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Full Length Research Paper

Assessment of the relation between Daily Dietary Intake and Depression level of the Employees Working in MMV, BHU, Varanasi, India.

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ABSTRACT

Depression, or major depressive disorder, is a mental health condition marked by an overwhelming feeling of sadness, isolation and despair that affects how a person thinks, feels and functions. As a major public health issues , India is the most depressed country in the world followed by China & USA according to (WHO 2018). The aim of the present study was to assess the correlation between macro nutrients Intake and depression level of the employees working in MMV, BHU, Varanasi. Depression is a commonly prevalent disorder throughout the world and several studies revealed that a healthy diet was associated with a significantly lower risk of developing depressive symptoms. The pattern of dietary intake is the primary factor which influences the level of depression of the subjects and secondary factors are environmental (like different cultural activities, lack of exercise and occupational stress etc).Descriptive methods was used for this study, data was collected by random sampling methods followed by a self structured questioners. In the present study it was found that depression level was negatively correlated with carbohydrate and fat intake whereas protein intake was positively correlated with depression .So It is concluded that by improving the sufficient amount of daily dietary intake specially macro nutrients, people can lead a healthy life.

Introduction

Diet is an important component for mental health. A dietary pattern characterized by a high intake of fruit, vegetables, whole grain, fish, olive oil, low-fat dairy and antioxidants and low intakes of animal foods was apparently associated with a decreased risk of depression.

"Depression" is a state in which a person feels sad, distressed and hopeless with little to no energy for normal activities (Smeltzer, *et al*. 2010). It is more typically thought of as strictly biochemical-based or emotionally-rooted. Depression affects about 151 million people worldwide (WHO 2008). In 2004 unipolar depression was the third leading cause of Disability Adjusted Life Years (DALY's) in the world and the main cause in middle and high income countries (WHO 2004 The global burden of disease 2004 update). A high consumption of red and/or processed meat, refined grains, sweets, high-fat dairy products, butter, potatoes and high-fat gravy, and low intakes of fruits and vegetables is associated with an increased risk of depression. Consumption of diets low in carbohydrate tends to precipitate depression, since the production of brain chemicals serotonin and tryptophan that promote the feeling of well being, is triggered by carbohydrate rich foods. Proteins are made up of amino acids and are important building blocks of life. The neurotransmitters dopamine and serotonin are made from tyrosine and tryptophan respectively. Lack of any of these two amino acids is associated with low mood and aggression in individual. The excessive build up of amino acids may also lead to brain damage and mental retardation. For example, excessive build up of phenylalanine in the individual with disease called phenyl-ketonuria can cause brain damage and mental retardation. It has been hypothesized that sufficient long chain PUFAs, especially DHA , (Diamond *et al*.1999) may decrease the development of depression. Experimental studies also had revealed that diets lacking omega-3 PUFA lead to considerable disturbance in neural function.

An association between diet and depression has now been confirmed in prospective and epidemiological studies. For example, in elderly men and women, consumption of fish, vegetables, olive oil and cereals was negatively correlated with severity of depressive symptoms (Mamplekou, *et al*. 2010) the benefits from fish and olive oil intake remained significant even when adjusted for confounders such as age, sex,

educational status, BMI and physical activity level as well as the presence of a number of medical conditions. s

The present study was carried out with the objective to assess the correlation between macro nutrients Intake (carbohydrate, fat and protein) and depression level of the employees working in MMV, BHU, Varanasi.

Materials and Methods

Study area

The present study was conducted at Mahila Maha Vidyalaya ,BHU ,Varanasi,221005

Sample size

The present study was conducted on total 40 subjects (male and female) including both teaching and non-teaching employees of MMV, BHU and the age was 25 years and above.

Sample determination method

A self structure questionnaire was administered to collect the data which includes general information, anthropometric measurement (height, weight and BMI), history of chronic diseases/disorders, and dietary intake pattern (through 24 hr recall methods and food frequency questioner).

Beck's Depression Inventory Scale (BDIs-II) was used to assess the level of depression (BDI-II,1996), standardized cut offs that differ from 0-13,14-19,20-28,29-63 as minimal, mild, moderate & severe depression level simultaneously. Correlation method of analysis(Pearson's correlation) was used to assess the correlation between the macro nutrients (carbohydrate and protein) of daily dietary intake and depression level of the subjects.

Data analysis

The recommended carbohydrate intake for sedentary workers of Indian according to RDA 2010 should be 45-65% per day, whereas the normal range has varied from 225gm-325gm/ day. The subjects under present study were categorized under five rangesi.e.,<170g/day,170-259g/day,260-325g/day,326-89g/day & >390g/day. The ideal protein intake for Indian is 1g/kg of body weight and fat intake according to RDA is 30-35% from total calories per day.

