

# A study on assessment Biochemical and Nutrient intakes of Obese Male NIDDM patients

**V. Chinnari Harika**

Department of Foods and Nutritional Sciences, Acharya Nagarjuna University,  
Andhra Pradesh, India.

## ABSTRACT

The present study was aimed to assess Biochemical analysis and Nutrient intakes of Obese Non-Insulin Dependent Diabetes Mellitus (NIDDM) male patients. A total of 35 members aged 45-55 years took part in the study. Random sampling procedures were used. All subjects belong to Guntur population, for this purpose Govt. General Hospital, Guntur District, Andhra Pradesh, India. In the present study biochemical analysis i.e., Fasting Blood glucose levels mg/dl, (FBG), post prandial blood glucose level mg/dl (PPBG) and glycosylated Hemoglobin % (HbA<sub>1c</sub>) levels of male Obese NIDDM patients were selected. Dietary intakes by using 24 hrs recall method data were collected their nutrient intakes were higher than the standards when compared to RDA standards. Blood glucose levels are also higher than the standards.

**Keywords:** Obese NIDDM Male patients, Biochemical assessment and Nutrient intakes.

## INTRODUCTION

Diabetes mellitus is one of the most burdensome chronic diseases that are increasing in epidemic proportion throughout the world (Mageshwari *et al*, 2004). According to WHO (2000), the global prevalence of non-insulin dependent diabetes mellitus (NIDDM) will more than double from 135 million in 1995 to 300 million by 2025. The largest number of diabetic subjects is in India (Pradeepa *et al*, 2002).

Diabetes mellitus, long considered of minor significance to world health, is now emerging as one of the main threats to human health in the 21<sup>st</sup> century (McCarty and Zimmet, 1994). Several epidemiological diseases globally and it is the fourth or fifth leading cause of death. The diabetes epidemic relates particularly to NIDDM which is a complex, constitutional multifactor disorder and recognised antiquity, affecting human society at all stages of development and is present both in developed and developing nations. The present study focuses attention on Biochemical and nutrient intakes of Obese male Non-Insulin Dependent Diabetes Mellitus (NIDDM) patients.

## MATERIALS AND METHODS

### Sample selection

For the present study Obese Non-Insulin Dependent Diabetes Mellitus (NIDDM) male patients were selected. A total of 35 members out of 650 Diabetic patients were selected, aged 45-55 years took part in the study. Random sampling procedures were used. All subjects belong to Guntur population, for this purpose Govt. General Hospital, Guntur District, Andhra Pradesh, India.

### Biochemical Analysis

#### Estimation of blood glucose

Blood glucose levels in different samples were estimated by the GOD-POD method described by Carl *et al*. (1996).

#### Glycosylated hemoglobin levels (HbA<sub>1c</sub>)

Glycosylated hemoglobin in the blood was estimated by the method Bry *et al*., 2001 and Roberts *et al*., 2002.

### Data Collection

Diet survey was carried out by weighing method (Rao *et al*., 1986). Quantitative dietary assessment was done through actual weighing of raw food item. The average dietary intake of

food per item was calculated and was compared with the RDA (Recommended Dietary Allowances) of India using the values as per 'Nutritive Value of Indian Food' (Gopalan *et al.*, 2002).

## RESULTS AND DISCUSSION

Table 1 shows the mean values of Fasting blood glucose (FBG), post prandial blood glucose (PPBG) mg/dl and glycosylated hemoglobin (HbA<sub>1c</sub>) (%) levels of Obese NIDDM male patients were  $145.92 \pm 2.85$  mg/dl,  $191.62 \pm 5.65$  mg/dl and  $10.46 \pm 0.56$  %. Biochemical mean values of obese NIDDM male patients were higher than the standards. *Suganthi and Sardha (1991)* and *Snehalatha et al (2003)* have reported that prevalence of diabetes was higher after 40 years of age. Majority of the subjects had fasting blood glucose (FBG) levels in the range of 200-300 mg/dl and a few of them (8 per cent) had FBG level more than 400 mg/dl at the time of diagnosis of disease.

Table 2 indicates Dietary intakes of Male Obese NIDDM patients. Energy intake of male obese NIDDM patients. Mean intakes of energy, carbohydrate, protein, total fat, and calcium were observed to be adequate and intakes were higher than the standards. Mean intake of iron was inadequate for male subjects. Higher intake of energy from all the three sources i.e. carbohydrate, fat and protein could be one of the hindering factors in effective management of diabetes as *Sudha et al (2004)* have reported that the most effective dietary management for type II diabetes is caloric restriction for weight reduction.

*Anita et al. (1993)* focused on demographic profile and food behavior in selected obese adults. The subjects included, out-patients and in-patients enrolled in the department of endocrinology and cardiology of a hospital in Bangalore. The mean values of nutrient intakes of female subjects were  $2507 \pm 166$  kcal of energy,  $75 \pm 6.3$  g of protein,  $85.6 \pm 12.7$  g of fat and  $357 \pm 36.8$  g of CHO respectively.

