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Journal of Preventive Medicine and Holistic Health

Journal homepage: <https://www.jpmmh.org/>

Original Research Article

A comparative clinical study on the effect of virechana karma and panchtikta pancha prashritika basti karma in the management of prameha w.s.r. to type ii diabetes

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ARTICLE INFO

Article history:

Received 17-06-2021

Accepted 28-06-2021

Available online 29-11-2021

Keywords:

Virechana (Purgative therapy)
 Basti (Medicated ayurvedic enema)
 Prameha/Madhumeha (Diabetes)
 Samshodhana Chikitsa
 Tridosha
 Agni
 Meda
 Kleda.

ABSTRACT

Madhumeha is a chronic disorder of *Tridosha* origin with the vitiation of various body elements like *Meda*, *Mamsa*, *Kleda*, *Vasa* and *Lasika*. Diabetes mellitus is similar to *Madhumeha* which is a subtype of *Vataja Prameha*. Here the patient voids excessive quantity of urine having concordance with *Madhu* with sweet taste.

Insulin and other oral hypoglycaemic drugs are associated with several side effects and they have limited role in preventing the complications like neuropathy, nephropathy, retinopathy etc. Hence an ideal therapy which corrects the basic pathology and prevents the progress of the disease and complications is the need of time. So The *Samshodhana Chikitsa (Panchakarma therapy)* explained in Ayurveda seems to be an appropriate solution for the treatment of Prameha.

Aacharya Charaka and Sushruta has advised *Shodhana* for *Sthula Pramehi*. here *Doshas* accumulate in the lower part of the body owing to the incompetence of the *Dhamanis*. The major factor involved in the *Samprapti* of *Madhumeha* are the *Srotorodha*, *Agnimandhya*, *Tridosha* in general and *Vata Prakopa* in particular hence to remove the *Srotorodha*, and to eliminate the *Dosha* from nearest root *Samshodhana Chikitsa* is best. *Virechana* is best to improve Agni and *Basti* is the best treatment to correct Vata.

The present clinical study was conducted to evaluate the efficacy of Virechana karma and Basti karma in 90 patients (equally distributed in three group) of diagnosed case of Madhumeha for periods of 3 month. Group comparison was done by ANNOVA test showed that the Virechana was found better to reduce FBS and PPP Basti was found better to reduce PPBS

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1. Introduction

Diabetes is the burning problem in medical science as well as Ayurvedic science. It has become a challenge in the medical field. So many researches have been done at various institutes in different places & in different way but till now no concrete results have been achieved.

Prameha is mentioned in Santarpanajanya Vyadhi (Ch. Su.-23/6) and the line of treatment for Santarpanjanya

Vyadhi is Apatarpana and Sanshodhana which include Vamana, Virechana, Basti, Nasya. Acharya Charaka and Vagbhata has mentioned Sanshodhana therapy as line of treatment for the management of Sthula Pramehi.

Diabetes being a metabolic disease needs to be corrected by correcting metabolism. The metabolic activities are primarily regulated by Pitta Dosha, for the correction of Pitta Dosha Virechana Karma is the first and foremost treatment modality.

As the disease Prameha advances it result in aggravation of Vata and Madhumeha in particular a type of Prameha

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involve mainly Vata dosha and for the correction of Vata dosha, Basti karma is the first and foremost treatment modality.

Acharya Charaka specially mentioned Panchatikta Pancha Prashritika Basti for the management of Prameha.

पटोलनिम्बभूनिम्बरासनासच्छदाम्भसः।
चत्वारः प्रसृता एको घृतात् सर्षपकल्कितः।
निरुहः पञ्चतिकोऽयं मेहाभिष्यन्दकुष्ठनुत्॥ⁱⁱⁱ

It is need of hour to put some clinical & experimental data to support & evaluate their efficacy. With this background the present research entitled “A Comparative Clinical Study On The Effect Of Virechana Karma And Panchatikta Pancha Prashritika Basti Karma In The Management Of Prameha W.S.R. To Type II Diabetes” was undertaken with following aims & objectives.

