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Relationship between diet and mental health in adolescents

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Abstract

Adolescents as defined by WHO represents children aged between 10-18 years. Growth spurt is generally seen among infants and adolescents. Growth is largely dependent on our diet, mental well-being and exercise. We are what we eat and the best part is it is in our control to decide what we eat and what we feed to our families. Undoubtedly food has mental, physical, emotional and even spiritual effect on our mind and body. Research has already proven the link between diet and mental health which is really important for children and teens. Various studies have shown that teens these days are more inclined towards fast foods, aerated drinks, even drugs and liquors are now part of their eating habits. Binge eating disorder is also one of the problems seen among adolescents, which further leads to various disorders and diseases. Diets which include burgers, pizzas containing large quantities of all the three whites i.e. sugar, salt and refined flour (maida) is actually not recommended for any age group and has further found to increase levels of depression, anxiety, mood swings, hyperactivity and wide variety of other mental and emotional problems. Such type of diets are just expanding our waistlines and starving and shrinking brain cells of our youth. Phytochemicals from plant sources and fish from animal source are known to play an important role to stay happy and to prevent damage to our brain cells. In the present article we will be dealing with above quoted aspect which really is the need of the day.

Keywords: Diet, food, health, adolescent

1. Introduction

Adolescence is the age of major physical, intellectual and emotional growth. This is the period of rapid development and is the most crucial period on which depends our adulthood. Mostly teenagers need to have happier mood, more energy for sports, studies and fun activity. They are generally under heavy pressure of meeting academic and peer demand along with physical changes that are taking place in their body. What they have to say, when to say, what they have to wear, how to get attention, all are matter of great concern for them. They are in great dilemma of being consider themselves in the category of adults or children and in all this the body's most important organ brain is still developing. If teens don't eat right, they become irritable, depressed and also develop problems such as obesity and eating disorders. Proper nutrition can help prevent and manage such conditions.

2. How food affects mood

Food we eat has direct or indirect effect on our mental, physical, social and spiritual behaviour or other way round we can say, whatever we eat affects our mind and brain. Each and every behaviour of an individual whether mental, physical or social is also influenced by the process of digestion, absorption and even elimination of food we have eaten. If we talk about general happiness it also depends on to a great extent on our digestion process. Digestive enzymes and metabolic processes have a role to play in digestion of food and thereby in our happiness and overall health. So, both food and mood has great impact on our digestion and vice versa, i.e., digestion affects our mood.

After having your meal if you have a satiety feeling or feeling of fullness it means your food is balanced and if after having your meal you still feel hungry then it shows that your meal is not balanced and complete. It is important to include all six tastes like sweet, sour, salty, bitter, astringent and pungent in your meal. Balanced meal should be planned in such a way that includes all the nutrients in proper amount like proteins, complex carbohydrates, healthy fats,

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vitamins and minerals. Water and healthy liquids must also be included in balanced meal. Fresh and seasonal fruits and vegetables are must in a diet. Also it is really essential to have meal at the same time daily so that digestive system can prepare for the meal. At the time of eating meal your mind should be calm and also the person who is preparing meal should be in happy and settled mood.

If you are lucky enough to have your own kitchen garden then vegetables grown there have no comparison with any of the market production but if you have to purchase the vegetables and fruits, try to have organically grown products. It is also to be considered that our diet should include fresh, light and easily digestible food like ripe fruits, ghee, cardamom, raisin, cooked vegetables, and cow's milk.

3. How the teen brain develops

During adolescence, the brain is undergoing developmental process. Axons are long thread like part of a nerve cell along which impulses are conducted from the cell body to other cells, muscles and glands. These axons develop a protective layer known as myelin or white matter which boosts the brain power to accept and transmit information. The brains dendrites which send electrical messages to the neurons extend and grow like branches during these developmental years. At this time, the synapses which is most frequently used to process information grow stronger while the weaker synapses that are not used begin to die. This brain remodelling phase in teens life is known as 'pruning' and without proper nutrition, the brains ability to learn new tasks or skills decreases. During this rapid and developmental phase of life brain needs proper sleep, hydration and good food, as what you eat impacts your brain.

