skin', the most common dermatological manifestation the superficial fungal diseases turn into critical state as multi drug resistance fungal dermatophytosis in course of time that is also well explained in our classical Ayurvedic text as *Dhatuanukraman*. That's why the disease *Dadru* is considered in both the groups of *Kushtha (Kshudra &Maha)* as per *Charak Samhita & Shushruta* Samhita respectively.

Materials and Methods –

Our present research work entitled **"*A Comparative clinical Evaluation of Tiladi churna and Pootikadi Lepa in the management of Dadru w.s.r. Tinea cruris*"** was taken, therefore the present study was conducted with the following aims and objectives:

1. The first object of study was to evaluate the role of *Pootikadi Lepa* in *Dadru* management.
2. The second object was to evaluate the role of *Tiladi Churna* in *Dadru* management.
3. The third object was to assess the synergistic effect of *Tiladi churna* and *Pootikadi Lepa* in the management of *Dadru.*
4. The fourth objective is to evaluate the comparative effect of *Pootikadi Lepa* and *Tiladi churna* with control group.

SELECTION OF CASES

The patients for the clinical study were selected from O.P.D. and I.P.D. of Sir *Sundarlal* Hospital, Department of *Kayachikitsa*, IMS, BHU. Selection was carried out on the basis of relevant history, signs and symptoms of *Dadru* as mentioned in Ayurveda and modern text. Total 60 patients of *Dadru* were enrolled for the above mention clinical study. Patients fulfilling the diagnostic criteria were included in the present study. Out of 60 patients, 6 patients discontinued the treatment during the course of trial. They were dropped out from the study, so 54 patients had completed the trial. A written information and consent form had been given to the selected patients. The patients were explained about the purpose, procedures and possible side-effects of the trial drugs.

INCLUSION CRITERIA

a. Patient with the classical sign and symptoms of *Dadru Kustha*

b. Patient 20 years to 60 years of age were included.

c. Patients belonging to either gender were included.

d. Patient willing to participate in above mentioned trial.

e. Duration of disease should be up to 2 years.

EXCLUSION CRITERIA

a. Skin cancer, psoriasis, eczema etc. associated with fungal infection.

b. The pregnant women and lactating mother were excluded.

c. Patient less than 20 yrs. and above 60 yrs. of age were excluded.

d. Any sensitivity reaction to the preparation

e. Diabetic and cardiac patients.

f. Duration of disease more than 2 years.

DIAGNOSTIC CRITERIA FOR *DADRU*

All the patients were diagnosed and assessed thoroughly on the basis of *Ayurvedik* and modern classical signs and symptoms. Patients examined on the basis of specially prepared proforma as mentioned in epidemiological study.

STUDY DESIGN

For the present study 60 patients of *Dadru* were registered and randomly divided in to following 4 groups-

Group A: In this group, *Pootikadi Lepa* for the local application with *Gomutra.* 15 patients were enrolled in this group out of which 2 patients dropped out and only 13 patients completed the trial.

Dosage- According to the area of involvement by the disease twice daily

Duration- 4 weeks

Group B: In this group, *Tiladi churna* for the internal administration with lukewarm water. 15 patients were enrolled in this group out of which 2 patients dropped and only 13 patients completed the trial.

Dosage- 5 gm twice a day with lukewarm water.

Duration- 4 weeks

Group C: In this group, *Pootikadi Lepa* for local application after mixing with *Gomutra* and *Tiladi Churna* for the internal administration with lukewarm water. 15 patients were enrolled in this group out of which 1 patient dropped and 14 patients completed the trial.

Dosage-

Pootikadi lepa: According to area of involvement by the disease twice daily

Tiladi churna: 5 gm twice a day with lukewarm water.

Duration- 4 weeks

Group D: In this group, Tab itraconazole 100 mg twice a day for oral administration and Terbinafine ointment 1% for local application. 15 patients were enrolled in this group out of which 1 patient dropped and 14 patients completed the trial.

Dosage-

Terbinafine ointment: According to area of involvement by the disease twice daily

Tab Itraconazole: 100 mg twice a day.

Duration- 4 weeks

The patients of all groups will be instructed about *Pathya- Apathya* as mentioned in the classical texts.

PARAMETERS FOR THE ASSESSMENT OF IMPROVEMENT

Classical sign and symptoms of *Dadru Kustha* will be scored and assessed accordingly. Assessment of effects of the therapy was done on the basis of various subjective and objective criteria. For the purpose of assessment, a detailed research performed were incorporating various parameters like *Dashavidha pariksha*, *Aṣṭavidha parikṣha* etc. Assessment was done every 15 days during the entire study period. Affected area

assessment by photography 0, 15 day and 30 day of treatment. Following criteria were adopted for the purpose of assessment.

(a) Subjective parameters

(b) Objectives parameters

(c) Laboratory investigation base parameters

(a) Subjective parameters

On the basis of *Ayurvedik* classical signs and symptoms of *Dadru* were considered under subjective parameters and assessment the overall effect of therapies a special scoring method was adopted as follows.

1.	***Kandu***	**Score**
	No Itching	0
	Mild Itching	1
	Moderate Itching	2
	Severe Itching	3

Mild Itching: Which comes occasionally, does not disturb routine activity, duration is 2 to 3 min; usually scratching is not required.

Moderate Itching: Which occurs frequently and disturbs the routine activity but does not disturb sleep, lasts for longer time, scratching every time is essential, recurs 3 to 4 times in 12 hours.

Severe Itching: Frequently occurs, disturbs routine activity & sleep, lasts for 20 to 30 min, scratching very essential, recurs 8 to 10 times in 12 hours.

2.	***Raga***	**Score**
	Normal skin color	0
	Mild red color	1
	Moderate red color	2

	Dark brown color	3
3.	***Daha***	**Score**
	Absent	0
	Mild (occasionally)	1
	Moderate (whole day continuous)	2
	Severe (Disrupt sleep)	3
4.	***Rookshata* (Dryness) Score**	
	Absent	0
	Mild (whitening of skin)	1
	Moderate (Scaling of skin)	2
	Severe (cracking of skin)	3

(b) Objective parameter

1.	**No of *mandal***	**Score**
	No *mandal*	0
	1 to 3 *mandal*	1
	4 to 6 *mandal*	2
	More than 6 *mandal*	3
2.	**Size of *mandal***	**Score**
	Absent	0
	Less than 5 cm	1

5 to 10 cm	2
More than 10 cm	3

When lesions (*Mandal*) are multiple, the size of the largest lesion is taken into consideration.

3. No of *pidika* on lesion	**Score**
No *pidika*	0
1 to 3 *pidika*	1
4 to 6 *pidika*	2
More than 6 *pidika*	3

(c) Laboratory investigation base parameters

To rule out the other systemic disease routine investigation were carried out before and after treatment.