2. Material and Methods

2.1. The research work has been carried out in three groups as follows

1. **Group-A:** The Patients of this group were treated with Virechana Karma followed by Madhumehari churna.
2. **Group-B:** In this group patients were treated with Panchatikta Pancha Prashritika Basti Karma followed by Madhumehari churna.
3. **Group-C:** In this group patient were continued on modern medicine for 3 months (Standard control group)

For this study 30 patients for each group were selected from inpatient and outpatient department of National institute of Ayurveda, Jaipur, Rajasthan.

Table 1: Distribution of 30 patients according to total amount of sneha needed

Total Amount of Sneha (ML.)	No of patient in Group 'A'	Percentage
350-550	15	50
>550-750	06	20
>750-950	09	30

Table 2: Distribution of 30 patients according to days required for snehana

No. of Days	No. of patients	Percentage
5	13	43.33
6	1	3.33
7	16	53.33

Table 3: Duration of sneha pachana in group A

Group A	Mean Duration/ Day (in hrs)							Total
	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	
N=30	4.13	6.7	8.26	10.00	11.13	11.4	12.38	9.14

% acquire Samyaka Snigdghata in 6 days, where as 16 % of them with in 7 days. amyaka Snigdghata was achieved in 5 days

2.2. Observation on virechana karma

Table 4: Distribution of 30 patients of Group A according to time required for onset of virechana vega

Time required for onset of Vega	No. of Patients	Percentage
>0 to 1 hour	08	26.66
>1 to 1½ hour	09	30
>1½ to 2 hour	09	30
>2 to 2½ hour	04	13.33

Table 5: Distribution of 30 patients of group 'A' according to virechana vega

Virechana Vega	No. of Patient	Percentage
1- 10	06	20
11-20	16	53.33
21- 30	07	23.33
>30	01	3.33

Table 6: Distribution of 30 patients of group 'A' according to shuddhi

Suddhi	No. of Patients	Percentage
Pravara	08	26.67
Madhyama	17	56.67
Avara	05	16.67

Table 7: Distribution of 30 patients of Group 'A' according to antiki shuddhi

Suddhi	No. of Patients	Percentage
Kaphant	25	83.33
Pittant	05	16.67

3. Objective

Evaluate the effect of Virechana karma and Panchatikta Pancha Prashritika(PPP)Basti Karma in the management of Madhumeha (Type 2 DM).

Table 8: Distribution of 30 patients of Group ‘A’ according to *laingiki shuddhi*

Shuddhi lakshana	No. of Patients	Percentage
<i>Srotoshuddhi</i>	27	90
<i>Indriya Prasada</i>	09	30
<i>Laghuta</i>	25	83.33
<i>Agni Vriddhi</i>	13	43.33
<i>KramaVita,Pitta,Kapha,VataAgamana</i>	14	46.66
<i>Anamayata</i>	00	00

Table 9: Average retention time of *anuvasana basti* found in 30 patients of *madhumeha*

<6 hrs		6 To 12 hrs		>12 hrs	
No. of Patients	%	No. of Patients	%	No. of Patients	%
19	63.33	11	36.67	0	0

Table 10: Average retention time of *niruha basti* found in 30 patients of *madhumeha*

5 To 10 Min		10 To 15 Min		>15 Min	
No. of Patients	%	No. of Patients	%	No. of Patients	%
13	43.33	16	53.33	01	0

Table 11: *Yoga-ayoga-atiyoga* after *niruha basti* administration

Yoga	No. of Patients	Found in every Basti	%
<i>Samyak Yoga</i>	28		93.33
<i>Ayoga</i>	00		00
<i>Atiyoga</i>	02		6.67

Table 12: *Yoga-ayoga-atiyoga* after *anuvasana basti* administration

Yoga	No. of Patients	Found in every Basti	%
<i>Samyak Yoga</i>	30		100
<i>Ayoga</i>	0		0
<i>Atiyoga</i>	0		0

