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ORIGINAL RESEARCH ARTICLE

SINGLE- BLIND PLACEBO CONTROLLED CLINICAL EVALUATION OF MAMAJJAKA GHANVATI IN PRAMEHA W.S.R. DIABETES MELLITUS

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Abstract

Background:

Prameha (~Diabetes Mellitus) is described as one of the disease mainly caused by vitiation of tridosha. Prameha is one of the eight diseases which are tough to cure known as mahagada (merely curable disease) are numerated by Sushruta. The syndrome diabetes mellitus has been largely covered under the broad heading of prameha. According to the International Diabetes Federation (IDF), 3.8 million people worldwide die from diabetes and related illnesses annually. In only 20 years the number of people with diabetes has exploded from 30 million to 246 million. By 2025 there will be approximately 380 million people living with diabetes, with the highest increases in new cases occurring in the most diabetics at 40.9 million followed by China with 39.8 millions.

Objective:

To find out an effective and cheap remedy to combat against prameha (~Diabetes Mellitus).

Methods and Materials:

The study was carried out in the 60 patients of prameha selected from the O.P.D/I.P.D of govt. Ayurvedic College hospital Raipur; total of 52 patients completed the full course of treatment. Out of this figure, 20 patients were studied in shamana Group who were given mamajjaka ghanavati, second group with virechana karma followed by mamajjaka ghanavati and rest 20 patients Were studied in control group who were given godanti bhasma as placebo treatment.

Results:

The trial drug & virechana (bio-purification) therapy shows highly significant result on objective parameter like reduction in Fasting Blood Sugar level, reduction in Post Prandial Blood Sugar level, along with clinical improvements on subjective parameters like excessive urination, turbidity of urine, excessive thirst, burning sensation in hand and leg, excessive sweating, ,excessive hunger & tiredness etc.

Conclusion:

The drug under trial, mamajjaka ghanavati was effective in Diabetes Mellitus conditions.

Keywords: prameha, mamajjaka, ghanavati, *Enicostemma Littorale Bloume*, virechana.



Introduction:

The Healthy long life is the desire of each and every one of us and this is the beginning of any medical science. In Ayurvedic texts the disease prameha (~DM) is described as one of the disease mainly caused by vitiation of tridosha. prameha (~DM) is one of the eight diseases which are tough to cure known as mahagada are numerated by Sushruta¹. The syndrome diabetes mellitus has been largely covered under the broad heading of prameha. Now a day's prameha (~DM) has been called a great problem for society. The disease is increasing day by day because of its hereditary background, on other hand in the modern mechanized age the physical labor is enormously reduced so we can say that busy and worried life of modern era has open the door for the disease to grow in the society. It has turned out to be the biggest "silent killer" today in the world. The mortality rate due to Diabetes mellitus is very high and is ranked fifth amongst the ten major causes of death in southern part of India. According to the International Diabetes Federation (IDF), 3.8 million people worldwide die from diabetes and related illnesses annually. In only 20 years the number of people with diabetes has exploded from 30 million to 246 million. By 2025 there will be approximately 380 million people living with diabetes, with the highest increases in new cases occurring in the most diabetics at 40.9 million followed by China with 39.8 million².

Aims and Objectives:

- To evaluate the efficacy of shamana (Palliative) therapy by using mamajjaka ghanavati.
- To assess the efficacy of shodhana purvaka shaman (Palliative measures'

after Proper Elimination of dosha (toxins)) Chikitsa in the management of this disease.

Materials and Methods

Design of Study:

Randomized, single blind closed labeled clinical study.

Selection of Patients:

The patients were selected from the O.P.D/I.P.D of govt. Ayurvedic College hospital Raipur irrespective of sex, religion and socioeconomic status. Patients underwent clinical examination on baseline and at 15 days intervals. They were given diaries to note incidence and severity of symptoms. Adverse effects if any were recorded. A questionnaire and clinician's observations were used for prakriti analysis.

Selection of drug: in order to find newer drugs for the health care need of the mankind. In perspective of this the present study, *Enicostemma Littorale Bloume*. Called locally as 'Mamajjaka' or 'Nahe' an ethno medicinal plant used in the treatment of prameha, often with considerable efficacy is taken for study.

Sampling: Simple random sampling technique using lottery method. Group allocation was done by simple random allocation (complete randomization).

Sample Size: 60 patients

Grouping:

60 patients under trial were subdivided into three groups i.e. Group A, Group B and Group C (each 20 patients) to compare the effects therapies.

