

DEPENDENCIES BETWEEN THE AWARENESS FOR HEALTHY NUTRITION PRINCIPLES AND THE DIETARY HABITS OF UNIVERSITY STUDENTS

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Abstract

The awareness of young adults for the principles of healthy nutrition is considered as the first necessary step towards applying them. The aim of this research is to determine the direction and extent to which awareness of the principles of healthy nutrition affects the healthy and eating behavior of young people.

The authors have conducted a survey with 148 healthcare students (46% female and 54% male) at Trakia University, Bulgaria. The empirical data was processed statistically with a social analysis software designed for social sciences studies: SPSS. The statistical analyses performed were mainly dispersion analysis (ANOVA), Pearson correlational analysis, etc.

75% of the respondents were familiar with the principles of healthy nutrition, yet hardly 32% of them applied them regularly. The study found that the statistically significant part of the respondents who were more informed about healthy nutrition were the younger and predominantly female. An interesting empirical finding established that there was no statistically significant impact of the awareness on the practical application of healthy nutrition principles to the life of young adults. The higher awareness was expressed in stronger correlations with the intentions of young adults to change their own weight, effectuate fasting periods and adjust their dietary habits. The students who claimed to have applied the principles of healthy nutrition in practice had a lower statistically significant body mass index (BMI) (normal and pre-obesity), much more rarely followed dietary regimes and were found in a statistically significant measure to aim at correcting their weight by up to 5 kg. They more often consulted competent peers or specialist coaches or nutritionists on dietary issues, consumed more fruit and vegetables, and less pastry and sugar foods. Contrary to all expectations, however, those who followed healthy nutritional regimes, according to their own subjective assessment, had a weaker interest

in the ingredients listed on food labels, compared to those who partially complied with healthy nutritional principles, consulted mainly the internet or aimed to reduce their weight by 10 to 15 kg.

The awareness for healthy nutrition strategies is not a sufficient factor when actually applying them to the life of young adults, regardless of the fact that they are following a healthcare course. Awareness campaigns for healthy nutrition will be more effective, if they are performed not only by specialists, but also by young adults who regularly practice healthy nutrition and have achieved notable results.

Key words: *Healthy nutrition, Dietary habits, University students.*

1. Introduction

Healthy lifestyle includes a number of components - healthy eating, physical exercise, a work and leisure regime, avoidance of smoking and opiates, environmental quality, etc. The awareness of these components is expected to impact their role in the life of people.

Nowadays, more and more young people show interest in healthy eating and try to follow its principles. Correct dietary regime is essential for good health and efficiency at work. An increasing number of young people realize that healthy eating does not necessarily mean vegetarian, vegan or restrictive diets. Correct nutrition is based on the awareness of the type of food, the way it is cooked, its calories and content.

Students are a specific group of young adults characterized by several indicators - due to their intense studies they often take less exercise, and suffer a psychological and emotional overload. Simultaneously, learning requires the consumption of nutritious food

that may supply the necessary energy intake, without compensating the empty calories in food. The intake of empty calories in teenagers (14 - 18 years old) is about 30.5 - 35.5% of the daily calorie ratio [1].

Obtaining information on the principles of healthy eating (PHE) from reliable sources is of key importance for building dietary habits in young people. Very often, due to their work overload students do not pay attention to the food they eat, although they know which foods are harmful or not.

On the other hand, the various media channels - television, internet and social media often show advertising of foods that can be characterized as harmful. These foods and drinks are rich in fats, carbohydrates, preservatives, and poor in fiber, vitamins or minerals, or have been prepared in an unhealthy way. Their taste, lower price, accessibility and wide distribution on the market turn them into a preferred choice of young people.

The same media channels may influence and encourage the behaviour towards healthy eating through various traditional cookery shows, advertisements, talk shows, debates, panel discussions, etc. [2].

Common impediments to healthy eating are lack of time, everyday stress, palatable qualities of high-calorie food, high cost of healthy food and easy access to unhealthy food [3].

There must be constant work on raising awareness in society of the importance of the balanced diet for a healthy life. To realize this aim, regular studies on changing eating habits of young people are needed [4].

For instance, even when good awareness of healthy eating can be seen in students, there are factors in their everyday life which do not facilitate the improvement of their dietary regime - lack of time and/or conditions for preparing food, stress and tension during studies and at the exams, worries about body weight, negative emotions, etc. [5, 6]. Also, very often food is chosen according to taste preferences [7]. Even in young people whose food intake on the whole respects the recommendations for healthy eating, an increased consumption of sugar and confectionery is commonly found [8].

