

Role of *Vamana Karma* in the Management of *Ekakuṣṭha* (Psoriasis)

Patel Manish^{1*}, Patel Kalapi², Gupta S N³, Kulashreshtha D⁴ and Jain Jinesh⁵

^{1,3}Department of Kayachikitsa, J. S. Ayurveda College, Nadiad, Gujarat, India

² Department of Panchakarma, J. S. Ayurveda College, Nadiad, Gujarat, India

⁴ Government (Auto) Ayurveda College, Rewa, MP, India

⁵ Department of Panchakarma, Government (Auto) Ayurveda College, Rewa (MP) , India

Abstract

Introduction: *Vamana* along with *kaiśora guggulu* and *mañjiṣṭhādīkvātha* are the common Ayurvedic treatments useful for the treatment of *ekakuṣṭha* (psoriasis). Effect of oral medication may be more effective after performing the *vamana karma*. Currently there is no scientific data that allows estimating the potential effectiveness of two operation *i.e.*, *vamana karma* followed by oral medicines and only oral Ayurvedic medicines as a treatment of psoriasis.

Methods: Patients of psoriasis were randomly divided into two groups and treated with *vamana karma*, twice, followed by oral medicines *i.e.*, *kaiśora guggulu* and *mañjiṣṭhādīkvātha* in group A whereas same oral medicines without *vamana* was given in the patients of group B. All the patients were assessed before and after the treatment with signs and symptoms, Dermatology Life Quality Index (DLQI) and PASI score. Paired ‘t’ test was utilized for testing of hypothesis.

Results: The signs and symptoms showed more than 60% improvement in patients of group A where $P \leq 0.001$ for all of them. However, they were showed approximately 20% improvement in signs and symptoms of the patients of group B where $P \leq 0.001$. 65.17% improvement was found in DLQI of the patients of group A while 14.34% was in the patients of group B.

Conclusion: *Vamana karma* is effective to reduce the signs and symptoms and improved the DLQI and PASI in the patients of psoriasis. It may play an enhancive role for the optimum effect of *kaiśora guggulu* and *mañjiṣṭhādī kvātha* in the patients of group A.

Keywords

Vamana, *samśodhana*, *kuṣṭharoga*, *kvātha*



Greentree Group

Received 05/04/17 Accepted 20/04/17 Published 10/05/17

INTRODUCTION

Patient of *ekakuṣṭha* has *asvedana* (loss of perspiration) with *matsyaśakalopam* (fish like shiny lesions on skin) and having *mahāvāstu* (chronic and long standing nature as well large and deep involvement of skin)¹. Psoriasis is a common, chronically recurring, papulo-squamous disease, characterized by various sized silvery-white, scaly patches seen most commonly on the elbows, the knees, and the scalp but later on covered whole body. Worldwide prevalence of psoriasis is 2%, but studies in developed countries have declared it more than twice the global estimate at an average of 4.6%². Evidence suggests that it is the most challenging disorders having negative impact on physical, mental, social and economical aspect of life of the psoriatic patients³⁻¹¹. According to the characteristic, *ekakuṣṭha* can be co-related with psoriasis of modern medicine.

Samśodhana (*vamana-virecana*) was indicated as a first line treatment for the *kuṣṭha roga* because of its chronic and recurring nature with the involvement of all *tridoṣa* as well as four main *duṣyas*¹². Main characteristics i.e., thickened skin with scaling and itching have suggested the *kapha* dominancy in psoriasis. *Vamana* was indicated as a main eradicated treatment for the *kapha* dominating skin disorders¹³.