Results and Discussion

Studies were revealed that many people were aware of the connection between nutrition and physical illness than connection of nutrition with depression. Many of the easily noticeable food patterns that precede depression are the same as those that occur during depression. These may include poor appetite, skipping meals, and a dominant desire for sweet foods (Lakhan SE, Vieira KF Nutr J. 2008). The results from the present study were as follows, according to the objective of the study.

Correlation between carbohydrate and depression level

In the present study, all of the respondents were reported that their daily carbohydrate intake fall between the range of <170g/day and 170-259g./ In case of their depression level, maximum respondents were fall under moderate depression level followed by mild and minimal depression level (figure-1). Respondents whose intake of carbohydrate was <170g/day, were suffering from moderate level of depression followed by mild and minimal depression level and other respondents whose carbohydrate intake falls between 170-259g/day, had found mild depression level followed by moderate and minimal depression (figure-1).

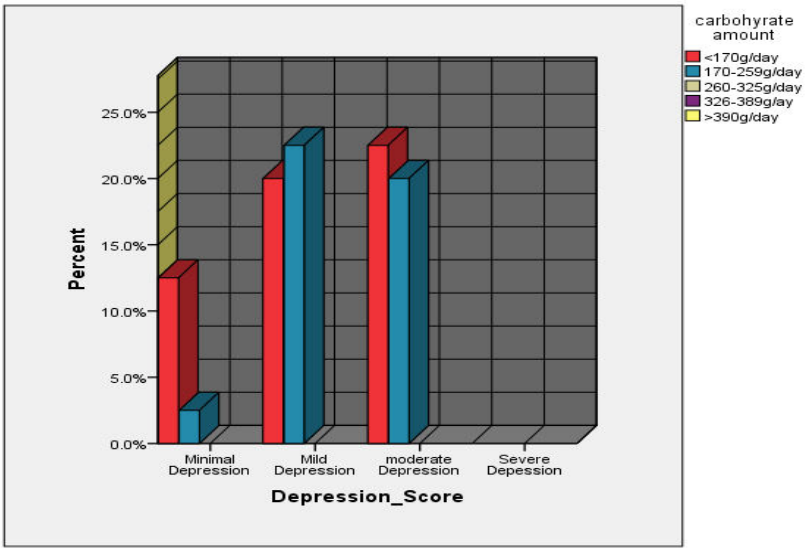

Fig-1: Carbohydrate intake and depression level of respondents

Carbohydrate has important role in our body. In view of above results, it was found that less amount of carbohydrate intake cause high depression level whereas the respondents who consume nearly equal to adequate amount of carbohydrate fall in mild to minimal depression level.

According to Rao T.S.S *et al.,* (2008), consumption of diets low in carbohydrate tends to precipitate depression, since the production of brain chemicals serotonin and tryptophan that promote the feeling of well being, Eating a meal which is rich in carbohydrates triggers the release of insulin in the body. Insulin helps let blood sugar into cells where it can be used for energy and simultaneously it triggers the entry of tryptophan to brain. Tryptophan in the brain affects the neurotransmitters levels.

Correlation between protein intake and depression level

It was found in the present study that respondents' daily total protein intake fall between the range of ≤ 45g/day and 46-55g/day and depression level falls under the categories of moderate along with mild and minimal level. Results were revealed that protein intake of respondents were came under ≤ 45g/day has equal chances of mild and moderate level of

depression and the respondents whose protein intake falls under 46-55g/day also has equal chances of moderate to mild depression level followed by minimal depression. Rest of the 7 percent respondents were equally from <45g/day and 46-55g/day falls under the category of minimal depression level (Figure-2).

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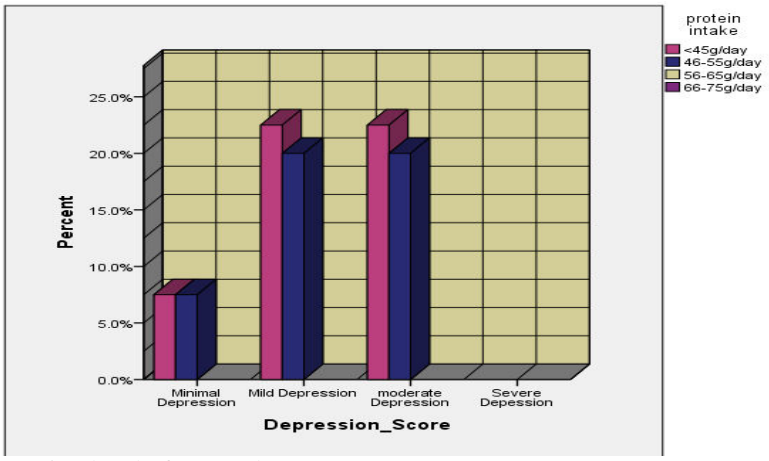

