

Evaluation of Diet and Life Style in the Etiopathogenesis of Type - 2 Diabetes

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ABSTRACT : The response to the psychological conditions varies person to person because each has different bodily and psychic constitution. Moreover, stressors play certain role in the development, progression, prognosis and treatment of disease. Stressful life-style affects one's mind and homeostasis of body by several psychosomatic mechanisms. Many psychosomatic disorders are wing sprouted-up with genetic disposition. Type-2 diabetes is one of such diseases, which is adversely affected by disturbed psychological conditions. Survey of 279 type-2 diabetes mellitus patients revealed that majority of the patients were taking milk, followed by curd, cheese, butter etc. Moreover, majority of patients had improper sleep and more than 3/4th female patients had attained menopause with negative mental attitude. These diabetic subjects had worry, depressed mood, anger, fear, apprehension and anxiousness up to a great extent. On Brief Psychiatry Rating Scale, psychological factors affected at various levels include: somatic concern, anxiety, emotional withdrawal, conceptual disorganization, tension, unusual thought content, excitement, disorientation etc. The data reflects that defective diet and disturbed mental health play an important role in etiopathogenesis of diabetes mellitus.

Key words : Psychological factors, *Manasabhava*, Type-2 Diabetes, *Avaranajanya Madhumeha*

INTRODUCTION

Now a days large section of society is returning towards natural ways of living with lot of expectation from Ayurveda-system of medicine which is easily available, eco-friendly and toxicity free with its holistic approach. In last few decades, life style and dietary habits have changed extensively. Fast life of today's era produces lot of stress and tension in daily life affecting the mind at subconscious level to disturb human physiology leading to psychosomatic disorders including diabetes mellitus.

Psychological conditions like *Chinta* (worry), *Lobha* (greed), *Shoka* (grief), *Bhaya* (fear), *Krodha* (anger) etc. are described as *Manasikabhava* in Ayurvedic classics. As soon as these *Manasikabhava* cross their physiological limits, they are considered as *Manasika Vikara*- pathological state adversely affecting body and mind both. It is suggested to hold-up *Manasikabhavas* like greed, grief, fear, anger etc. to maintain physical and mental well being. (*LobhaShokaBhayaKrodhaManaVegan Vidharayet*).¹

Diabetes is a global problem with devastating human, social and economic impact. Today >245 million people worldwide are living with diabetes and by the year 2025 this number is expected to be >380 million. Type-2 diabetes is responsible for 90 - 95% of diabetes cases and increasing at alarming rate as a result of increased

urbanization, high rate of obesity, sedentary and stressful lifestyle. India has the world's largest diabetes population with estimated 35 million patients and known as "*Capital of Diabetes Mellitus*".²

Syndrome of diabetes is broadly covered under *Prameha* with excessive quantity & turbidity in the urine depending upon the interaction between three *doshas* and ten *dushyas*. *Prameha* has three types viz *Kaphaja Prameha*, *Pittaja Prameha* & *Vataja Prameha*; and 20 Sub-types: *Kaphaja-10*, *Pittaja-6* & *Vataja-4*. *Madhumeha* has been described as one of the sub-types of *Vataja Prameha*.

Further, *Charaka* based on body constitution³ has classified the patients as *sthoola pramehi* (obese diabetics) and *krisha pramehi* (asthenic non obese patients) which has resemblance with type-2 and type-1 diabetes, respectively. Type-2 Diabetes can also be covered under *Avaranajanya Madhumeha*⁴.

Sushruta has discussed two types of *Prameha* viz, *Sahaja Prameha* which is due to genetic predisposition and comparable to type-1 diabetes and *Apathyanimitaja Prameha* which is developed later on due to defective diet, sedentary lifestyle and lack of exercise⁵ (Type-2 Diabetes).

MATERIAL AND METHOD

Total 279 patients of type-2 Diabetes, attending the O.P.D./I.P.D. of Institute for Post Graduate Teaching & Research in Ayurveda Hospital, Gujarat Ayurved University, Jamnagar, were selected irrespective of their sex, caste etc. for survey study.