Study setting:

The study was carried out in the O.P.D/I.P.D of govt. Ayurvedic College hospital Raipur from December 2010- December 2012.



Raipur is a district head quarters with population 1,010,087.

Ethical considerations:

Ethical clearance was obtained from the institutional ethics committee (IEC). Informed consent obtained from all the patient.

Diagnostic Criteria

In an attempt to deal with these problems, the National Diabetes Data Group of the National Institutes of Health in 1979 revised the criteria for the diagnosis of diabetes:

- 1.Fasting (overnight): Venous plasma glucose concentration 7.8 mmol/L (140 mg/dL) on at least two separate occasions.
- 2.Following ingestion of 75 g of glucose: Venous plasma glucose concentration 11.1 mmol/L (200 mg/dL) at 2 h and on at least one other occasion during the 2-h test; i.e., two values 11.1 mmol/L (200 mg/dL) must be obtained for diagnosis.

If the 2-h value is between 7.8 and 11.1 mmol/L (140 and 200 mg/dL) and one other value during the 2-h test period is equal to or greater than 11.1 mmol/L (200 mg/dL), a diagnosis of "impaired glucose tolerance" is suggested. Persons in this category are at increased risk for the development of fasting hyperglycemia or symptomatic diabetes, but such progression is not predictable in an individual patient. In 1997 the American Diabetes Association recommended modified criteria for the diagnosis of diabetes mellitus, decreasing the diagnostic cut off for

Intervention:

Group	Drug	Dose		Duration
Sha	Mamajjaka	PPBS	Dose	45Days

fasting plasma glucose to 7 mmol/L (126 mg/dL).

All the patient labeled as having diabetes mellitus and those present with symptoms will be screened for diabetes i.e. blood sugar

Inclusion criteria

All the patient labeled as having diabetes mellitus and those present with symptoms will be screened for diabetes i.e. blood sugar

The new patients fulfilling the diagnostic criteria of World Health Organization for DM described as under were selected³ -

- Fasting blood glucose >126 mg/dl or
- Postprandial (PP) blood glucose >140 mg/dl at an interval of first 2 h during an oral glucose tolerance test.

Criteria for high blood glucose: The diagnosed patients who were taking allopathic medicine but their blood glucose was not under control were included⁴.

Exclusion criteria

- 1.Patients of type-I diabetes.
- 2.Cases with F.B.S >300 mg/dl, Juvenile Diabetic cases.
3. Age >70 years.
- 4.Cases having complication like Retinopathy, Nephropathy etc.
- 5.Cases with other complicated diseases along with D.M. (malignant hypertension, history of severe unstable angina, myocardial infarction, cardiovascular accidents, and renal failure.
- 6.Pregnant or lactating women.



mana	Ghanavati	(mg/dl)		
		140-200	1B.D	
		200-250	1TDS	
		250>	2TDS	
(B) Shodhana purvaka Shaman Chikitsa	Shodhana & Mamajjaka Ghanavati	140-200 200-250 250>	1B.D 1TDS 2TDS	45Days
(C)Placebo Chikitsa	Godanti bhasm		1BD	45Days

Investigations:

Blood: Routine blood investigations like C.B.C, Hb%, E.S.R., and P.C.V. to rule out any other pathological condition.

Biochemical examination includes

1. Blood sugar (fasting and post Prandial).
2. Lipid profile (Serum Cholesterol, Serum Total lipids, Serum Triglycerides, Serum HDL, Serum LDL Serum VLDL) to evaluate the role of medodusti.
3. Blood Urea and Serum Creatinine to assess functional status of kidney.

Urine: Routine examination and microscopic examination

Apart from Blood sugar criteria other investigations are carried out only for safety of the patients. These values were recorded both before and after treatment.

Criteria for assessment

After completion of the treatment, the results were assessed by adopting the following criteria:

- Fasting blood Sugar (F.B.S.) and Post prandial blood sugar (P.P.B.S.) levels.
- Improvement in signs and symptoms of disease on the basis of the symptoms score.

