The impact of self-management education on prevention and control of type-2 Diabetes mellitus

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Abstract: **DM is metabolic disorder characterized by the decrease ability or complete inability of the tissues to utilise carbohydrate, accompanied by changes in the metabolism of fat, protein, water & electrolytes. The disorder is due to deficiency or diminished effectiveness of the hormone insulin. DM affects some 120 million people world-wide & is in increases.** <u>**Aims & objectives**</u>**: To assess the impact of diabetes education among young adults & adult's diabetics on the control of blood sugar. To assess the diet & nutrient intake of adults by 24 hour diet recall/food frequency questionnaire. Result: During the study it was found that the 36% subjects strongly agreed to that healthy eating makes a big difference in getting disease while 58% subjects somewhat agreed. After the second counselling it was found that the subjects follow the diet chart very carefully and do exercise regularly and also follow to SMBG method regularly and their FBG were control and also PPBS were control. Discussion: Close observation and follow-up during the study period, it was observed that most of the subjects had lack of physical activity. No consumption of fruits and vegetables in an average day, probably it was the cause of obesity. However only the Walnuts maintained flexibility of the arteries. Conclusion: As far as consumption of food is concerned it was found that the adults understudy were taking less nutrient dense but high energy and unbalance carbohydrate foods when compared to the doses recommended by ICMR, therefore most of them were high blood glucose level.**

Keywords: **DM-Diabetes Mellitus, BMI-body mass index, FBG-fasting blood glucose,HbA1C, Protein, PPBS-Post parindial blood glucose level.**

I. INTRODUCTION

Diabetes mellitus is a metabolic disorder characterized by the decrease ability or complete inability of the tissues to utilise carbohydrate, accompanied by changes in the metabolism of fat, protein, water & electrolytes. The disorder is due to deficiency or diminished effectiveness of the hormone insulin.[1] In diabetes, insulin secreted by the pancreas is either insufficient or ineffective. This may be due to a primary disorder of insulin secretion or due to insulin resistance because of a receptor defect in the target tissue.[2] Diabetes affects some 120 million people world-wide & is in increases.[3] Over the past three decades, the number of people with diabetes mellitus has more than doubled globally, making it one of the most

important public health challenges to all nations. Type 2 diabetes mellitus (T2DM) and prediabetes are increasingly observed among children, adolescents and younger adults. The causes of the epidemic of T2DM are embedded in a very complex group of genetic and epigenetic systems interacting within an equally complex societal framework that determines behaviour and environmental influences[4] Severe untreated diabetes of which hyperglycaemia is just one aspect of metabolic derangement can lead to both macro and microvascular complications. A relatively simple and non-invasive method of preventing these complications is to recognize the impact of diet on insulin production and maintenance. Therefore, people with diabetes mellitus need help in planning and accepting a daily diet which contains the appropriate amounts of CHO, protein, fat and fibre, together with adequate amounts or vitamins and minerals[5] Diabetes education provided by certified diabetes educators can help improve the lives of patients with diabetes mellitus. With morbidity and medical costs or increasing concern, diabetes educators must provide patients and primary are given with the tools to improve their DM and the motivation and understanding to help them meet their goals. The impact of early onset Type 2 DM is extensive. The individuals are likely to be obese, have a multigene –rational family history of Type 2 DM, lead a sedentary lifestyle is of black or minority ethnic (BME) origin and come from a socially deprived group[6] we can estimate our energy needs by measuring the amount of oxygen we consume. We eat, we digest, we absorb, we store, we transfer energy, we burn the energy, and then we repeat. Energy balance is determined by caloric intake versus caloric expenditure. Complex control systems promote energy storage (primarily as adipose tissue fat) during periods of food surplus and mobilization of energy stores when food is scarce[7] Body mass index or BMI is a simple and widely used method for estimating body fat mass. BMI was developed in the 19th century by the Belgian statistician and anthropometrist Adolphe Quetelet. BMI is an accurate reflection of body fat percentage in the majority of the adult population. It however is less accurate in people such as body builders and pregnant women. A formula combining BMI, age, and gender can be used to estimate a person's body fat percentage to an accuracy of 4%. An alternative method, body volume index (BVI), is being developed in an effort to better take into account different body shapes[8]

II. BODY OF ARTICLE

Material and methods

The present study was conducted to assess the causes and impact on young type 2 diabetes mellitus from January 2017 to December 2017 it include 60 patients with diabetes mellitus at chirayu hospital Bhopal & Arogya niketan clinic gulmohar of Bhopal city of Madhya Pradesh. For this study data were collected through 2 methods:

1. Survey Method

2. Observation Method

For survey an interview method (Written Questionnaire Method) was used.