Table 13: Improvement in symptoms of *madhumeha* in *virechana* group

Symptoms	No. of patient	Mean		%	S.D.	S.E.	T	P
		B.T.	A.T.					
Prabhut mutrata (polyurea)	29	1.86	0.63	66.29	0.66	0.12	9.95	<0.001
Avila Mutrata (turbid urine)	16	0.6	0.06	88.83	0.25	0.04	4.66	<0.001
Kshudadhikya (polyphagia)	30	2.13	1.13	46.94	0.57	0.10	9.32	<0.001
Trishnadhikya (polydipsia)	27	1.13	0.33	70.79	0.54	0.10	7.18	<0.001
Kara pada tala suptata(Tingling sensation in palm & feet)	19	0.76	0.16	78.98	0.37	0.06	5.28	<0.001
Pindikodvestan (calf muscles cramp)	23	1.93	0.56	70.82	0.50	0.09	13.46	<0.001

Table 14: Improvement in symptoms of *madhumeha* (type 2 DM) in *basti* group

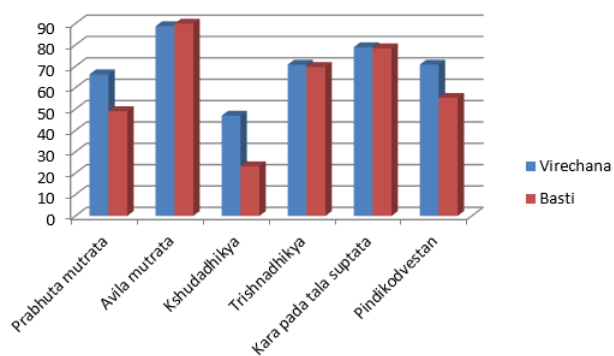
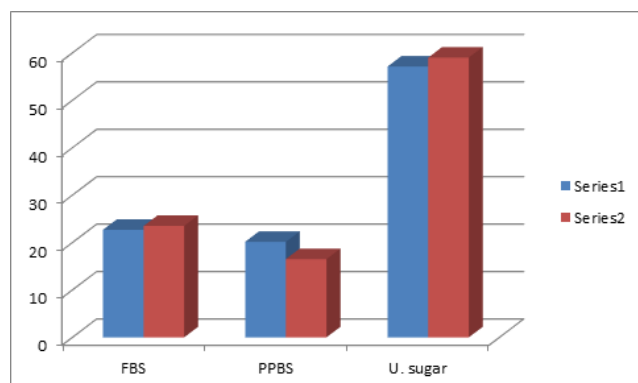
Symptoms	No. of patient	Mean		%	S.D.	S.E.	T	P
		B.T.	A.T.					
Prabhut mutrata (polyurea)	30	2.16	1.10	49.07	0.84	0.15	6.18	<0.001
Avila Mutrata (turbid urine)	21	0.70	0.06	90	0.25	0.04	7.07	<0.001
Kshudadhikya (polyphagia)	29	1.86	1.43	23.27	0.67	0.12	3.79	<0.001
Trishnadhikya (polydipsia)	30	1.10	0.33	69.72	0.54	0.09	7.38	<0.001
Kara pada tala suptata(Tingling sensation in palm & feet)	25	1.36	0.30	78.45	0.46	0.46	9.13	<0.001
Pindikodvestan (calf muscles cramp)	26	1.93	0.86	55.28	0.34	0.06	23.02	<0.001

Table 15: Change in biochemical parameters in virechana group

Symptoms	No.of patient	Mean		%	S.D.	S.E.	T	P
		B.T.	A.T.					
FBS	30	174.09	133.18	23.5	51.24	9.35	4.97	<0.001
PPBS	30	231.14	192.9	16.51	73.36	13.39	2.53	>0.017
U.sugar	30	1.13	0.46	59.02	1.07	0.19	3.34	0.002

Table 16: Change in biochemical parameters in PPP basti group

Symptoms	No. of patient	Mean		%	S.D.	S.E.	T	P
		B.T.	A.T.					
FBS	30	174.78	134.53	22.68	31.16	5.69	6.40	<0.001
PPBS	30	239.08	190.9	20.15	52.63	9.60	4.92	<0.001
U.sugar	30	0.93	0.40	57.12	1.03	0.89	2.64	0.013

**Fig. 1:****Fig. 2:**

3.1. Inclusion criteria

1. Patient of NIDDM with blood sugar level; FBS- 126 to 300 mg/dl or PPBS-180 to 400 mg/dl.
2. Patient having classical signs and symptoms of the Prameha(Diabetes) according to Ayurveda as well as modern medicine.
3. Age group of 20-60 years patient otherwise healthy and fit for Virechana karma and Basti Karma as per the ayurvedic classics.

