

## ASSESSMENT OF THE RELATION BETWEEN DIFFERENT FOOD ITEMS AND OUTCOMES OF EPILEPSY IN ADULTS

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### INTRODUCTION

Epilepsy can be defined clinically as a neural disorder described by recurring senseless appropriations (as minimum two gratuitous appropriations happening >24 h apart)<sup>[1]</sup> while a seizure is considered as any clinical event caused by an irregular electric discharge in the brain and thus epilepsy is the tendency to have recurrent seizures. Epilepsy should be regarded as symptom for underlying brain.<sup>[2]</sup> It is the communal neural condition influencing persons of all social class, race and ages.<sup>[3]</sup> It is universally public chronic sicknesses influencing around fifty million persons of all ages<sup>[4]</sup> In the developed world, onset of new circumstances happens normally in the elderly and infants;<sup>[5]</sup>

Generally, the occurrence of epilepsy in urbanized countries is about 50 for each 100,000 (range 40–70 for each 100,000 yearly)<sup>[4]</sup> whereas the occurrence of epilepsy in low income nations is usually greater in the range of 100 to 190 for each 100,000 yearly<sup>[6]</sup> Modern researches using patient reports from Norway (rough incidence rate 11.7 for each 100; effective epilepsy 6.7 per 1000)<sup>[7]</sup> and Ireland (life occurrence 10 for each 1000; treated epilepsy 8.3–9.0 for each 1000)<sup>[8]</sup> recommend advanced occurrence rates in western nations. Consistent with the contributing etiology, epilepsy is classified into three kinds: idiopathic, acquired and cryptogenic. Idiopathic epilepsy refers to epilepsy reason is totally unidentified as in epilepsy without primary physical brain lesions or other neurologic symptoms. Acquired epilepsy stands for epileptic appropriations due to one or more recognizable physical brain lesions. Cryptogenic epilepsy means that epilepsy is understood to be symptomatic, with anonymous reason.<sup>[9-11]</sup>

A number of epilepsy cases are due to genetic issues. Nonetheless, it can also come from brain hurts due to head blows, extraordinary fever, contagions, or cancers.<sup>[12]</sup> A number of

nutritional ingredients can deteriorate seizure control. Glutamate, the main excitatory neurotransmitter, is evidently epileptogenic;<sup>[13]</sup> Stimulating substance, like caffeine, likewise has stated to deteriorate seizures, that is possibly owing to obstruction the adenosine  $\alpha_1$  receptors—activation of which is anticonvulsant.<sup>[14]</sup> Epilepsy frequently runs in relatives. If a close relative has idiopathic epilepsy, there is approximately a 9% to 12% likelihood that the child may hold epilepsy if one of their parents has idiopathic epilepsy and relatives to ones with epilepsy similarly involve advanced possibility.<sup>[15]</sup> Epileptogenesis procedure was verified to be included in numerous molecular and organic trails or developments. These consist of neurotransmission signaling, genetic and molecular mechanism, neurogenesis and rewiring pathway, apoptotic pathway, inflammatory pathway, gene and protein regulation.<sup>[16]</sup> The medical symptoms of seizure rely on the epileptic discharges position in the cortex and the level and outline of the epileptic discharge propagation in the brain such as the motor cortex involvement leads to convulsions, hypothalamus leads to marginal autonomic discharge and the reticular formation involvement of the upper brain stem causes consciousness loss.<sup>[17]</sup> Epilepsy treatment is by many approaches either by anti epileptic medications or by transformation life mode or by surgical treatment. Selecting antiepileptic drugs rely on type of seizure, epilepsy condition, pharmacokinetic side view, other medical conditions, effectiveness, likely adverse effects and cost.<sup>[18]</sup>

While AEDs are the treatment backbone, other therapy modalities have variable amounts of medical and investigational support. Lifestyle variations, mainly prevention of alcohol and sleep deficiency, can be imperative in definite conditions and persons. Biofeedback, relaxation and additional behavior methods can assist patient subset, particularly those with steadfast aura earlier complex fractional or secondarily widespread seizures. Dietetic complements are of unverified importance, excluding pyridoxine (vitamin B<sub>6</sub>), that is decisive for healing uncommon pyridoxine dependence of neonates and infants and for seizures owing to antituberculous treatment with isoniazid.<sup>[18]</sup>

The inhibitory transmitter gamma-amino butyric acid (GABA) is principally vital in this state, extreme stimulation by induced neurotransmitters, such as acetylcholine and glutamate, provoke seizure activity. It is probable that both reduction of inhibition and excessive excitation play significant part in seizures.<sup>[2]</sup>

