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RESEARCH ARTICLE

THE FACTORS WHICH INFLUENCE THE DIABETIC DIET

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Abstract

Globally, the prevalence of diabetes mellitus (T2D), impaired glucose tolerance (IGT) and obesity have been gradually increasing during the last three decades. The role food plays in both the prevention and management of diabetes. Attempt to control these disorders, healthcare workers try to manipulate the quality, quantity, and variety of carbohydrates in the diet in an effort to control diabetes in patients. However, many patients and health professionals do not seem to appreciate the complexities of carbohydrates and a verity of issues related to glycemic control in patients with diabetes. WHO aims to stimulate and support the adoption of effective measures for the surveillance, prevention and control of diabetes and its complications, particularly in low and middle income countries by implementing its global strategy on diet and physical activities.Management of diabetes at the initial stage and prevention of future onset could be easily achieved by dietary management.Nutrition counseling should be sensitive to the personal needs, willingness to change and ability to make changes of the individual with pre diabetes or diabetes.The glycaemic response, index and the load of foods and effective drinking time of water are not incorporated in dietary management among diabetic patients. Generating the knowledge on these will be importance in managing diabetes.

Introduction:-

Globally, the prevalence of diabetes mellitus (T2D), impaired glucose tolerance (IGT) and obesity have been gradually increasing during the last three decades [1]. Attempt to control these disorders, healthcare workers try to manipulate the quality, quantity, and variety of carbohydrates in the diet in an effort to control diabetes in patients. However, many patients and health professionals do not seem to appreciate the complexities of carbohydrates and a verity of issues related to glycemic control in patients with diabetes.

The number of individuals with diabetes and IGT in each Asian country will increase substantially in coming decades. Unlike in the West, where older populations are most affected, the burden of diabetes in Asian countries is disproportionately high in young to middle-aged adults. Asia has undergone marked economic and epidemiologic transition in recent decades. The largest increase of the diabetic population occurs in the most economically

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productive age group. Over the past three decades, diabetes has become a major cause for morbidity and mortality affecting the youth and the middle-aged [2].

WHO aims to stimulate and support the adoption of effective measures for the surveillance, prevention and control of diabetes and its complications, particularly in low and middle income countries by implementing its global strategy on diet and physical activities [3].

Management of diabetes at the initial stage and prevention of future onset could be easily achieved by dietary management [4].Long term dietary intervention studies provide confirmation that dietary modification can reduce the risk of progression from impaired glucose tolerance (IGT) to T2DM and produce sustained benefit in people with diabetes. Diet and lifestyle changes are the first intervention steps recommended by leading health agencies to prevent and control type 2 diabetes [5& 6].

Nutrition counseling should be sensitive to the personal needs, willingness to change and ability to make changes of the individual with pre diabetes or diabetes.The patient diagnosed with diabetes faces dietary restrictions often involving major lifelong changes to previous food behaviors.

The ADA (2016) reported that there is no one size that fits all eating pattern for individuals with type 2 diabetes. Medical Nutrition therapy (MNT) is recommended for all individuals with type 1 and type 2 diabetes as a part of an overall treatment plan [7].

The glycaemic response, index and the load of foods and effective drinking time of water are not incorporated in dietary management among diabetic patients. Generating the knowledge on these will be importance in managing diabetes.

Result and Discussion:-

Glycaemic response

Glycemic response (GR) is defined as the extent to which any test meal raises blood glucose. Glycemic response is affected by many factors, including the glucose tolerance status of the subject. Glycemic response is also affected by the amount and type of carbohydrate in a meal, the digestibility of the carbohydrate (e.g, indigestible carbohydrates such as fructo-oligosaccharides do not raise blood glucose), the Glycemic Index (GI), the amount and type of fiber, fat, and protein [8 &9].

Glycemic index

The GI was first introduced in 1981 by Jenkins and colleagues [10] to provide objective advice on carbohydrates to patients with diabetes. The GI measures the effects of carbohydrates with respect to their ability to increase blood glucose and compares it with blood glucose response to either white bread or glucose.The original study on glycemic index by Jenkins and colleagues (Jenkins *et al*., 1981) did not consider ACH in formulating the GI. Major drawbacks of the GI are that it measures the impact of individual foods, rather than a mixed meal, and does not necessarily consider the amount eaten or foods in the context of an overall diet.The American Diabetes Association (2016) advises patients that, for most people with diabetes, the first tool for managing blood glucose is carbohydrate counting [7]. Nevertheless, the type of carbohydrate significantly affects the blood glucose level. Using the GI seems helpful in “fine-tuning” blood glucose management. Therefore, the use of GI in combination with carbohydrate counting is likely to provide additional benefits for patients in achieving blood glucose goal.

However, the GI was introduced as a replacement for food exchange tables that were used in medical nutrition therapy for diabetes at that time. The GI is well accepted in some countries, including Australia, but is used less in the United States [11].

Glycaemic load

Glycemic load (GL) was introduced in 1997, which measures the blood glucose response to a specific weight of a given food. Thus, GL provides a measure of total glycemic response to a food or meal. GL is calculated by multiplying the amount of carbohydrate contained in a serving size (weight in grams or volume in milliliters) by the GI value of that food divided by 100. Some believe that GL is more meaningful in managing diabetes than is GI [12].

Available carbohydrate
Depending on the type of carbohydrate and the availability of fiber contents in the food ingested, the percentage absorbed will vary [13]. The percentage that is absorbed from total carbohydrate is generally identified as the "available carbohydrate." However, food labels indicate the total carbohydrate in a given food. When patients try to count their carbohydrate content, food labels are likely give misleading information.

Effects of other food and vegetables on carbohydrates absorption and the glycemic response
Most of the studies on carbohydrates have been done using pure carbohydrate meals, rather than complex, mixed meals such as patients would eat. Others have shown that dietary fat and protein reduced the glycemic response of carbohydrates in a mixed meal [8]. Other factors also affect the GI of a carbohydrate diet. For example, in normal subjects as well as patients with diabetes, it has been shown that when a carbohydrate meal is eaten with watery gravy, the glycemic response is high [13].

Apparent volume of food after cooking
To prevent misguiding patients, when a healthcare worker prescribes a diet with GI/GL, consideration of the post-cooked apparent volume of food needs to be considered.

Conclusion:-

Many believe that GI as the sole factor that determines the glycemic response. Patients and health professionals give importance to GI rather than using a holistic approach to glycemic response. The American Diabetes Association advises patients that, for most people with diabetes, the first tool for managing blood glucose is carbohydrate counting. Nevertheless, the type of carbohydrate significantly affects the blood glucose level, so using the GI seems helpful in "fine-tuning" blood glucose management. Therefore, the use of GI in combination with carbohydrate counting is likely to provide additional benefits for patients in achieving blood glucosegoals, especially for those who are willing to put extra effort into monitoring their food choices.

Finally, the Glycemic Index is still relevant to diabetes diet and other dietary modifications. However, the glycemic response (GR) to a meal is complicated by many other factors. Therefore, using GI alone to judge a food item may not be the right approach. Moreover, the apparent volume of cooked food; addition of proteins, fats, and vegetable fiber to carbohydrates; cooking methods; and available carbohydrate are important modifiable factors that should be considered when prescribing a diet.

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