3.2. Exclusion criteria

1. Age < 20 yrs and > 60 yrs
2. Patients of Prameha (Diabetes having disease chronicity of more than 20 yrs)
3. Patients of Type-1 Diabetes or the patients of Type-2 Diabetes taking Insulin
4. Patients having serious complications of Diabetes like Nephropathy, Neuropathy, Retinopathy, Diabetic Foot, Carbuncles etc
5. Patients having drug or chemical induced Type II Diabetes, like glucocorticoids induced or thyroid hormone induced etc.
6. Diabetes associated with Carcinoma or any other disease affecting multiple body systems
7. Pregnancy

3.3. Virechana karma

In Ayurveda Virechana Karma(Purgative Therapy) is indicated for the treatment of Madhumeha(Type 2 DM).¹ 30 Patients of Non Insulin Dependent Diabetes Mellitus were registered in this group. All the patients were examined for general condition and for assessment criteria's. In this group patients are given Virechana Karma in following manner.

3.3.1. Purva karma

3.4. Deepana-pachana

Panchakola Churna 3Gms 2 times a day was given with Sukhoshna Jala Anupana for 3 to 7 days till Nirama Lakshana achieved. During this period Laghu, Rooksha, Pathya and easily digestible Aahar (diet) was advised.

3.5. Snehapana

After observing Diptagni, patients were given Triphal Siddha Taila for Snehapana starting with Hrasiyasi Matra (30- 50ml) which was increased in Arohana Krama till Samyak Snigdha Lakshana appeared.

3.6. Vishrama kala

During Vishrama Kala Sarvanga Abhyanga with Dashamoola Taila was done for 30 minutes followed by Mrudu Bashpa Sveda for 3 days.

3.7. Pradhana karma

In the morning after ascertaining the digestion of previous night meal, Virechana Yoga (10 gm) was given after administering Sarvanga Abhyanga and Mrudu Bashpa Sveda to the patients and advised for drinking of warm water from time to time to potentiate the action of Virechana. A constant observation was made and recorded the initiation of Vega, associated features and completion of Vega etc.

3.8. Virechana yoga

Virechana yoga was selected from charak samhita i.e

त्र्यशूणं त्रिफलां दन्तीं चित्रकं त्रिवृतां तथा। स्नुक्क्षीरभावितं सम्यग् ॥

3.9. Pashchat karma

For deciding the type of Shuddhi Laingiki, Vaigiki and Antiki parameters were considered. After completion of Virechana, the patients were asked to have complete physical and mental rest and to follow the diet and code of conduct. The Samsarjana Krama was decided on the basis of Shuddhi grade and it was started from the evening meal on the day of Virechana.²

3.10. Panchatikta pancha prashritika basti (PPP Basti) karma

In Ayurveda Panchatikta pancha prashritika Basti (PPP Basti) is specially indicated for Madhumeha.³ 30 Patients of Non Insulin Dependent Diabetes Mellitus were registered in this group. All the patients were examined for general condition and for sign and symptoms of Diabetes mellitus. In this group patients were given PPP Basti Karma.

Panch tikta panch prashritika Basti is specifically indicated for the treatment of Prameha Hence this Basti was administered in Kala Basti schedule which consist of total 16 number of Basti out of which 6 were Niruha Basti and 10 were Anuvasana Basti.⁴

3.11. Niruha Basti

3.11.1. Preparation of panchatikta panch prashritika basti⁵

Pancha Tikta pancha prashritika basti contain following ingredients in different proportion as shown below:

3.11.2. Raw material for kashaya (decoction)

1. Patol patra (Trichosanthes dioica leaf)

2. Nimba twak (Azadirachta indica bark)
3. Kiratatikta (Swertia chirata whole plant)
4. Rasna (Pluchea lanceolata leaf)
5. Saptaparna (Alstonia scholaris bark)

Honey and rock salt were mixed together in the beginning followed by addition of warm ghee and thoroughly triturated. The finely wet grinded paste of *Sarshapa* was then added; lastly decoction was added to it. The mixture was then again triturated thoroughly. Mixture is than filtered through sieve and made warm indirectly in water bath. The filtrate so obtained was used as *Basti dravya*.