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Inclusion Criteria: Patients of type-2 diabetes fulfilling the standard diagnostic criteria of World Health Organization (W.H.O.) for Diabetes Mellitus.⁶

- ♦ Symptoms of diabetes mellitus plus random blood glucose >200mg/dl
or
- ♦ Fasting blood glucose >126mg/dl
or
- ♦ Two-hour blood glucose >200mg/dl during an oral glucose tolerance test.

A detailed proforma covering signs & symptoms of type-2 diabetes, dietary habits, positive & negative *Manasikabhava* and Brief Psychiatry Rating Scale, was prepared to study disturbed psychological factors.

Exclusion Criteria: Patients of Insulin dependent diabetes mellitus (Type-1), endocrinopathies like Acromegaly, Cushing's syndrome, Hyper-thyroidism etc., drug or chemical (Glucocorticoids, Thiazides etc.) induced diabetes mellitus, certain genetic syndromes associated with diabetes e.g. Down's syndrome, Turner's syndrome etc.

Investigations: Biochemical investigations like : Routine Haematological investigations to rule out pathological conditions, blood sugar (fasting and postprandial) to assess present state of disease, lipid profile: serum cholesterol, serum triglyceride, HDL, VLDL, LDL to evaluate *dusti of Meda*, blood urea and serum creatinine to assess renal status along with urine examination.

OBSERVATION AND RESULTS

Data of 279 type-2 diabetic patients surveyed, revealed that maximum number of patients (98.96%) had >40 yrs of age with chronicity of >2 yrs (58.06%). The 88.17% of patients were on regular treatment while 10.39% were not taking any medication though aware of disease. The 96.06% patients were married and 56.27% had more than four family members. Majority of patients (90.68%) belonged to middle class. Positive family history of diabetes was reported in 45.88% patients. Maximum patients (52.69%) had *Kapha-Vataja prakriti* and 54.48% had *Tamasika Manas prakriti*. Symptoms reported includes: Polyuria (42.65%), Turbid urine (8.6%), Polyphagia (25.45%), Polydipsia (32.97%), Burning sensation in palm & sole (27.60%), Numbness in hand & leg (40.14%), Excessive sweating (20.43%), Dryness in mouth (18.28%), Weakness (69.89%), Fatigue (63.44%), Leg cramps (42.65%) and Loss of weight (13.62%). Retinopathy was observed in 13.26% patients and neuropathy 28.67% patients.

Diet & lifestyle :

The data on dietary habits revealed that majority of the patients were indulging in Milk (80.65 %) and its products like Curd (58.43%), Cheese (6.45%), Butter (10.75%), Kheer (7.17%), Ice-Cream (3.23%) etc. Sugarcane products like Jaggery (62.37%), Sugar (87.10%) were commonly found in the diet. *Snigdha dravya / viscous food* like Ghee (64.16%), Oil (75.99%), Vanaspati Ghee (18.28%) were used routinely with the main diet along with fruits like Banana (66.31%), Chiku (31.54%), Custard apple (13.26%), Grapes (10.04%), Dates (19.35%), Mango (56.99%), Non-vegetarian food like *Anupa Mamsa* (9.32%), Egg (7.53%) etc. In general taste wise most of the patients were consuming *Madhura* (85.30%) *rasa* dominant food, followed by *Amla* (27.96%), *Tikta* (12.54%), *Katu* (11.11%) & *Lavana* (10.04%) and property-wise maximum patients were taking *Guru* (70.25%) *guna* dominant food, followed by *Snigdha* (34.41%), *Sheeta* (7.89%) & *Picchila* (5.73%).

