

Food – The Engineer of Mind
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“Tell me what you eat, and I tell you what you are” is a famous saying by Jean Anthelme Brillat-Savarin, in 1826, in his seven-volume book *The Physiology of Taste*. In *Ecce Homo*, from 1908, he wrote, ‘But as to German cookery in general what has it got on its conscience! Soup before the meal; meat cooked till the flavour is gone, vegetables cooked with fat and flour; the degeneration of pastries into paperweights! Add to this the utterly bestial postprandial habits of the ancients, not merely of the ancient Germans, and you will begin to understand where German intellect had its origin in a disordered intestinal tract. German intellect is indigestion; it can assimilate nothing.’ Similarly, the concept of ‘you are what you eat’ continued to be famous till now and several researchers contributed evidences proving food is the medicine and the vital component that could build a man physiologically and psychologically.

Food is considered to be culture and is an essence of life. Eating a meal makes anyone calm and happy. Be it humans or animals, it can be observed that hunger can cause them to be alert and irritable. However this emotional sense and response has made all living beings to find food and do anything to satiate hunger. Food what one consumes is therefore is variety of emotions that are connected with several emotions or circumstances.

There are several studies that have proved that food what one takes to have direct impact on their psychological stability. A meta-statistical report of 10 countries by researchers suggested that diet of a person may contribute to depression (Psychiatry Research, Vol. 253, 2017). There were also reports by Felice Jacka, PhD, director of the Food and Mood Centre at Deakin University in Australia stating that dietary patterns impact hippocampal volume in adults, (BMC Medicine, Vol. 13, No. 215, 2015). Children nowadays are observed to have attention deficit disorder (ADHD) showing signs of inattention, hyperactivity, and/or impulsivity in specific ways. These symptoms had a strong relation with the food the children consumed. Children who took higher amount of carbohydrate, junk food and sweets were likely to develop ADHD symptoms. A change in their diet has shown to decrease the ADHD symptoms within months.

Whatever consumed directly or indirectly affect one’s brain. Some things affect more, and usually it affects one when enough of it is not available. Research have shown that consuming low amino acids like tryptophan makes one depressed and angry and this can lead to multiple wars for food and cannibalism. Similarly, too low sugar and vitamins can cause a change in brain functions that will be revealed after few days of deprivation.

However, these reports have proved that food play a major role in the mood and mental health of man. If it had to be focussed on the effect of starvation on mind and health, there are surprising results. Scientifically, it is proved that there is a treacherous relationship between hunger and anger. Skipping the breakfast and staying hungry for long cause one to be grumpy, angry and irritated. This is biologically due to low sugar in blood. Serotonin is a hormone that helps standardize mood and appetite. And once body cut off the production it leads to mood swings especially anger and frustration. Low sugar in blood causes several hormones like leptin, growth hormone, ghrelin and so on are imbalanced, simultaneously disturbing the neurotransmitters. This condition makes one harder to concentrate on simple tasks and makes them difficult to behave within the socially acceptable norms. This is one reason that many grab on to a snack or are advised to do so when they feel inexplicably angry.

The effect of starvation is seen from several episodes in history. One such was witnessed by the world during the tragic naturalistic experiences of famine. And others are often seen in news where some get violent out of hunger leading them to do anything.

It is observed from several classics and myths that the best talk was around the food table and the appearance of food caused an instant happiness in man. Sometimes even the thought or smell of food made one feel relaxed. Food is considered to the essence of life. There was an age during the 1940s when women exchanged their silk wear or wedding rings for a meal during famine.

Nevertheless, the present study focuses on how diet can influence human mind. Simple experiment is when one takes a cup of coffee, here seems to be quick dose of energy and concentration and conversely if more than one cup is taken it leads to heightened anxiety. This suggests that taking good and right amount of food can cause positive vibes and also keeps chronic stress, depression, depressive disorders and even schizophrenia at bay. Researchers have investigated on this matter and have revealed that patients with mental disorder are considered better to choose fruits and vegetables over comfort food to enhance their state of mind. A 9yr research of nearly 300 Canadians, found that a higher fruit and vegetable consumption was related with lower depression and anxiety – beyond age, gender, income, education, physical activity and so on. Similarly in 2013 a survey found that adults had a better mood when they consumed more o fruits and vegetables and the researchers suggested 7-8 servings of fruits and vegetables or positive mood.

There are roughly 100 billion neurons in the brain and about 100 trillion bacteria in the gut and they communicate with each other. Researches into the gut-brain axis called the biochemical signalling taking place between the gut microbes and the central nervous system has changed the way one looks upon mental health. In a study based upon 710 young adults, it was found that frequent consumption of fermented foods like yogurt, kimchi, tempeh, kefir, soymilk, sauerkraut, pickles, miso soup and even dark chocolate lowered symptoms of social anxiety, especially in those who were prone to neuroticism. This was attributed the probiotics- live friendly bacteria present in the fermented food having antidepressant and anti-anxiety effects.

There are also reports showing drinking certain beverages in the right amount can toast one's mental health by uplifting their mood and creating a positive energy. A study on 5,500 adults in Spain have revealed that drinking 2-7 glasses of wine per week led to low depression. However it was also reported in the same study that higher consumption of alcohol led to depression. Scientifically the positive mood given by these food and drinks was due to the presence of polyphenols – compounds from plant based food, exerting a positive effect on the cognitive function, synaptic plasticity, mood and neuronal function. This could be the main reason for the old saying 'An apple a day keeps the doctor away'. Some other studies have stated that even mild dehydration of 1 to 2 percent of water loss can lead to poor concentration, short-term memory problems, moodiness and anxiety.