(1) Hb%

(2) LFT (SGOT, SGPT)

(3) RFT (Urea, Creatinine)

(4) RBS

(5) KOH SCRAPPING TEST

OBSERVATION & RESULT: EFFECT OF THERAPIES

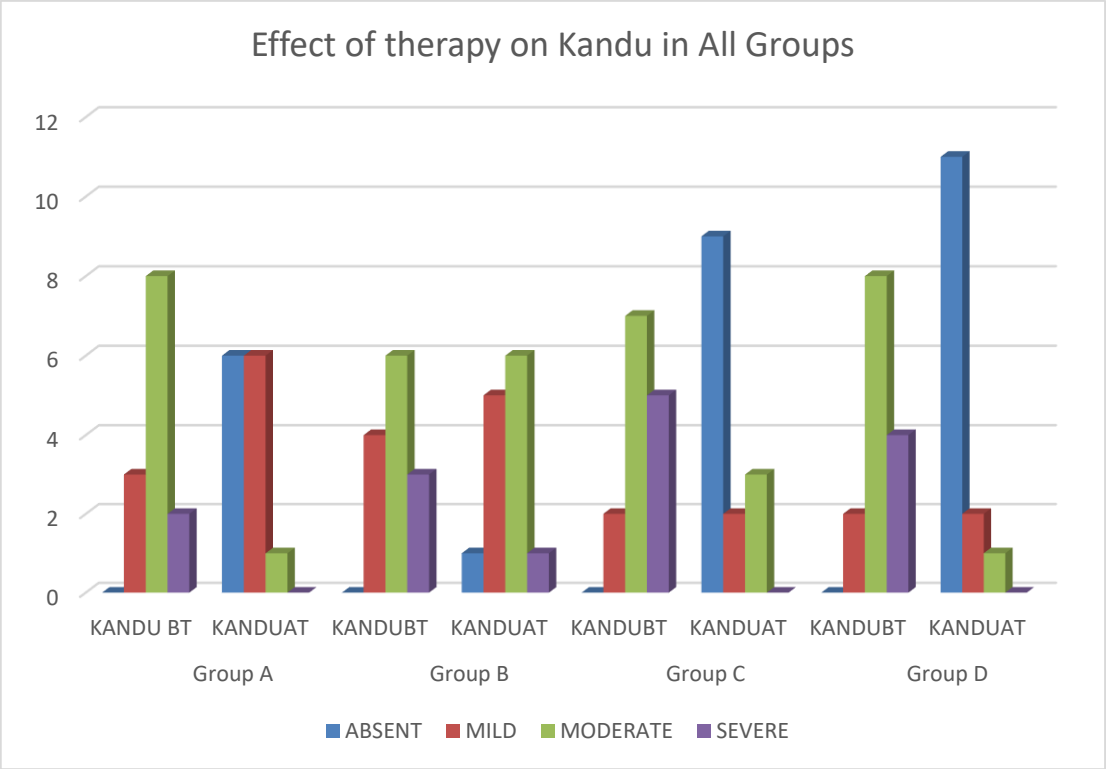
The clinical improvement was assessed on the basis of change in the common symptoms giving a specific score to these symptoms which has been described in epidemiology study. Data analysis of non – parametric variables by using Wilcoxon matched paired test. Clinical observations are related to 54 patients (group A- 13, group B- 13, group C – 14, group D - 14) who completed the trial. Results of therapy in all groups are given below.

Subjective Parameter Base Criteria

Effect of therapy on *Kandu* in all four groups:

Groups	Grade	KANDU No. and percentage of cases		Within the Group comparison (Wilcoxon signed Rank Test)
		BT	AT	
Group A	0	0 (0%)	6 (46.2%)	Z=3.314
	1	3 (23.1%)	6 (46.2%)	p =.001
	2	8 (61.5%)	1 (7.7%)	
	3	2 (15.4%)	0 (0%)	
Group B	0	0 (0%)	1 (7.7%)	Z = 2.236
	1	4 (30.8%)	5 (38.5%)	p =.025
	2	6 (46.2%)	6 (46.2%)	
	3	3 (23.1%)	1 (7.7%)	
Group C	0	0 (0%)	9 (64.3%)	Z =3.360
	1	2 (14.3%)	2 (14.3%)	p =.001
	2	7 (50.0%)	3 (21.4%)	
	3	5 (35.7%)	0 (0%)	
Group D	0	0 (0%)	11(78.6%	Z =3.376
	1	2 (14.3%)	2 (14.3%)	p =.001
	2	8 (57.1%)	1 (7.1%)	
	3	4 (28.6%)	0 (0%)	
Between the Group comparison (Kruskal Wallis Test)		χ^2= 1.951 p =0.583	χ^2=16.205 p =.001	

The overall effect of all groups on *Kandu* after intervention was found significant with p value .001 (BT p value was 0.583).

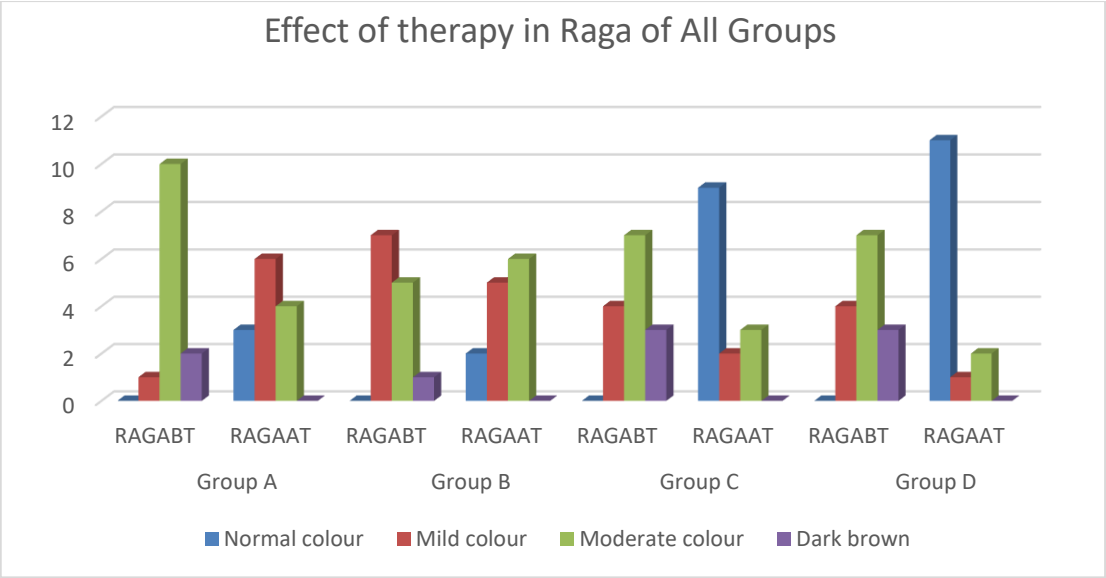


Effect of therapy on *Raga* in all four groups:

Groups	Grade	RAGA No. and percentage of cases		Within the Group comparison (Wilcoxon signed Rank Test)
		BT	AT	
Group A	0	0 (0 %)	3(23.1%)	Z=3.127
	1	1(7.7%)	6(46.2%)	p =.002
	2	10(76.9%)	4(30.8%)	
	3	2 (15.4%)	0(0.0%)	
Group B	0	0(0%)	2(15.4%)	Z = 1.732
	1	7(53.8%)	5(38.5%)	p =.083
	2	5(38.5%)	6(46.2%)	
	3	1(7.7%)	0(0.0%)	
Group C	0	0(0%)	9(64.3%)	Z =3.416
	1	4(28.6%)	2(14.3%)	p =.001
	2	7 (50.0%)	3(21.4%)	
	3	3(21.4%)	0(0.0%)	
Group D	0	0(0%)	11(78.6%)	Z =3.372
	1	4(28.6%)	1(7.1%)	p =.001