It is very important for adolescents to focus on what they eat, when they eat and how much they eat as it affects the attention, memory, ability and focus. There is of course no such food that will enhance your performance before some important test or exam but the best way to start your day is by having a breakfast that should include complex carbohydrates, proteins and healthy fats that can regulate blood pressure and keep teens satisfied for a few hours until lunch. If there is deficiency of essential nutrient teens may suffer poor concentration and tiredness.

4. Nutritional requirements of adolescents

Adolescence is the period of lots of physical changes, growth spurt is their development is at very rapid pace. This is the period when an individual require maximum calories when compared to their whole life time. Although the calorie intake depends on the type of worker one is for example sedentary, moderate or heavy worker. But in general teenage boys require 2800 Calories and teen girls require 2200 Calories in a day. The protein intake should be 45 to 60 g/day. The source of protein intake can be either vegetarian or non-vegetarian e.g. meat, fish, eggs, soy protein all are considered to contain large amounts of proteins. The fat is also an important nutrient required by the teens but care should be taken to have healthy fat that helps to energise the body and absorb Vitamin A, D, E and K. Fats are also characterized as Mono unsaturated fats, Poly unsaturated fats and Saturated fats. Out of these saturated fats are the most harmful. They increase cholesterol level and also increase risk of heart diseases and Type 2 diabetes including other life style diseases. However, monounsaturated and polyunsaturated fats are healthy fats that improve blood cholesterol level and lower blood sugar. The diet of teens should contain less than 30% of calories

from fat. Saturated fats are mainly from animal sources of food like full fat dairy products and red meat. Some of the examples of healthy fats are coconut oil, olive oil, eggs and avocados. When we talk about carbohydrates, complex carbs are better as they convert sugar into energy. Teens should consume 130g of carbohydrates/day i.e. 50 to 60 % of their daily calories should be from complex carbohydrates like brown rice, popcorn, vegetables, peas, beans, whole grains. Calcium intake should be 1300mg/day. Calcium is required for strong bones and teeth. But teens should avoid intake of aerated drinks and soda as it hinders the absorption of calcium in the body. Iron is one of the most important mineral whose deficiency can be seen in older age if it is not taken in correct amount in beginning years of life. Recommended dose is 8 to 11 mg/day for boys and 15mg / day for girls and up to 18mg as they reach age of 18 years. Teens need 600 IU of vitamin D a day which is somewhat difficult to get only from food sources. 3 to 4 servings of milk with exposure to sunlight helps to get recommended Vitamin D. How can we forget Omega 3 fatty acid, which is mainly found in fish like salmon, Mackerel, sardine, Trout and amongst vegetarian source they are present in flax seed. Omega 3 fatty acids help to reduce the problem of dementia and improve focus and memory.

5. Effect of diet on adolescent depression

Depression is a serious disorder and when its treatment part is discussed one mostly depends on psychotherapy and psychopharmacological interventions (Martinson, 2008) ^[10]. The relationship between diet, nutrition and depression as a treatment method is still under process but focus is shifting towards this side also. With growing interest, research are being conducted which depicts that diet and nutrition could significantly reduce the effects depression (Bamber *et al.*, 2007) ^[2].

Adolescent depression is one of the focus area over the past several years. There are several studies which depicts that better diet quality is associated with better mental health outcomes (Jacka *et al.*, 2013). An inverse relationship also has been confirmed between healthy diets and depression.

There is very less data available regarding impact of diet, nutrition and adolescent depression. However, there are several studies related to adult mental health disorders (Oddy *et al.*, 2009) ^[8]. There has been a correlation between negative mental health and western diet pattern which includes red meat, processed foods, sugary and refined food products (O'Neil *et al.*, 2014) ^[9]. Better mental health outcomes were found in those who consume fresh fruit and vegetables. Today's adolescent generation is mostly dependent on aerated beverages and processed refined and sugary products rather than going for freshly cooked vegetables or fish or pulses. They are far away from fresh fruits and juices. Tetra pack juices are also not very healthy when we talk about freshly prepared juice of any seasonal fruit or shakes like papaya or mango or banana. Increased use of caffeine in the form of coffee or tea should also be minimized. Studies suggested that increased incidence of mental health problems over recent years may be related to change in dietary pattern over the same time frame, with a shift from whole foods to a more refined and processed diet (Bottomley and Mckeown, 2008) ^[3].