Dietary treatments are a possibly valuable assistant to other epilepsy cures, like anticonvulsant medicines, epilepsy surgical treatment, and vagus nerve stimulation. While the

ketogenic diet (huge fat, satisfactory protein, and small carbohydrate) is the best deep-rooted dietary treatment for epilepsy.<sup>[19]</sup> and seems to lessen the seizures number by half in about 30 to 40 percent of kids.<sup>[20]</sup>

The Incorporation of the dietetic complement having omega-3 polyunsaturated fatty acids(n-3 PUFAs) can be advantageous in conquest of several cases of epileptic seizures.<sup>[21]</sup>

In comparison to women without epilepsy, women with epilepsy and AED usage have an augmented danger of minor pre-eclampsia, vaginal bleeding late in pregnancy, gestational hypertension and delivery earlier than thirty four weeks of gestation.<sup>[22]</sup>

The comorbidity load in persons with epilepsy is extraordinary. Numerous sicknesses, with misery, migraine, nervousness, dementia, heart disorder, digestive ulcers, and pain are equal to 8 counts more public in people with epilepsy as compared with the common population.<sup>[23]</sup>

Clearly, there is a marginal epilepsy patients who become therapeutically refractory, and presently are unlikely to achieve any prolonged period of seizure remission.<sup>[24]</sup> Sudden unexplained death in epilepsy (SUDEP) is a unusual epilepsy complication, and its reason and danger factors are unidentified.<sup>[25]</sup> Mortality rate from SUDEP and other causes is increased when seizures are poorly controlled.<sup>[26]</sup>

## CHAPTER 2

### MATERIAL AND METHOD (MODEL)

#### Model

This study had a cross-sectional design in which diverse food items were taken in epileptic patients against their outcomes. Fifty patients of both sexes were included.

Patients with concomitant causes such as brain tumor, meningitis...etc., were excluded as their outcomes will be severely affected by the persistence of these causes making the possibility of finding any impact of diet on the outcome in these cases very low.

Children below 6 years were excluded owing to the complexity in getting a full dietary history and the high possibility of inaccuracy in it.

## MATERIALS

Diverse food items of the food matrix were reviewed and openly interviewed using a questionnaire. The outcome of patients was assessed primarily and in some way from a detailed history of the case. And directly (if available) through their EEG and MRI results.

### Method of Investigation

Patients had been interviewed using a detailed dietary questionnaire of the foremost items in food matrix.

The questionnaire involved the frequency, amount, category and other information concerning many food items in addition to other factors such as appetite, mealtime, working hours, sleeping pattern, activity level, and GIT disturbances.

At that point, their outcomes had been evaluated secondarily through their treatment dose, epileptic attacks rate, Attacks severity (ictal duration, convulsion extent, consciousness level, post-ictal duration, cyanosis, asthenia, autonomic, cognitive and mood effect) and directly (if available) from their EEG (2 patients) and MRI (1 Patient) results.