Fig-2: Protein intake and depression level of respondents

Several studies show that amino acids such as tryptophan, tyrosine, and phenylalanine could be helpful in treating depression available at http:/diet.hajimeru.biz/category/health/nutritionj). Considering this evidence, it can be implied that restoring serotonin levels may decrease the symptoms of depression precipitated by serotonin deficiencies. The medication aside, this goal can be achieved through adherence to a diet that is high in tryptophan. In addition, the amino acid tyrosine and sometimes its precursor phenylalanine are converted into dopamine and nor-epinephrine.

Correlation between fat intake level and depression level

Figure-3 shows the relation between fat intake and depression level of respondents. In the present study, maximum respondents' fat intake was between 36-45g/day and that is about 60 percent of the total respondents of the study followed by 25 percent (<35g/day), 12.5 percent (between 46-55g/day) and 2.5 percent in high fat intake range (>56g/day). Depression level among respondents maximum comes under moderate depression level (27.5%) followed by mild (22.5%) and minimal depression level (10%). Any case of severe depression level was not found among the respondents under the present study.

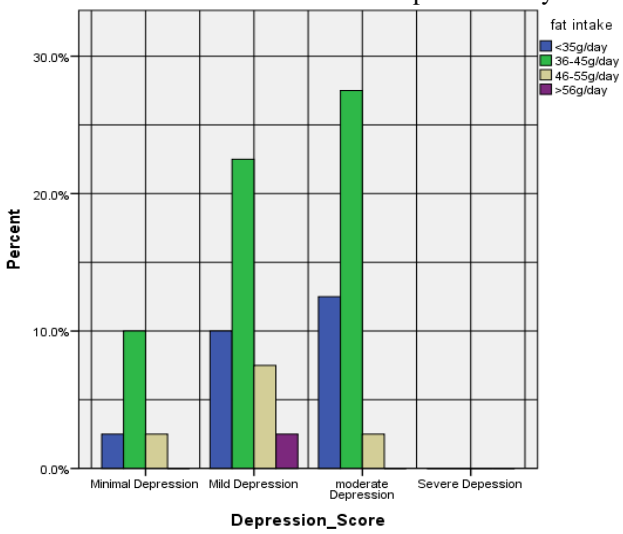

Fig-3. Fat intake and depression level among respondents

The results of the several studies showed that sufficient long chain PUFAs, especially DHA, may decrease the development of depression (Stoll ***et.al.***1999). Low to liberal amount of fat intake may cause depression level high according to Jokin de irala *et. al.,* 2011. In a prospective study, it was mentioned that after adjusting for sex, age, smoking status, BMI, physical activity levels and employment status, adherence to a Mediterranean diet including high levels of vegetables, fruits, nuts, cereals, legumes and fish, moderate alcohol intake and low amount of meat or meat products and whole-fat dairy intake was protective against development of depression (Alonso *et al*. 2009). In other a study by Jacka *et al.* 2010 found that consuming a "traditional" diet containing vegetables, fruits, meat, fish and whole grains was also associated with a 35 percent reduced risk of depression .

Prevalence of depression was high in all countries and was more prevalent among subjects who reported less than adequate level of F &V intake. Although the basic therapeutic approach for depression is pharmacological treatment, many clinical psychiatrists consider non-pharmacological approaches as an essential component of treatment. Non-pharmacological interventions such as dietary modification by encouraging higher consumption of F&V should be given more programmatic attention (Ghose Bishwajit *et. al., 2017).* One widely accepted mechanism for higher fruits and vegetables

consumption on better mental health is that antioxidants defend against the negative effects of oxidative stress, which is associated with depression.

Conclusion

India is the most depressed country in the world followed by China and USA according to WHO, 2018. One factor that may contribute to depression is a person's dietary habits, which will determine the nutrients that they consume. In the current years, depression is a disorder of major public health importance, in terms of its prevalence and the suffering, dysfunction, morbidity and economic burden. From the preen study it was concluded that a healthy diet was associated with a significantly lower risk of developing depressive symptoms of people and it is suggested that low Glycaemic index (GI) foods such as some fruits and vegetables (like apple, pears, grapes, carrot, cabbage, sweet potato, etc), whole grains, pasta etc are more likely to provide a moderate but lasting effect on brain chemistry, mood and energy level than the high GI foods - primarily sweets - that tend to provide immediate but temporary relief.

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