The data on life style revealed that most of the patients indulged in sedentary life style like *Asya Sukha* - seating comfortably (59.14%), *Swapna Sukha* - sleeping comfortably (34.41%), *Divaswapa* - day sleeping (55.20%), *Atinidra* - excessive sleeping (30.47%), *Bhojanottara Nidra* - sleeping immediately after meal (49.82%) etc. As well 91.04% patients were either doing less exercise or not doing at all. It was further observed that 64.16% patients had improper sleep and 67.38% had disturbed psychological factors. In female 77.69% patients had attained menopause and 64.47% patients were multiparous. The data exhibited that due to fast & stressful modern life-style, negative *Manasikabhavas* like *Chinta*-worry (66.67%), *Vishada*-depressed mood (48.39%), *Krodha*-anger (23.66%), *Shoka*-sorrow (19.00%), *Bhaya*-fear (50.54%), *Moha*-affliction (9.32%), *Dwesa*-revenge (6.81%), *Upadhi*-impactness (65.59%), *Udvega*-apprehension (52.69%), *Chittodvega*-anxiousness (56.63%) etc. were observed as *Manasika nidana*. Moreover, positive *Manasikabhava* like *Harsha*-cheerfulness (51.25%), *Priti*-happiness (54.12%), *Dhairya*-fearlessness (50.18%), *Avasthanan*-stability (53.76%), *Shraddha*-good attitude (32.62%), *Medha*-grasping (7.17%), *Dhriti*-good control (5.38%) etc. were altered in these patients. On Brief Psychiatry Rating Scale examination, Somatic concern (45.16%), Anxiety (66.31%), Emotional withdrawal (17.56%), Guilt feelings (4.30%), Conceptual disorganization (39.78%), Tension (65.23%), Grandiosity (5.38%), Hostility (11.11%), Suspiciousness (1.43%), Motor retardation (22.22%), Unco-operativeness (22.22%), Unusual thought content (54.84%), Blunted affect (26.88%), Excitement (22.22%) & Disorientation

(9.32%) showed altered psychological factors in patients of type-2 DM.

The fasting blood sugar (FBS) was well under control in 20.09% patients only. Among the patients having uncontrolled FBS, 49.53% had FBS between 120-199 mg/dl, 17.29% between 200-249 mg/dl and 13.08% patients had FBS equal or >250 mg/dl. The post prandial blood sugar (PPBS) was reported under control only in 29.95% patient with 28.99% poor control (PPBS 201-249 mg/dl), 14.98% between 250-299 mg/dl and 26.09%

patients had PPBS equal or >300 mg/dl. The 47.28% patients had presence of urine sugar.

Serum cholesterol was found abnormally high (303.26 mg/dl) in 21.35% patients, serum triglyceride was high (245.89 mg/dl) in 35.20% patients, serum low density lipid was high (201.83 mg/dl) in 33.52% and serum very low density lipid was high (50.56 mg/dl) in 32.95% patients, while serum high density lipid was low (28.95 mg/dl) in 18.18% patients. Pathologically high serum creatinine (2.10 mg/dl) was observed in 25.70% patients and high blood urea (112.65 mg/dl) in 1.15%

FIG NO. 1 : DEMOGRAPHIC DATA OF 279 PATIENTS SURVEYED :

