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Nutritional Psychiatry: Benefits and Challenges



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ABSTRACT

Nutrition plays a pivotal role in the spectrum of mental disorders. Nutritional psychiatry is an upcoming branch in which special emphasis has been put on the role of nutrition in prevention and management of psychiatric disorders. There has been scientific evidence that balanced diet plays a key role in wide array of psychiatric disorders ranging from dementia, depression, ADHD, anxiety and Schizophrenia. The role of nutrition in emotional regulation has also been proved. Neurotransmitters play a pivotal role in maintenance of mental health. Amino acids which are derived from our food are necessary for proper function of the brain. The aim of current review is to discuss the importance of nutrition in the prevention and treatment of psychiatric disorders as well as to propose a way forward after discussing the benefits and challenges that can come up in the future.



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1. INTRODUCTION

Since time immemorial, diet and nutrition has played a very significant role in the maintenance of an individual's overall health. Since the beginning of 18th century, mental health has been a topic of rigorous discussion and research. But a major part of the 18th & 19th century was spent in debunking the myths related to psychiatric disorders and mental health. At the advent of the 21st century, intellectuals realized that the concept of health simply cannot be limited to a disease free state. In 1948, WHO defined health as "A state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity". With this concept, it became apparent that the mental or psychological aspect of health also plays a very significant role in maintenance of health and quality of life. Physical health is a very strong indicator of overall mental health and vice-versa. Furthermore, in 1984, WHO redefined Health as "The extent to which an individual or group is able to realize aspirations and satisfy needs and to change or cope with the environment". With this revised definition, it became evident that the psychological aspect is very important for the maintenance of positive mental health.

With time, it became understood that psychotherapy does not always receive the expected outcomes. As a result, other interventions are receiving increased attention. In recent years, the focus has also shifted from curative to preventive with special emphasis on nutrition. Certain researches have already proven that nutritional interventions have psycho protective potential. (1)

In Nutritional psychiatry, diet is characterized by the high intake of vegetables, fruit, whole-grains, nuts, seeds and fish, with limited processed foods. (3)

The brain operates at a very high metabolic rate, utilizing a large proportion of the body's energy and nutrient intake. The structural and functional components of the brain are dependent on amino acids, fats, vitamins and minerals as well as trace elements. The antioxidant system operates with the support of nutrient cofactors and phytochemicals. The functioning of the immune system is influenced by diet and other lifestyle factors. Repair mechanisms are also highly influenced by nutritional factors. (2)

Appropriate planning of diet given in the right way with right amount is said to enhance neurotransmitter activity, which undoubtedly improves cognitive efficiency. Logically, food quality and intake has a tremendous impact on function of the brain. (4)

However, despite its role as the foundation of physiological processes, nutrition as a factor in promoting positive mental health (or working against it) has suffered from scientific neglect. (2)

2. BENEFITS

A myriad of systematic reviews and meta-analyses have established that diet and mental health are inter-related. (4) The effect of diet and nutrition on mental health has been established by some epidemiological studies and proven with the help of interventional studies. (1)

Diet rich in vegetables, fruits, mushrooms, and fish have been associated with a decreased risk of suicide. (5) Specific elements of the diet have also been linked to a decreased risk of depressive symptoms. (6)

Moreover, Mediterranean diet results in better cognitive outcomes and a reduced risk of dementia. (7, 8)

A study conducted in epileptic children undertaking ketogenic diet proved reduced frequency of epileptic seizures under fasting conditions, which indicate towards the fact that alternative sources of energy can prove to be beneficial. It is also indicated that the gut micro biota also play a role in individual's response towards stress. (3)

The consumption of micronutrient especially minerals and vitamins has been associated with less aggression and better emotional regulation in children. (4)

A recent meta-analysis showed that high intake of refined sugar and saturated fat increases hyperactivity, in spite of the protection provided by diet rich in vegetables and fruits. (9)

Furthermore, it's been proven that deficiencies of various nutrients, primarily vitamins, decrease cognition. (10)

3. CHALLENGES

The biggest challenge for the rise and establishment of Nutritional Psychiatry as a sole therapy in the treatment of psychiatric disorders is in producing comprehensive and consistent scientific evidence in favor of the claim regarding the role of diet and nutrition in maintenance of mental health. The existing research has proven positive relationship between effect of diet on maintenance of mental health or otherwise, but the extent to which it has an effect is still questionable. With current knowledge, it is difficult to discuss the extent of effectiveness of nutrition in treating mental disorders. Before we decide to make any concrete claims, rigorous scientific evidence is needed. Therefore, it is quite evident that the establishment of diet and nutrition as a sole therapy for curative as well as prevention of psychiatric disorders faces some inherent challenges. (1)

It has already been emphasized that Nutritional psychiatry diets are characterized by the high intake of vegetables, fruit, whole-grains, nuts, seeds and fish, with limited processed foods. However, there is still significant challenges in defining a healthy diet, as many cultures have diverse dietary patterns which are still healthy. At the base of all these diets are some common factors which are likely to be significant contributors to the observed results. (3)

On one hand, monitoring of intake of specific components of diet is a very cumbersome task. Dietary patterns amongst individuals and groups of individuals vary. On the other hand, rigorous awareness is needed about the food components in order to make the initiative feasible.