	2	7 (50.0%)	2(14.3%)	
	3	3(21.4%)	0(0.0%)	
Between the Group comparison (Kruskal Wallis Test)		χ^2= 4.900 p = .179	χ^2 =11.854 p =.008	

The overall effect of all groups on *Raga* after intervention was found significant with p value .008 (BT p value was 0.179)

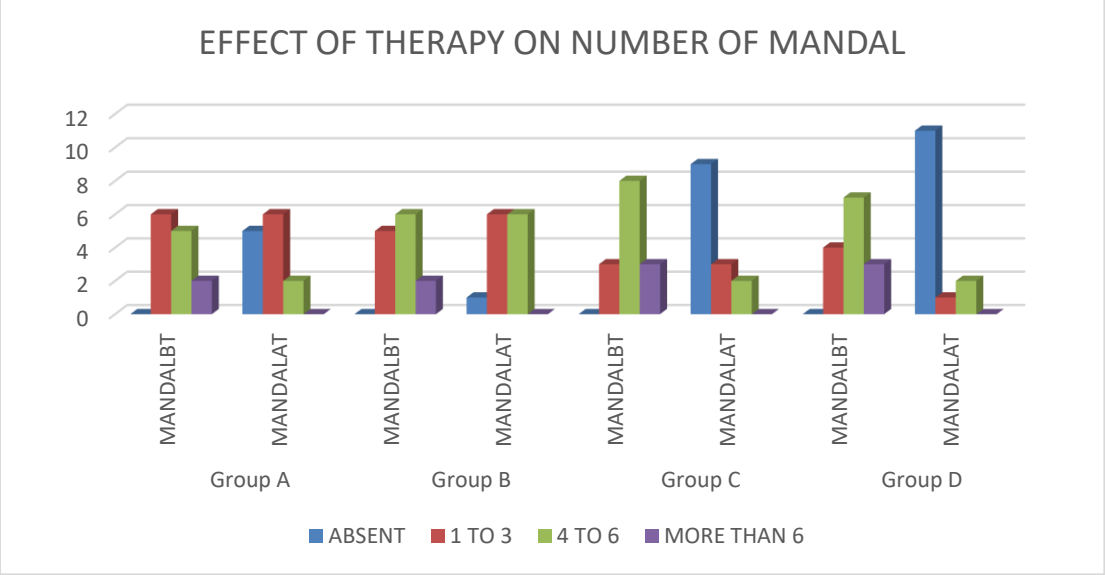


Effect of therapy on number of *Mandal* in all four group:

Groups	Grade	NO. OF MANDAL No. and percentage of cases		Within the Group comparison (Wilcoxon Signed Rank Test)
		BT	AT	
Group A	0	0 (0.0%)	5(38.5%)	Z=2.762 p =.006
	1	6(46.2%)	6(46.2%)	
	2	5(38.5%)	2(15.4%)	
	3	2 (15.4%)	0(0%)	
Group B	0	0(0%)	1(7.7%)	Z = 2.236 p=.025
	1	5(38.5%)	6(46.2%)	
	2	6(46.2%)	6(46.2%)	
	3	2(15.4%)	0(0%)	

Group C	0	0(0%)	9(64.3%)	Z =3.250
	1	3(21.4%)	3(21.4%)	p =.001
	2	8(57.1%)	2(14.3%)	
	3	3(21.4%)	0(0%)	
Group D	0	0(0%)	11(78.6%	Z =3.372
	1	4(28.6%)	1(7.1%)	p =.001
	2	7 (50.0%)	2(14.3%)	
	3	3(21.4%)	0(0%)	
Between the Group comparison (Kruskal Wallis Test)		χ^2= 1.716 p = .633	χ^2 =13.807 p =.003	

The overall effect of all groups on *No. of Mandal* after intervention was found significant with p value .003 (BT p value was 0.633)

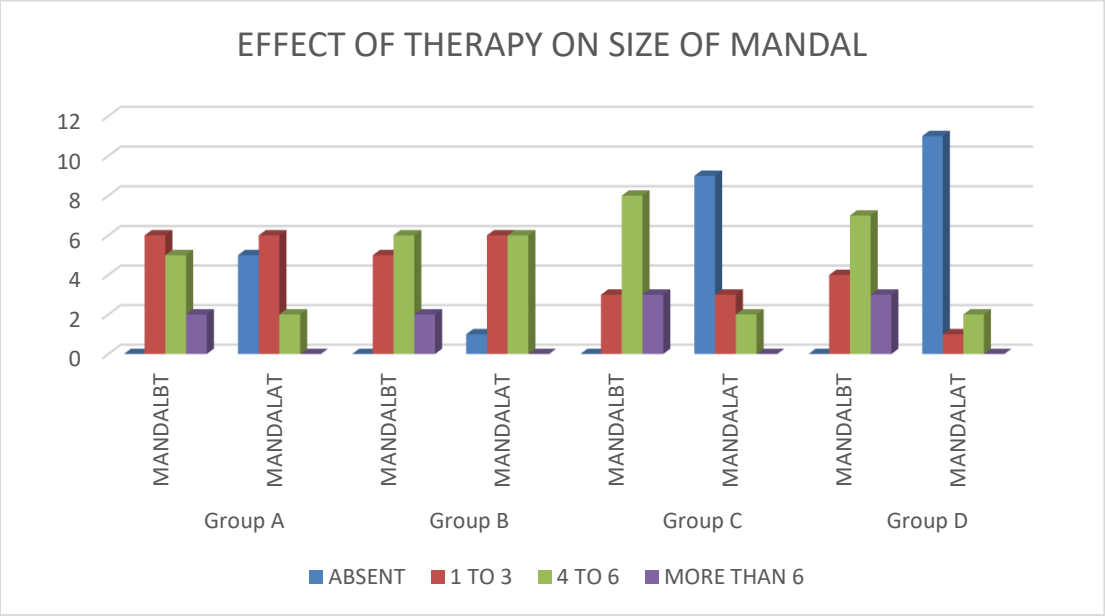


Effect of therapy on Size of *Mandal* in all four groups:

Groups	Grade	SIZE OF MANDAL No. and percentage of cases		Within the Group comparison (Wilcoxon Signed Rank Test)
		BT	AT	
Group A	0	0 (0.0%)	5(38.5%)	Z=2.972
	1	4(30.8%)	4(30.8%)	p =.003

	2	7(53.8%)	4(30.8%)	
	3	2(15.4%)	0(0.0%)	
Group B	0	0(0%)	1(7.7%)	Z = 1.890
	1	5(38.5%)	7(53.8%)	p =.059
	2	5(38.5%)	3(23.1%)	
	3	3(23.1%)	2(15.4%)	
Group C	0	0(0%)	9(64.3%)	Z =3.115
	1	4(28.6%)	5(35.7%)	p =.002
	2	7(50.0%)	0(0.0%)	
	3	3(21.4%)	0(0.0%)	
Group D	0	0(0%)	11(78.6%)	Z =3.236
	1	4(28.6%)	3(21.4%)	p =.001
	2	8(57.1%)	0(0.0%)	
	3	2(14.3%)	0(0.0%)	
Between the Group comparison (Kruskal Wallis Test)		χ^2=0.136 p = .987	χ^2 =18.640 p =.000	