Overall Effect of Therapy

Effect of both therapies was assessed on the basis of following parameters:

- Reduction in severity of sign & symptoms⁵
- Reduction in blood sugar level

Reduction in blood sugar level: It was analyzed by following gradation pattern for blood sugar level. Results obtained for each patient with application of below mentioned formula indicates efficiency of the drug in reducing the blood sugar level. (As compared to base line B.S.L level (in the form of %)

$$\text{Reduction in F.B.S.(\%)} = \frac{(\text{Total BT} - \text{Total AT}) \times 100}{\text{Total BT}}$$

$$\text{Reduction in P.P.B.S.(\%)} = \frac{(\text{Total BT} - \text{Total AT}) \times 100}{\text{Total BT}}$$

Total BT

Statistical analysis:

The information gathered on the basis of observation was subjected to statistical analysis in terms of mean score (x), standard Deviation (S.D.) standard error (S.E.), paired t – test was carried out at the level of 0.05, 0.01, 0.001, of P level. The obtained results were thus interpreted as^{6, 7&8}

P<0.05 – Improvement

P<0.01 – Significant Improvement

P<0.001 – Highly Significant



Observations & Results:

The Table 1 reveals that prabhuta mutrata (polyuria) was found in 100% patients, daurbalya (weakness) was found in 98.76% of the patients, trishnadhikya (polydipsia) was found

in 84.61% of the patients, kara-pada-tala-daha (burning sensation in hand & soles) was found in 76.92% while 84.61% patients were having avila mutrata (turbid urine).

Chief complains	Number of patients			Total	%
	Group A (N-18)	Group B (N-14)	Group C (N-20)		
Polyuria	18	14	20	52	100
Turbidity of urine	15	13	16	44	84.61
Polydipsia	15	13	16	44	84.61
Polyphagia	16	11	18	45	86.53
Burning sensation in hands and soles	14	12	14	40	76.92
Numbness in hands & soles	14	12	13	39	75
Weakness	17	14	20	51	98.7
Cramps in walking	14	11	13	38	73.7
Nature of sweating	17	14	18	49	94.23

Table-1 Chief complaints observed in 52 patient of Prameha (~DM)

Effect of Therapies:

Group A- Mamajjaka Ghanavati (Shamana group)

Effect of mamajjaka ghanavati on chief Complaints:

Prabhutamutrata(Polyuria):

The initial mean score of prabhuta mutrata was 2.17 which reduced to 0.78 after treatment with 64.10% relief. The result was highly significant at p<0.001.

Avila mutrata (Turbidity of urine):

Mamajjaka ghanavati provided highly significant (P<0.001) reduction in Turbidity of urine by 47.6% relief.

Pipasadhikya (Polydipsia):

The mean score was 1.61 and reduced to 0.78 after treatment. The relief was 59.25%. This result was statistically highly significant at p<0.001.

Kshudhahikya (Polyphagia):

Mamajjaka ghanavati provided statistically highly significant (P<0.001) relief in Polyphagia by 50% relief.

Karapada-daha (Burning sensation in hands & soles):

It was reported that initial mean score of this group was 1.56 and after treatment it reduced up to 0.89. This 53.57 % relief was statistically highly significant (P<0.001).



Karapada-supti (Numbness in hands & soles):

Before treatment mean score of this group was 1.28 which was reduced up to 0.78 after treatment, this way treatment provided 39.13% relief, which was statistically highly significant (P<0.001).

Daurbalya (weakness):

Before treatment mean score was 1.83 which was reduced up to 1 after treatment, this way treatment provided 38.7% relief, which was statistically highly significant (P<0.001).

Pindico-dwestana (Cramps in walking):

The mean score was before treatment was 1.39 Which reduced up to 0.78 after treatment and thus 41.66% relief was found which Was statistically highly significant (P<0.001).

Sweda-pravriti (Nature of sweating):

It was observed that the mean score was 1.78 before Treatment and after treatment it was reduced up to 0.72. So here 59.37% relief was found which was statistically significant (P>0.001) (see table no.2)

S.N.	Sign & Symptoms	B.T. Mean	A.T. Mean	% of Relief	S.D.	S.E.	T-value (Paired test)	P value	Remarks
1	Polyuria	2.17	0.78	64.10	0.73	0.17	11.75	<0.001	H.S.
2	Turbidity of urine	1.61	0.67	58.62	0.77	0.18	7.43	<0.001	H.S.
3	Polydipsia	1.61	0.78	59.25	0.81	0.19	9.22	<0.001	H.S.
4	Polyphagia	1.78	0.89	50	0.76	0.18	11.66	<0.001	H.S.
5	Burning sensation in hands & soles	1.56	0.61	53.57	0.70	0.16	6.27	<0.001	H.S.
6	Numbness in hands & soles	1.28	0.78	39.13	0.81	0.19	4.12	<0.001	H.S.
7	Weakness	1.83	1.00	38.7	0.84	0.20	9.22	<0.001	H.S.
8	Cramps in walking	1.39	0.78	41.66	0.81	0.19	5.17	<0.001	H.S.
9	Nature of sweating	1.78	0.78	59.37	0.75	0.18	10.76	<0.001	H.S.

