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Chapter 3

The role of diet in health, wellbeing and achievement

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Abstract

Food plays a fundamental role in people's health, well-being and achievements. This article will seek to show the relationship that diet has with chronic diseases, mental health, cognitive performance, physical performance and productivity. A balanced and healthy diet provides the fuel necessary for the body to function optimally. Speaking first of its relationship with health, a good diet can control or even prevent diseases such as obesity, diabetes, cardiovascular diseases, among others. On the well-being side, a good diet influences our energy and vitality, improves body composition and reduces stress and anxiety. With respect to achievements, a balanced diet influences cognitive performance, which leads to concentration, memory and learning. It also helps in physical performance which influences our motivation and productivity. We must take into account the importance that eating a good diet deserves, since it is closely related to positive aspects that human beings seek for their development and provide optimal results in their daily lives.

Keywords:

Nutrition; well-being; achievements; health: diet.

Introduction

Chronic diseases can be prevented with a healthy diet, since the fundamental basis is the balance of plant foods with foods of animal origin. Eating habits and physical activity favor the reduction of morbidity profiles in people (Cena and Calder, 2020). Diet plays a fundamental role in people's health, because when it is not adequate, chronic degenerative diseases and metabolic risks are presented, such as high blood pressure, high blood glucose, high cholesterol, overweight, cancer, cardiovascular diseases, diabetes mellitus, obesity and obesity (Moreira et al., 2014). Hence, diet and nutrition are coming to the forefront and the scientific evidence on counteracting diseases throughout life is growing. More importantly, dietary plans and regimens can determine whether or not a person suffers from the aforementioned diseases (Løvhaug et al., 2022). In addition, dietary strategies should not only aim to ensure health for all but should also promote the consumption of adequate amounts of foods that make up a healthy diet as a whole. This chapter presents an analysis of the most important aspects of diet and the health status of the population.

Nutrition and chronic diseases

The relationship between diet and the prevention of diseases such as obesity, diabetes, cardiovascular diseases and some types of cancer. Chronic diseases, also called non-communicable diseases, require a long-term diet plan. They are currently a global problem that, according to the WHO, cause 40 million deaths (Torres, 2022). There are multiple diseases related to or caused by poor nutrition, whether in quantity, excess or defect, or poor quality: anemia and atherosclerosis, some types of cancer, diabetes mellitus, obesity, high blood pressure, vitamin deficiency, malnutrition, endemic goiter, bulimia nervosa, anorexia nervosa and/or vigorexia. Certain diseases that affect the small intestine can cause improper absorption of nutrients, such as undiagnosed and untreated celiac disease and Crohn's disease (Pfeiffer, 2017).

The role of essential nutrients in disease prevention. Many common diseases and their symptoms can often be prevented or alleviated with a certain diet; For this reason, nutrition science tries to understand what are the specific dietary aspects that influence health (Rizzo et al., 2016). In all food groups, especially fruits and vegetables, we can find essential nutrients such as vitamins and minerals. Low consumption of these can cause deficiencies that can alter our system and cause diseases. For example, a good consumption of fruits provides us with antioxidant vitamins such as vitamin C, which promotes high blood pressure. Vegetables

are of great importance due to the contribution of many vitamins, minerals and dietary fiber that help prevent colorectal cancer (Angulo and Mendez, 2024).

Nutrition and mental health

The relationship between diet and mental health, including depression, anxiety and stress. It has been shown that our eating habits can reduce or increase the risk of having disorders such as depression, anxiety and stress. For example, processed foods and drinks have colorings that impact our psychological well-being, for example, tartrazine, carmoisine, allura red, sodium benzoate and sunset yellow in high doses cause changes in mood, they can also cause hyperactivity and attention deficit in children which can cause them to have a delay in learning (Sasaki, 2017). Also, weathering foods that cause inflammation also have an impact on mood, due to systemic interaction and brain functioning.

The role of essential nutrients in mood regulation.

There are more and more studies that show that diet is essential for better control of mental health diseases, all foods contain nutrients with functions that help us in our mood, for example, it has been shown that vitamin B12 in low concentrations affects the neurotransmitters of the brain, so our moods can be low, it has been shown that in patients with depression, anxiety and stress a deficiency of vitamin B12 was found and an improvement was seen when including it as a supplement, however, this does not mean May this be the replacement for the treatment of any disorder (Pastor, 2023).