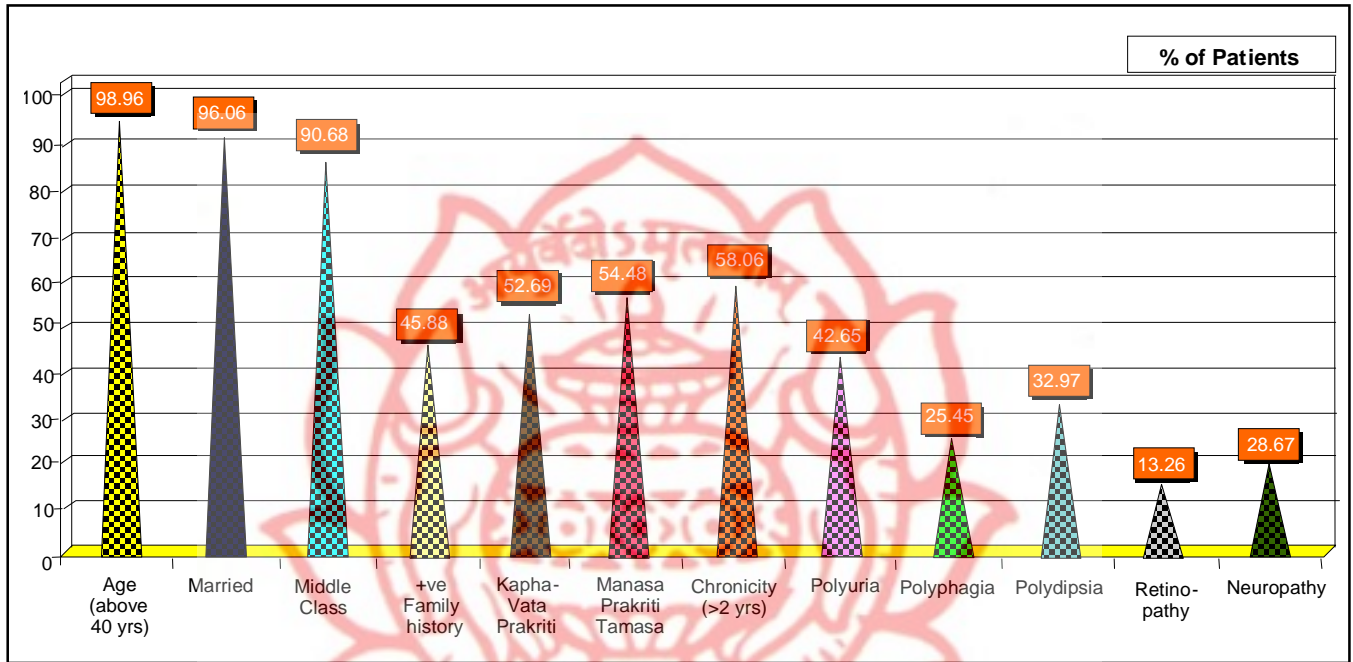


FIG NO. 2 : DATA ON DIET & LIFE STYLE :