3.12. Anuvasana basti

Triphala Siddha Tila taila 60 ml mixed with one gram each of Shatpushpa and Saindhava Lavana was used for Anuvasana Basti.

Yoga-Atiyoga and ayoga of Niruha and Anuvashana Basti are Presented in Table 1-4.

3.12.1. Madhu mehari churna (Shaman drug)

Madhu mehari churna is the commonly prescribed yoga at National institute of Ayurveda, Jaipur for the treatment of Diabetes (Madhumeha). This is prepared by taking equal amount of each of following 12 drugs.

4. Results

The important findings of the present clinical study are presented below:

1. Sthula madhumeha a type of Prameha can be correlated to type 2 Diabetes mellitus based on sign and symptoms
2. Bahudoshha, Agnimandhya particularly Dhatwagnimandhya, Medasavruta Marga, Margavarana Janya Vata Prakopa are important factors involved in pathogenesis of Madhumeha
3. Samshodhana is the first line of treatment for Sthula Pramehi
4. Virechana is the best among Samshodhana for elimination of Bahu Dosha in general and Pitta dosha in particular along with it have effect on Kapha Dosha also and regulates the movement of Vata and improves Agni
5. Basti is best to correct Vata Dosha to remove the Avarana of Vata and PPP Basti is specially advised for Prameha, the drugs of PPP Basti are lekhana in nature their by reduces Meda and Kleda which are the basic factor in Prameha
6. *Triphala Taila for Snehapana in Virechana* group and for *Anuvasana Basti* in Basti group and *Triphala Trivrit, Danti Trikatu, Chitraka Choorna*, with *Snuhi Kshira* for *Virechana* and *Pancha Tikta Pancha Prasrutika Niruha Basti*, were used as these drugs are

Table 17:

Pharmacodynamics of Virechan yoga					
Dravya	Rasa	Guna	Virya	Vipaka	Doshghanta
Nagara	Katu	Laghu, Snigdha	Ushna	Madhura	VataKaphahara
Marich	Katu	Laghu, Tikshna	Ushna	Katu	Vata –Kapha Shamaka
Pippali	Katu	Laghu, Snigdha, Tikshna	Anushna-sheeta	Madhura	VataKaphahara
Amalaki	Except Lavana	Sheet	Madhura	Laghu, Ruksha	Tridosahara
Bibhitaka	Kashaya	Ushna	Madhura	Laghu, Ruksha	Tridosahara Kapha-Pittahara
Haritaki	Except Lavana	Ushna	Madhura	Laghu, Ruksha	Tridosahara
Chitrak	Katu	Laghu, Ruksha Tikshna	Ushna	Katu	KaphaVatahara
Trivrit	Katu, Tikta	Laghu, Ruksha Tikshna	Ushna	Katu	Pittakaphasanshodhana (Prabhava: Virechaka)
Danti	Katu,	Tikshna, Guru	Ushna	Katu	Kaphapittahara (Prabhava: Virechaka)
Snuhi	Katu	Laghu, Snigdha	Ushna	Katu	Kaphapittahara (Prabhava: Virechaka)

Table 18:

Day	Type of Basti
1st	Anuvasana Basti
2nd	Anuvasana Basti
3rd	Niruha Basti
4th	Anuvasana Basti
5th	Niruha Basti
6th	Anuvasana Basti
7th	Niruha Basti
8th	Anuvasana Basti
9th	Niruha Basti
10th	Anuvasana Basti
11th	Niruha Basti
12th	Anuvasana Basti
13th	Niruha Basti
14th	Anuvasana Basti
15th	Anuvasana Basti
16th	Anuvasana Basti