Nutrition and cognitive performance

It has been shown that adolescents with obesity problems have had poor cognitive performance in subjects such as mathematics and language. Also the lack of the first meal of the day, which is breakfast, affects the correct functioning of the central nervous system due to the synthesis of neurotransmitters. (González, 2021) People who live in the Mediterranean normally follow the Mediterranean diet since it is rich in fruits, vegetables, cereals, legumes, dairy products and fish, generates satiety with a low calorie intake and accompanied by physical activity. This diet will help with better memory, academically we will be able to have better retention of information and it will not deteriorate over the years (Vasquez et al., 2022).

The role of essential nutrients in regulating brain function

Our body mainly needs carbohydrates, lipids and proteins. If we want to regulate our brain functions, we must have a balanced diet. If we do not have it, we will have nutrient deficiencies that can affect us. That is why we must highlight the importance of carbohydrates, since it is the main reserve source of our body, 50% of what we consume goes to our brain mainly for energy purposes. Proteins are made up of amino acids that are important to consume through the diet since the body cannot synthesize them on its own. An example is serotonin, which is a neurotransmitter that is synthesized from the amino acid tryptophan. Low levels of this are related to a decrease in learning, reasoning and memory. With lipids we have the example of Omega-3, which stands out in cognitive development, visual memory learning and auditory function (González, 2021).

The relationship between diet and physical performance

Through a correct eating plan we can obtain significant improvements in our performance, as well as in our recovery. Greater intensities and duration can be obtained during training. If we obtain the necessary nutrients in our diet we will obtain an optimal state of health, both performance and recovery are more effective and the body responds better to unexpected loads (Diller and Thompson, 2019).

The role of essential nutrients in regulating muscle function and endurance. Essential nutrients include proteins, carbohydrates, fats, vitamins and minerals. Proteins are essential for the growth and repair of muscles, carbohydrates provide energy and fats are also important since they provide us with satiety and help us with muscle health. Consuming sufficient amounts of these nutrients before and after exercise helps repair and strengthen muscles, resulting in a reduced risk of injury (Madden et al., 2021).

Food and productivity

The relationship between diet and productivity.

In our daily diet, it is essential to have all the food groups in adequate and sufficient proportions during the day for our body to function correctly. By not following this healthy lifestyle, we run the risk of facing cardiovascular diseases, such as diabetes, obesity and hypertension, and normally people who suffer from any of these conditions have complications and problems that prevent them from

having better productivity (Martínez, 2021). The World Health Organization (WHO) assures that by having a healthy lifestyle, which involves having a balanced diet and exercising regularly, a person can increase their productivity by 20%, performance, physical and mental well-being, as well as reduce the risk of cardiovascular diseases (Aucapiña and Becerra, 2023).

The role of essential nutrients in regulating energy and motivation.

As mentioned previously, the amino acids that we obtain through proteins are essential for the correct functioning of the neurotransmitters in our body. Some examples of neurotransmitters are: Dopamine, mainly participates in our memory, motivation, attention and cognition and Histamine also helps us with motivation and to have a state of alert (Segura, 2021). The energy we obtain is thanks to macronutrients (carbohydrates, lipids and proteins) since the body is not capable of synthesizing it on its own, that is why we must consume adequate quantities to obtain better energy. Furthermore, if we do not have a good supply of these macronutrients we can have deficiencies that will cause us diseases and, most importantly, lack of energy and motivation, this will prevent us from continuing with our daily activities. We must not forget micronutrients (vitamins and minerals) are also a fundamental role for our metabolism, for example, B complex vitamins help the conversion of nutrients to energy, magnesium helps produce cellular energy, a poor diet causes deficiencies of these micronutrients and as a consequence can cause lack of energy that appears as fatigue and lack of concentration (Reyes, 2023).

The relationship between diet and the immune system

The immune system is made up of cells, tissues and organs that together have the function of protecting the body from diseases and infections. All of this is made up of immune cells, and for these to function they require energy from all the micro and macronutrients that we obtain from our diet. A dietary deficiency leads to alterations in our immune system and an increase in contracting infections, which is why it is extremely important to include all varieties of groups in our daily diet, 45-55% should be made up of carbohydrates, 15-25% foods of animal origin and 25-35% and it is also important to maintain good hydration, our body will reserve the nutrients obtained from these groups in the adipose tissue which secretes hormones and cytokines. that participate in immunological activity (Sunardi, 2021).