The present study conducted a survey on 100 university students on the relationship between mood and food. It was found that about 85% of the respondents were observed to have their mood controlled by food. The respondents were found to have positive vibes when they consume their regular breakfast before coming to class. They have also confessed that the menu they dislike were likely to make them upset and grumpy.

Even though science have proved the concept of food determining mood, ancient literature and several literary books have marked characters and situations where food plays a major role. In most of the classics a social gathering involves drinks like wine, beverages which were an indication of joy and a positive start of relation. Food was used to depict strong emotions to the reader. This can be seen in Grimm's fairy tale 'Hansel and Gretel' where the children lost in the wood were frustrated, hopeless and tearful with hunger but are overwhelmed with joy at seeing a house made of food. In the story Gods food by Grimm's also portrays the distress of a widow mother who was starving along with her five kids. In most of the fairy tales there are the hungry ogres, mean stepmothers and witches who make a meal out of poor children. Babies are also portrayed as cannibals who eat their mother out off hunger or anger. In the tale One Eye, Two Eyes and Three Eyes, Grimm's have pictured a magic goat who gives food keeping them happy. In another stage, when hunger strikes two eyes, she is so frustrated that it lead her to cry her heart out.

One of the stories in the new collection is 'The Two Travelling Companions'. Two men, a shoemaker and a tailor, set off on a journey. The tailor only brings enough bread for two days. When his food runs out, and he starts to waste away, the shoemaker is merciless. Grimm's tales have portrayed the horror of what hunger can lead to and how sweet it is to satiate hunger.

There are also several historians who controlled their die to remain calm and get rid of their animal passions. Since the time of Adam and Eve, there are other vegetarians like George Bernard Shaw, who avoided meat, tea and so on for aesthetic reasons. Mahatma Gandhi also eliminated milk products and meat to keep his spirit calm. Leo Tolstoy, Albert Schweitzer and Adolf Hitler were all vegetarians. Since the age then people knew and believed food influenced human behaviour. Hitler was a teetotalter and has said in several stages that elephants are the strongest animals and they don't eat meat.

Depending on what is consumed, the duration and the quantity consumed, food is known to have both negative and positive effects. There is a clear connection of food with the negative emotions one possesses. Usually people grabbed on to the food that could make them happy and it varied from people to people. In this study also most of the respondents had different reasons to why they chose the emotional foods. The food chosen by the respondents also differed with gender. When males chose meal type food, females preferred snacks. Some respondent's happiness and energy depended on the meal time- breakfast, lunch and dinner. While majority of them felt happy and positive when they had their daily breakfast (70%), some of them preferred a luxurious lunch and few preferred the dinner they have after work. It was also found that skipping their positive vibe meals cause them to be cranky whole day and sometimes even the next day. However there also observed that the foods they chose to be different from the comfort foods (like caffeine, chocolates, fat foods and carbs). Most of them (80%) chose healthy food than comfort food to uplift their mood.

There are several reports stating that food with saturated fat, high calories, sweets and sodium increased the negative moods days later. Whatever the food taken the mood was sure to stay after a day or two with a maximum of three days. Some of the respondents who had an inclement towards comfort foods for positive mood also had a negative influence in them in later days. It is scientifically proved that comfort foods can only uplift one's mood for short period.

The present study has given supportive evidence that food is engineer of mental health. The survey taken among the university students revealed that meals have a large impact on mind and mood of students. Food controlled the mind of people. From all the previous literature and present study it can be concluded that food will directly influence the mood of man.

References

1. Li, Ye, et al. "Dietary patterns and depression risk: a meta-analysis." *Psychiatry research* 253 (2017): 373-382.
2. Jacka, Felice N., et al. "Western diet is associated with a smaller hippocampus: a longitudinal investigation." *BMC medicine* 13.1 (2015): 215.
3. McMartin, S.E., Jacka, F.N., Colman, I. (2013). The association between fruit and vegetable consumption and mental health disorders: Evidence from five waves of a national survey of Canadians. *Preventive Medicine*, 56(3): 225-230.
4. White, B.A., Horwath, C.C., Conner, T.S. (2013). Many apples a day keep the blues away – daily experiences of negative and positive affect in food consumption in young adults. *British Journal of Health Psychology*, 18(4): 782-798.
5. Hilimire, M., DeVyllder, J.E., Forestell, C. (2015). Fermented foods, neuroticism, and social anxiety: an interaction model. *Psychiatry Research*, 228(2): 203-208.
6. Evrensel, A., Ceylan, M.E. (2015). The gut-brain axis: the missing link in depression. *Clinical Psychopharmacology and Neuroscience*, 13(3): 239-244.

7. Gea, A., Beunza, J.J., Estruch, R., Sanchez-Villegas, A., Salas-Salvado, J., et al. (2013). Alcohol intake, wine consumption and the development of depression: the PREDIMED study. *BMC Medicine*, 11:192.
8. Niu, K., Hozawa, A., Kuriyama, S., Ebihara, S., Guo, H., et al. (2009). Green tea consumption is associated with depressive symptoms in the elderly. *The American Journal of Clinical Nutrition*, 90(6): 1615-1622.
9. Gomez-Pinilla, F., Nguyen, T.T.J. (2012). Natural mood foods: the actions of polyphenols against psychiatric and cognitive disorders. *Nutritional Neuroscience*, 15(3): 127-133.
10. Riebel, S.K., Davy, B.M. (2013). The hydration equation: update on water balance and cognitive performance. *American College of Sports Medicine's Health & Fitness Journal*, 17(6): 21-28.

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