TABLE 2: Effect of therapy on Sign & Symptoms of the Patients (18) of Group ‘A’

Group B (Mamajjaka ghanavati + virechana karma):

Effect of mamajjaka Ghanavati + virechana karma to the Different Sign & Symptoms of the Patients

Prabhutamutrata(Polyuria):

Mean score before treatment was 2.21 reduced to 0.57 post therapeutically by giving 74.19% relief. It was highly significant at p<0.001.

Avila mutrata (Turbidity of urine):

Virechana purvaka shaman provided highly significant (P<0.001) reduction in Turbidity of urine by 74.07% relief.

Pipasadhikya (Polydipsia):

The mean score in this group before treatment was 1.36, which was brought down to 0.71 with the relief of 47.36% this was highly significant at p<0.001.



Kshudhahikya (Polyphagia): the mean score was 1.71 before treatment which reduced up to 0.64 after treatment with 64% relief, which statistically highly significant (P<0.001).

Karapada-daha (Burning sensation in hands & soles): It was observed that the mean score of this group was 1.50 before treatment and after treatment it was reduced up to 0.71. So here 52.38% relief was found which was statistically insignificant (P>0.001).

Karapada-supti (Numbness in hands & soles):The mean score of this group before treatment was 1.57 and after treatment 0.79 with 57.89% relief, which was statistically highly significant (P<0.001).

Daurbalya (weakness):

The mean score before treatment was 2.00 which was reduced to 0.64 after treatment with 67.85. % relief it was statistically highly significant (P<0.001).

Pindico-dwestana (Cramps in walking):

Before treatment mean score was 1.57 which was reduced up to 0.79 after treatment, this way treatment provided 50% relief, which was Statistically highly significant (P<0.001).

Sweda-pravriti (Nature of sweating):

It was reported that initial mean score in this group was 1.86 and after treatment it reduced up to 0.36. This 80.76 % relief was statistically highly significant (P<0.001) (see table no.4).

S.N.	Sign & Symptoms	B.T. Mean	A.T. Mean	% of Relief	S.D.	S.E.	T-value (Paired test)	P value	Remarks
1	Polyuria	2.21	0.57	74.19	0.49	0.13	12.36	<0.001	H.S.
2	Turbidity of urine	1.92	0.50	74.07	0.65	0.17	8.27	<0.001	H.S.
3	Polydipsia	1.36	0.71	47.36	0.83	0.22	04.84	<0.001	H.S.
4	Polyphagia	1.71	0.64	65.38	0.74	0.20	05.49	<0.001	H.S.
5	Burning sensation in hands & soles	1.50	0.71	52.38	0.83	0.22	06.75	<0.001	H.S.
6	Numbness in hands & soles	1.57	0.79	57.89	0.65	0.17	10.82	<0.001	H.S.
7	Weakness	2.00	0.64	67.85	0.74	0.20	03.94	<0.001	H.S.
8	Cramps in walking	1.57	0.79	50	0.80	0.21	04.36	<0.001	H.S.
9	Nature of sweating	1.86	0.36	80.70	0.50	0.13	03.56	<0.001	H.S.

TABLE 4: Statistical Analysis showing in the Effect of Trial Drug to the Different Sign & Symptoms of the Patients (14) group B.

Group C: (Placebo therapy + diet control)

Effect of placebo with strict diet control in the Different Sign & Symptoms of the Patients

Prabhutamutrata(Polyuria):

The mean score before treatment in this group was 1.40 which was reduced to 0.75 after treatment by giving



46.42% relief. It was significant at $p < 0.01$.

Avila mutrata (Turbidity of urine):

Placebo shows statistically highly significant ($P > 0.001$) reduction in Turbidity of urine by 38.71% relief.

Pipasadhikya (Polydipsia):

The mean score prior to the treatment was 1.20, which was reduced to 0.80, giving 27.27% relief. This result was statistically highly significant.

Kshudhahikya (Polyphagia): Initially the mean score was 1.60 before treatment which reduced up to 1.00 after treatment with 47.36% relief, which was statistically significant ($P < 0.001$).

Karapada-daha (Burning sensation in hands & soles): The mean score of this group before treatment was 1.15 which was reduced to 0.80 after treatment with 30.43% relief but it was statistically significant ($P < 0.001$).

