

THE ROLE OF LIFESTYLE MODIFICATION ON PATIENT OF DIABETES MELLITUS: A CASE STUDY

Sangeeta Kumari¹, Darshna Pandya²

¹M. D. 2nd Year, ²Assistant Professor,
Department of Rog Nidan, I.P.G.T. & R.A., G.A.U., Jamnagar, Gujarat, India

Email: sangeeta140291@gmail.com

ABSTRACT

The global prevalence of diabetes mellitus has doubled since 1980, rising from 4.5% to 8.5% in adult population. Among the prevalence majority of people with diabetes are affected by Type 2 diabetes mellitus. It is the condition where the body cannot utilise secreted insulin (Insulin resistance). Type 2 diabetes is considered among *Apathyanimitaja Prameha*. As far as line of treatment of diabetes is concern, dietary management is given priority not only in *Ayurveda* but also in contemporary medical science. A case, 45 year old female having obesity (BMI 33.29Kg/m²) came to the OPD. On investigation, she was diagnosed as a case of type 2 DM with positive family history. A detailed history regarding her diet and lifestyle was taken and necessary modification regarding the same was advised to her. The patient was assessed on 15 day interval for subjective parameter, investigated for sugar level every month and rest of the parameter including lipid profile noted before treatment and at the end of three month. After three month dietary management, BMI improved by 7.47%, fasting and post prandial sugar was improved by 33.92% and 22.93% respectively. Improvement observed in Lipid profile was also encouraging.

Keyword: Diet, Type 2 DM, *Apathyanimitaja Prameha*, lifestyle modification

INTRODUCTION

Type 2 diabetes is known as adult-onset diabetes, is a form of diabetes characterized by high blood sugar, insulin resistance and relative lack of insulin. Long term complications from high blood sugar include heart disease, CVS, diabetic retinopathy which can result in blindness, kidney failure and poor blood flow in the limbs which may lead to amputations.

The global burden of the disease has increased twelve-fold between 1985 and 2011. [1] Diabetes currently affects more than 62 million Indians, which is more than 7.1% of the adult population. The average age for onset is 42.5 years. Nearly 1 million Indians die due to

Diabetes every year. [2] Globally, an estimated 422 million adults are living with diabetes mellitus; according to the latest 2016 data from the world health organization (WHO) [3]. Diabetes prevalence is increasing rapidly previous 2013 estimates from the International Diabetes Federation put the number at 381 million people having diabetes. [4] Type 2 diabetes primarily occurs as a result of obesity / insulin resistance. Most common Causes of obesity are excessive food intake and lack of physical activity i.e. Sedentary Lifestyle.

Hence, lifestyle modification plays a major role to

overcome this disease. In Ayurveda, diabetes mellitus can be correlated with *Apathyanimittaja Prameha /Madhumeha*. It is *Tridoshaja* in origin with predominance of *Kapha*. *Charak* has mentioned that luxurious life style, overuse of milk and milk products and jaggery products, lack of physical work etc. *Kapha Dosh*a provoking factors are considered as major factors for development and progression for disease *Prameha*.^[5]

Case Report

A female patient of 45 years old came to the OPD of Rog Nidan Department of the institute, on 21/08/2019 having the complaints of weight gain, heaviness in the body, *Atikshudha* (Excessive Hunger), *Atipipasa* (Excessive Thirst), *Nidraadhikya* (Sleeping Excess), *Aalshya* (Laziness), *Mukhgalatalushosh* (Dryness of Mouth, Throat & palate), *Karpadasuptata evum daha* (Burning and Numbness of hand & legs), *tandraadhikya* (Drawziness) and *Prabhutamutrata* (Excessive urination) and *Avila Mutrata* (Muddy urine) for last two years.

Past History

- ✓ Chikungunya before 7 month,
- ✓ renal stone before one year,
- ✓ Accidental injury of Left leg before four year.

Family History

- ✓ Positive history for Type 2 DM found to paternal as well as maternal side.

Personal History

The patient was having increased appetite, used to take one extra meal daily with dominance of *Madhur, amla Rasa* and had habit of having meal even though first meal is not digested, as well as she used to have over eating.

The frequency of urine was 10-12 times in a day time, 2-3 times in the night, Yellowish, slight turbid in colour and having regular bowel habit. She was also having habit of day sleep (about two hours) since ever, with eight hours regular sound night sleep. She was not used to do exercise.