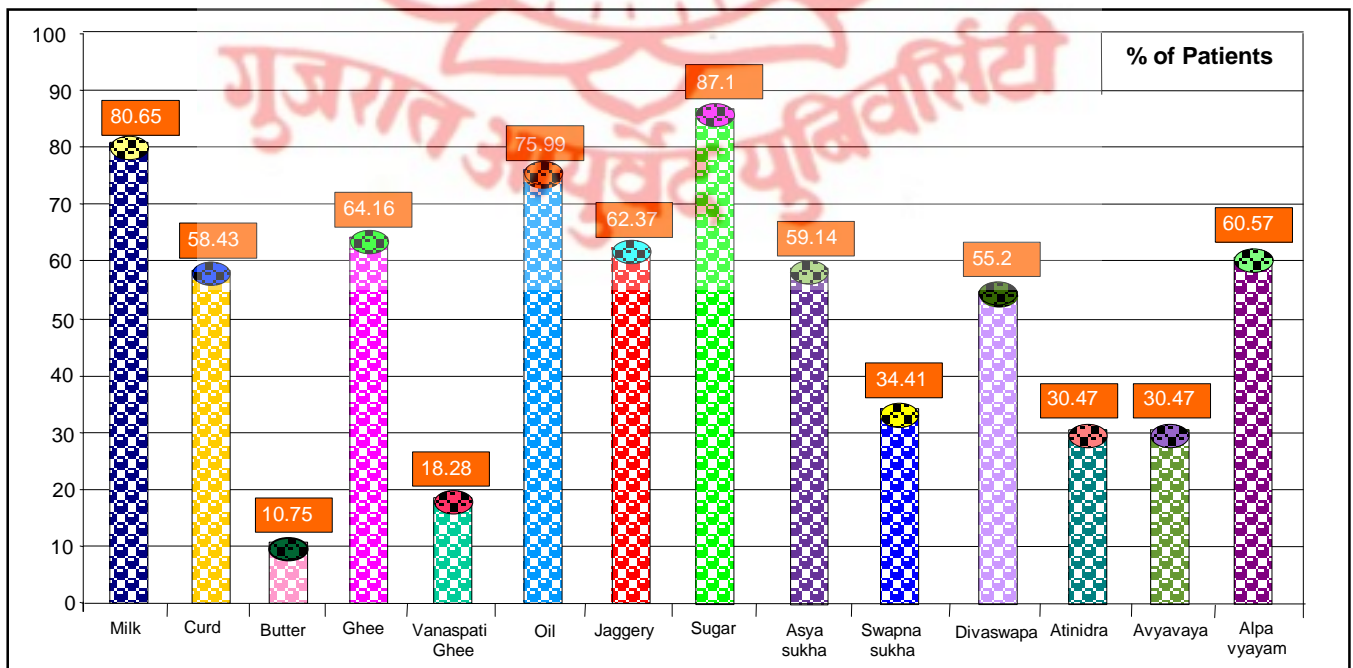


FIG. NO. 3 : DATA ON GENERAL DIETARY HABITS :

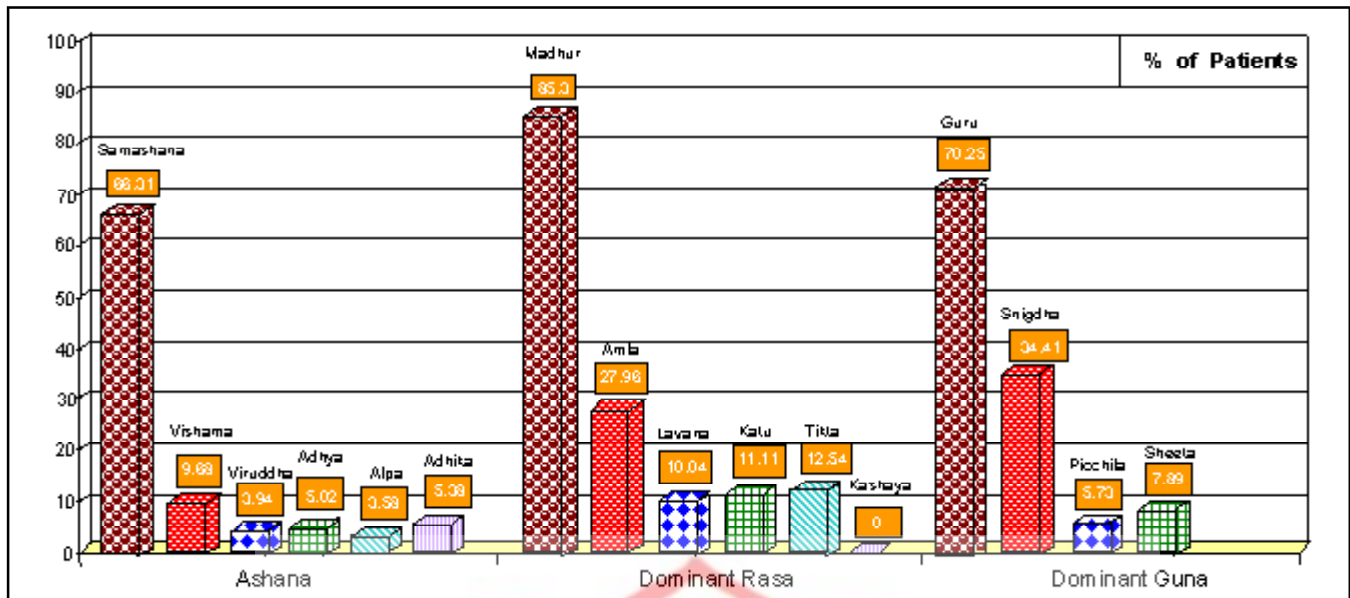


FIG. NO. 4 : DATA ON DISTURBED POSITIVE & NEGATIVE PSYCHOLOGICAL FACTORS :