Karapada-supti (Numbness in hands & soles): The mean score of total

before treatment was 1.10 and after treatment it became 0.70 with 57.14% relief which was statistically highly significant ($P < 0.001$).

Daurbalya (weakness):

The mean score before treatment was 1.65 and after treatment it became 1.45 which was statistically insignificant ($P < 0.05$).

Pindico-dwestana (Cramps in walking):

Initially the mean score was 1.00 before treatment which reduced up to 0.60 after treatment with 40% relief, which was Statistically highly significant ($P < 0.001$).

Sweda-pravriti (Nature of sweating):

It was found that the mean score was 1.50 before Treatment and after the completion of the course it was reduced up to 0.80 this 46.66% relief was statistically significant ($P < 0.001$) (see table no.5).

S.N.	Sign & Symptoms	B.T. Mean	A.T. Mean	% of Relief	S.D.	S.E.	T-value (Paired test)	P value	Remarks
1	Polyuria	1.40	0.75	46.42	0.81	0.18	3.57	<0.01	S.I.
2	Turbidity of urine	1.55	0.95	38.71	0.75	0.16	5.55	<0.001	H.S.
3	Polydipsia	1.20	0.80	27.27	0.75	0.16	3.56	<0.001	H.S.
4	Polyphagia	1.60	1.00	47.36	0.79	0.18	05.34	<0.001	H.S.
5	Burning sensation in hands & soles	1.15	0.80	30.43	0.77	0.17	3.20	<0.001	H.S.
6	Numbness in hands & soles	1.10	0.70	57.14	0.73	0.16	3.56	<0.001	H.S.
7	Weakness	1.65	1.45	12.12	0.94	0.21	2.18	<0.05	I.S.
8	Cramps in walking	1.00	0.65	40	0.88	0.17	3.56	<0.001	H.S.
9	Nature of sweating	1.50	0.80	46.66	1.05	0.17	6.66	<0.001	H.S.

TABLE 5: Statistical Analysis showing in the Effect of Trial Drug to the Different Sign & Symptoms of the Patients (20) in group C



Effect of the therapy in Fasting & Postprandial Blood Sugar label:

Group A (Mamajjaka Ghanavati group):

18 patients of prameha (~DM) were treated with mamajjaka ghanavati. The initial fasting blood sugar value of 18 patients of Prameha before treatment was 1.78 decline to 0.83 after treatment by giving 53.12% relief with t value of <0.001 the statistical analysis showing highly significant result.

Before treatments mean post prandial blood sugar value was

Table No.6 Effect of the therapy in Fasting & Postprandial Blood Sugar label

(FBS- Fasting Blood Sugar, PPBS- Post Prandial Blood Sugar)

Blood Sugar	Mean Score		% of relief	S.D.	S.E.	T	P
	B.T.	A.T.					
Group A 18 Patients							
F.B.S.	1.78	.83	53.13	0.42	0.09	9.6	<0.001
P.P.B.S	1.89	0.88	52.94	0.83	0.19	3.6	<0.001
Group B 14 Patients							
F.B.S.	1.57	0.57	63.63	0.75	0.20	3.5	<0.01
P.P.B.S	1.64	0.74	66.52	0.74	0.19	2.2	<0.001
Group C 20 Patients							
F.B.S.	1.4	1.05	25	0.51	0.11	3.2	0.004
P.P.B.S	1.4	1.0	32.14	0.56	0.12	3.5	0.002

Overall effect of the trial therapies:

Table 7 reveals that in group A, out of 18 patients 33.3% patients had control the disease, while 11.1% patients had markedly and 16.6% had moderately improvement while 44.7% patients had mild improvement. No patients found unchanged. In group B, out of 14 patients 42.8% patients had control the disease

293.5 declined to 227.5 after treatment by giving 22.2% relief.

Group B (Mamajjaka Ghanavati + Virechana karma):

The table 6 reveals that virechana provided statistically highly significant reduction (P<0.001) in Fasting blood sugar by 63.63% & statistically highly significant reduction (P<0.001) in postprandial Blood sugar by 66.52% relief.

Group C: (Placebo therapy + diet control) provided statistically significant reduction in FBS by 25% relief and in PPBS with 32.14% relief.

7.14% & 35.7 patients had marked and moderately improvement However, no patient Found unchanged. In group C, out of 20 patients 20% patients had control the disease, while 10% each patients had markedly improvement and moderate improvement. 35% patients had got mild improvement however no improvement found in 5 patients i.e. 25%.