General Examination

The patient's weight was 80 kg, height 152 cm, body mass index (BMI) 38.08 kg/m². Vitals like Pulse 78/minute, Temperature 98.6 °F and Respiratory Rate 20/minute were almost within normal range except blood pressure which was slight on higher side i.e. 138/90 mm of Hg. Physical and Systemic examination of the patient did not show any abnormal findings.

Dashavidha Pareeksha

On tenfold examination the patient found to have *Pitta-Kapha* dominant constitution, mediocre *type* of *Satmya, Satwa, Sara* and *Vaya* along with inferior quality for *Vyayam* (physical exertion), *Samhanana* (compactness of body) and *Jarana Shakti* (digestion power).

Body Circumference (Table - 1)

Parameter	Before starting management (In Inches)
Waist	48
Chest	42
Abdomen	41
Hip	41.5
W:H ratio	1.15
Mid arm	Rt.-14.5 Lt.-13.5
Mid of thigh	Rt.-19.5, Lt.-19.5
Leg	Rt.-14, Lt.-13.5

She was investigated on 25th March, 2019 and diagnosed as diabetes mellitus with fasting blood sugar 224mg/dl and post prandial blood sugar 266 mg/dl.

Her Lipid profile showed serum cholesterol 284mg/dl, S. triglycerides 865mg/dl and S. VLDL 173 mg/dl.

As the patient was newly diagnosed case it was planned to manage her with diet and lifestyle modifi-

cation. The entire symptoms were assessed at the interval of 15 days; blood sugar investigated every month and all parameters including lipid profile, BMI

were assessed before and at the end three month. All the body parameters were documented before and after treatment.

Patient lifestyle and suggested modifications: Table - 1

Routine	Past	Suggested
Wake up	8:00am	6:00am
<i>Pranayam</i>	Nil	<i>kapalbhati</i> 20 times in 3 stage, <i>Anuloma-Vilom</i> in the morning (due to accidental injury the patient was unable to go for walk or other exercise)
Breakfast	10:00am <ul style="list-style-type: none"> ▪ Tea with excess sugar Paratha/thepla/gathiya/ ▪ Puri/chapati (2-3) 	9:00am <ul style="list-style-type: none"> ▪ Tea (tulsi+dalchini+laung+Adarak) Without sugar ▪ Karela juice twice in a week ▪ Mumura/chapati
Day sleep	2 hours	15-20 min max.
Lunch	1:00pm <ul style="list-style-type: none"> ▪ Chapati (4-5) of wheat flour ▪ Vegetable-potato (most of time), ladyfinger, frequent use of paneer, cheese in vegetable. ▪ Curd daily ▪ Buttermilk 	1:00pm <ul style="list-style-type: none"> ▪ Chapati- made with “barley + wheat” equal amount flour ▪ Vegetable-Bittergourd/Bottle gourd/ ▪ Drumstick/Sponge gourd/Spinach/Fenugreek, ▪ Green gram, ▪ Buttermilk
Refreshment	4pm <ul style="list-style-type: none"> • Fried items, bakery products or sweets like, Samosa, puff, bread product, banana fruit etc. 	4pm <ul style="list-style-type: none"> • Roasted gram (if required)
Dinner	10pm <ul style="list-style-type: none"> ▪ Dosa, bhelapuri, panipuri, pizza, idli, (5 to 6 time a week) 	7pm <ul style="list-style-type: none"> ▪ Chapati “wheat & barley” mixed flour ▪ Green vegetables, ▪ Boiled munga 3 times/week
Bed time	1:30am	10:00pm

Observation & Result:

After completion of three months treatment, results were assessed. Subjective criteria; FBS and PP₂BS, as well as lipid profile (S. cholesterol, S. triglyceride, VLDL), Body weight and BMI. Diabetic parameters

have shown in table 1, change in Lipid profile in table 2 and reduction in weight (kg) and BMI in table 3 and reduction in Body circumference have shown in table 4.