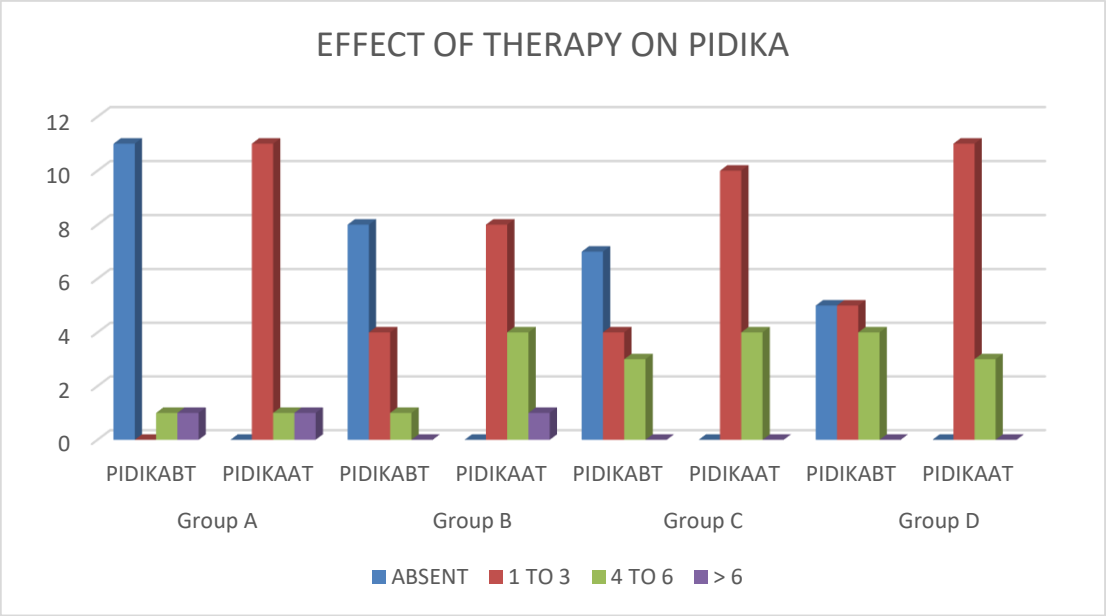
The overall effect of all groups on Size of *Mandal* after intervention was found highly significant with p value .000(BT p value was 0.987)



Effect of therapy on *Piḍika* in all four groups:

Groups	Grade	PIDIKA No. and percentage of cases		Within the Group comparison (Wilcoxon Signed Rank Test)
		BT	AT	
Group A	0	11(84.6%)	11(84.6%)	Z=1.000 p =.317
	1	0(0.0%)	1(7.7%)	
	2	1(7.7%)	1(7.7%)	
	3	1(7.7%)	0(0.0%)	
Group B	0	8(61.5%)	8(61.5%)	Z = 0.000 p =1.000
	1	4(30.8%)	4(30.8%)	
	2	1(7.7%)	1(7.7%)	
	3	0(0.0%)	0(0.0%)	
Group C	0	7(50.0%)	10(71.4%)	Z =2.449 p =0.014
	1	4(28.6%)	4(28.6%)	
	2	3(21.4.0%)	0(0.0%)	
	3	0(0.0%)	0(0.0%)	
Group D	0	5(35.7%)	11(78.6%)	Z =2.640 p =.008
	1	5(35.7%)	3(21.4%)	
	2	4(28.6%)	0(0.0%)	
	3	0(0.0%)	0(0.0%)	
Between the Group comparison (Kruskal Wallis Test)		χ^2= 5.371 p = .147	χ^2 =1.891 p =.595	

The overall effect of all groups on No. of *Pidika* after intervention was found not significant with p value .595 (BT p value was 0.147)

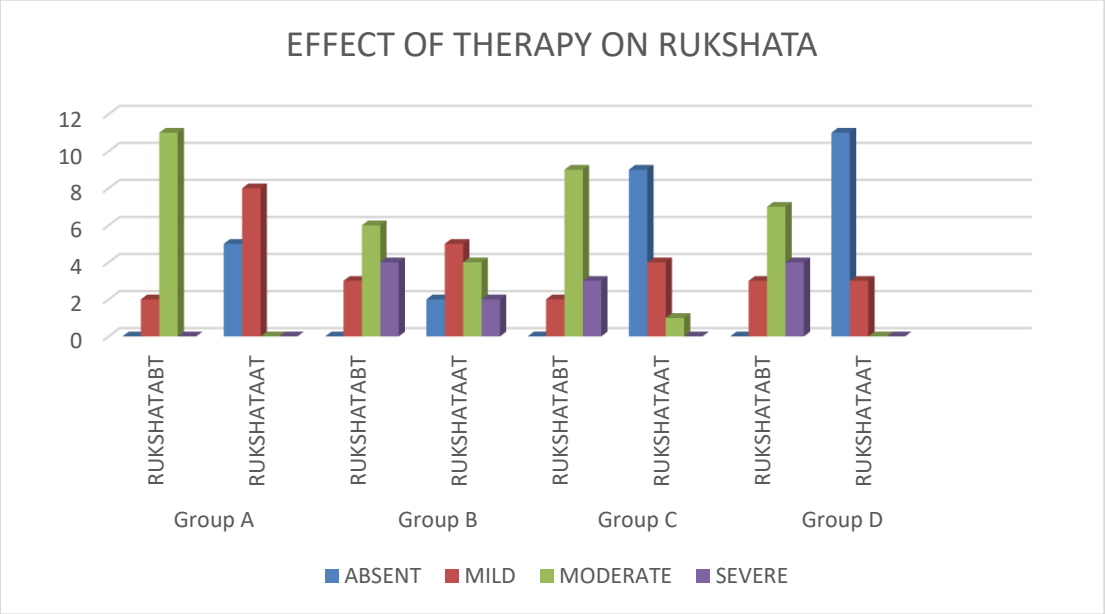


Effect of therapy on *Rukshata* in All four groups:

Groups	Grade	RUKSHATA No. and percentage of cases		Within the Group comparison (Wilcoxon Signed Rank Test)
		BT	AT	
Group A	0	0(0.0%)	5(38.5%)	Z=3.358 p =.001
	1	2(15.4%)	8(61.5%)	
	2	11(84.6%)	0(0.0%)	
	3	0(0.0%)	0(0.0%)	
Group B	0	0(0.0%)	2(15.4%)	Z = 2.828 p =.005
	1	3(23.1%)	5(38.5%)	
	2	6(46.2%)	4(30.8%)	
	3	4(30.8%)	2(15.4%)	
Group C	0	0(0.0%)	9(64.3%)	Z =3.372 p =.001
	1	2(14.3%)	4(28.6%)	
	2	9(64.3%)	1(7.1%)	
	3	3(21.4%)	0(0.0%)	
Group D	0	0(0.0%)	11(78.6%)	Z =3.376 p =.001
	1	3(21.4%)	3(21.4%)	
	2	7(50.0%)	0(0.0%)	
	3	4(28.6%)	0(0.0%)	

Between the Group comparison (Kruskal Wallis Test)	χ^2= 1.326 p = .723	χ^2 =16.473 p =.001	