Total effect	Group A		Group B		Group C		Total	%
	No. of pt.	%	No. of pt.	%	No. of pt.	%		
Control	06	33.3	06	42.8	04	20	16	30.7
Marked improvement	02	11.1	01	7.14	02	10	05	9.61



Moderate improvement	03	16.6	05	35.7	02	10	10	19.2
Mild improvement	07	44.4	02	14.2	07	35	16	30.7
No improvement					05	25	05	9.61
Total	18	100	14	100	20	100	52	100

Table 7: Overall effect of therapy in patients of Prameha (~DM).

Discussion:

All the Ayurvedic classics described the disease prameha (~DM) in detail. This disease has been listed under the eight mahagada (merely curable disease) which are difficult to cure. In the person having hereditary predisposition disease becomes quickly incurable due to the short circuit in the metabolic pathway. Patients starts to convert most of the food nutrients into glucose irrespective of body requirement most of the symptoms of the disease prameha occur due to defect in the functions of jathragni and dhatwagni leading to the excessive formation of deranged quality rasa, mamsa, meda, kleda etc.

Attempt has been made to explain the prameha as the synonyms of the diabetes mellitus. It has been observed that prameha has a great resemblance with disease diabetes mellitus of the modern science if we consider the prameha from the clinical point of view the kaphaja, pittaj and vataja type of prameha are nothing but the clinical progression of the same disease diabetes mellitus. Regarding the clinical features of urinary changes Sushruta has clearly mention that instead of doshas and dushyas are being the same only due to difference in their proportion(doshas–dushyas–samyoga-vishesa) different manifestation are observed^{9,10,11}.

Almost all of the Ayurvedic texts have given emphasis of samsodhan (Purification), shamana (palliative) and diet & exercise in the treatment of the

disease. In the pathogenesis of the prameha, the kapha and pitta are the main dosha, whereas the most important dushyas are meda and kleda. So, in its management such drugs have to be selected which are against meda and kleda as well as having hypoglycemic effect. So, the drug Mamajjaka which is widely used in rural parts of the country as a folklore medicinal plant which fulfills the above criteria has been selected. According Sushruta, The doshas in the patients of prameha (~DM) accumulates in the lower part of the body owing to the incompetence of the dhamanis. So keeping these factors in view, the virechana therapy was selected. As prameha is a drava pradhan vyadhi generally depends on the ahara-vihara (diet & exercise) without which any kind of treatment is not effective for long time.

Probable mode of action of mamajjaka ghanavati:

The drugs mamajjaka mainly having tikta, katu rasa usna veerya and laghu, ruksa guna, katu vipaka and kaphavatahara properties. Thus usna veerya and tikta rasa helps to normalize the function of Jathragni and dhatwagni. That in turn helps to form the dhatus in proper proportion with samyak qualities. laghu, ruksa guna helps for the shosan of bahudrava shlesma and reduction of vitiated meda, kleda. Thus once these factor get normalized in the body they in turn make clear the Path of vata which stops the depletion of vital dhatus (tissues)



and restore normal physiology^{12, 13, 14, 15, 16, & 17}.

Probable mode of action of Virechana:

As said by acharya Sushruta, in the patients of prameha (~DM), kapha and pitta are vitiated excessively and they remain lying in the lower part of the body virechana (purgation) has the quality to eliminate both pitta and kapha. Also, it is the best shodhana (purification) therapy for the elimination of dosha lying in the lower parts of the body. By the elimination of kapha and pitta, obstructions are removed (avarana), which are caused by the path of vata. At the same time, the elimination of kapha also alleviates the vitiated kapha vargiya dushyas. In this way, the virechana therapy reduced the vitiation of dosha and the dushyas. In this group, the shamana therapy was given after the virechana. When the shamana drug was given to the patients whose vitiated doshas were already eliminated by the virechana therapy, it ultimately provided better relief in comparison with the shamana therapy alone. The above-mentioned facts are evident from the results of this study, as the virechana and mamajjaka ghanavati group (combined therapy) provided better relief in signs and symptoms of the patients of prameha(~DM).

Conclusion:

In the present study, better relief was observed in signs and symptoms of the patients in comparison with the biochemical parameters. After evaluating the total effect of therapies, it was observed that the virechana (purgation) and mamajjaka ghanavati (combined therapy) provided better relief in the patients of prameha (~DM) in comparison with the mamajjaka ghanavati (Shamana therapy) alone.

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