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STRESS AS A FACTOR DETERMINING FOOD CHOICE

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Abstract

Stress is an inherent part of life. It accompanies people in many everyday situations, regardless of gender or age. It is inevitable because everyone faces some challenges and problems that need to be solved. The source of stress may be a promotion or demotion at work, financial problems, health problems, too few or too many tasks, silence, noise, lifestyle changes, lack of purpose or multiple goals, fatigue, wedding or loss of a loved one, and many other situations.
In many cases, stress has a negative impact on the human body, affects the perception of the world and self-esteem, and contributes to various diseases. It is associated with pain, fatigue and the inability or problems to cope with a situation. However, it should not be perceived only as a bad and dangerous situation that should be avoided at all costs, because it is inherent in human life and its functioning. It is a normal reaction of every organism, a physiological phenomenon related to life processes. In certain situations it is a natural phenomenon, and it appears as a kind of tension. What is important is how a person deals with his or her own feelings. Learning how to respond skilfully to stress is very important because it is not the stress itself that is dangerous, but the response it triggers.
There is a strong connection between stress and eating. Stress can be a trigger that stimulates the desire to eat food. Food, however, can become a temporary relief, a way to cope with a crisis situation. It can become a way of dealing with stress. The aim of the study was to analyse the impact of stress on nutrition. It was hypothesized that stressful situations cause a decrease in appetite while changing eating behaviour.
In the course of the research, an online survey was used, i.e. posted on an external server. Respondents had access to it via their individual Internet address.
Conclusions: (1) Emotions occurring in difficult situations and causing tension contribute to changes in eating behaviour. (2) The relationship between stress and nutrition is not the same for everyone. (3) Stressful situations most often result in a decreased appetite and reluctance to eat.

Key words: stress, diet, food

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Introduction

The modern understanding of stress is the result of the interaction between external and internal factors [1]. The creators of the Polish definitions of stress include: J. Reykowski, T. Tomaszewski and J. Strelau. J. Reykowski is the creator of the first Polish monograph on psychological stress, which was defined as the relationship between external factors and human characteristics and reactions to these factors. A similar definition was provided by T. Tomaszewski, replacing the term stress with a difficult situation and adding that a necessary condition for the occurrence of a difficult situation is the moment of disruption of the balance between the above-mentioned elements [1]. The topic of imbalance was also taken up by J. Strelau, who defines stress as a state during which a person feels strong emotions, characterized by feelings such as anger, anxiety, fear, helplessness, which are responsible for the formation of stress in the body when a person is not able to control them. This leads to numerous biochemical and physiological changes that disturb homeostasis and affect a person's mental balance and physical condition[2].

Stress coping strategies are constantly changing cognitive and behavioural efforts aimed at managing specific external and internal demands that a person feels is taxing or exceeding his or her resources [3]. R.S. Lazarus and S. Folkman indicate two functions of such effort:

1. reducing unpleasant tension and 2. acting to solve a problem [3]. In their opinion, a person can cope with stress through confrontation, self-control, distancing, assuming responsibility, seeking social support, escape and avoidance, positive re-evaluation and planning to solve the problem. The most effective ways to solve a stressful situation include problem-oriented strategies such as:

1. planning a solution to the problem,
2. active coping with stress
3. seeking social support.

These are positively associated with adaptation, self-esteem and good health. A person in a stressful situation may also choose strategies based on emotions. These include:

1. denial
2. consumption of psychoactive substances,
3. withdrawal,
4. disorganized behaviour and seeking emotional support
5. positive re-evaluation [4].

Lazarus and Folkman developed an integrated model of coping with stress. They distinguished two types of cognitive assessment:

1. primary assessment, which consists in a subjective assessment of whether a stimulus is a stressor
2. secondary assessment, which means taking actions to deal with the situation and the source of stress [3].

In this way, they defined two strategies for coping with stress: task-oriented and emotionally oriented.

There is an increasing number of studies confirming the influence of food on mood and emotions [5]. Excessive food consumption is becoming more and more common as a result of emotions. Emotions influenced by environmental stimuli may have the ability to stimulate the body to crave the consumption of a given product that could reduce emotional tension [5]. However, emotions do not trigger one specific behaviour. They may vary depending on the person and emotional state.

The influence of emotions on the quality and quantity of food consumed may be caused by two mechanisms. The first mechanism involves eating foods that are consistent with emotions. Its main feature is that positive emotions increase the desire to eat, motivate people to eat, and people feel pleasure from eating. In turn, negative emotions reduce the motivation to consume food. The second mechanism is based on the relationship between food consumption and the emotional state [6].

The way a person eats and the nutritional status of his/her body before and during a stressful situation also affects the way one fights stress. An increase in the secretion of stress hormones reduces magnesium levels, which in turn may lead to heart rhythm disturbances and increased neuromuscular hyperexcitability manifested by tremors and muscle pain as well as mental and physical fatigue. When a body is under stress, antioxidants (especially vitamins C and E) are also reduced, which contributes to the weakening of the immune system and increases the body's susceptibility to diseases [7].

