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## Food, health and well-being

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### 2.1 Introduction

The concept of well-being, in existence since the 1950s, indicates that a human being must be considered as a whole, both physically and mentally. The “feel good” has become a way of life indicated as a method to prevent the development of diseases, according to the old motto for which “it is better to prevent than to cure”. This philosophy concerns various aspects of human life and primarily is based on a correct lifestyle, which combines healthy eating behavior and regular physical activity, while also covering psychological aspects and social implications (such as the relationship with the others). Today, the World Health Organization defines health not only as the absence of illness but rather as a “state of complete physical, mental and social well-being”, that is, to feel good and feel fit with oneself and with others.

### 2.2 Eating to feel good in a healthy lifestyle

People, like all living beings, derive from food the substances necessary for living and living well. The daily preoccupation of eating for survival has led, since the beginning, to an incessant search for food, since it has been shown that a well-nourished organism has the possibility to live longer, to resist diseases better, to procreate more easily thus prolonging the species. Eating is therefore essential. Today, fortunately, in the civilized world, a strict need to search for food does not exist (at least for most people); however, a proper way of eating is essential to keep healthy and perform normal daily activities. We do not just try to “survive”, as our ancestors did, but we tend to thrive, satisfying our desires and satisfying even non-material needs. Food thus acquires the values of a personal symbolism (of pleasure) and of social relationship with fellow members of one’s community.

The pursuit of well-being pushes the person to perform actions in daily living useful for that purpose: nutrition and physical-sporting activity, in this sense, constitute a very close union and are mutually interconnected. In fact, while on the one hand with proper nutrition the body has everything necessary for physical activity, on the other hand it allows to achieve and maintain a healthy body

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composition, which is a prerequisite for the well-being of the body and mind.

Proper nutrition rests on three main cornerstones: 1) use of safe food (from the hygienic and toxicological point of view); 2) diet (i.e., lifestyle), adequate in nutrients and possibly enriched with functional compounds; 3) correct eating behavior. Only if these three cornerstones are respected, nutrition contributes to health and well-being. In the absence of one or more of these factors, there is the risk of losing the state of health and of slipping more or less quickly towards an illness [1]. Leaving aside the first point (food safety), the relationship between food and eating, nutritional adequacy and eating behavior of individuals is outlined below.

## 2.3 Nutrition or eating?

“Nutrition” and “eating” are not synonymous, as Food Science studies have shown there is a complex relationship between food and the individual. One could say that “animals feed themselves, men eat” or in other words “eating is not just eating”. Hunger, appetite, sense of satiety at the end of the meal and sense of satiety between meals are different and important concepts in the regulation of food intake.

### 2.3.1 State of nutrition (or organ of nutrition?)

With nutrition, the substances that are necessary and indispensable (nutrients) are supplied to the organism in order to maintain health, to grow and to avoid the decay of the organism. Even if there is not a well-defined anatomical organ, such as the heart or muscles, quickly identifiable, it may be helpful to think of an “organ of nutrition”, (it would be better to talk about “nutrition apparatus”), which does not have physically distinct anatomical dimensions. However, it must be regularly maintained and safeguarded, as all the organs can get sick (causing illness) putting health and life at risk.

The organ of nutrition consists of nutrients and works for the presence of these. The 45 essential compounds must be introduced with food, as our body does not have the ability to build them in various ways. The foundation of these studies on essential compounds is the “Budget Principle”, which applies to each of these 45 compounds: in a nutshell the daily intake of nutrients with the diet must correspond to the body outputs (obligatory). If this principle is respected, then the balance will be achieved, otherwise in the absence of this simple rapport the

Budget may move away from the equilibrium point, going towards growth (positive balance) or towards a decrease (negative balance), with both situations compromising health and therefore life too.

Since the 45 nutrients appear in the body in different quantities (operationally we speak of macro- and micronutrients), it follows that changes in the balance of the former will have more or less gross repercussions on the structure of the organs, while for the latter (micronutrients/microconstituents, such as vitamins and microminerals), more sensitive methods are needed to detect scarcity or need. These methodologies obviously do not exclude more sophisticated techniques, in which the input (eating) is correlated with the output (excretion) (considered the “gold standard”). However, in practice these techniques are supplanted by others that are based on a different assumption: if the body’s content is balanced, it is the outflows (excretion) that determine the inflows of food and nutrients. The constant level (within established limits) of these nutrients therefore bears witness to a balanced budget condition.

For the chemical composition (in nutrients) there are specific tables elaborated by prestigious institutions, easily available on electronic form or in hard copy, which are updated periodically. The differences in the composition (or bromatological) values, which depend on various factors including the composition and origin of food, are never such as to affect the biological variability. Also, for this reason the variety of foods is a key principle in food choices.

## 2.4 Eating behavior and nutrition

There are many ways to eat and yet eating behavior has repercussions on how much is then consumed. We must eat calmly, so as to taste the food and feel the feeling of satiety (eating quickly does not allow, in fact, to control how much you eat). This becomes more difficult today at a time when everything is fast, from the place of work to the various activities of life. Eating while standing, walking and talking, causes the loss of the socializing and convivial dimension of a meal consumed at home with one’s family.