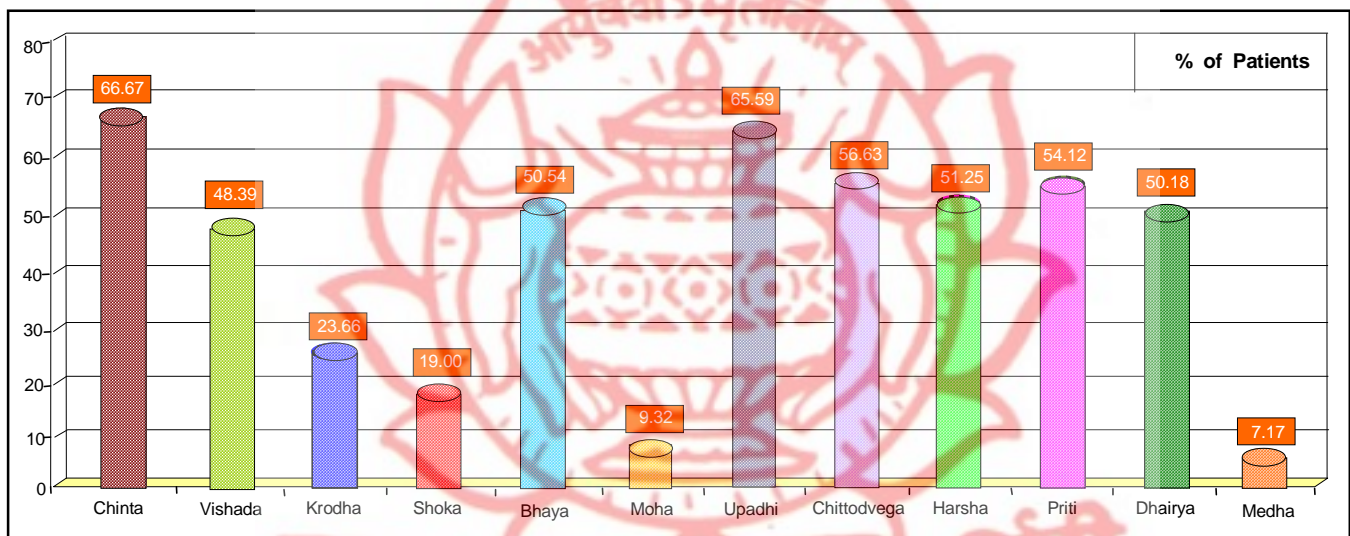


FIG. NO. 5 : DATA ON BRIEF PSYCHIATRY RATING SCALE :

