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Comparative study on nutritional status between vegetarian and non-vegetarian diabetic patient (Type 2), age group of 30-50 years

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Abstract

Diabetes is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction, and failure of different organs, especially the eyes, kidneys, nerves, heart, and blood vessels. Several pathogenic processes are involved in the development of diabetes. Body weight (kg) is measured by weight machine, height (cm) is measured by anthropometric rod, BMI (kg/m^2) is calculating by formula (weight in $\text{kg}/\text{height in m}^2$) and MUAC (cm) is measured by MUAC tape. Under nutritional assessment carbohydrate, protein and fat consumption are collected from patient by questionnaire method. Under bio-chemical assessment glucose fasting and Pp level of the patient are collected from laboratory. In the study of weight it is found that the mean weight of vegetarian diabetic patient is higher than the non-vegetarian diabetic patient's mean weight. The mean of weight of vegetarian diabetic patient is 65.3 kg is significant (*), and the mean weight of non-vegetarian diabetic patient is 58.03 kg is not significant. In the study of height, it is found that the mean height of vegetarian diabetic patient is higher than the non-vegetarian diabetic patient's mean height. The mean of height of vegetarian diabetic patient is 161.3 cm is significant (*), and the mean height of non-vegetarian diabetic patient is 160.4 is not significant. In the study of BMI, it is found that the mean BMI of vegetarian diabetic patient is higher than the non-vegetarian diabetic patient's mean BMI. The mean BMI of vegetarian diabetic patient is 26.00 kg/m^2 is not significant, and the mean BMI of non-vegetarian diabetic patient is 23.4 kg/m^2 is significant (*). In the study of MUAC it is found that the mean MUAC of vegetarian diabetic patient is higher than the non-vegetarian diabetic patient's mean MUAC. The mean MUAC of vegetarian diabetic patient is 26 cm is not significant. And the mean MUAC of non-vegetarian diabetic patient is 23 cm is significant (*). Carbohydrate consumption of vegetarian diabetic patient is higher than non-vegetarian diabetic patient. The mean carbohydrate consumption of vegetarian diabetic patient is 331.38 gm is not significant. The mean carbohydrate consumption of non-vegetarian diabetic patient is 262.47 gm is significant (*). Fat consumption of vegetarian diabetic patient is lower than non-vegetarian diabetic patient. The mean fat consumption of vegetarian diabetic patient is 40.36 gm is significant (*). The mean fat consumption of non-vegetarian diabetic patient is 32.66 gm is not significant. Protein consumption of vegetarian diabetic patient is lower than non-vegetarian diabetic patient. The mean protein consumption of vegetarian diabetic patient is 53.12 gm is significant (*). The mean protein consumption of non-vegetarian diabetic patient is 57.58 gm is not significant. The glucose fasting and Pp level of vegetarian diabetic patient is lower than non-vegetarian diabetic patient. The fasting level of vegetarian diabetic patient is 130.1 mg/dl and fasting level of non-vegetarian patient is 158.9 mg/dl both are significant (*). The Pp level of the vegetarian diabetic patient is 198.0 mg/dl and Pp level of non-vegetarian diabetic patient is 254.8 mg/dl both are not significant.

Keywords: BMI, MUAC, glucose fasting and Pp level, diabetes type-2, therapeutic diet

Introduction

Diabetes mellitus is a chronic metabolic disorder that prevents the body to utilise glucose completely or partially. It is characterised by raised glucose level in the blood and alteration in carbohydrate, protein, and fat metabolism. It can be due to failure the formation of insulin or liberation or action. The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction, and failure of different organs, especially the eyes, kidneys, nerves, heart, and blood vessels. Several pathogenic processes are involved in the development of diabetes. In type 2 diabetes the pancreas makes insulin, but it either doesn't produce enough, or the insulin does not work properly. Nine out of 10 people with diabetes have type 2. This type occurs most often in people who are over 40 years old but can occur even in childhood if there are risk factors present. Type-2 diabetes may sometimes be controlled with a combination of

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diet, weight management and exercise. However, treatment also may include oral glucose-lowering medications (taken by mouth) or insulin injections. Increased thirst and frequent urination (excess sugar building up in bloodstream causes fluid to be pulled from the tissues), increased hunger, weight loss, fatigue, blurred vision and slow-healing sores or frequent infections these are signs and symptoms of type 2 diabetes. Different types of factors effects on diabetes, as well as diet are one of them. The Main objective of my project is to find out the physical, of nutritional and biochemical of vegetarian and non- vegetarian diabetic patient and to know what type of diet is required to control diabetes.