Objective of the work

There is a strong connection between stress and eating. Stress can be a trigger that stimulates the desire to eat food. Food, however, can become a temporary relief, a way to cope with a crisis situation. It can become a way of dealing with stress.

The aim of the study was to analyse the impact of stress on nutrition. It was hypothesized that stressful situations cause a decrease in appetite while changing eating behaviour.

Material and methods

In the course of the research, an online survey was used, i.e. posted on an external server. Respondents had access to it via their individual Internet address.

The prepared research tool was made available for research via the social networking site Facebook.pl on March 7-19, 2022. After collecting a sufficient number of questionnaires, they were checked for data completeness.

The study covered a group of 100 people, mostly women (66.6%).

The age of the respondents varied. The largest group were people aged 31-35 (24%), followed by those aged 26-30 (17%) and 36-40 (16%). People between 41 and 45 years of age constitute 12% of the respondents, between 46 and 50 - 11%, and those over 50 and under 25 - 10% each.

Most of the respondents live in larger towns. More than 1/3 of them declared that their place of residence is a large city. A significant proportion of respondents also lived in small towns (27%) and villages (25%). The smallest group were people living in rural areas (14%).

Result

Coping with stress is a very important element of an individual's functioning. An appropriate response minimizes its negative impact.

Tab. I. Form of coping with stress through eating, taking into account socio-demographic characteristics (%)

	Yes	**No**
Sex		
Female	23	77
Male	6	94
Age		
Under 25 years	10	90
26-30 years	24	76
31-35 years	21	79
36-40 years	17	83
41-45 years	18	82
46-50 years	20	80
51 years and more	0	100
Place of residence		
Village	16	84
Suburban areas	14	86
Small town	19	81
Big city	18	82

Women are most likely to reach for food products in stressful situations. Almost 23% of this group deal with negative emotions in this way. In men this percentage is 6%. In the case of other socio-demographic characteristics, there was no correlation with the choice of this method of dealing with negative emotions related to stress.

Gender differences may, however, result from socio-cultural conditions. Men are most often raised to be strong. In difficult situations, males are more likely to display assertive behaviour. They cope better with stress when it comes to reaching for food (they reach for stimulants more often). Women, on the other hand, are taught from childhood that they must be gentle. This is probably why they are more likely to exhibit passive behaviours.

Tab. 2. The impact of stress on appetite taking into account socio-demographic characteristics (%).

	Reduces appetite	**No influence**	**Increases appetite**
Sex			
Female	43	21	36
Male	49	27	24
Age			
Under 25 years	40	30	30
26-30 years	29	24	47
31-35 years	29	21	50
36-40 years	31	25	44
41-45 years	25	25	50
46-50 years	27	18	55
51 years and more	30	20	50
Place of residence			
Village	32	24	50
Suburban areas	21	14	65
Small town	37	19	44
Big city	26	24	50

Women are more likely to experience increased appetite as a result of stress than men. Among men, however, a higher percentage experience a reduction in the desire to eat or do not experience any symptoms related to eating. Women, therefore, cope with stress more often than men by changing their eating behaviours. It was also observed that with age, appetite increased more and more often under the influence of negative emotions. In turn, respondents from small towns and rural areas declared decreased appetite more often than others. Socio-demographic characteristics may be related to the intensity of appetite in difficult situations related to stress. Research confirms that the way people respond to stress is determined by many factors. The relationship between emotions and eating depends on genetics, the environment and the stage of life at which a given individual is.

Tab. 3. The impact of stress on appetite taking into account socio-demographic characteristics (%).

	Always	Very often	Sometimes	Rarely	Never
Sweets	12	19	17	21	31
Salty snacks	9	15	11	19	46
Fast food	9	15	8	4	64
Meat	7	18	4	3	68
Fish	0	1	2	2	95
Dairy	0	2	4	2	92
Vegetables	2	6	5	7	80
Fruit	4	9	5	11	71
Grain products	3	3	9	3	82

Stress causes the respondents to more often reach for products that are not healthy for the body. Sweets and salty snacks dominate the choices in stressful situations. Quite often, respondents also eat fast food and meat products. Consumption of these four products was always or very often mentioned by over 20% of respondents (sweets: always -12%, very often - 19%; salty snacks: always - 9%, very often 15%; fast food: always - 9%, very often – 15%; meat: always – 7%, and very often 18%). These products were also often mentioned as food that respondents sometimes or rarely consume in stressful situations. Few people are inclined to eat fish and dairy products in such situations. The situation is not much better in the case of cereal products, fruit and vegetables. These are not products that are consumed in difficult situations.

Stress is therefore related to nutrition and the choice of certain foods. This puts people at risk of various diseases, such as obesity or being overweight because the choice of meals is focused on processed, high-calorie products that are not healthy for the body. However, no significant relationships were observed between product selection and socio-demographic characteristics. Only in the case of gender were differences found. Women were more likely to reach for sweets, and men were more likely to reach for fast food and salty snacks. Hormones may influence this. In women, after eating sugar, the hormone of happiness increases faster, which can become addictive to the body.

