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Multi Modal Ayurvedic Treatment of *Madhumeha* (with Particular Reference to Type 2 Diabetes Mellitus)

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ABSTRACT

INTRODUCTION

Madhumeha is a *vata* dominant *prameha* which comes into *yapya* category of *asadhya* diseases having *madhusamam mutrapravritti* and *prabhuta-avilamutrata* as cardinal features. Type 2 diabetes mellitus of modern medical science resembles *avaranajanya madhumeha* mentioned in classics.

MATERIALS AND METHODS

Total 31 patients of *madhumeha* were treated with multimodal therapy for 6 weeks. Following *sarvanga abhyanga* with *tilataila* and *sarvanga bashpasvedana* with plain steam for 3 days in early morning, *mriduvirechana* was given on 3rd day with *erandasneha* 30-40 ml and *dinadayalachurna* three to five grams (according to *koshtha*) which was followed by *samsarjanakrama* on 4th day. *Niruhabasti* with *pathyadi kvatha* was given for 8 days starting from the 5th day. *Jambubija ghanavati* was started as oral medicament from 5th day in dose of 4 tablets (500 mg each) twice a day before meals which was given for total 38 days. The results were then assessed by relief in subjective and objective criteria by a specially prepared grade score and laboratory investigations.



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RESULTS:

Significant improvement with p value less than 0.001 was observed in all of the subjective and objective criteria.

CONCLUSION:

Madhumeha is *yapya* disease which can be managed by this multimodal therapy showing significant improvement in all of the subjective and objective criteria.

KEYWORDS

Madhumeha, Type 2 Diabetes Mellitus, Multimodal Therapy



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INTRODUCTION

Madhumeha is a *vata* dominant *prameha* which comes into *yapya* category of *asadhya* diseases. *Madhusamam mutrapravritti* is a cardinal feature of *madhumeha*. Cardinal features of *prameha* which are *prabhuta* and *avilamutrata*, can also be considered as features of *madhumeha*. In modern medical science, diabetes mellitus which literally means frequent and sweet urination can be considered as a similar clinical condition for *madhumeha*. Amongst its two main types, type 2 diabetes mellitus resembles *avaranajanya madhumeha* mentioned in classics. In this type, despite presence of insulin (the *vata* principle), because of its resistance (*avarana*), there is impaired cellular uptake as well as metabolism of glucose and thus hyperglycemia (*madhurya*) occurs in body. Diabetes is a global pandemic. The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014 all over the world¹. WHO projects that diabetes will be the 7th leading cause of death by 2030². The International Diabetes Federation (IDF) estimates the total number of diabetic subjects to be around 40.9 million in India and this is further set to rise to 69.9 million by the year 2025³.

AIMS AND OBJECTIVES

1. To study and observe the effectiveness of multi modal treatment in the management of *madhumeha* (type 2 diabetes mellitus).
2. To establish the effectiveness of multi modal treatment in the management of *madhumeha*, logically.

MATERIALS AND METHODS

Patients of both genders, between the ages of 25 to 65 years, with fasting venous glucose from 127 to 170 mg/dl or postprandial venous glucose from 200 to 300 mg/dl who were compatible for the therapy were registered in the clinical trial from outdoor and indoor patients department of P. D. Patel Ayurved Hospital, Nadiad. The study obtained Institutional Ethics Committee clearance (JSAM/IECHR/30/05-2015) and was registered at Clinical Trial Registry of India (CTRI/2015/11/006362). A written informed consent from each patient was taken before enrolling in the clinical trial.

Exclusion criteria:

1. Patients with associated diseases like cancer, tuberculosis, severe cardiovascular disease.



2. Patients having complications of diabetes like nephropathy, retinopathy, diabetic foot, carbuncles.
3. Patients having diabetes mellitus in association with other endocrinopathies like phaeochromocytoma, acromegaly, Cushing's syndrome and hypothyroidism.
4. Patients having drug or chemical induced type 2 diabetes mellitus, like glucocorticoids induced or thyroid hormone induced.
5. Patients with genetic syndromes associated with type 2 diabetes mellitus like Down's syndrome, Klinefelter's syndrome, Turner's syndrome.
6. Patients who were dependent on insulin.
7. Patients who were not suitable for *virechana*⁴ and *basti*⁵.
8. Pregnant and lactating women.