Subjective Improvement: Table - 2

Sr. No.	Clinical feature	B.T.	Days of visit					
			15 th	30 th	45 th	60 th	75 th	AT
1	<i>Atikshudha</i> (Excessive Hunger)	2	2	1	1	1	0	0
2	<i>Atipipasa</i> (Excessive Thirst)	2	2	2	1	1	0	0
3	<i>Nidradhikya</i> (Sleeping Excess)	2	2	2	1	0	0	0
4	<i>Alasya</i> (Laziness)	2	2	1	1	1	0	0

5	<i>Ghanangata</i> (Heaviness of the body)	2	1	0	0	0	1	0
6	<i>Mukhgalatalushosha</i> (Dryness of Mouth, Throat & palate)	3	2	2	1	1	0	0
7	<i>Kara-Pada Suptata</i> (Numbness of hand & legs)	2	2	1	1	1	0	0
8	<i>Kara-Pada Daha</i> (Burning of hand & legs),	2	2	1	1	1	1	1
9	<i>Tandra</i> (Drawziness)	1	1	1	1	0	0	0
10	<i>Prabhuta Mutra</i> (Excessive urination)	2	2	1	0	1	0	1
11	<i>Avila Mutrata</i> (Muddy urine)	1	1	0	0	0	0	0

Effect of lifestyle modification on diabetic profile: Table 3

Diabetic profile	5/03/19	20/04/19	21/05/19	25/06/19	% Improvement
FBS (mg/dl)	224	187	184	148	33.92%
PP ₂ BS (mg/dl)	266	231	214	205	22.93%

FBS- Fasting blood sugar; PP2BS- Post prandial blood sugar

Reduction in lipid parameters: Table 4

Lipid profile	BT 25/03/19	25/03/19	Improvement
S. Cholesterol (mg/dl)	284	190	33.09%
S. Triglyceride (mg/dl)	865	283	67.28%
S. VLDLs (mg/dl)	173	57	67.05%

VLDL- Very low density lipid.

Improvement in weight and BMI: Table 5

Parameter	BT	AT	Improvement
Weight (kg)	80	74	7.5%
BMI (kg/m ²)	33.29	30.80	7.47%

BMI- Body mass index.

Improvement in body circumference: Table 6

PARAMETER	B.T. (In Inch)	A.T. (In Inch)
<i>Kati</i> (Waist)	48	44
<i>Ura</i> (chest)	42	41
<i>Udar</i> (abdomen)	41	40
<i>Sphika</i> (hip)	41.5	40
W:H ratio	1.15	1.10
<i>Bahu</i> (midarm)	Rt.-14.5 Lt.-13.5	14 13
<i>Uru</i> (midthigh)	Rt.-19.5 Lt.-19.5	19 19
<i>Jangha</i> (leg)	Rt.-14 Lt.-13.5	13.5 13.5

DISCUSSION

Regular indulgence of *Pishtanna* (items prepared from fine flour), curd and other unctuous, heavy and fermented property diet, provocation of *Kapha*, *Pitta* and *Meda mansa* takes place. This arouses in *Aavarana* of *Vayu* finally resulting *Madhumeha* especially insulin resistance type 2 diabetes mellitus. Diet and lifestyle

modification plays an important role for the management of type 2 diabetes. [6] *Ayurveda* also insist that such patients should have maximum use of barley and similar *Ruksha* (create dryness in body) still *Guru* (heavy) property food in his regular diet. [7] The person who performs exercise will overcome from such disease successfully and the person who does not per-

form exercise and do not having diet control, will suffer with disease like *Prameha / Madhumeha* along with its grave complications. [8]

Bitter gourd, bottle gourd, drumstick, sponge gourd, spinach, fenugreek, green gram and barley; these are *Pathya* in *Madhumeha* and having property like *Tiktakatu-kashya rasa, Laghu-Ruksha guna, Usna virya, Lekhana-Chhedana Karma*. They are having opposite property to causative factors of the disease. It will remove the *Aavarana* and thus, can control the disease.

In diabetes mellitus, insulin resistance is found due to obesity and obesity is the result of vitiation of *Rasa, Mansa & Meda dhatu*. These *Dravyas* are having opposite properties to vitiated *Dhatu* and hence, pacify them. Diet modification as well as lifestyle management in diabetic patient reduced the blood sugar, S. cholesterol, S. Triglyceride, and S.VLDL. It also helps to decrease body weight, BMI & waist circumference.

CONCLUSION

Diet modification as well as lifestyle management can be a good tool to manage initial stage of the disease like type 2 diabetes mellitus.

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