According to Greenstone (2007) ^[4], a key growth hormone in the brain called brain derived neurotrophic factor (BDNF) is also suppressed after regularly consuming processed and refined foods. So, time has come to say good bye to such

foods that are slowly and slowly deteriorating our brain cells and taking away our happiness by giving momentary mood boost.

6. Omega-3 fatty acids and serotonin

Serotonin is a vital chemical neurotransmitter in the body. It relays signals between nerve cells and regulates their intensity. Low levels of Serotonin are associated with depression. About 80-90% of human body's total serotonin are found in specialized cells in our guts. Omega 3 fatty acids are crucial components of the structure of Central Nervous System and their surrounding membranes. They are involved in serotonin transport which may explain this relationship with mental health disorder (Kiecolt Glaser Belury, Porter *et al.*, 2007).

In another study Johnson (2010) [7], found that the role of omega 3 fatty acid in depression. Depression has been seen in individuals having low levels of fatty acids in their red blood cell membranes. He also mentioned that researchers reviewing the association between low levels of omega-3 fatty acids and depression for the American Psychiatric Association (APA) were impressed enough with the evidence to recommend that adolescents with a depressive disorder take at least one gram of omega-3 supplements per day (Johnson, 2010) [7]. Currently, however, antidepressants are the number one prescribed drug on the market. Johnson (2010) [7] states that mainstream medical and mental health professionals treat the symptoms with a medical-based approach which focus on studies of effective pharmaceuticals. In his article, Johnson (2010) [7] states there are several alternative ways to treat depression, including a nutritional and dietary approach.

7. Binge eating disorder

When we discuss depression, Binge disorder is counted as an important term. Though, Binge disorder is a new diagnosis but the truth is, this problem was their earlier also without much recognition. It is very common problem among adolescents and is one of the important symptoms to judge if a teen is undergoing depression. Teen tends to eat more than a normal individual and sometimes he /she eat in secret without letting their parents to know about it. However others may see the binge eating episodes, but mistakenly attribute them to an "adolescent growth spurt" rather than consider the possibility of a serious mental health issue.

8. Phytochemicals

In today's world, when we hear about depression, we try to find its solution through antidepressant but nutritional and dietary approaches can also be suggested to treat depressions. There are number of phytochemicals that can be utilized for mood upliftment and for treating depression. Phytochemicals provide an extensive research area in antidepressant therapies. Plant metabolites from different categories including polyphenols (flavonoids, phenolic acids, lignanes, coumarins), alkaloids, terpenes and terpenoids, saponins and saponinins, amines, and carbohydrates were found to possess antidepressant activity. Assessing the structure-activity relationship of highly potent antidepressant phytochemicals is suggested to find future natural, semisynthetic, or synthetic antidepressants. Further clinical studies are also necessary for confirmation of natural antidepressant efficacy and completion of their safety profile (Bahramsoltani, 2015) [1].

9. Treating depression through diet

Habit formation is the key in motivating adolescents to be

away from simple carbohydrates like sugary products, refined and processed foods rather they should inculcate habit of having freshly cooked meals with their parents at dining table. By having meals together elders can keep an eye on their teens along with telling them to have healthy food with proper amount of liquids in their diet in the form of water, fresh fruit juices or coconut water or lemon water. Teens who consume fresh fruits, sprouts, salads are more likely to feel happy and energised rather than lethargic. When and how much quantity of water they should drink in a day should be a priority task. In morning at least 2 glasses of water after waking up helps to prevent constipation. They should have proper breakfast before going to school, so that they have enough energy for carrying out daily activities in school both mental and physical.

10. Conclusion

It is difficult to be mentally and physically healthy if you are unable to consume quality food. If you are in habit of consuming low quality food containing high amounts of most dangerous three whites, i.e., sugar, sodium and fat, it will result in low brain development, increased anxiety and depression along with diabetes and obesity (O'Neil *et al.*, 2014) [9]. However, unfortunately the potentially important role of diet in mental well-being remains under recognized, perhaps due to a lack of awareness of the research evidence or scepticism surrounding diet as capable of influencing mood and behaviour.

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