Kaiśora guggulu and *mañjiṣṭhādikvātha* are the oral medicaments mentioned in ayurvedic classics for the treatment of various skin disorders¹⁴⁻¹⁵. Both are being used since many years by ayurvedic physician for psoriasis as well as many types of skin disorders with satisfactory results in routine practice. In research studies as from the available sources, mostly role of *virecana* or role of both *vamana* and *virecana* were analyzed. Moreover *vamana karma* in comparison with any classical and routinely used oral Ayurvedic medicaments is yet to be established. Ayurvedic classics also mentioned repeated *samśodhana* (*vamana, virecana, raktamokṣaṇa* and *śirovirecana*) for getting good result in *kuṣṭha roga*. Regarding the classical statement of repeatedly *samśodhana*, there was only paucity in the field of Ayurvedic research. Currently there is no scientific data that allows estimating the potential effectiveness of the two times operation of *vamana karma* in the treatment of psoriasis. Effect of oral medicine may be more effective after performing the *vamana karma*.

We therefore aimed to measure the effect of commonly used oral Ayurvedic medicaments after two times performing *vamana karma* in compare to use of same

oral medicaments without *vamana karma*. The assessed outcomes also included the effect of Psoriasis on quality of life suggesting three different categories to determine the severity of psoriasis as mild, moderate and severe with the help of DLQI (Dermatology Life Quality Index)¹⁶. DLQI is a questionnaire which further helps to understand the impact of Psoriasis on quality of life and effect of treatment on it was also give the knowledge that how Ayurveda can improve life quality of these patients.

HYPOTHESIS

Null hypothesis (H_0):

Patients of *ekakuṣṭha* (psoriasis) who consumed *vamana karma* two times along with oral medicaments i.e., *kaiśora guggulu* and *mañjiṣṭhādi kvātha* have same relief compared to the patients who consumed only oral medicaments without *vamana karma*.

Alternative hypothesis (H_A):

Patients of *ekakuṣṭha* (psoriasis) who consumed *vamana karma* along with oral medicaments i.e., *kaiśora guggulu* and *mañjiṣṭhādi kvātha* have more relief compared to the patients who consumed only oral medicaments without *vamana karma*.

MATERIALS AND METHODS

Study design and sample size:

It was un-controlled, randomized, open labeled clinical study contains 30 participants in each group. Generally in this type of condition, in India patients usually first consult conventional medicine and then choose Ayurvedic treatment as a complementary approach. *Vamana karma*, an Ayurvedic procedure had placed as an intervention in this study. Hence, blinding was also not possible.

Selection of the patients and recruitment procedure:

Patients who fulfill the inclusion criteria (see below) were selected randomly from the out-patient and in-patient department of the P D Patel Ayurveda Hospital attached with the J S Ayurveda College, Nadiad, Gujarat and government Ayurveda hospital, Rewa (MP). All the participants were recruited randomly and divided in to two groups as Group A and Group B. All the participants were instructed and informed about the whole study procedure and duly signed informed consent were also taken.

Randomization:

Participants were randomized in group A and group B by using the block randomization methods with the help of web address

<https://www.sealedenvelope.com/simple-randomiser/v1/lists> which is an online tool to create a blocked randomization list for clinical trial.

Total 8 numbers of blocks with 6, 8 and 10 block sizes were generated for randomization of 62 participants on this web address as a feed number of 11683514634897. Unique identification codes were also generated for the participants. 1st, 7th and 8th blocks were of 6 participants (block size), 2nd, 3rd and 4th blocks were contains 8 participants (block size) and 5th and 6th blocks were of 10 size.

Criteria for diagnosis:

Patients having the classical signs and symptoms of the psoriasis as well as *ekakuṣṭha* i.e., *matsyaśakalopam* (silvery white plaques with scaling of the affected skin site), *asvedanam* (loss of perspiration on affected site) and *mahāvāstu* (having a chronic and long term disease state or extensive localization) were selected.

A special proforma containing etiological factors of *kuṣṭha* with *duṣṭī lakṣaṇa* of *doṣa*, *dūṣya* and *srotas* etc. were fulfilled. Patients were thoroughly questioned and examined on the basis of prepared proforma and clinical tests like Auspitz sign, Candle grease sign, etc were carried out to confirm the diagnosis.

Routine hematological laboratory investigations i.e. Hb, TLC, DLC, ESR, SGPT, serum protein, Blood sugar level along with urine routine microscopic examination were performed to exclude the other pathology.

Inclusion criteria:

– Patients confirmed the diagnosis and having the age between 18 to 50 years with either of the sex.