Criteria of withdrawal:

Any participant suffering clinical conditions i.e. hyper-osmolar state, hypoglycemia, ketoacidosis, systemic infections was to be withdrawn from the study.

Investigations:

1. Fasting venous glucose
2. Postprandial venous glucose
3. Urine sugar (fasting and postprandial)

Treatment protocol:

Mriduvirechana karma:

→ *Purva karma:*

1. *Sarvanga abhyanga* with *tilataila*.
2. *Sarvanga bashpasvedana* with plain steam.

Duration: 3 days once in the morning

→ *Pradhana karma:*

Erandasneha 30-40 ml and *dinadayala churna* (*anubhuta virechanayoga*) were prepared in Sundar Ayurveda Teaching Pharmacy by combination of *churnas* of the following drugs: *haritaki*, *yavani*, *saindhava* and *svarnapatri*. Three to five grams (according to *koshtha*) with lukewarm water was given on 3rd day early in the morning after *sarvanga snehana* and *svedana*.

→ *Pashchat karma:*

Samsarjana krama with some modifications from the classics, for 3 *annakala*. *Mudgayusha* was given as dinner on the *virechana* day. The next day, boiled mung and boiled vegetables were given both the times.

*Niruhabasti karma*⁶:

Niruhabasti with *pathyadikvatha* was given every day after performing the *sarvanga abhyanga* with *tilataila* and *sarvanga bashpasvedana* with plain steam for next 8 days.



Niruhabasti was made according to the classics with following contents:

Madhu 30 ml, *saindhava* 5 gm, *tilataila* as *sneha* 30 ml, *basti kalka*⁷ (*yavani*, *bilvagarbha*, *madanaphala*, *kushtha*, *vacha*, *shatapushpa* in equal parts each) 15 gm, *pathyadi kvatha*^{8,9} 240 ml.

Shamanachikitsa:

Jambubija ghanavati:

Content: Seeds of *Syzygium cumini* (Linn.) Skeels

Dose: 4 tablets (500mg each) twice a day before meals.

Duration: It was started from the 5th day of the treatment and continued for next 38 days.

Total duration of the treatment was of 6 weeks.

Diet:

Patients were kept on following diet during multi modal therapy:

Breakfast: 10 grams *chyavanaprashavaleha* with 100 ml milk

Lunch and dinner: Boiled mung, barely flour chapatti, mung beans soup and boiled vegetables (except potatoes).

Rice, sweets, sour food items, items which are heavy to digest were strictly prohibited during the therapy.

Conventional medicines during therapy:

All the patients who were consuming the conventional anti hyperglycemic drugs were instructed to stop them from the day of *virechana* and also not to start it again prior to the instructions by investigator. Blood sugar level was checked time to time and if required, the same anti-hyperglycemic agents were started with smaller dose. Changes in the dose of drugs were noticed and are mentioned in the results.

Criteria for assessment:

Assessment was done on the basis of signs like Fasting blood sugar, Postprandial blood sugar, Fasting urine sugar, Postprandial urine sugar, *prabhutamutrata* (assessed by total urine output and frequency of urine in 24 hours) and grade score pattern prepared for the symptoms like *kekshudhadhikya*, *trishnadhikya*, *gala-talushosha*, *kara-padataladaha*, *kara-padatalasupata*, *pindikodveshtana*, *daurbalyaandatisveda*.

The grade score pattern is shown in Table 1

Criteria for the assessment of overall effect of therapy:

1. Improvement < 25% – no relief
2. Improvement \geq 25% up to 50%-mild relief
3. Improvement \geq 50% up to 75%-moderate relief
4. Improvement \geq 75% up to 100%-marked relief



5. 100% improvement- complete relief
For the overall assessment, the subjective criteria and objective criteria were given equal (i.e., 50%) weightage. For assessment

of subjective and objective criteria each, the average of all the symptoms (in subjective criteria) and signs (in objective criteria) were considered.

