

## Intake of fruits and vegetables is essential for mental well-being among children

According to the World Health Organization (WHO), around 10–20% of adolescents worldwide suffer from mental health issues, and this is rising now. It has also been proven that half of all mental health problems develop by the age of 14. Potential causes for this include social and economic compulsions which result in children living with their parents for an extended period of time, thereby delaying the sense of autonomy in them, social media influences and the difficulties of modern school culture. Given the importance of adolescence in a person's life, finding solutions to safeguard or improve mental wellness in children and young people is essential. Although adult and adolescent well-being are comparable, they are not equivalent. Children are still growing, and several aspects must be considered while assessing their well-being. The Centers for Disease Control and Prevention (CDC), USA, defines what it means for children to be mentally healthy as: 'Being mentally healthy during childhood entails achieving developmental and emotional milestones, as well as acquiring appropriate social skills and how to deal with challenges. Children who are mentally healthy have a higher quality of life and can perform well at home, school, and in their community.'

A recent study<sup>1</sup> by researchers from University of East Anglia, UK, explores the connection between nutrition and children's mental well-being, and reveals that youngsters who eat more fruits and vegetables are more likely to have better mental well-being than those who eat less of the above. Nutrition, according to the researchers, is a modifiable factor at both the individual and societal levels, and has a significant impact on health throughout one's course of life. It is intricately involved in the development and normal functioning of the body, and thus has the potential to affect both physical health and mental well-being.

In the above study, the researchers have gathered data from more than 50 schools in the UK, including elementary, secondary and further education colleges; 1253 primary school students aged 5–11 years, and 7570 secondary school students aged 12 and 16 years. The Warwick–Edinburgh Mental Well-being Scale was utilized by the researchers for secondary school pupils, and the Stirling Children's Well-Being

Scale was used for elementary school children. They studied the mental health by asking individuals to rate how often they experienced feelings such as 'I've been feeling confident about myself', or 'I've been feeling appreciated'. The overall score was computed by summing the points for each statement, with a higher score indicating better mental health in a youngster. The students were also asked about their age, gender, health, living circumstances and negative experiences (such as being harassed or experiencing arguments or violence at home), as well as what food they generally ate. This was significant because, rather than focusing just on diet and well-being, the researchers were able to include additional aspects that might influence a person's well-being score. They found that the association between a healthy diet and improved mental health persisted, even after accounting for all of the other factors.

Improved fruit and vegetable intake was related with higher mental well-being scores in the secondary school group – approximately 8% higher for those who ate five servings every day compared to those who consumed none. It was also observed that the participants' well-being score differed based on the style of breakfast or lunch they ate. When compared to secondary school students who ate a customary breakfast (such as cereal, toast, or a cooked meal such as eggs), those who did not have any breakfast had an almost 6% poorer mental well-being score. Those who solely drank energy drinks for breakfast had an almost 7% lower sense of satisfaction and those who did not eat lunch had comparably low scores than those who did. These correlations were also seen in primary school students. The study also discovered that, on average, four students in a class of 30 would have nothing to eat or drink before school, and three would have nothing during lunch. They also observed that just 25% of secondary school students consumed five or more fruits and vegetables per day, with one in ten having none. Even without the relationship to mental health, these data are alarming, as undernutrition is likely to have an influence on the academic performance as well as growth and development of students. While more primary school students ate breakfast and lunch, they consumed less fruits and vegetables.

To put the findings into context, not eating breakfast or lunch had the same negative effect on mental health as youngsters experiencing frequent arguing or violence at home. According to the findings, excellent quality nourishment should be offered to all children and young people in order to boost mental wellness and help them attain their full potential. In contrast, the influence of nutrition and dietary choice is less clear; however, there is some possible biological foundation for the link between improved food quality and mental well-being. On a fundamental level, adequate nutrition is necessary to provide the building blocks for normal development and function of the body in both adults and children, including cell growth and replication, DNA synthesis, neurotransmitter and hormone metabolism, and optimal nutrition is especially important for brain development in children. The brain develops faster than the rest of the body throughout early life, making it more vulnerable to nutritional shortage serving as a rate-limiter. Dietary consumption also has a direct impact on a variety of biological processes, such as oxidative processes, inflammation and immunity, and brain signalling molecules. An unhealthy diet correlated with increased inflammation is important, because systemic inflammation is often higher in patients with depression; and high-fat, high-sugar dietary habits affect proteins that are essential for brain development, such as brain-derived neurotrophic factor, the concentrations of which have been shown to correlate with the severity of symptoms in patients with depression. Public health initiatives and school policies should be implemented to guarantee that all children have access to high-quality nourishment both before and throughout school, in order to improve mental health and enable them to reach their full potential. Not only is it difficult to get and consume fruits and vegetables, as well as specific meals in general, but there is also the issue of acceptability. Children who are still learning to enjoy or even try new meals might be quick to dismiss fruits and vegetables. Here, kid-friendly dishes might be helpful, assisting them in meeting the standards.

1. Hayhoe, R., Rechel, B., Clark, A. B., Gummerson, C., Smith, L. S. J. and Welch, A. A., *BMJ Nutr. Prevent. Health*, 2021; doi:10.1136/bmjnph-2020-000205.

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