Exclusion criteria:

– Patients contraindicated for Vamana karma

– Patients having pregnancy or lactating period.

– Patients having any complications of the psoriasis.

– Patients with chronic co-morbidities i.e. cardiovascular disorders, hypo or hyper thyroidism and other kidney, liver or metabolic disorders.

– Patients with other systemic disease like diabetes mellitus, cancer, AIDS, tuberculosis, skin diseases like seborrhic dermatitis, lichen simplex chronicus and others which interfere in the outcome of the research.

Study procedure and time period:

All the patients were randomly divided into two groups. Patients of group A were treated in in-patient department with *vamana karma*

followed by oral ayurvedic medicines i.e., *kaiśora guggulu* and *mañjiṣṭhādi kvātha*. Total time limit for the patients of group A was maximum of 60 days.

a) *Ābhyantara snehapāna* with *pañcatikta ghr̥ta* for 3 to 7 days according to the *koṣṭha* and *agni* of the patients. *Ābhyantara snehapāna* were stopped after getting the *samyaka snehapāna* sings (minimum 3 and maximum 7 days).

b) *Abhyaṅga* and *svedana*: after completion of *snehapāna*, participants were operated for *sarvāṅga abhyaṅga* with *jātyādi taila* and *sarvāṅga bāṣpa svedana* for next two days.

c) *Vamana karma*: *Vamana karma* was performed classically on the 2nd day after the *samyaka snehapāna* with the help of *madanaphala pippalī cūrṇa* and honey in the morning (from 10 to 11 AM). The dose of the *madanaphala pippalī cūrṇa* was varied according to the *agni* and *koṣṭha* of the patients.

d) *Saṁsarjana karma*: All the participants were kept on the *saṁsarjana karma* for the next 3 to 7 days. *Saṁsarjana karma* was performed according to the classics with require period and availability.

e) *Śamana yoga*: Then after all the participants were treated with *śamana yoga*

(ayurvedic classical remedies – mentioned above) for next 1 week period.

f) The same procedure (i.e. *vamana* procedures) was performed again after the completion of 1 week *śamana* treatment in all the participants and again 3 weeks *śamana* treatment was also given to the participants of the group A after the completion of second phase of the therapy.

Total period of treatment in the group A was of maximum 60 days. Patients of group B were treated with only oral ayurvedic medicines and total duration of the treatment was of 4 weeks.

Diet: All the participants were instructed for the following diet (except *saṁsarjana*).

- Breakfast: *Cyavanaprāśāvaleha* – 10 g with 150 ml milk (Amul milk).
- Lunch: Boiled mung, mung beans soup, boiled vegetables chapatti and rice.
- Dinner: Mung beans soup, rice or Khichadi (Indian recipe which contains equal quantity of mung beans and rice), boiled vegetables.
- Others: Patients may take fruits (only Papaya and sweet apple) and pop rice if they become hungry during the day period other than lunch, breakfast and dinner. They were instructed not to take milk with any food items. Salts, oily, spice and sour taste were totally restricted, if not possible, patients

may add *saindhava lavaṇa* (Ayurvedic salt) in above food items during cooking.

Table 1 Grade score of signs and symptoms of *ekakūṣṭha* and psoriasis

SIGNS AND SYMPTOMS	GRADE SCORE				
	0	1	2	3	4
<i>Asvedana</i> (loss of perspiration)	Normal <i>svedana</i>	Little <i>svedana</i>	Normal <i>sveda</i> with exercise	Little <i>sveda</i> with exercise	No <i>sveda</i> after exercise
<i>Mahavastu</i> (Lesions distribution)	No lesion	Lesion on partial parts of hand, leg, neck, scalp, back	Lesion on most parts of hand, leg, neck, scalp, back	Lesion cover maximum parts of hand, leg, neck, scalp, back	Whole body
<i>Tvaka patana - matsyashakalopam</i> (scaling)	No scaling	Scaling off between 15 – 28 days	Scaling off between 7 –15 days	Scaling off between 4 –7 days	Scaling off between 1 – 4 days
<i>Kandu</i> (itching)	No itching	Occasional	Frequent but tolerable	Not tolerable and disturbed routines	mostly all time with disturbing sleep and routines
<i>Rukshata</i> (dryness)	Normal	Slightly dry skin	Excessive dry skin	Lichenified skin	Bleeding through the skin
<i>Vaivarnya</i> (Discoloration)	Normal color	Slight discoloration	Reddish discoloration	Reddish black discoloration	Black discoloration
Auspitz's sign /candle grease sign	Absent	Improving in compare to before treatment	Present as before treatment	-----	-----