Table 19:

1. Kvath (Decoction of Patol, Nimba, Bhunimba, Rasna, Saptaparna)	320 ml
2. Kalka (Paste of Sarshapa)	10 gm
3. Sneha (Go-ghrita)	80 ml
4. Madhu (Honey)	80 ml
5. Saindhava (Rock salt)	5 gm

specifically mentioned for the treatment of *Prameha*. Madhumehari churna contains drugs Jambu Beeja, Amra Patra, Karavellaka, Gudmar, Bilva Patra, Neem Beeja, Bala Beeja which are dominant in Tikta, Kashaya Rasa, Katu Vipaka Ushna Virya, Kapha Pitta hara and lekha and Rukshana action and proven for anti diabetic, hypolipidemic, and hypoglycemic action.

7. In this study 44.44% patient were in the age group of 51- 60 years, 64.44% were males, 33.33% were house wives, 36.67% of patients had family

history of Madhumeha, 66.67% patients were having *Vishamagni*, 61.11% 65.56% patients were having *Madhyama Koshtha*, Vata Pitta and Pitta Kapha prakriti were predominant in 27.78% and 26.67% patients respectively, Madhura rasa Aahara in 77.78%, *Snigdha Ahara* (milk products etc) in 85.56%, sedentary nature of work in 83.33% of patients.

8. In group A 26.66% patients were having FBS between 126 to 150 mgm/dl, 53.33% between 151- 200 mgm/dl and 20% between 201- 250 mgm/dl. In group B

Table 20:

Detailed of content of Madhumehari churna					
Dravya	Rasa	Guna	Virya	Vipaka	Doshghanta
Jabu beej	Kashaya, Madhura, Amla	Laghu, Ruksha	Shita	Katu	Kapha-pitta shamaka
Amrasthi majja	Kashaya,	Laghu, Ruksha	Sheeta	Katu	Kapha-pitta shamaka
Karela	Tikta, Katu	Laghu, Ruksha	Ushna	Katu	Kapha-pitta shamaka
Gudmar	Kashaya, Tikta, Katu	Laghu, Ruksha	Ushna	Katu	Vatakapha shamak
Methi	Tikta	Laghu, Snigdha	Ushna	Katu	Vatakapha shamak
Bilva	Kashaya, Tikta	Laghu ,Ruksha	Ushna	Katu	Vatakapha shamak
Neem beej	Tikta, Kashaya	Laghu	Sheeta	Katu	Kapha-PittaShamaka

23.33 % patients were having FBS between 126 to 150 mgm/dl, 60 % between 151- 200 mgm/dl and 16.66 % between 201- 250 mgm/dl and in group C 20 % patients were having FBS between 126 to 150 mgm/dl, 70 % between 151- 200 mgm/dl , 3.33 % between 201- 250 mgm/dl and 6.66% between 251- 300 mgm/dl.

9. In group A 46.66 % patients were having PPBS between 181 to 230 mgm/dl, 40 % between 231- 280 mgm/dl and 10 % between 281- 330 mgm/dl and 3.33% between 331- 380 mgm/dl. In group B 50 % patients were having FBS between 181 to 230 and mgm/dl, 43.33 % between 231- 280 mgm/dl and 3.33 % both between 281- 330 and 331-380mgm/dl respectively. In group C 56.66 % patients were having FBS between 181 to 230 mgm/dl, 30 % between 231- 280 mgm/dl, 10 % between 281- 330 mgm/dl and 3.33% between 331- 380 mgm/dl.
10. In group A 46.66% had urine sugar nil, 33.33% had 1+, 10 % each had urine sugar 2+ and 4+. in group B 40% had urine sugar nil, 26.66% had 1+, 20 % each had urine sugar 2+ , 6.66% each had 3+ and 4+. In group C 50% had urine sugar nil, 30% had 1+, 6.66 % had urine sugar 2+ and 13.33% had urine sugar 4+.
11. In group A Virechana reduced Prabhutamutrata by 66.69%, Aavilamutrata by 88.83%, Kshudhadhikya by 46.94%, Trishnadhikya by 70.79%, Karapadataladaha by 71.66%, Karapadatalasuptata by 78.98%, Atisweda by 75.11% FBS by 22.68%, PPBS by 20.15% and Urine sugar by 57.12%. All these results were statistically highly significant (P=0.001)
12. In group B PPP basti reduced Prabhutamutrata by 44.07%, Aavilamutrata by 90%, Kshudhadhikya by 23.27%, Trishnadhikya by 69.72%, Karapadataladaha by 41.17%, Karapadatalasuptata by 78.45%, Atisweda by 20.38% FBS by 23.50%, PPBS by 16.51% Urine sugar by 59.02%. All these results were statistically highly significant (P=0.001).
13. In group C oral hypoglycaemic drugs reduced FBS by 15.64%, PPBS by 17.98%, Prabhutmurata by 57.80%, Avila Mutrata by 94.0%, All these results were statistically highly significant. Trishnadhikya was