However, following these nutritional indications does not ensure that we are completely immune to a disease because no food alone can prevent or cure diseases. However, it must be emphasized that a healthy and balanced diet is of great help to promote the functioning of the immune system (Trucco, 2021).

Table 1. Nutrients and compounds that help the immune system

Nutrient	Function	Reference
Vitamin A	Helps white blood cells identify pathogens.	Barker, 2023
Vitamin C	Helps treat respiratory infections	Alberts et al., 2025
Vitamin E	Protects body tissue from free radicals (unstable molecules that damage cells, tissues and organs)	Barker, 2023
Vitamin D	It proliferates cells with the purpose of protecting against foreign agents.	Rebelos, Tentolouris, and Jude, 2023
Vitamin B12 / Folic acid	Helps in the production of immune cells	Barker, 2023
Vitamin B6	It helps in the production and communication of immune cells, as well as metabolizing antibodies	Barker, 2023
Prebiotics	Maintain the integrity of the intestinal lining (villi)	Trucco, 2021
Zinc	Helps produce new immune cells	Razzaque & Wimalawansa, 2025
Copper	Participates in the development, growth and maintenance of the immune system	Razzaque & Wimalawansa, 2025
Selenium	Participates in the production of red blood cells	Razzaque & Wimalawansa, 2025
Iron	Maintains healthy immune cells	Razzaque & Wimalawansa, 2025
Glutamin	It has a function in various immune cells such as macrophages and neutrophils	Trucco, 2021
Omega-3	Regulates inflammatory processes and acts on immune cells.	Trucco, 2021

Source: own elaboration

Conclusion

This chapter provides an overview of good nutrition and its beneficial effects on health. A balanced diet helps to significantly reduce chronic diseases. Minerals are vital to health because they play essential roles in maintaining the functions of most body systems, so excessive supplementation should be avoided to prevent toxicity or adverse health effects. Vitamins will be important therapeutic considerations for various physiological functions.

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El papel de la dieta en la salud, el bienestar y los logros

O papel da dieta na saúde, no bem-estar e nas conquistas

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Resumen

La alimentación desempeña un papel fundamental en la salud, el bienestar y los logros de las personas. Este artículo tratará de mostrar la relación que la dieta tiene con las enfermedades crónicas, la salud mental, el rendimiento cognitivo, el rendimiento físico y la productividad. Una dieta equilibrada y saludable proporciona el combustible necesario para que el organismo funcione de forma óptima. Hablando en primer lugar de su relación con la salud, una buena dieta puede controlar o incluso prevenir enfermedades como la obesidad, la diabetes, las enfermedades cardiovasculares, entre otras. En cuanto al bienestar, una buena dieta influye en nuestra energía y vitalidad, mejora la composición corporal y reduce el estrés y la ansiedad. En cuanto a los logros, una dieta equilibrada influye en el rendimiento cognitivo, que se traduce en concentración, memoria y aprendizaje. También ayuda en el rendimiento físico, que influye en nuestra motivación y productividad. Debemos tener en cuenta la importancia que merece llevar una buena alimentación, ya que está estrechamente relacionada con aspectos positivos que el ser humano busca para su desarrollo y proporcionarle resultados óptimos en su vida diaria. Palabras clave: Nutrición; bienestar; logros; salud; dieta.

Resumo

A alimentação desempenha um papel fundamental na saúde, no bem-estar e nas realizações das pessoas. Este artigo procurará mostrar a relação que a alimentação

tem com doenças crônicas, saúde mental, desempenho cognitivo, desempenho físico e produtividade. Uma dieta equilibrada e saudável fornece o combustível necessário para que o corpo funcione de maneira ideal. Falando primeiramente de sua relação com a saúde, uma boa dieta pode controlar ou até mesmo prevenir doenças como obesidade, diabetes, doenças cardiovasculares, entre outras. No que diz respeito ao bem-estar, uma boa dieta influencia nossa energia e vitalidade, melhora a composição corporal e reduz o estresse e a ansiedade. Com relação às conquistas, uma dieta equilibrada influencia o desempenho cognitivo, o que leva à concentração, à memória e ao aprendizado. Ela também ajuda no desempenho físico, o que influencia nossa motivação e produtividade. Devemos levar em conta a importância que uma boa alimentação merece, pois está intimamente relacionada aos aspectos positivos que o ser humano busca para seu desenvolvimento e proporciona ótimos resultados em sua vida diária.

Palavras-chave: Nutrição; bem-estar; realizações; saúde: dieta.