Questionnaire was divided into 7 sections: General information, Food habits, Blood glucose level, Family history, Physical factors, 24 hr Dietary recall, Anthropometric Measurements.

METHOD OF STUDY - Assess the obesity of the sample was collected by using the BMI chart adopted by NATIONAL INSTITUTE OF HEALTH, USA.

To assess the food intake of the sample, a 24 hr dietary recall method of diet survey was adopted. The young diabetic adults were asked to give an account of view on different factors and quantity of food items consumed. From the height and weight BMI of the individual adult was calculated. The dietary intake was compared with the Recommended Daily Allowance (RDA) given by the Indian Council of Medical Research (ICMR). The data was analyzed by appropriate statistical tools.

Liver function test – It has been done to detect comorbidity related to liver.

Renal function test– It has been done to detect comorbidity related to kidney.

24 hour dietary recall – with the help of Questionnaire, it has been collected the information related to daily routine.

It has used some educational tools to educate the subjects about diabetes mellitus.

OBSERVATIONS AND RESULTS –

TABLE: I

Frequency of consuming outside food in a week	Number of subject	%
Never/ Rarely	10	16 %
Once in a week	16	26 %
2-3 times in a week	8	13 %
4 or more time in a week	20	33 %
Don't know	6	10 %

Only 16 % were consuming outsider foods rarely and 26 % were consuming once in a week and 13 % are consume 2-3 times in a week and 33% were consuming more outsides foods.

TABLE: II

Test Name	Number of subject	Average	Range
Fasting blood glucose level	60	146.56	89 - 260
Post parindial blood glucose level	60	213.8	134 - 356

The average of the fasting blood glucose level of the 60 young adults was 146.56 and the range was 89 – 260, and the average of the post parindial blood glucose level of the 60 young adults is 213.8 and the range was 134-356.

TABLE: III

Glucose level of the subject after imparting the education.

S.No.		Number of subject	average	Range
1	Fasting blood glucose level	60	135.26	85 - 234
2	Post parindial blood glucose level	60	194.16	120 - 297

The average of the fasting blood glucose level of the 60 young Diabetic adults was 135.26 and the range between lowest and highest level of the fasting blood glucose level was 85 and 234 respectively. The average of the post parindial blood glucose level of the same 60 young Diabetic adults was 194.16 and the range between lowest and highest level of the post parindial blood glucose level was 120 and 297 respectively.

III. CONCLUSION

Correlation of height, weight and BMI level of the young diabetic adults belonging to higher and middle income group was analyzed in the present study. Associated factors like lack of physical activity, consumption of fast foods/sodas, fried foods, hormonal factors were included.Results indicated that there was a marked deficiency in the nutritional level. 50 % diabetic adults were obese as they were consuming more outsider foods and less diet as recommended by ICMR. As far as consumption of food is concerned it was found that the adults under study were taking less nutrient dense but high energy and unbalance carbohydrate foods when compared to the doses recommended by ICMR, therefore most of them were high blood glucose level. Although the genetic factors and hormonal imbalance leads to diabetes mellitus but still it can be controlled. The study concluded that deficit consumption of various food stuffs ultimately leads to inadequate intake of nutrients which in turn affect the nutritional status of young adults. Their BMI status proved their food intake resulting in various complications. Emphasis should be laid on the consumption of more green leafy vegetable, seasonal fruits, salad, whole grains and legumes so that they can get valuable nutrients and protein in sufficient amount. Emphasis should be laid on the consumption of balanced, moderate and complex carbohydrate so that they can maintain their blood glucose level. Emphasis to do some exercise and games so that they can maintain their weight.

REFERENCES

[1] Textbook of Nutrition and Dietetics, Kumud Khanna Ph.D ,Elite Publishing House PVT.LTD.2005

[2] A Textbook of Nutrition, Darshan Sohi, S.Vikas & Company (Medical Publishers) INDIA.

[3] Jonathan E Shaw, Paul Z Zimmet, Daniel McCarty, Maximillian De Courten. Diabetes care 23 (4), B5-B5, 2000

[4] Lei Chen, Dianna J. Magliano & Paul Z. Zimmet *Nature Reviews Endocrinology* **volume 8**, pages228–236 (2012)

[5] MA Valero, M León-Sanz, I Escobar, P Gomis, A de la Cámara & JM Moreno ,*European Journal of Clinical Nutrition* **volume 55**, pages1111–1116 (2001)

[6] Journal of Nutrition & Health, Volume 34, issue 1/pages. 69-78/2001 /2288-3886(pISSN)

[7] Journal of Hydrology, Volume 535, pages 581-597.

[8] A Textbook of Nutrition, Darshan Sohi,S.Vikas & Company (Medical Publishers) INDIA