Table 1 Grade score pattern showing criteria for assessment

Grades	0	1	2	3
1	<i>Prabhuta mutrata</i>			
a) Total urine output (in ml)	Up to 1500	1500-2000	2000-3000	>3000
b) Frequency of urine in 24 hours				
2	<i>Avilamutrata</i>			
a) Turbidity of urine	Clear urine	Slight cloudy or smoky	Turbidity clearly present	Extremely turbid
b) Altered consistency (with the help of specific gravity of urine collected for 24 hours)				
3	<i>Kshudha-dhikya</i>			
	Usual (Main meals-2 Snacks-1)	Increased (Main meals-2 Snacks-2-3)	Increased (Main meals-2 Snacks-3-5)	Increased (Main meals-3 Snacks-2-3)
4	<i>Trishna-dhikya</i>			
	Normal (1.5-2 liters water intake/24 hours)	Increased but can be controlled (2-2.5 liters water intake/24 hours)	Increased with increased frequency of drinking water (2.5-3 liters water intake/24 hours)	Very much increased (>3 liters water intake/24 hours)
5	<i>Gala-talushosha</i>			
	No <i>shosha</i>	Feeling of thirst off and on can be managed by a glass of water	Feeling of thirst is severe but can be managed by drinking sufficient amount of water	Severe feeling of thirst remains even after drinking water
6	<i>Kara-padataala daha</i>			
	No <i>daha</i>	Mild to moderate burning occasional	Moderate to severe for very often and regular activity not hampered	Very severe for whole day and regular activity hampered
7	<i>Kara-padatalasuptata</i>			
	No <i>suptata</i>	Mild to moderate occasional <i>suptata</i>	Moderate to severe for very often and regular activity not hampered	Very severe for whole day and regular activity hampered



8	<i>Pindikodvesht ana</i>	No cramps	Cramps after walking 1 km or heavy work	Cramps after walking ½-¼ km or moderate work	Cramps during routine active work
9	<i>Daurbalya</i>	Can do routine work / exercise	Can do moderate exercise with hesitancy	Can do mild exercise only, with difficulty	Can't do mild exercise too
10	<i>Atisveda</i>	Sweating after heavy work and fast movement or in hot weather	Profused sweating after moderate work and movement	Sweating after little work and movement	Profuse sweating after little work and movement

Statistical analysis:

Obtained data were statistically analysed using student paired t-test.

RESULTS AND DISCUSSION

Statistically highly significant results were observed in all of the signs and symptoms. As seen in Table 2, among the

Table 2 Effect of multimodal treatment on objective criteria of 31 patients of *madhumeha* (type 2 diabetes mellitus)

	Mean score			%	Paired 't' test			
	BT	AT	D (BT-AT)	Relief	SD	SE	't'	P
<i>Prabhutamutrata:</i>								
Total urine output (24 hours)	1.46	0.85	0.60	41.46	0.49	0.09	6.45	<0.001
Frequency of urine in 24 hours	9.70	7.22	2.48	25.58	3.30	0.59	4.18	<0.001
FBS	150.80	118.61	32.19	21.34	34.61	6.21	5.17	<0.001
PPBS	255.61	175.96	79.64	31.15	49.61	8.92	8.92	<0.001
FUS	1.77	1.00	0.77	43.63	0.99	0.17	4.35	<0.001
PPUS	2.51	1.22	1.29	51.28	1.27	0.22	5.65	<0.001



objective criteria, maximum i.e. 51.28% relief was observed in post-prandial urine sugar (PPUS), followed by 43.63% relief in fasting urine sugar (FUS) and 41.46% relief in total urine output in 24 hours which was one of the parameters for assessing *prabhutamutrata*. Another parameter for assessing *prabhutamutrata* was frequency of urine in 24 hours, in which 25.58% relief was found. In fasting blood sugar (FBS) and post-prandial blood sugar (PPBS), 21.34% and 31.15% relief were found, respectively. As seen in Table 3, among the subjective criteria, maximum i.e. 80.00% relief was observed in *karapadataladaha*, followed by

76.92% relief in *karapadatalasuptata* and 72.22% in *pindikodveshtana*. 59.64% and 58.18% relief were found in *gala-talushosha* and *trishnadhikya* respectively. In *atisveda*, *kshudhadhikya* and *daurbalya*; 55.00%, 51.28% and 50.94% relief was found.