Preparation of medicines:

Medicines were prepared in the Sundar Ayurveda Pharmacy (a teaching pharmacy undertaking by the department of RS & BK of the J. S. Ayurveda College, Nadiad) under the expert supervision. All the single drugs were identified and verified by the experts of the department of *dravyagūṇa* of the J. S. Ayurveda College, Nadiad.

Assessment of the patients: Assessment of the patients was done before starting the treatment, after the completion of *vamana karma* and after the completion of whole treatment schedule.

Criteria for assessment:

1. Improvement in the signs and symptoms of the disease and in the clinical tests like Auspitz sign, etc was considered as the criteria for improvement. All the patients were assessed before and after the completion of treatment.

2. With the help of Dermatology Life Quality Index (DLQI), improvement in life quality after the treatment was assessed.

3. All the patients were assessed before treatment, and after the completion of the treatment with the help of Psoriasis Area and Severity Index score (PASI). PASI is an international acceptable assessment tools for

the efficacy and effectiveness of the treatment in the management of psoriasis.

For easy assessment, <http://www.dermnetnz.org/topics/pasi-score/> web address was used that displays intensity of each and every sign mentioned for measurement of PASI. For calculation of PASI score, <http://pasi.corti.li/#ref4> web address was used that provides the PASI calculator online.

4. Scoring pattern adopted for the assessment of main signs and symptoms in this study was mentioned in table – 1.

Statistical analysis of the results:

The study results were statistically analyzed. Inferential statistical method (un-paired ‘t’ test) was utilized for testing of hypothesis. Descriptive statistical methods were utilized for data analysis of both the groups. The

average data recorded at the end of the study were compared with the data recorded at the beginning of the study in both the groups. A value of $p < 0.05$ was considered as statistically significant.

RESULTS

In this study, null hypothesis – “patients of group A having *ekakuṣṭha* (psoriasis) and who were operated for *vamana karma* twice followed by oral medicaments i.e., *kaiśora guggulu* and *mañjiṣṭhādi kvātha* have same relief compared to the patients of group B who consumed only oral medicaments without *vamana karma*” was accepted prior to analysis.

Acceptance of above null hypothesis was tested and results obtained were shown in table – 2.

Table 2 Testing of hypothesis through two sample t test

Signs and symptoms/ DLQI questionnaire/ PASI score	Mean score		Overall S.D.	Degree of freedom	t value	p value
	Group A	Group B				
<i>Asvedanam</i>	1.38	0.52	0.69	45	4.24	<0.001
<i>Mahāvāstu</i>	2.14	0.57	0.60	57	9.98	<0.001
<i>Matsyaśakalopam</i>	2.28	0.73	0.91	57	6.22	<0.001
<i>Vaivarṇyam</i>	1.97	0.53	0.65	57	8.40	<0.001
<i>Kaṇḍū</i>	2.59	0.97	1.16	57	5.78	<0.001
<i>Rūkṣatvam</i>	2.09	0.50	0.59	44	7.04	<0.001
<i>Auspitz sign</i>	1.24	0.37	0.22	31	5.27	<0.001
<i>Candle grease sign</i>	1.22	0.36	0.32	21	3.57	<0.01
DLQI	16.50	3.37	32.39	57	8.87	<0.001
PASI	21.56	4.69	42.38	57	7.81	<0.001

It shows that in all the assessment parameters i.e. signs, symptoms, DLQI and PASI, the p value is less than 0.01. Hence,

in this research work null hypothesis was rejected and alternate hypothesis (which

suggests that both the groups have different effect) was accepted.