reduced by 53.40%, Karapada Daha and Karapada Suptata by 27.77%, All these results were statistically significant.

14. Percentagewise Virechana was better than PPP Basti and PPP Basti was better than oral hypoglycemic drugs for Prabhutamutarata, Kshudadhikya, Karapadataladaha, Atisweda, Alashya, Sheetpriata, Pindikodvestana, Nidradhikya, Tamodarshan, BMI, Serum Cholesterol, HDL and LDL; whereas PPP Basti was better than Virechana and Virechana was better than oral hypoglycemic drugs in Aavilmutrata, Karapada suptata, Dourbalya, Klaihya, FBS and VLDL.
15. Group comparison by ANNOVA test showed that the difference in the results in between the groups is statistically insignificant.
16. Virechana was found better to reduce FBS and PPP Basti was found better to reduce PPBS

4.1. Statistical test

The data obtained on the basis of observation was subjected to statistical analysis in the term of mean, standard deviation error by applying the unpaired ‘t’ test. The results were interpreted at p<0.05, p<0.01 and p<0.001 significance levels

The effect of the *Virechana karma* on *Madhumeha* (type2DM) are presented in table and Chart.

5. Discussion

Virechana Dravya leads to inflammation in mucosal cell. Due to inflammatory changes vaso active amines and polypeptides increases membrane permeability in GIT and cause vaso dilation thus waste products where so ever present in the body either in extra-cellular, intracellular or in plasma can be brought into intestine to maintain the homogeneity from where it can be eliminated out of body by the increased propulsive movement of G.I tract, which is induced by *Virechana Dravya*.

Bahu Drava Shleshma, Abadda *Medas*, Agnimandhya, and *Srotorodha* are important factors in the pathogenesis

of Sthula *Madhumeha*. *Virechana* eliminates the vitiated *Dosha* and *Mala* and clears the channels,⁶ which are obstructed by *Shleshma* and *Medas* and removes the *Avarana* and regulates the *Vata*.

Acharya Charaka mentioned that *Basti* reaches the *Nabhi Pradesha*, *Kati*, *Parshva* and *Kukshi* expels out the *Pureesha* and accumulated *Dosha* after mixing with them.⁷ On the other hand Acharya Sushruta has clearly mentioned that though *Basti* is administered in the *Pakvashaya*, the active principles of *Basti Dravya* spreads all over the body through the minute *Srotas* in the same way as water reaches to all parts of the plant from its root.⁸

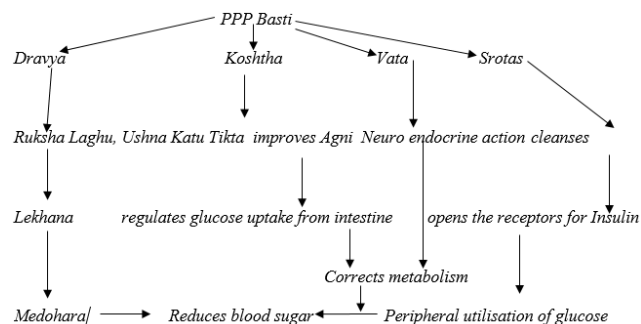


Fig. 3:

5.1. According to modern science

Enteric nervous system (ENS) normally communicate with the central nervous system through the parasympathetic (eg. via the Vagus nerve) and sympathetic (e.g. via the Prevertebral ganglia) nervous system. Sensory neurons of the ENS monitor chemical changes within the GIT as well as pressure of its wall. Enteric motor neurons govern contraction of GI tract smooth muscle and activity of GI tract endocrine cells. ENS also makes use of more than thirty neurotransmitters, most of which are identical to the ones found in CNS such as acetylcholine, dopamine, serotonin etc. The enteric nervous system has the capacity to alter its response depending on factors such as bulk and nutrient composition. As the total nervous system is interrelated so this regular stimulation to ENS may have some positive effect over the CNS also and in this way the neuro- endocrine regulation may take place.⁹

Basti corrects the *Vata Dosha* and by virtue of the *lekhana* property of the drugs used in *PPP Basti* it cleanses the channels removes the *Medasa Avarana* and regulates the movement of *vata*.

6. Conclusion

The important findings of the present clinical study are presented below:

1. Sthula *madhumeha* a type of *Prameha* can be correlated to type 2 Diabetes mellitus based on sign and symptoms
2. *Bahudosha*, *Agnimandhya* particularly *Dhatwagnimandhya*, *Medasavruta Marga*, *Margavarana Janya Vata Prakopa* are important factors involved in pathogenesis of *Madhumeha*
3. *Samshodhana* is the first line of treatment for *Sthula Pramehi*
4. *Virechana* is the best among *Samshodhana* for elimination of *Bahu Dosha* in general and *Pitta dosha* in particular along with it have effect on *Kapha Dosha* also and regulates the movement of *Vata* and improves *Agni*
5. *Basti* is best to correct *Vata Dosha* to remove the *Avarana* of *Vata* and *PPP Basti* is specially advised for *Prameha*, the drugs of *PPP Basti* are *lekhana* in nature their by reduces *Meda* and *Kleda* which are the basic factor in *Prameha*
6. *Triphala Taila* for *Snehapana* in *Virechana* group and for *Anuvasana Basti* in *Basti* group and *Triphala Trivrit*, *Danti Trikatu*, *Chitraka Choorna*, with *Snuhi Kshira* for *Virechana* and *Pancha Tikta Pancha Prasrutika Niruha Basti*, were used as these drugs are specifically mentioned for the treatment of *Prameha*. *Madhumehari churna* contains drugs *Jambu Beeja*, *Amrasthi*, *Karavellaka*, *Gudmar*, *Bilva Patra*, *Neem Beeja*, *Bala Beeja* which are dominant in *Tikta*, *Kashaya Rasa*, *Katu Vipaka Ushna Virya*, *Kapha Pitta hara* and *lekhana* and *Rukshana* action and proven for anti diabetic, hypolipidemic, and hypoglycemic action.
7. Percentage wise *Virechana* was better than *PPP Basti* and *PPP Basti* was better than oral hypoglycemic drugs for *Prabhutamatarata*, *Kshudadhikya*, *Karapadataladaha*, *Atisweda*, *Alashya*, *Sheetpriata*, *Pindikodvestana*, *Nidradhikya*, *Tamodarshan*, *BMI*, *Serum Cholesterol*, *HDL* and *LDL*; whereas *PPP Basti* was better than *Virechana* and *Virechana* was better than oral hypoglycemic drugs in *Aavilmutrata*, *Karapada suptata*, *Dourbalya*, *Klaihya*, *FBS* and *VLDL*.
8. Group comparison by *ANNOVA* test showed that the difference in the results in between the groups is statistically insignificant.
9. *Virechana* was found better to reduce *FBS* and *PPP Basti* was found better to reduce *PPBS*

7. Source of Funding

None.

8. Conflict of Interest

None.

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Cite this article: Pandey RK, Bhatted S. A comparative clinical study on the effect of virechana karma and panchtikta pancha prashritika basti karma in the management of prameha w.s.r. to type ii diabetes. *J Prev Med Holistic Health* 2021;7(2):89-97.