For all of the subjective and objective criteria, p value was less than 0.001 which suggests that results obtained here are not by chance.

Overall assessment of effect of multimodal treatment on 31 patients of *madhumeha* (type 2 diabetes mellitus):

Table 3 Effect of multimodal treatment on subjective criteria of 31 patients of *madhumeha* (type 2 diabetes mellitus)

Criteria	Mean score			% Relief	Paired 't' test			
	BT	AT	D (BT-AT)		SD	SE	't'	P
<i>Karapadataladaha</i>	1.66	0.33	1.33	80.00	0.48	0.11	11.66	<0.001
<i>Karapadatalasuptata</i>	1.62	0.37	1.25	76.92	0.57	0.14	8.66	<0.001
<i>Kshudhadhikya</i>	1.85	0.90	0.95	51.28	0.38	0.08	11.35	<0.001
<i>Trishnadhikya</i>	1.96	0.82	1.14	58.18	0.35	0.06	16.97	<0.001
<i>Gala-talushosha</i>	2.03	0.82	1.21	59.64	0.41	0.07	15.37	<0.001
<i>Pindikodveshtana</i>	1.63	0.45	1.18	72.22	0.50	0.10	11.06	<0.001
<i>Daurbalya</i>	1.96	0.96	1.00	50.94	0.67	0.13	7.64	<0.001
<i>Atisveda</i>	1.81	0.81	1.00	55.00	0.44	0.13	7.41	<0.001

Out of total 31 patients, 45.16% patients belonged to the group of moderate improvement, 38.71% patients belonged to the group of mild improvement, the overall results of 9.68% patients remained

unchanged while 6.45% patients belonged to the group of marked improvement.

Among total 31 patients, 23 patients were taking conventional treatment before starting multimodal therapy even though their blood and urine sugar level was high. Among



them, 9 patients (39.13%) were reported to maintain normoglycaemia without conventional treatment and so they were instructed to discontinue it. We were able to maintain blood sugar level of 6 patients (26.08%) with half dose of their conventional medicaments. However, 8 patients (34.78%) needed their conventional medicaments to maintain normoglycaemia and so they were instructed to continue it along with this therapy.

Discussion on the disease reveals that *madhumeha* (type 2 diabetes mellitus) is *kapha-vata* dominant disorder in which *vata* gets *avrita* by *kapha*. *Rasa*, *udaka*, *mamsa* and *medas* are mainly involved in the pathogenesis of *madhumeha*. 85.29% patients had *kulavritta* of *madhumeha* which shows a strong genetic component. Majority of the patients did *kaphaprapakopakaaharasevana* (*madhura*, *amla*, *guru* and *snigdha*) and *viharasevana* (*sanshodhanabhava* and *avyayama*).

Virechana and *bastikarma* were done for pacifying both *vata* and *kaphadosha* and to remove *avarana* of *kaphadosha*. *Pathyadikvatha* used in *niruhabasti* has mainly *kaphashamaka* properties. *Jambubija ghanavati* having *kashaya* rasa; *laghu*, *rukshaguna*; *katuvipaka*; *dipana* and *mutrasangrahaniya karma*; works on

provoked *kapha* and by removing *avarana* of *kapha*, helps *vata* in its normal functions.

CONCLUSION

Madhumeha is *yapya* disease which can be managed by this multi modal therapy. The multi modal therapy is effective in reducing the subjective parameters and controlling blood and urine sugar level in the patients of *madhumeha* (type 2 diabetes mellitus) and it was statistically significant ($P < 0.001$). No any unwanted effect noticed during the entire study period.



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