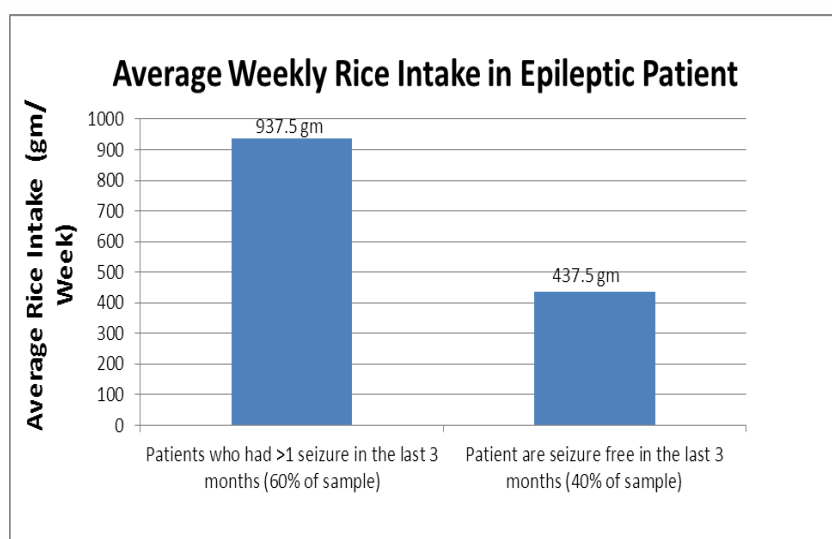
## CHAPTER 3/ RESULTS

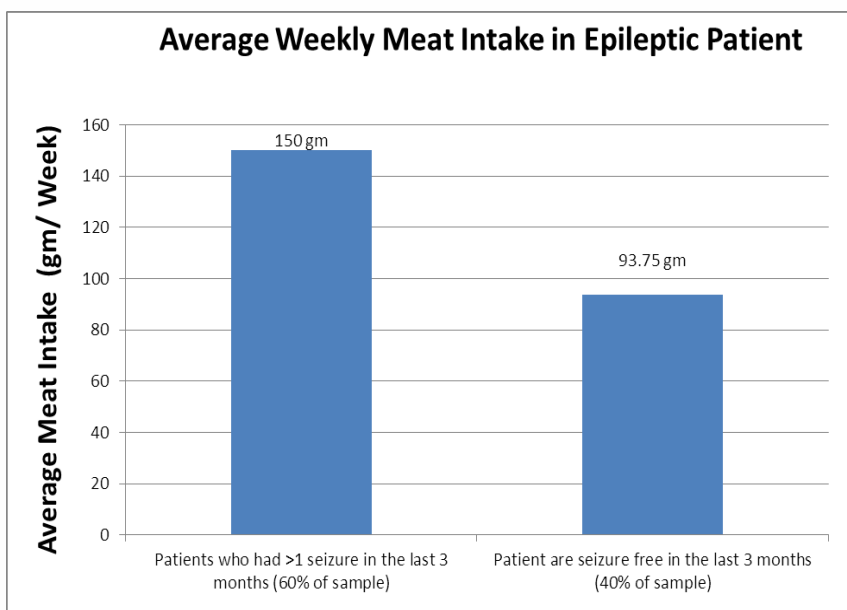
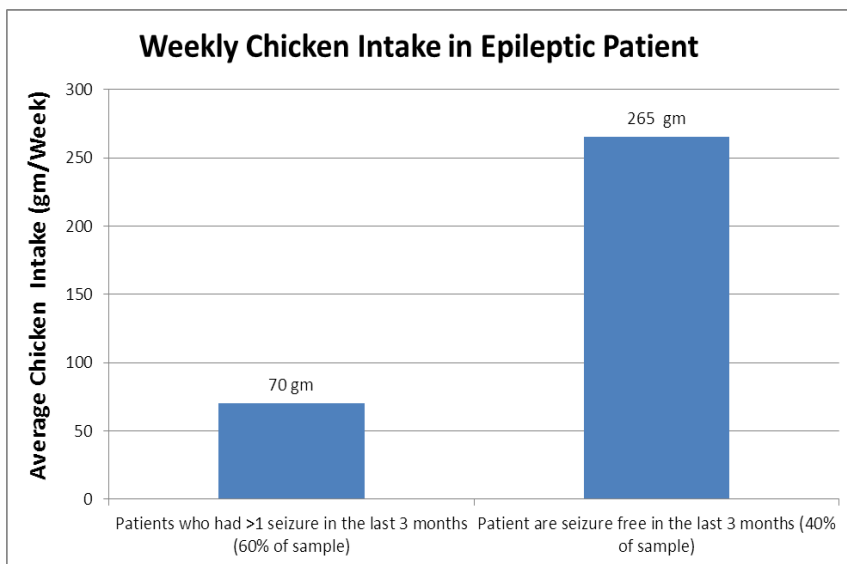
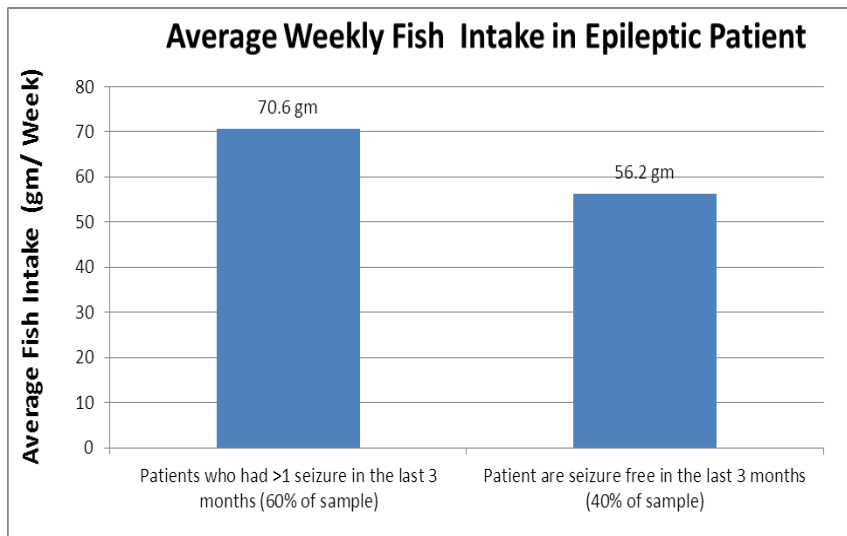
We classified the sample of 50 patients into dual groups:

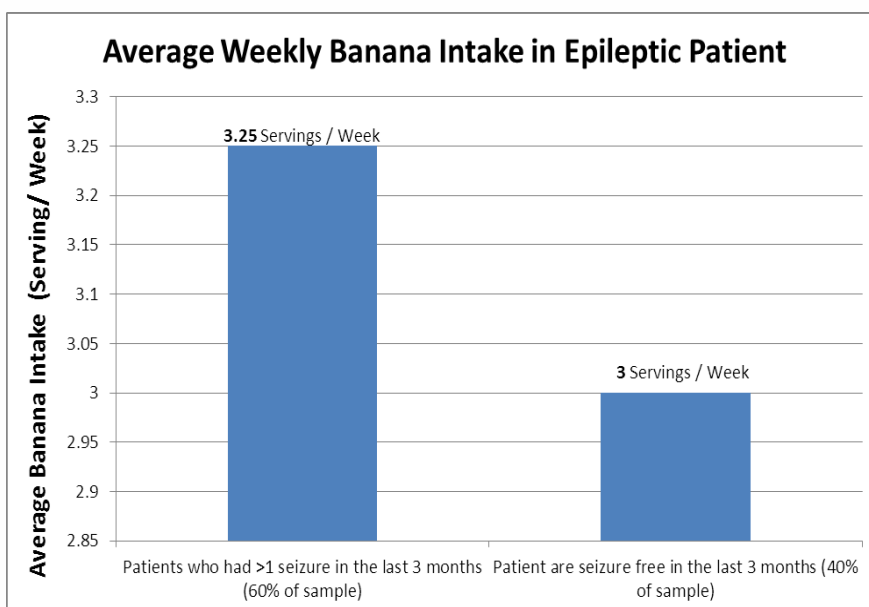
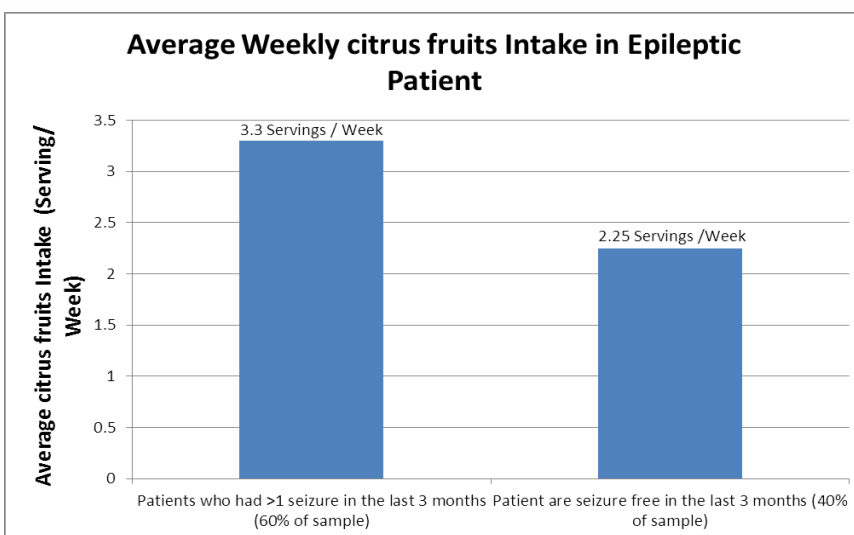
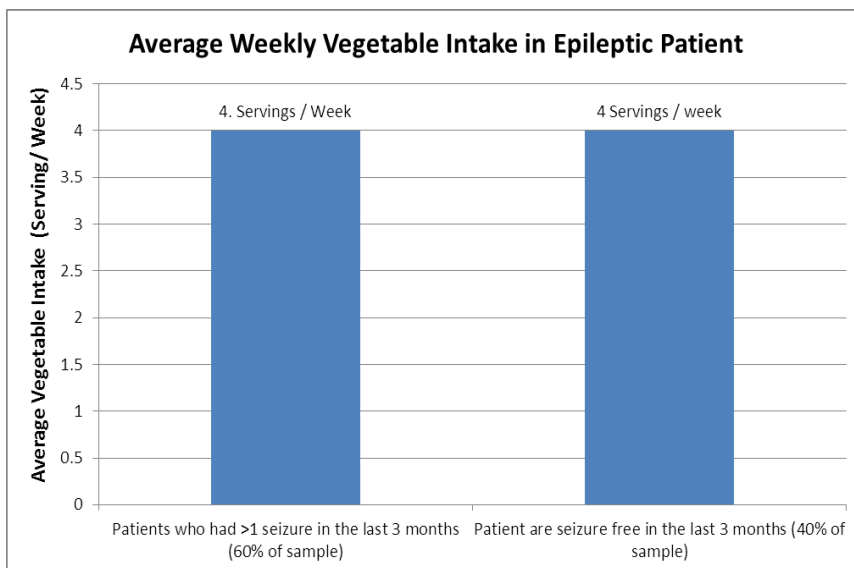
**Group A** - Patients that are seizure free in the last 3 months-> **20 patients (40% of sample)**