The overall effect of all groups on *Rukshata* after intervention was found significant with p value .001(BT p value was 0.723)

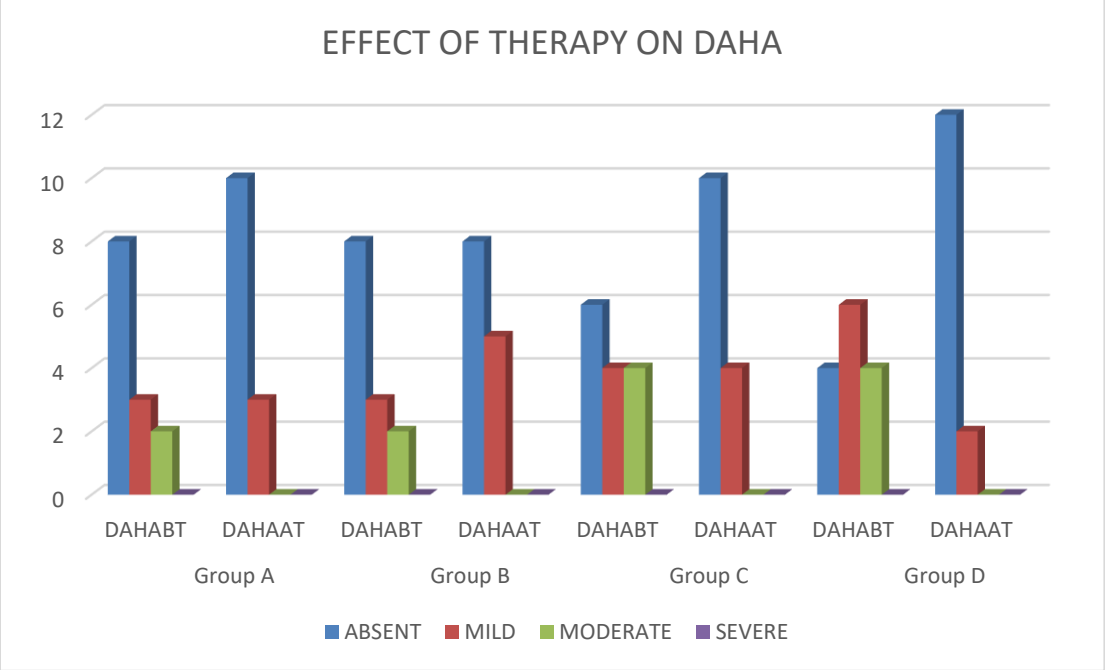


Effect of therapy on *Daha* in four groups:

Groups	Grade	DAHA No. and percentage of cases		Within the Group comparison (Wilcoxon Signed Rank Test)
		BT	AT	
Group A	0	8 (61.5%)	10(76.9%	Z=2.000 p =.046
	1	3 (23.1%)	3 (23.1%)	
	2	2 (15.4%)	0(0.0%)	
Group B	0	8 (61.5%)	8 (61.5%)	Z = 1.414 p =.157
	1	3 (23.1%)	5 (38.5%)	
	2	2 (15.4%)	0(0.0%)	
Group C	0	6 (42.9%)	10(71.4%	Z =2.530 p =.011
	1	4 (28.6%)	4 (28.6%)	
	2	4 (28.6%)	0 (0.0%)	

Group D	0	4 (28.6%)	12(85.7%	Z = 2.972
	1	6 (42.9%)	2 (14.3%)	p =0.003
	2	4 (28.6%)	0(0.0%)	
Between the Group comparison (Kruskal Wallis Test)		X^2= 3.678 p = .298	X^2 =2.118 p =.548	

The overall effect of all groups on *Daha* after intervention was found not significant with p value .548 (BT p value was 0.298)

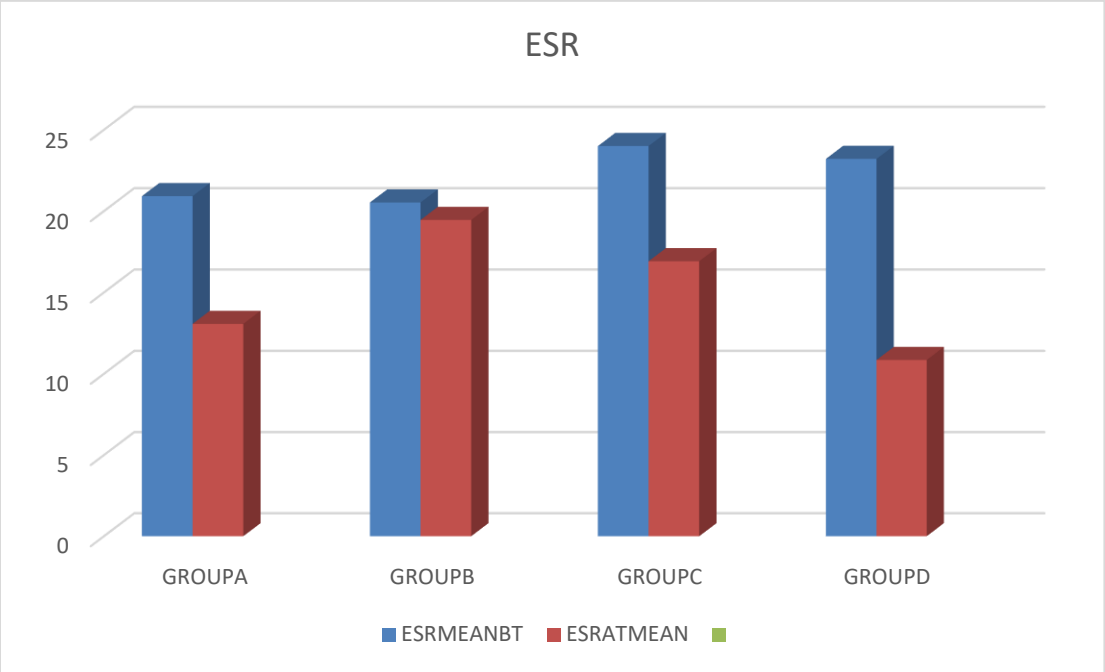


Effect of therapy on ESR in all four groups:

Groups	ESR Mean ± SD		Within the group comparison Paired t test (BT-AT)
	BT	AT	
Group A	20.92±5.007	13.07±3.174	7.846±3.484 t=8.119 p = 0.000
Group B	20.53±3.478	19.46±3.356	1.076±1.255

			t = 3.092 p =0.009
Group C	24.00±5.276	16.92±3.429	7.071±4.178 t =6.333 p = 0.000
Group D	23.21±4.172	10.85±2.032	12.35±4.271 t = 10.824 p = 0.000
Between the group comparison One-way ANOVA	F= 1.882 p =0.145	F= 21.576 P = .000	
Post -Hoc test Significant Pairs p<0.05		0.000(A/B) 0.011(A/C) 0.000(B/A) 0.000(B/D) 0.011(C/A) 0.000(C/D) 0.000(D/B) 0.000(D/C)	