Table 3 Effect of treatment on signs and symptoms in the patients of both the groups

Signs and symptoms	GROUP A					GROUP B				
	n	Mean value		Relief in %	P value	n	Mean value		Relief in %	P value
		BT	AT				BT	AT		
Asvedanam (loss of perspiration)	24	2.25	0.88	61.11	< 0.001	23	2.39	1.87	21.81	< 0.001
Mahāvāstu (lesions distribution)	29	3.59	1.45	59.61	< 0.001	30	3.4	2.83	16.66	< 0.001
Matsyaśakalopam (Scaling)	29	3.62	1.34	62.85	< 0.001	30	3.5	2.77	20.95	< 0.001
Vaivarṇyam (Discoloration)	29	3.38	1.41	58.16	< 0.001	30	3.17	2.63	16.84	< 0.001
Kaṇḍū (Itching)	29	3.97	1.38	65.21	< 0.001	30	3.43	2.47	28.15	< 0.001
Rūksatvam (Dryness)	22	3.00	0.91	69.69	< 0.001	24	2.67	2.17	18.75	< 0.01
Auspitz sign	17	2.00	0.76	61.76	< 0.001	16	2.00	1.63	18.75	< 0.01
Candle grease sign	09	2.00	0.78	61.11	< 0.001	14	2.00	1.64	17.85	< 0.01

Table 4 Effect of treatment on Psoriasis Area Severity Index (PASI) in both the groups

Total PASI	n	Mean value		D	Relief in %	S.D. ±	S.E. ±	t value	P value
		BT	AT						
Group A	29	36.52	15.00	21.56	59.03	10.2	1.89	11.38	< 0.001
Group B	30	35.6	28.9	4.69	13.15	7.17	1.31	3.57	< 0.001

Table 5 Effect of treatment on Dermatology Life Quality Index (DLQI) in both the groups

DLQI score	GROUP A					GROUP B				
	n	Mean value		Relief in %	P value	n	Mean value		Relief in %	P value
		BT	AT				BT	AT		
Symptoms & feelings	29	5.62	2.41	57.05	< 0.001	30	5.03	4.4	12.58	< 0.01
Daily activities	29	5.45	2.14	60.75	< 0.001	30	4.93	4.2	14.86	< 0.05
Leisure	29	4.03	1.00	75.21	< 0.001	30	4.00	3.57	10.83	< 0.05
Work problem	29	2.76	0.76	72.50	< 0.001	30	2.67	2.4	10.00	> 0.05
Personal relationship	29	4.48	1.41	68.46	< 0.001	30	4.1	3.27	20.35	< 0.01
Treatment effect	29	3	1.10	63.21	< 0.001	30	2.8	2.33	16.66	< 0.01
Total	29	25.34	8.83	65.17	< 0.001	30	23.53	20.17	14.34	< 0.01

Individual results of both the groups in all the parameters were also drawn in table number – 3, 4 and 5 which suggested that both the groups have significant results. However, patients of group A have more results than the patients of group B.

Table 6 Comparison of the effect of treatment in both the groups

SIGNS AND SYMPTOMS	IMPROVEMENT IN GROUP A (IN %)	IMPROVEMENT
--------------------	-------------------------------	-------------

	After 1 st <i>vamana</i>	After 2 nd <i>vamana</i>	After treatment	IN GROUP B (IN %)
<i>Asvedanam</i> *	18.5	53.7	61.11	21.81
<i>Mahāvāstu</i>	35.6	49.0	59.61	16.66
<i>Matsyaśakalopam</i>	34.3	52.4	62.85	20.95
<i>Vaivarṇyam</i>	30.6	48.0	58.16	16.84
<i>Kaṇḍū</i>	59.1	68.7	65.21	28.15
<i>Rūkṣatvam</i> **	50.0	59.1	69.69	18.75
<i>Auspitz sign</i> ***	50.0	58.8	61.76	18.75
<i>Candle grease sign</i> ****	44.4	61.1	61.11	17.85
Total DLQI	-----	-----	65.17	14.34
Total PASI	-----	-----	59.03	13.15