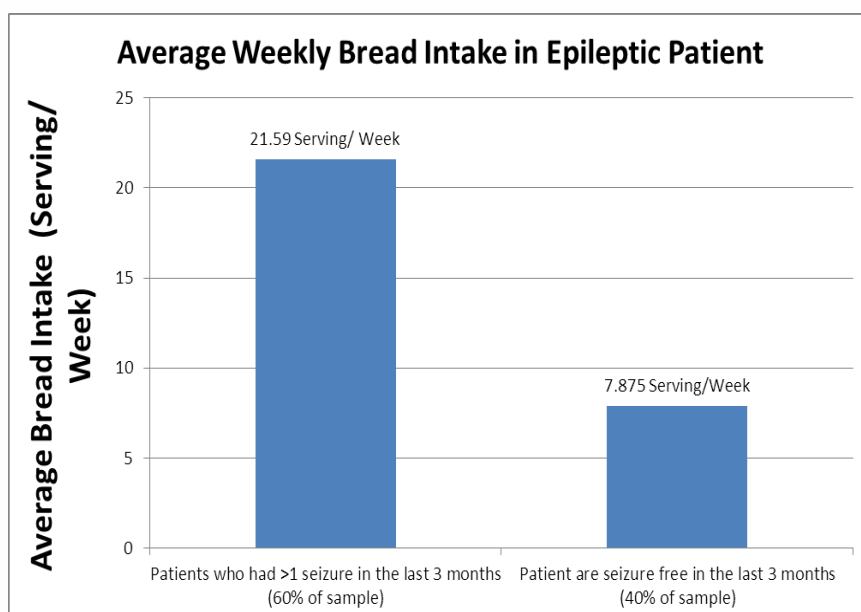
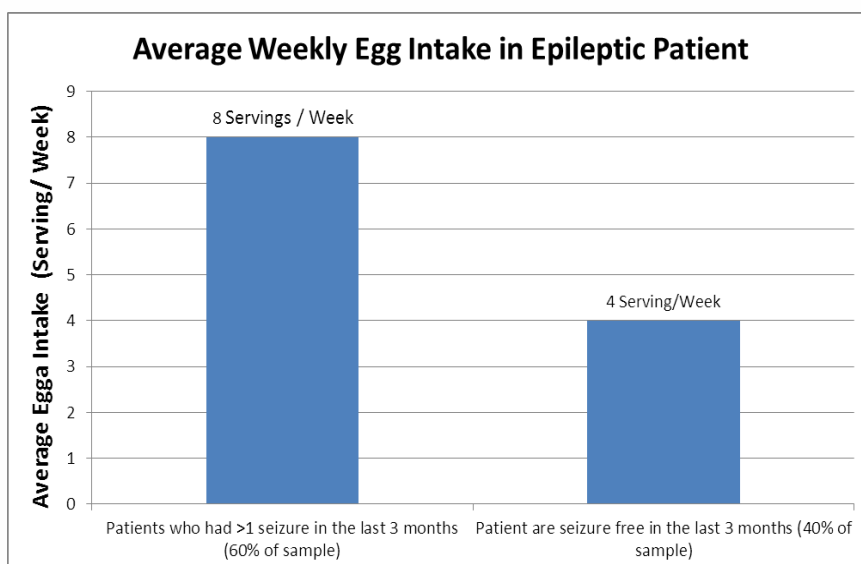
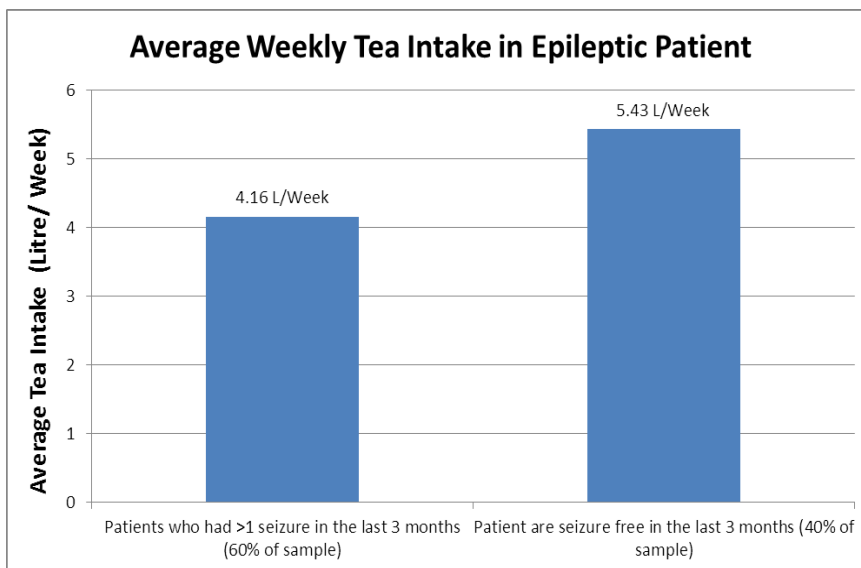
**Group B** - Patients who had >1 seizure in the last 3 months-> **30 Patients (60% of sample)**