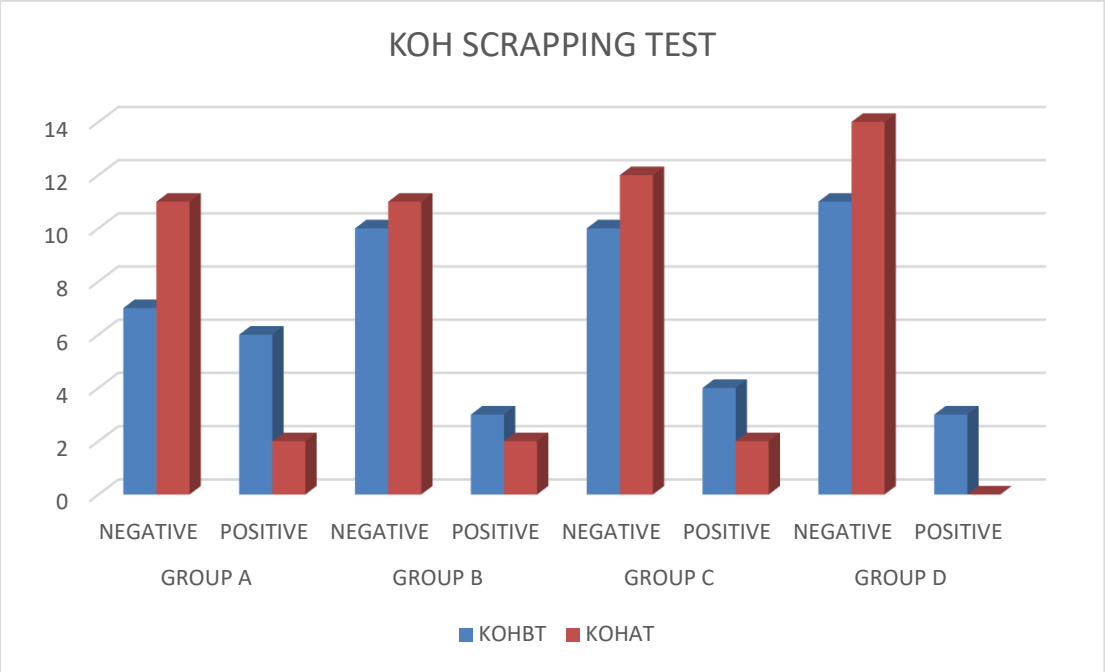
Overall effect of all groups in ESR after intervention is statistically highly significant with p value 0.000 (BT p = 0.145)



Effect of therapy on KOH SCRAPPING in four groups:

Group	Status	KOH No. and % of cases		Within the Group Mc Nemar Test
		BT	AT	
Group A	Negative Positive	7(53.8%) 6(46.2%)	11(84.6%) 2(15.4%)	p = 0.125
Group B	Negative Positive	10(76.9%) 3(23.1%)	11(84.6%) 2(15.4%)	p= 1.000
Group C	Negative Positive	10(71.4%) 4(28.6%)	12(85.7%) 2(14.3%)	p=0.500
Group D	Negative Positive	11(78.6%) 3(21.4%)	14(100%) 0(0.0%)	p=0.250
Between the Group Comparison Chi square test		**$\chi 2 = 2.429$** **p = 0.488**	χ^2 =2.374 p =0.499	

Results: There is no significant change in KOH Scrapping test before and after treatment in all four groups.



Total effect of the therapy in all groups:

Improvement	No. and percentage of cases				Total
	Group A	Group B	Group C	Group D	
No improvement	2 (15.4%)	8 (61.5%)	0 (0%)	0 (0%)	10 (18.5%)
Mild improvement)	8 (61.5%)	5 (38.5%)	5 (35.7%)	3 (21.4%)	21 (38.9%)
Moderate improvement	1 (7.7%)	0 (0%)	7 (50.0%)	3 (21.4%)	11 (20.4%)
Marked improvement	2 (15.4%)	0 (0%)	2 (14.2%)	8 (57.14%)	12 (22.2%)
Total	13	13	14	14	
X2 = 21.8 df = 3 p = 0.000					

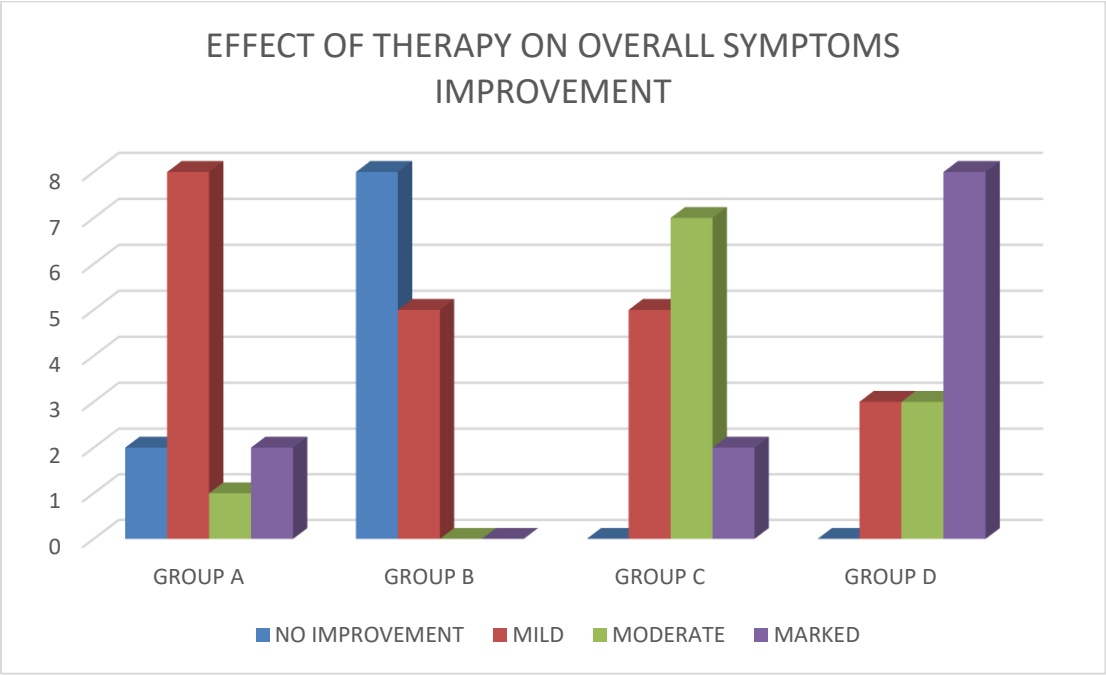
The overall improvement has been calculated on the basis of presence or absence of seven symptoms before and after treatment as given below:

When there is no change in number of symptoms (0%)- No improvement

Up to 50% (presence of 4 symptoms or more)- Mild improvement

51-75% (presence of 2 to 3 symptoms)- Moderate improvement

More than 75% (presence of 1 or absence of all symptoms)- Marked improvement



Discussion:

Probable Explanation for Effect of Group B

In Group B, *Tiladi churna* was given 5gm twice a day with lukewarm water. The constituents of *Churna* are *Bakuchi* (2 parts) and Krishna *tila* (1 part). *Bakuchi* posses *Laghu, Ruksha guna, Tikta rasa, Katu vipaka* which are opposite of *Kapha Dosha* and may help in relieving symptoms of *Dadru.* This is also *Kaphapitthara* in nature and mentioned in *Katuka varga* and *Tikta skandha* [iii]which are *Kustha* and *kandughana*. But *Bakuchi* is used specifically in *Shwitra roga* rather than other *Kustha*. Psoralen, chemical constituent of *Bakuchi* stimulates melanogenesis [iv]so this drug is not specific for *Dadru* but for *Shwitra.* Another constituent is Krishna *tila* which has *Katu, Tikta* rasa, *Katu vipaka* and *Ushna veerya* so it seems it may be useful in *Kapha* dominant *Dadru* but its nature is *Kaphapittavardhak* so it may aggravate the symptoms of *Dadru*. It is included in *Swedopaga Mahakashaya* [v]by Acharya *Charak* so it may increase *Kleda* at the affected site and aggravate the symptoms like *Kandu*. Above discussion reveals that Krishna *tila* may increase the symptoms of *Dadru* rather than alleviation. But some phytochemical study reveals some secondary metabolites which exhibits antifungal effect on some species of fungus.