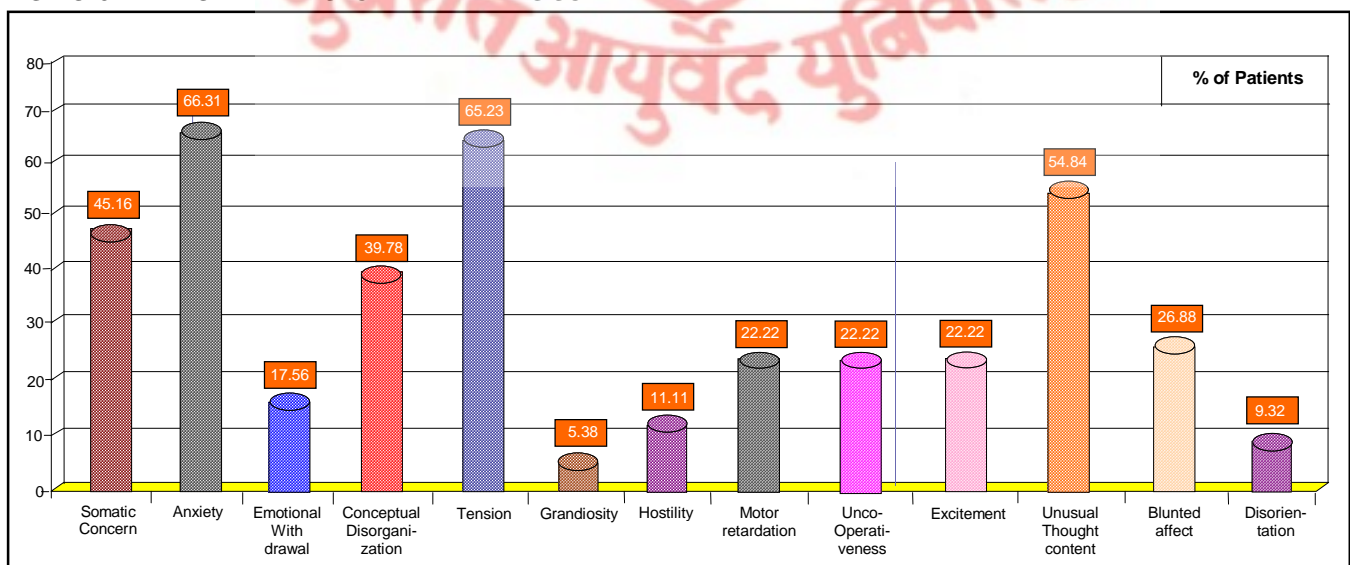


FIG. NO. 6 : FASTING BLOOD SUGAR OF DIABETIC PATIENTS (n=214) :

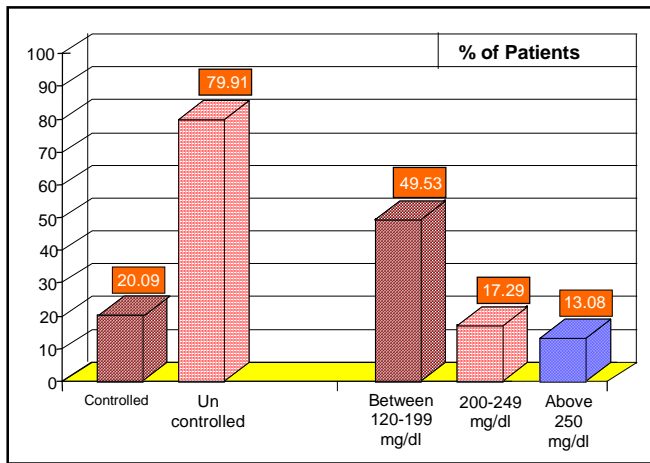


FIG. NO. 7 : POST PRANDIAL BLOOD SUGAR OF DIABETIC PATIENTS (n=207) :