Discussion and discussion of the results

Stress as the body's reaction to a specific situation can lead to many changes in its functioning. There is increased concentration and alertness, the body prepares for increased effort, blood is transported to the main muscles, and the heart rate incre-

ases. Strength, speed of thinking and movement increase. The body focuses on the functions it needs to survive. As a consequence, the final reaction to stress may take the form of general exhaustion or mobilization for action. Response models to it are determined by various factors. It is believed that each individual has a specific strategy for coping with stress. The differences result from genetics, perception of the situation and acquired adaptive skills. Some will choose task-focused, constructive and action-focused models, while others will choose negative forms of coping with stress. One of the important features of stress is its relationship with nutrition.

The primary role of consumption is to provide the body with the appropriate amount of energy and nutrients. However, it also increasingly serves other functions. One of them is regulating emotional states. Under the influence of certain emotions, a person may try to look for peace and relaxation. This is especially the case with negative emotions. Emotional eating then occurs, i.e. eating as a result of feeling specific emotions. Stress is a reaction of the body that leads to many extreme emotions, often negative, which translate into changes in the motivation to consume food.

Stress contributes to changes in diet. It also causes changes in the intensity of appetite by reducing or increasing a person's appetite. Studies have shown that stress more often reduces the desire to eat food products, although this is not a clear enough reaction to assume that this is how the majority of society behaves. A significant part of the research population also experiences increased appetite, especially women. Men, on the other hand, more often do not experience any changes in appetite under the influence of stress, which may result from the structure of the brain stem (the structure of the locus coeruleus in the brain stem, in women the dendrites are longer and more branched). The need for food under stress also increases with age. Regardless of socio-demographic characteristics, stress had the same impact on the choice of specific meals. In all groups, sweets and salty snacks were consumed much more often than other products, such as vegetables or fruit. Kozłowska et al. [8] believe that this may be due to other mechanisms responsible for inhibiting or increasing appetite. These may be separate from those responsible for food selection.

Each research study begins with the selection of an item which determines the purpose. The subject of research is the objects and phenomena about which the researcher intends to formulate statements [9]. It is a fragment closely related to reality, which, as an object of interest, is possible to experience empirically [10]. The subjects of research are objects or phenomena in relation to which the scientists want to conduct research [11].

The work uses the diagnostic survey method, which allows to determine the scope of the phenomenon, its level and intensity, and to assess it. The use of this method explained certain processes taking place in a community [12].

Australian researchers (Torres and Nowson) also reached interesting conclusions regarding the relationship between stress and emotions [13]. As a result of their observations, they noticed that in a stressful situation a person refrains from eating or starts eating, depending on the stressor and the activated stress axis. When the stressor is acute and sudden, the sympathetic nervous system axis (adrenal medulla) is activated. The consequence of this is abstaining from food. The body is mobilized to act quickly; blood flows from the organs to the muscles, and digestive functions are reduced. However, if stress is chronic, the hypothalamic-pituitary (adrenal cortex) axis is activated. Cortisol then increases and people reach for food to replenish energy reserves [7].

Moreover, in a stressful situation, a person experiences certain physiological changes: increased sweating, accelerated heart rate, abdominal cramps or weakness. They may be confused with the feeling of hunger. Some people do not notice the difference whether they feel like eating something or need to replenish their energy. The feeling of hunger is necessary for human survival. Appetite, however, is often confused with hunger during stress. This is closely related to the mental condition. All the more so because, as mentioned earlier, nowadays food does not only fulfil nutritional functions, it also satisfies psychological needs.

Stress is a symptom of the body's mobilization for action. Perceiving it from a specific perspective is important from the point of view of its impact on the individual. Most respondents believe that stress is an emotional state and a psychophysiological reaction of the body. It is much less often treated as a type of stimulus. In a sense, it can be understood this way because it stimulates action, but in fact it is a reaction to a specific stimulus, a relationship between external factors and the individual's reaction to a given situation. Few people perceive it as a disease. Stress is often treated as a civilization disease, called a silent killer. However, it should be clearly noted that stress is not a disease, but it has a huge impact on the development of many diseases.

The predominance of people whose appetite is reduced by stress over the number of people with increased appetite is not very significant. However, this requires additional, more detailed research. However, more clear answers were obtained in the case of choosing specific food products in stressful situations. Stress led subjects to eat sweets, salty snacks, fast food and meat more often than other products. Eating a meal rich in carbohydrates causes an influx of tryptophan into the brain and an increase in serotonin (stress increases the demand for serotonin and accelerates its breakdown). This gives a temporary feeling of peace without solving the problem. However, the body remembers choices and they are often repeated in the future, turning eating behaviours into habits that may become dangerous for the proper functioning of the body.

Conclusions

1. Emotions occurring in difficult situations and causing tension, contribute to changes in eating behaviour.
2. The relationship between stress and nutrition is not the same for everyone.
3. Stressful situations most often result in decreased appetite and reluctance to eat.

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