Maximum patients of the group were in the category of no improvement (8 out of 13) but there is no aggravation of symptoms after drug administration.

Probable Explanation for Group A

In Group A, *Pootikadi Lepa*, was used for local application twice a day after mixing with *Gomutra*. First constituent is *Pootikaranj* which consists *Laghu, Tikshana, Vishada, Sukshama, Khara guna* and *Ushna veerya* which are opposite to the nature of disease, may be the reason to alleviate the symptoms like *Kandu*, number and size of *Mandal*, *Rukshata* etc. This drug is also included in *Lekhaniya Mahakashaya* by Acharya *Charak*[vi] so it may be specifically helpful in reducing elevation and size of Mandal due to debridement of uppermost dead skin layer due to *Lekhaniya guna*. The next component is *Aragwadha* which is specifically mentioned in *Kusthaghana* and *Kandughana Mahakashaya*[vii] and *Kaphapittahara* in nature so it can be considered specific drug for *Dadru*. It may specifically relieve *Kandu* due to *Kaphanashak guna*, *Daha a*nd *Pidika* due to *tikta* rasa and *sheeta veerya*. It also contains secondary metabolites notably phenolic compounds and tannins which have specific antifungal effect.

Another one constituent of *lepa* is *Snuhi* which is *Laghu, Tikshana, Ushna, Vishada* and used as a *kshar s*o it alleviates the symptoms due to opposite nature of the disease. It may specifically subside *Kandu* due to *guna* opposite to *Kapha dosha* and no. and size of Mandal due to *chhedan* and *lekhan* property of *Kshar*[viii]. Also contains secondary metabolites like phenol, tannins, flavonoids contain antifungal activity. [ix]

The next component is *Devdaru (Cedrus deodara*) which contains *Katu, Tikta*, Kashaya rasa, *Katu Vipaka, Ushna veerya* so it may be helpful in *Dadru* management specifically in *Kandu* and *Daha* and *Pidika* due to *tikta rasa* and it also contains secondary metabolite *Himachalol, Atlantolone* [x]due to which it exhibits antifungal activity in Dermatophytosis.

The next constituent, *Jaati* contains properties just opposite to *Kapha Dosha* and also mentioned in *Kusthghana Mahakashaya* by Acharya *Charak* and jasmine also exhibits antifungal activity against Candida albicans.

The last constituent of *Lepa* is Ark (*Calotropis procera*) which posses all properties opposite to *Kapha* and also acts as *kshar* so may be helpful in all the symptoms of *Dadru* due to its *Ushna* and *lekhan guna*. Whole plant specifically latex contains *antidermatophytic* activity which is proved in many phytochemical studies[xi].

Lepa is applied after mixing with *Gomutra* which also *Kaphaghana* and relieves *Kandu* according to Acharya *Charak*[xii]. *Gomutra* also posses antifungal and antimicrobial activities and increase the bioavailability of drugs.

Above discussion suggested that all the drugs in the *lepa* are potent *Kusthaghana* and contains all properties opposite to the nature of disease, having *Sodhana* and *Lekhan* properties and also posses secondary

metabolites with antifungal activity. External application of drugs in skin disease is considered equally or more important in modern medicine also. Maximum patients of this group got mild relief (up to 50%) but some patients were in the category of moderate improvement and marked improvement also.

Comparison of Group C with Group A and B

Group C contains both *Pootikadi Lepa* and *Tiladi Churna* so exhibits additional effect. *Lepa* along with oral medication always gives better results in skin disease than single one. That's why Group C exhibits better results than Group A and B. Maximum patients of this group were in the category of moderate improvement and no patient is in the categorization of mild and no improvement.

Comparison of Group D with Group C

Out of total 12 patients of marked improvement, 8 patients were from Group D and 2 from Group C. 11 patients who got moderate improvement, 7 pts from Group C and 3 from Group D so on the basis of above results, it is proved that Group D has better results than Group C, A and B. Group D is control group which contains scientifically proved fungicidal and fungistatic drugs so exhibits better results than others.

Overall Effect of Therapy on the basis of 7 Symptoms Present or Absent Before and After Treatment

Out of 54 patients, 10 patients got no improvement from the therapy (2 in Group A and 8 in Group B), 21 patients were in mild improvement category (8 in Group A, 5-Group B, 5-Group C and 3 in Group D), 11 patients were found in the category of moderate improvement (1 from Group A, 7 from Group C and 3 from Group D) and out of total patients 12 patients got marked improvement (2 patients in Group A, 2 in Group C and 8 in Group D)

Overall effect of therapy on all symptoms of *Dadru* is statistically highly significant with p value 0.000.

On the basis of improvement in number of symptoms, best results were found in Group D followed by Group C followed by Group A and least improvement was found in Group B

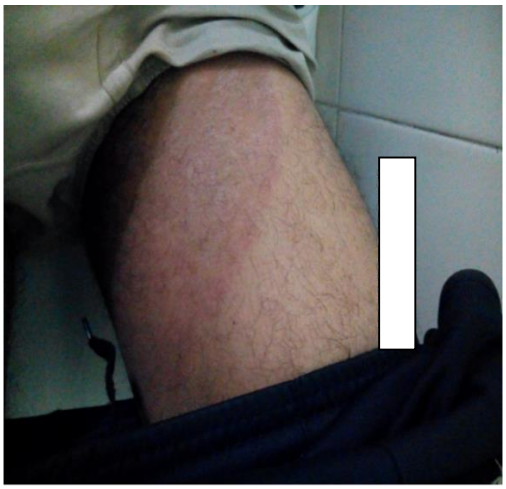
Conclusion:

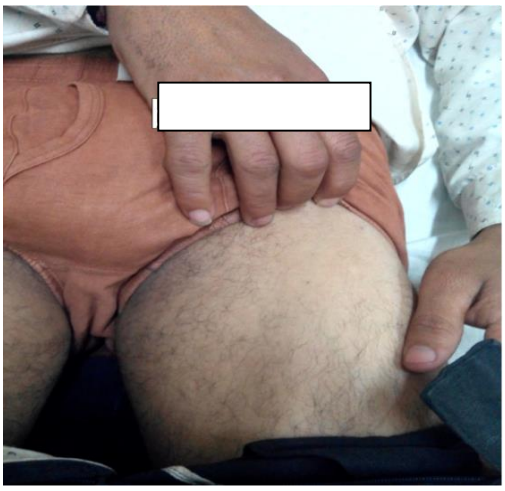
Decreasing order of Groups improvement according to symptoms present or absent before or after treatment

Group D > Group C > Group A > Group B

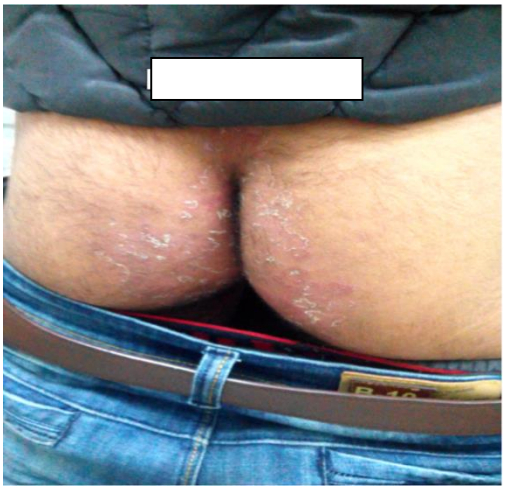
- On conducting the clinical study, it was concluded that both trial drugs are effective in the management of *Dadru* but *Tiladi churna* exhibits lesser effect than *Pootikadi lepa*.