Materials and Methods

About 60 patients were chosen as a subject from local area in West Bengal, All participants were within same age group (30-50), similar economic status (Poor & Moderate and high), non-smokers and similar dietary habits. Consent was obtained from every subject. Body weight (kg) is measured by weight machine, height (cm) is measured by anthropometric rod, BMI (kg/m²) is calculating by formula (weight in kg/height in m²) and MUAC (cm) is measured by MUAC tape. Under nutritional assessment carbohydrate, protein and fat consumption are collected from patient by questionnaire method. Under bio-chemical assessment glucose fasting and Pp level of the patient are collected from laboratory.

Statistical analysis

One-way ANOVA analysis (F value) was undertaken to test for differences in mean of BMI and MUAC of the patient. Data processing and statistical analyses were done using the SPSS for Windows statistical software package (Version 10.0, SPSS Inc., Chicago, IL, USA, 2001). Descriptive statistics were used for all the variables studied. The p value of ≤0.001 was considered statistically significant.

Result

The distribution of the study subjects with respect to their BMI and MUAC were presented in Table 1. Under the anthropometric assessment it was found that, mainly BMI and MUAC are affected in vegetarian and non-vegetarian diabetic patient.

Table 1: BMI and MUAC of vegetarian and non-vegetarian diabetic patient

	BMI (kg/m ²)	MUAC (cm)
Non-Vegetarian diabetic patient	22.9	23.0
Vegetarian diabetic patient	26.0	26.0

Vegetarian and non-vegetarian diabetic patient - *p<0.001

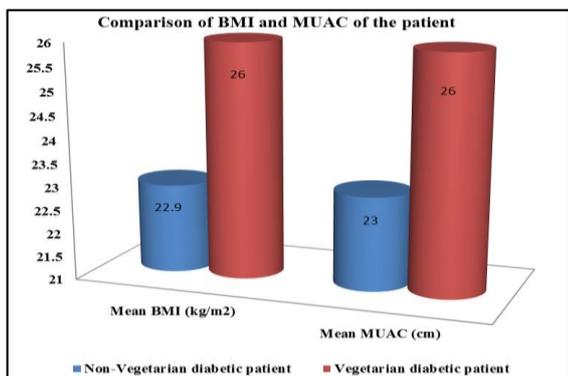


Fig 1: Comparison of BMI and MUAC of non-vegetarian diabetic and vegetarian diabetic patient

Table 2: Comparison of nutritional status of Non-Vegetarian diabetic and vegetarian diabetic patient

Group	Carbohydrate (gm)	Protein (gm)	Fat (gm)
Non-CLD	297.5±5.10	63.75±5.00	28.33±5.00
CLD	266.7±0.68	58.13± 0.84	24.8±0.39

Vegetarian and non-vegetarian diabetic patient - *p<0.001

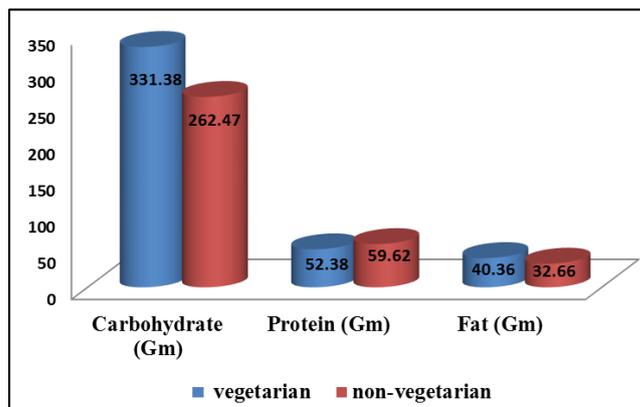


Fig 2: Comparison of carbohydrate, protein and fat intake

Table 3: Biochemical status of Vegetarian and non-vegetarian diabetic patient

	Fasting level mg/dl	Pp level mg/dl
Vegetarian diabetic patient	130.1	198.0
Non-vegetarian diabetic patient	158.9	254.8