On the other hand, care must also be taken not to load the food with values and symbolisms that go beyond the fact that it must nourish us. If it is normal – precisely because of the symbolic meaning of food – to eat a little more on special occasions, one must not fall into the habit of gratifying oneself, however, always with food. Eating (a little) more what we like is also a means of overcoming a momentary state of discomfort; but if you exaggerate

with this consolatory behavior, serious health damage can result. In these cases, it is necessary to recognize the causes of the discomfort, understanding that one enters a vicious circle and, above all, not pouring on the food a meaning that it must not have.

Eating disorders are many and more or less known, such as anorexia [2], bulimia [3], uncontrolled nutrition, orthorexia (being obsessed with the quality and genuineness of food), vigorexia (being obsessed with physical and athletic appearance and therefore with the type of food admitted) and psychogenic obesity [4, 5].

## 2.5 Eating disorders

Various conditions increase the risk of a compromised nutritional state, as the daily introduction of food increases or more often decreases: the loss of the nutrient balance is accompanied by an alteration of the metabolic state of the individual (malnutrition). It should be emphasized that extreme variations appear visually, as alterations in the body composition and profile/image of the person make it clear to everyone the danger of this condition and the need for nutritional restoration. However, it should be remembered that some alterations, linked to mineral and vitamin imbalance, are still important even if more subtle and less easy to recognize as these situations can severely impact the well-being condition of those affected.

Caloric malnutrition (or more often protein-calories malnutrition) is a condition that not only affects the categories of subjects with psychiatric disorders, but it is the consequence of a reduced introduction of energy (calories) and/or proteins necessary to compensate for daily losses [6]. Faced with this situation, the body responds initially with an adaptation by reducing, for example, the activity of basic metabolic processes, as indicated by a lower level of thyroid hormones, or by improving the efficiency of intestinal absorption of some nutrients, and lastly by resorting to use the body's reserves. This condition of total, partial or variously modified fasting gradually reduces body weight which begins to become visually evident. The image of an individual with anorexia is similar to the sadly famous pictures of prisoners in concentration camps, reduced to skeletal appearance due to severe malnutrition. Alongside the obvious deficiencies, which affect the body image, other nutrients may be lacking partially or totally creating individualized situations, diagnosable with sophisticated biochemical techniques that document the deficiency of many, if not all, of the 45 nutrients.

Caloric malnutrition, due to reduced proteins (a clinical situation known as Kwashiorkor) or especially due to a reduction in protein-calories (a clinical situation known as Marasmus), compromises the person's health, affecting multiple organs and especially the cardiovascular system, whose failure is the ultimate cause of death. To prevent this extreme condition in the most serious cases, the 45 nutrients are administered directly intravenously, or through the Parenteral (Forced) Nutrition procedures.

The hidden malnutrition, on the other hand, represents a reduced supply of one or more micronutrients (minerals and/or vitamins) that apparently are not accompanied by a decreased intake of proteins and above all of energy (the subject can also appear normal or even overweight). These deficiency diseases, even if they do not reach such degrees as to lead to death, nevertheless compromise the functionality of all the organs and consequently contribute to the insufficiency of these organs. Even in such situations, it is obviously necessary to remedy the problem by replacing the missing nutrient, either by correcting the diet or by boosting it with supplements [7].

Malnutrition due to excess is the consequence of a food behavior that is characterized by an excess of food intake, of a different type and according to different methods that are not reported here but which are easy to perceive (haphazardly eating, bingeing, etc.). In this case we are faced with people who actually "eat more than they should".

Even in the presence of food surplus, the body initially puts in place defense mechanisms both reducing, where possible, the absorption of nutrients in excess and above all, but not always, increasing the outputs. This shows how the body has, within certain limits, the ability to maintain internal homeostasis by acting on the inputs and outputs in different ways depending on the individual nutrients. For example, for iron there is the possibility of increasing the percentage absorbed, but without being able to affect the increase in elimination. Therefore, the control of the iron balance occurs at the level of intestinal absorption. On the other hand, for others like sodium, its control occurs only at excretory level (kidney), with nothing on the absorption quota (sodium is almost completely absorbed). Even an excess of individual nutrients can be risky for health and for life.

In food behavior disorders, nutritional deficiency pictures accompany certain situations, such as anorexia nervosa, athletic anorexia, vigorexia, orthorexia, dieting, etc., while nutritional accumulation diseases (energy, fats, etc.) can be found in cases of bulimia nervosa, uncontrolled eating and psychogenic obesity [8].

## 2.6 Treatment: which therapy?

The therapy for malnutrition is obviously multidisciplinary and multidimensional (diet, physical activity, drugs and cognitive-behavioral therapy) [9]. In these cases, it is necessary to treat the person with malnutrition and not only malnutrition by itself! Neglecting the psychological aspects and focusing attention only on the physical-biological problems risks intervening only on the symptoms and ignoring the causes. Therefore, the first concern is to not underestimate the problem, thinking of being able to solve it without the intervention of an expert, or worse, not to recognize it at all. The identification of malnutrition by defect or excess is the first step, which immediately follows the identification of a

true path of re-nutrition that is presented as a food re-education aimed at correcting the most harmful aspects.

Times, methodologies and counseling, of course, are not standardizable, as therapy should be individualized. An optimal approach avoids being too hasty in imposing the correct feeding, but rather looks to establish since the beginning a few and simple rules that can produce, in the end, a satisfactory result on both the physical and the behavioral level. By proceeding step by step, it is possible, on the one hand, to avoid rapid changes in body composition, which the patients may live as compromising their body images, and, on the other hand, it is possible to avoid pursuing impossible objectives, both theoretical and ideal.

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