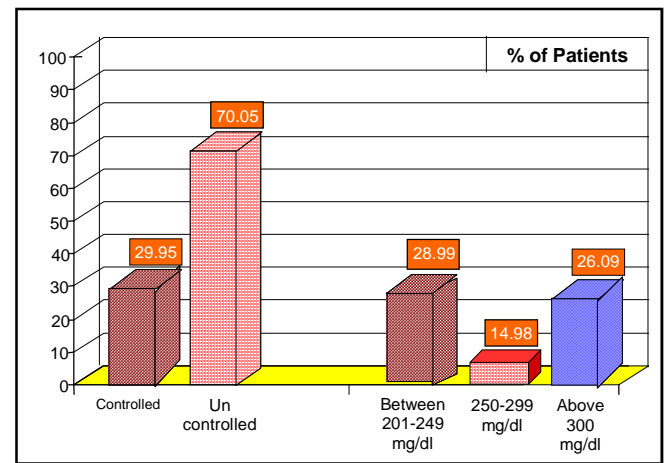
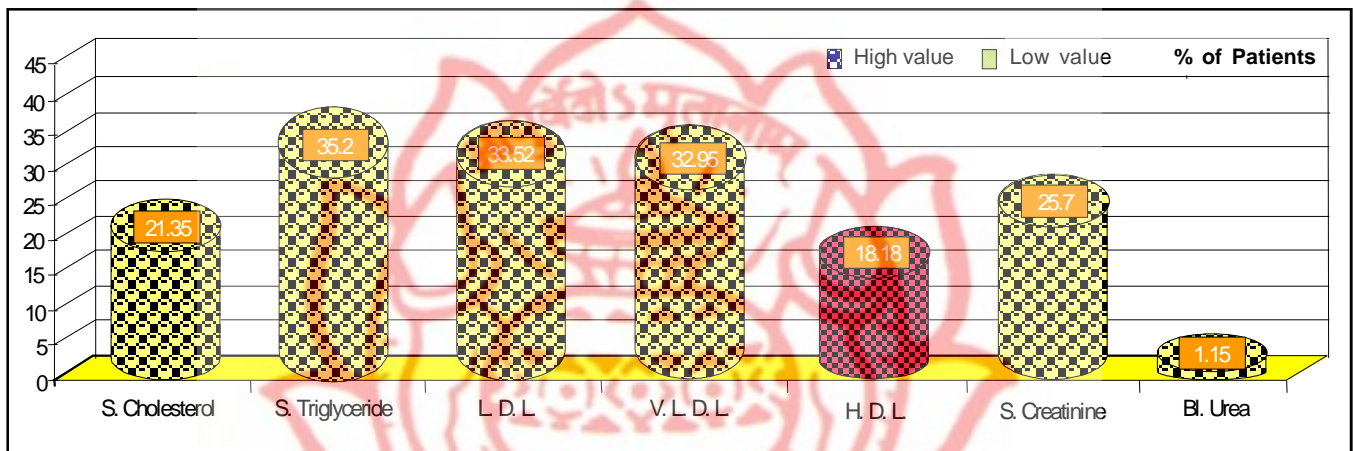


FIG. NO. 8 : LIPID PROFILE & RENAL PROFILE OF DIABETIC PATIENTS :



patients.

DISCUSSION

Majority of patients were above 40 yrs with chronicity of more than 2 yrs which shows the maturity onset nature of disease with burden of children’s career and their marriage causing disturbed mental health because of increased social and financial burden. The 96.06% patients were married and 56.27% had more than four family members highlighting that family burden increases the problems. It may lead to imbalanced psychological factors triggering the disease. Majority of patients from middle class (90.68%) indicate their more struggled life, causing more mental stress. Positive family history (45.88%) showed genetic background of disease. Maximum patients with *Kapha-Vataja Sharirika prakriti* (52.69%) and *Tamasika Manas prakriti* (54.48%) showed proneness towards diabetes.

Dietary habits revealed the fact that majority of the patients had *Samashana* type of wrong food

habit and they were consuming *Madhura rasa* (85.30%) and *Guru guna* (70.25%) dominant food. Both type of food increases the *Kapha* and *Meda*, the main *dosha* and *dushya* of the disease. Most of the patients were indulging sedentary life habits like *Asya Sukha*, *Swapna Sukha*, *Divaswapa* etc, the important causative factors of disease and were not doing any exercise. Mental stress, anxious state of mind, tension etc. served as aggravating factors, causing disturbance in psychological conditions which has impact on etiology as well as pathology of disease. In female patients menopause and negative mental attitude also disturb the psychosomatic health leading to neuroendocrine changes and stress induced hormones causing insulin antagonism in type-2 patients. The modern fast & stressful life style disturb psychological factors evaluated on Brief Psychiatry Rating Scale. It evokes negative *Manasikabhavas* like worry, depressed mood, anger etc. which act as *Manasika nidana*. Moreover, these negative emotions deteriorate the positive *Manasikabhavas* like cheerfulness, happiness, good attitude etc; keeping the state of mind in high sympathetic tone causing the release of stress induced neurochemicals which has hyperglycemic effects.