Also, when the components of food are taken into consideration, absorption and metabolism of these components depends on many factors. Every individual's physiology as well as personal preferences will need to be taken into account if dietary intervention is to be considered and planned. Furthermore, maintenance of consistent course of intervention is quite difficult. The extent to which diet has an effect is very difficult to assess. One factor that has to be kept in mind is that the confounding factors in case of dietary considerations are more. (1)

Stress is also one factor which is said to affect out mood and act as a predisposing factor to depression and other psychiatric disorders. In the present times, when majority of the global population is under moderate to severe stress, it becomes imperative as well as challenging to

tackle such confounding factors. Hence, in addition to diet, stress management will also play a very pivotal role in keeping the situation in check. (4)

To also note, substantial research has been carried out to establish a relationship between nutrition and depression, but nothing can be said about the impact on severe mental illnesses like anxiety and bipolar disorder. (3)

The proportion of mental disorders is significantly high in the population as well the corresponding economic burden. The therapeutic aspect of the treatment is dominated by psychotherapy but these interventions are not sufficient to handle the disease burden.

Therefore, it is imperative that additional strategies are required for preventive and therapeutic purpose. (11)

Also, methods to estimate people's dietary intake are difficult. There are chances of measurement errors, both, in diet as well as assessing the mental health of individuals. (12)

With increasing urbanization and modernization, the use and exposure towards heavy metals like lead and mercury has increased tremendously. It has already been proven that repeated and sustained exposure to these heavy metals have grave impact on neuro-muscular development. With humongous use of processed food articles all over the world by people of all age groups which has increased the exposure to heavy metals multifold. The preservatives used in processed food articles to increase their shelf life pose a grave threat to mental health of individuals. (4)

4. A WAY FORWARD

There is now a need to understand biological pathways which mediate the diet-mental health link. Earlier, the focus was on understanding the inflammatory and oxidative stress but recently the focus has shifted to intestinal permeability and gut micro biota. Such nutritional psychiatry researches can play a role in neurodevelopmental and neurodegenerative disorders. Additionally, there is a need to promote clinical and population level dietary strategies. One way to go forward is the development and incorporation of nutraceuticals as an adjunctive therapy in the treatment of mental disorders. One challenge in incorporating nutraceuticals is general misconception that supplements can have same or even better effect

as diet. But there is no substantial data in favor of role or effectiveness of supplements in management of mental disorders. (12)

Also, in order to protect and prevent from the harmful exposure to heavy metals, alternatives have to be found which could tackle or decrease the aforesaid effects. A study reported that Niacin, folate, vitamin B6, vitamin B12, phospholipids, cholesterol, omega-3-fatty acids play a protective role against the heavy metals. Rising global burden of psychiatric disorders have made it mandatory to look for alternative and effective treatment modalities which will assist in handling the disease burden. Nutrition has already been proven to play a crucial role in mental health. (4)

5. MATERIALS AND METHODS

Several online searches from PubMed, Google Scholar, MEDLINE, and Research Gate has been used for collecting the relevant information.

6. RESULTS AND DISCUSSION

Since preliminary research is already underway to establish the extent to which nutrition can be incorporated in the management of psychiatric disorders but the existing data is still insufficient to form make any authentic claim. Further evidence based extensive scientific research is needed if any concrete claim is to be made about the impact and the extent to which nutrition is to be incorporated in the management and prevention of psychiatric disorders as well as maintenance of mental health. A sense of urgency is needed to bring more efficiency and strength to the process of determining the ways in which overall dietary patterns and specific nutritional elements can influence mental health.

7. CONCLUSION

Nutritional psychiatry without any doubt is an upcoming hot shot in the field of psychiatry. Its importance and relevance in providing better solutions to the psychiatric disorders cannot be undermined. It took the medical fraternity a very long time to realize the scope of nutrition in psychiatry. Though the researches have gained momentum, but it is still in preliminary stage. A wide array of confounding factors has to be kept in mind in order to effectively incorporate nutrition in the field of psychiatry. Further scientific evidence is needed to recognize and utilize its full potential by the stakeholders.

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