* n=24 in group A ** n=22 in group A; *** n=17 in group A and n=16 in group B; **** n=9 in group A and n=14 in group B; Rest where n=29 in group A; n=30 in group B

Table – 6 shown the difference of the effect of both the groups. The *asvedanam*, *mahāvāstu*, *matsyaśakalopam*, *vaivarṇyam*, *kaṇḍū* and *rūkṣatvam* were showed 61.11%, 59.61%, 62.85%, 58.16%, 65.21% and 69.69% improvement respectively in the patients of group A where $P \leq 0.001$ for all of them. However, they were showed 21.81%, 16.66%, 20.95%, 16.84%, 28.15% and 18.75% improvement respectively in the patients of group B where $P \leq 0.001$ for all the symptoms and signs. The effect of the treatment in the Dermatology Life Quality Index (DLQI) is statistically significant in both the group but $p < 0.001$ for the patients of group A whereas $p < 0.01$ in group B. 65.17% improvement was found in DLQI of the patients of group A while 14.34% was in the patients of group B. Improvement in PASI score after the treatment was observed with statistically highly significance ($P \leq 0.001$) in the patients of group A which

was statistically less significant ($p < 0.05$) in group B.

DISCUSSION

Ekakuṣṭha is *vāta-kapha* dominant disorder affecting the *tvak*, *rakta*, *lasikā* and *māmsa*. Ayurveda describes most of the skin diseases under the broad heading of “*kuṣṭha*”. Psoriasis is a papulo-squamous disorder characterized by scaling, itching, thickening and erythema of the skin along with lack of perspiration on affected area. All these characters can be correlated with *matsyaśakalopam*, *kaṇḍū*, *mahāvāstu* and *asvedanam* mentioned in *ekakuṣṭha*. Most of the ingredients of oral medicaments have *tikta-kaṭu rasa*, *uṣṇa vīrya* and *kaṭu vipāka* and also *raktaśodhana*, *tvak prasādana* and *kuṣṭhghna* action which may responsible for the results. *Vamana karma* alleviates the *kapha* from the body and also open the

channels (*srotas*) which may enhance the action of the oral Ayurvedic formulations.

Clinical study is reveals higher incidence of psoriasis in the patients of 30 to 50 years of age. Males affects more than females. Stressful condition and cold atmosphere increase the signs and symptoms of the disease. *Viruddha* and *guru āhāra* is also found as main causative factor in this study which is matching with the classical statement regarding the *nidāna* of *kuṣṭha roga*. Results of this study suggest that oral medicaments as well as *vamana karma* both have good effect in the patients. However more results in group A even just after the completion of first *vamana karma* suggest that *vamana* alone has also a good effect and if oral medicines administered after the *vamana karma*, it becomes more effective.

Planned placebo controlled or standard therapy controlled study on larger samples with individual therapy may be helpful to find out the role of *vamana* as well as oral medicaments individual in the management of psoriasis. This will be more helpful to establish the effect of each treatment scientifically.

This study will be a platform for those researchers who want to establish the role of *pañcakarma* procedures especially *vamana karma* in the patients of psoriasis.

CONCLUSION

Marvellous results obtained in signs and symptoms just after the *vamana karma* which also further improved after the completion of treatment in the patients. *Vamana karma* alone had also effect on reduction of signs and symptoms of *ekakuṣṭha* (psoriasis). Administration of only oral medicaments i.e. *kaiśora guggulu* and *mañjiṣṭhādi kvātha* have also significant effect. However, the patients, who consumed these oral medicaments after the *vamana karma*, got more benefit with more significance. Hence, *vamana karma* is effective to reduce the signs and symptoms and improved the DLQI and PASI in the patients of psoriasis. It may have played an enhancive role for the optimum effect of *kaiśora guggulu* and *mañjiṣṭhādi kvātha* in the patients. Oral medicaments give more benefit if it uses after performing *vamana karma*. Two times operation of *vamanakarma* in the patients of psoriasis gives more benefit.