And then each group was assessed with different Dietary Items as shown in the results below:









## CHAPTER 4

### DISCUSSION

This study evaluates the dietary intake in epileptic patient to search for a possibility of any correlation between diet intake and the outcome of epilepsy.

If you suffer from epilepsy, you may experience a developed frequency of seizures after consumption of definite foods, as several foodstuffs can activate epileptic incidents, based on the Epilepsy Society. Avoidance of these foodstuffs and eating systematic, well-adjusted meals can assist to decrease your seizures risk and enhance your whole healthiness.

At what time the body metabolizes fat, it makes matters called ketones. The ketogenic diet (KD) attempts to obligate the body to use additional fat for energy in place of glucose by expanding fat and limiting carbohydrates. It is utilized to stop seizures in child or adult who has epilepsy. It is not until now distinct in what way or what reason the ketogenic diet averts or decreases seizures.

KD, being big in fat and small in carbohydrates, was proposed to decrease seizure incidence. It is presently employed principally for kids who suffer from seizures in spite of antiepileptic medications. Newly, there were concentration in less limiting KDs comprising the modified Atkins diet (MAD) and the using these dietaries has lengthy into adult practice.<sup>[27]</sup>

(Levy RG<sup>1</sup> 2012 etal) reported a randomized investigation of sensible quality of the Atkins food. This investigation presented the same advantages in seizure mechanism with a smaller amount of restricting diet. Regarding those with therapeutically inflexible epilepsy or those in whom surgical treatment is inappropriate, KD may possibly recover seizure control; however acceptability is reduced. One investigational research recommended that the Atkins diet might give a analogous consequence on seizure mechanism, but this entails additional analysis.<sup>[28]</sup>

Papers available in the "Neurology" journal in 2006 explained that 50 % of a patient group who used with a diet regime that required simply low-glycemic nutrients exhibited 90 % less seizures. The Epilepsy Society recommends that in a number of epilepsy patients, changeable blood-glucose degrees can induce seizures. To equalize the levels of blood glucose, high-glycemic foodstuffs must be avoided that raise the blood glucose degrees. These diets have sophisticated carbohydrate foods as in soft drinks, pizza, cakes, bagels, white bread, white



rice, and white pasta. As an alternative, small glycemic-index foodstuffs as in brown rice, whole grains, legumes, complete-wheat bread and pasta, nuts and yogurt. The majority of vegetables and fruits are small-glycemic. Namely, they do not make the levels of blood glucose raised and decreased extremely. Nevertheless, if you suffer from epilepsy, the Epilepsy Society urges that you keep away from definite fruits and vegetables that are within the moderate to big-glycemic level as in bananas, dates, raisins, mangos, and mashed potatoes.<sup>[29]</sup>

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