Vegetarian and non-vegetarian diabetic patient - *p<0.001

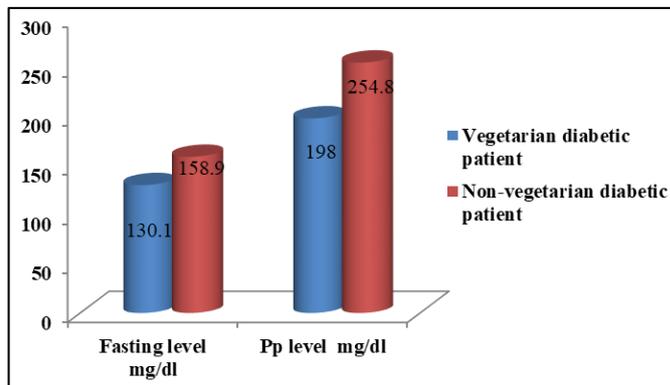


Fig 3: Comparison of biochemical status of vegetarian and non-vegetarian diabetic patient

Discussion

The present section summarizes the results derived in the multiple data analysis conducted above. Analysis is done in order to compare between vegetarian and non-vegetarian diabetic patient. It is tried to find the anthropometrical, nutritional and biochemical status of category has been considered. The samples have been collected from locality. In the study of weight it is found that the mean weight of vegetarian diabetic patient is higher than the non-vegetarian diabetic patient’s mean weight. The mean of weight of vegetarian diabetic patient is 65.3 kg is significant (*), and the mean weight. of non-vegetarian diabetic patient is 58.03 kg is not significant. In the study of height, it is found that the mean height of vegetarian diabetic patient is higher than the non-vegetarian diabetic patient’s mean height. The mean of height of vegetarian diabetic patient is 161.3 cm is significant (*), and

the mean height of non-vegetarian diabetic patient is 160.4 is not significant.

In the study of BMI, it is found that the mean BMI of vegetarian diabetic patient is higher than the non-vegetarian diabetic patient's mean BMI. The mean BMI of vegetarian diabetic patient is 26.00 23.4 kg/m² is not significant, and the mean BMI of non-vegetarian diabetic patient is 23.4 kg/m² is significant (*).

In the study of MUAC it is found that the mean MUAC of vegetarian diabetic patient is higher than the non-vegetarian diabetic patient's mean MUAC. The mean MUAC of vegetarian diabetic patient is 26 cm is not significant. And the mean MUAC of non-vegetarian diabetic patient is 23 cm is significant (*).

In nutritional study it is found that

Carbohydrate consumption of vegetarian diabetic patient is higher than non-vegetarian diabetic patient. The mean carbohydrate consumption of vegetarian diabetic patient is 331.38 gm is not significant. The mean carbohydrate consumption of non-vegetarian diabetic patient is 262.47 gm is significant (*).

Fat consumption of vegetarian diabetic patient is lower than non-vegetarian diabetic patient. The mean fat consumption of vegetarian diabetic patient is 40.36 gm is significant (*). The mean fat consumption of non-vegetarian diabetic patient is 32.66 gm is not significant.

Protein consumption of vegetarian diabetic patient is lower than non-vegetarian diabetic patient. The mean protein consumption of vegetarian diabetic patient is 53.12 gm is significant (*). The mean protein consumption of non-vegetarian diabetic patient is 57.58 gm is not significant.

The glucose fasting and Pp level of vegetarian diabetic patient is lower than non-vegetarian diabetic patient. The fasting level of vegetarian diabetic patient is 130.1 gm/dl and fasting level of non-vegetarian patient is 158.9 mg/dl both are significant (*). The Pp level of the vegetarian diabetic patient is 198.0 mg/dl and Pp level of non-vegetarian diabetic patient is 254.8 gm/dl both are not significant.

Conclusion

From anthropometric assessment it was found that the mean weight and MUAC level of vegetarian diabetic patient is higher than the non-vegetarian diabetic patient mean weight and MUAC level, because vegetarian diabetic patient consume excess amount of fat rich food likes ghee, milk, butter, cheese etc. so it is concluded that if diabetic patient have high cholesterol level then fat rich food should be avoided from the patient diet. From the nutritional assessment it was found that vegetarian diabetic patient consume low protein rich food than non-vegetarian diabetic patient, we know that protein rich food is good for controlling diabetes, because protein recover the damage cell. So in this point of view non-vegetarian diet is better than vegetarian diet. From bio-chemical assessment it was found than glucose fasting and Pp level of non-vegetarian diabetic patient is higher than vegetarian diabetic patient, because from Questionary method it was observed that vegetarian diabetic patient consume more fruit and fibre rich food that help to reduce glucose level.

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