CONFLICT OF INTEREST

Nil

REFERENCES

1. R. K. Sharma and B. Dash, *Agnivesha's Charaka Samhita*, Text with English Translation, Volume 3 chikitsa sthana, chapter 7- verse 21, Chowkhamba Sanskrit Series Office, Varanasi, India, 4th edition 2000, pp. 324-25.
2. World Health Organization, Global Report on Psoriasis, 2016: p 7 Assessed on 24/07/16 from http://apps.who.int/iris/bitstream/10665/204417/1/9789241565189_eng.pdf
3. Stern RS, Nijsten T, Feldman SR, Margolis DJ, Rolstad T. Psoriasis is common, carries a substantial burden even when not extensive, and is associated with widespread treatment dissatisfaction. *J Invest Dermatol Symp Proc.* 2004;9(2):136–9.
4. Kimball AB, Jacobson C, Weiss S, Vreeland MG, Wu Y. The psychosocial burden of psoriasis. *Am J Clin Dermatol.* 2005;6(6):383–92.
5. De Korte J, Sprangers MA, Mombers FM, Bos JD. Quality of life in patients with psoriasis: a systematic literature review. *J Invest Dermatol Symp Proc.* 2004;9(2):140–7.
6. Weiss SC, Kimball AB, Liewehr DJ, Blauvelt A, Turner ML, Emanuel EJ. Quantifying the harmful effect of psoriasis on health-related quality of life. *J Am Acad Dermatol.* 2002;47(4):512–8.
7. Kimball AB, Gieler U, Linder D, Sampogna F, Warren RB, Augustin M. Psoriasis: Is the impairment to a patient's life cumulative? *J Eur Acad Dermatol Venereol.* 2010;24(9):989–1004.
8. Tang MM, Chang CC, Chan LC, Heng A. Quality of life and cost of illness in patients with psoriasis in Malaysia: a multicenter study. *Int J Dermatol.* 2013;52(3):314–22.
9. Augustin M, Kruger K, Radtke MA, Schwippl I, Reich K. Disease severity, quality of life and health care in plaque type psoriasis: a multicenter cross-sectional study in Germany. *Dermatology.* 2008;216(4):366–72.
10. Russo PAJ, Ilchef R, Cooper AJ. Psychiatric morbidity in psoriasis: a review. *Australas J Dermatol.* 2004;45(3):155–9; quiz;160–1.
11. Sampogna F, Tabolli S, Abeni D, IDI Multipurpose Psoriasis Research on Vital Experiences (IMPROVE) investigators. Living with psoriasis: prevalence of shame, anger, worry, and problems in daily activities and social life. *Acta Derm Venereol.* 2012;92(3):299–303. Thomas TM, Plymat KR, Blannin J, Meade TW (1980). Prevalence of urinary incontinence. *Br Med J.* 281:1243–1245

12.R. K. Sharma and B. Dash (2000), *Agnivesha's Charaka Samhita* (Text with English Translation), Volume 3 chikitsa sthana, chapter 7- verse 39-42, Chowkhamba Sanskrit Series Office, Varanasi, India, 4th edition. p. 329.

13.R. K. Sharma and B. Dash (2000), *Agnivesha's Charaka Samhita* (Text with English Translation), Volume 2 chikitsa sthana, chapter 20- verse 19, Chowkhamba Sanskrit Series Office, Varanasi, India, 4th edition. p. 371.

14.G. Prabhakar Rao (2013). Sharangadhara samhita of Sharangadhara (text with English translation), madhyama khanda, chapter no 2, verse 136. Chaukhambha publications, New Delhi. page 100.

15. G. Prabhakar Rao (2013). Sharangadhara samhita of Sharangadhara (text with English translation), madhyama khanda, chapter no 7, verse 70-81. Chaukhambha publications, New Delhi. page 149.

16. DLQI score in pdf format was assessed from the following web address on 16-04-2015; 3:00 PM. <http://sites.cardiff.ac.uk/dermatology/files/2014/07/DLQI.pdf>