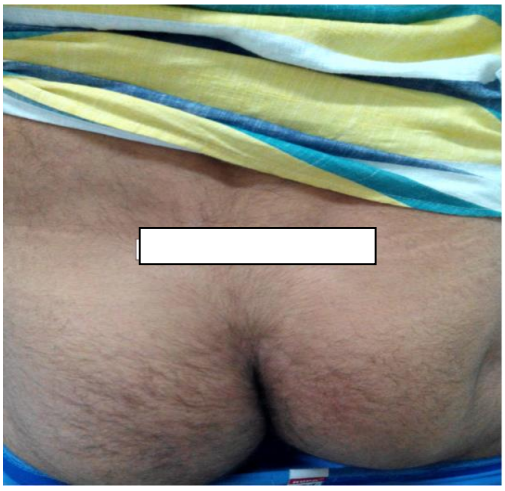
No side effects of drugs were noted during the whole study period, so we can say that all the trial drugs are safe.



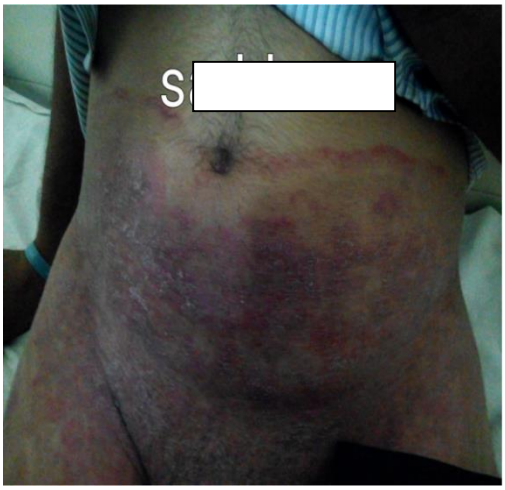


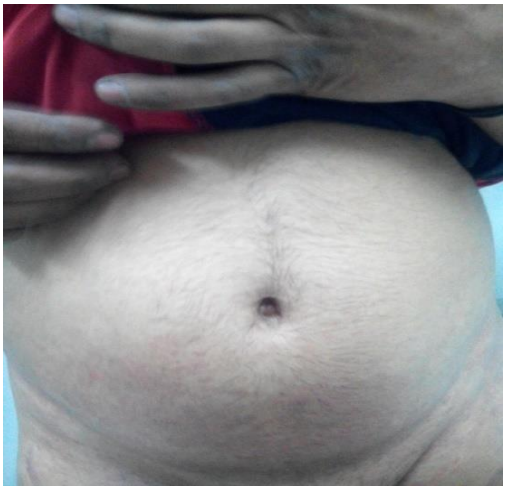
Group A **BT** **AT**



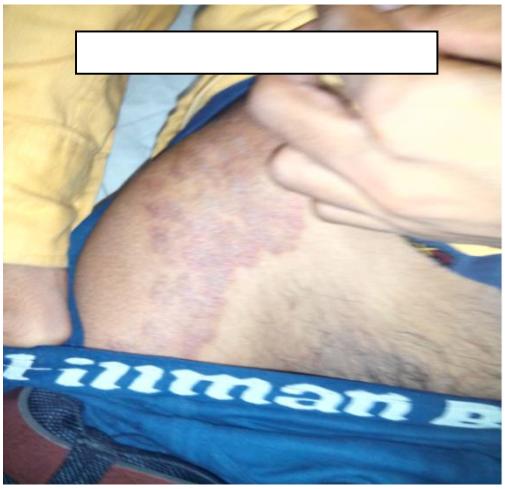


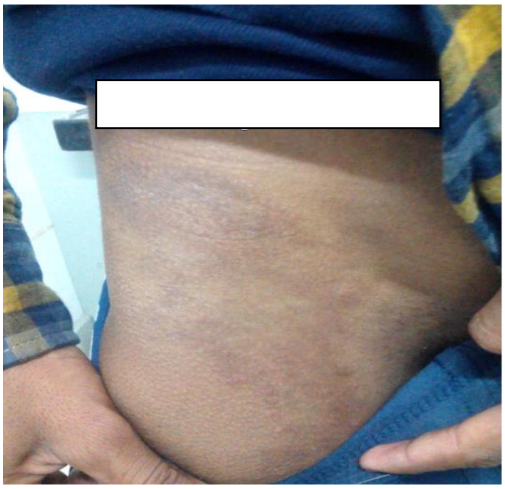
Group B **BT** **AT**



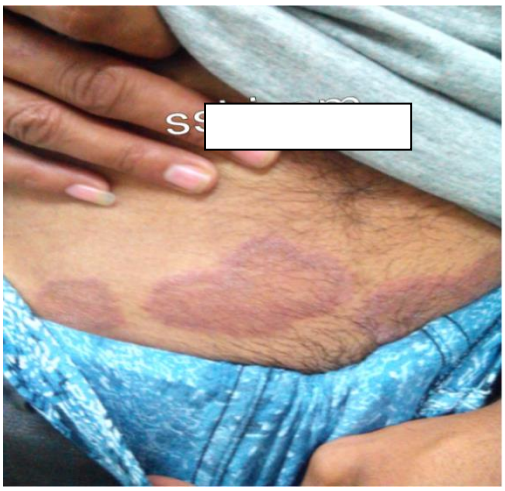


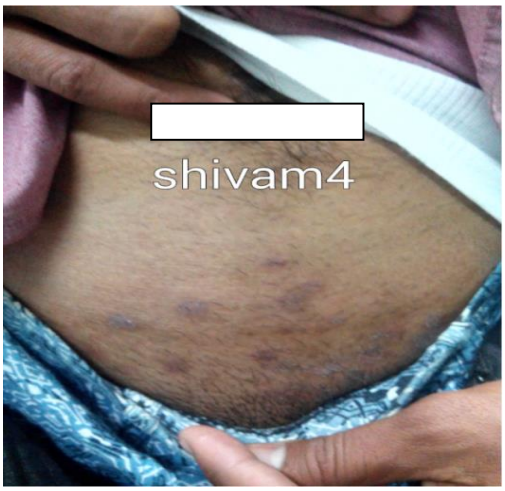
Group C **BT** **AT**





Group A **BT** **AT**





Group C **BT** **AT**

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