**Table 1: Biochemical analysis of patients**

| S. No. | Biochemical assessment | Mean $\pm$ SD                      | Standards |
|--------|------------------------|------------------------------------|-----------|
| 1.     | FBG (mg/dl)            | $145.92 \pm 2.85$<br>(140.0-149.0) | 80-120    |
| 2.     | PPBG (mg/dl)           | $191.62 \pm 5.65$<br>(183.0-200.0) | 190-145   |
| 3.     | Hb A <sub>1c</sub> (%) | $10.46 \pm 0.56$<br>(9.1-10.9)     | 6.5-7.0   |

**Table 2: Dietary intakes of Male Obese NIDDM patients**

| S. No. | Dietary Intakes | Mean $\pm$ SD                           | Standards |
|--------|-----------------|---|-----------|
| 1.     | Energy(K.cal)   | $3526.65 \pm 229.92$<br>(3165.5-3981.0) | 1500      |
| 2.     | Protein(g)      | $94.04 \pm 5.51$<br>(82.0-99.1)         | 58        |
| 3.     | Fat(G)          | $98.19 \pm 6.35$<br>(88.8-109.6)        | 36        |
| 4.     | Carbo-hydrate   | $458.32 \pm 30.24$<br>(395.3-495.5)     | 236       |
| 5.     | Calcium         | $1217.89 \pm 29.96$<br>(887.2-1678.5)   | 400       |
| 6.     | Iron            | $24.45 \pm 4.09$<br>(19.1-31.3)         | 28        |
| 7.     | Vit A           | $2132.90 \pm 241.63$<br>(1810.4-2587.4) | 2400      |

## CONCLUSION

The study has revealed that rate of prevalence of diabetes is more among overweight/obese people and by modifying diet and lifestyle, doing exercise regularly and by consumption of

traditional food adjuncts one can control diabetes without or with minimum dose of medicine. Diabetes is not curable; one has to live with it. Living with diabetes is like living with diabetic lifestyle. There is Proper guidance and

education regarding diet and diabetes care makes significant improvement in the life style of diabetics, which is helpful for glycemic control. Level of knowledge, attitude and practices are also playing their key role in this regard

#### ACKNOWLEDGEMENT

The author expresses her thanks to H.O.D, Dept of foods and nutritional sciences, Acharya Nagarjuna University for providing continuous help during her research work.

#### REFERENCES

1. Anitha Kochar, Malkit Nagi and Rajbir sachdeva. Nutrient Adequacy of Non Insulin dependent Diabetics Influenced by Nutrition Counseling. *J Hum Ecol.* 19(2): 131-137.
2. Bry L and Chen PC. Effects of hemoglobin Variants and Chemically Modified Derivatives on Assays for Glyco Haemoglobin. *Clin Chem.* 2001; 47: 153-163.
3. Carl A, Bruits and Edward R. Ashwood. Carbohydrates in Teitz. *Fundamentals of Clinical Chemistry*, W.B. Saunders and Company Philadelphia. 1996: 351-374.
4. Garcia MJ, Mc Namara PM, Gordon T and Kannel WB. Morbidity and mortality in diabetics in the Framingham population. Sixteen year follow-up study. *Diabetes.* 1974; 23: 105-111.
5. Gopalan C, Ramsastri BV and Balasubramaniam SC. Nutritive value of Indian Food. Indian Council of Medical Research, New Delhi. 2002.
6. Kannel WB and Mc Gee DL. Diabetes and cardiovascular risk factors: the Framingham study. *Circulation.* 1979; 59: 08-13.
7. Mageshwari U, Joseph S and Minitha S. Pattern of cardiovascular complications among diabetics. *Ind J Nutr Dietet.* 2004; 41: 507.
8. McCarty D and Zimmet P. Diabetes 1994–2010 global estimates and projections. Melbourne: Bayer AG, Leverkusen and International Diabetes Institute; 1994.
9. Pradeepa R, Deepa R and Mohan V. Epidemiology of diabetes in India-current perspective and future projections. *J Indian Med. Assoc.* 2002; 100: 144-8. Diabetes Mellitus, WHO Technical Report Series, 727, 1985.
10. Raghuram TC, Pasricha S and Sharma RD. Diet and diabetes. NIN, ICMR, Hyderabad. 1993.
11. Snehalatha, C, Ramchandran A, Kapur A and Vijay V. Age-specific prevalence and risk association for impaired glucose tolerance in urban southern India population *J Assoc Physicians India.* 2003; 51: 756-7.
12. Sudh, V, Radhika G and Mohan V. Current dietary trends in the management of diabetes. *Ind J Med Res.* 2004; 120: 4-8.
13. Suganthi S and Sardha V. Prevalence of hypertension in diabetes mellitus and impact of diet counseling. *Ind J Nutr Dietet.* 1991; 28: 238-242.
14. Wild S, Roglic G, Green A, Sicree R and King H. Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. *Diabetes Care.* 2004; 27: 1047-1053.