Another problem for the health of young people that needs correcting is insufficient physical activity, even in the presence of relatively good dietary habits [9]. Sedentary lifestyle, combined with a low intake of fruit and vegetables, alcohol consumption and smoking have a negative impact on their health in perspective [10].

Because of that, students who have good knowledge

of healthy eating do not always choose healthy alternatives. Conducting studies to find the awareness level of students and identify lapses in their knowledge of healthy eating may guarantee good health and quality of life for many people in future.

Hence, the aim of the present study is to find dependences between the awareness of the principles of healthy eating and their practical observance/ application through some dietary habits of students.

2. Materials and Methods

An anonymous survey has been held with 148 students from medical majors from Trakia University - Stara Zagora, Bulgaria. 46% of the respondents were female, and 54% - male. The research instrument consisted of a questionnaire, containing 34 items, part of which divided into sub items. Three of the questions are open and emic, while the other 31 are Likert scale based. The questionnaire is constructed in three modules: awareness of the principles of healthy eating (PHE), practical application of PHE and demographic questions.

The statistical processing of the empirical data was performed using a social analysis software SPSS (Nursis, 1986). We applied main statistical analyses, such as dispersion analysis (ANOVA), Pearson correlational analysis, etc.

3. Results and Discussion

The two key variables in the study have been obtained through the questions "Are you aware of the principles of healthy eating?", and "Do you observe/ apply the principles of healthy eating?"

3.1 Awareness of the principles of healthy eating

A large majority of the respondents claim that they are partially informed about PHE (75%). None have expressed the belief that they have a thorough knowledge of them, while a quarter of them have no knowledge of PHE (Figure 1).

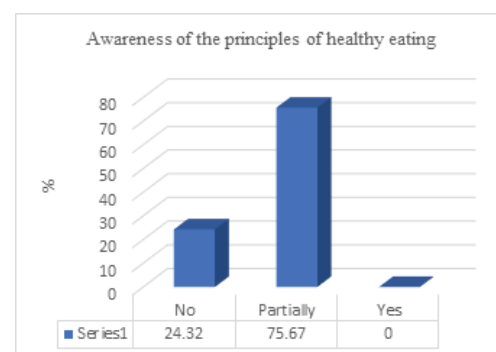


Figure 1. Awareness of principles of healthy eating

When applying ANOVA dispersion analysis and Pearson correlation analysis the higher awareness of PHE enters into stronger dependences with:

- Stronger intentions of young people to correct their own weight ($F = 10.22$; $p < 0.05$) in comparison to their weaker awareness (Table 1);
- Realization of periods of fasting with higher probability ($R = 0.45$; $p < 0.05$);
- Change in eating habits in the following directions: fewer meal times a day ($R = 0.36$; $p < 0.05$), increased consumption of fruit and vegetables ($R = 0.39$; $p < 0.05$), reduced consumption of pastries and sugar-rich foods ($R = 0.43$; $p < 0.05$).

It is apparent that the awareness of PHE presupposes healthier practices in some dietary regimes and habits of students, covered by the study.

At the background of these results, we can note the interesting empirical fact that dispersion analysis (ANOVA) does not establish a statistically significant influence on the subjective evaluations for awareness of PHE on the subjective claims for their practical observance/ application. Pearson correlations, however, show a weak, but statistically significant dependence between subjective opinions on the awareness of young people and their claims to have included PHE in their real life (0.28 ; $p < 0.05$). Additional studies on bigger samples are needed to prove this fact with a higher certainty.

A seeming contradiction between the subjective evaluations on the awareness and observance/ application of PHE shows a weak dependence. However, the dependence between the subjective evaluation on the awareness and eating practices is stronger and statistically significant. Perhaps this contradiction is due to the limitations of the study which bases its conclusions on the main variables of the subjective evaluations, not on the behavioral facts, which must be taken into consideration in future research.

The study found out that students who are more informed about the principles of healthy eating show a statistically significant tendency to be of younger age ($R = 0.35$; $p < 0.05$) and more often of female gender (R

$= 0.45$; $p < 0.05$), compared to students who claim that they are less aware of the principles of healthy eating – they are older and most often male.

Perhaps women have a statistically significant better awareness of PHE due to their innate higher social desirability, which according to some studies is the reason for higher statistically significant reduction of the calorie intake, compared to men [11].

In continuation of the above mentioned, it is interesting to trace the sources of information of young people in various aspects of healthy eating.

Similar to the awareness of other individually important goals [12], most often students receive information on healthy eating (Figure 2) on the internet (89.19%), from important others in their close friendship circle (51.35%), more rarely from their family (37.84%), TV (24.32%), and most rarely from school/ university (16.22%), specialists (10.81%), and others (8.11%).

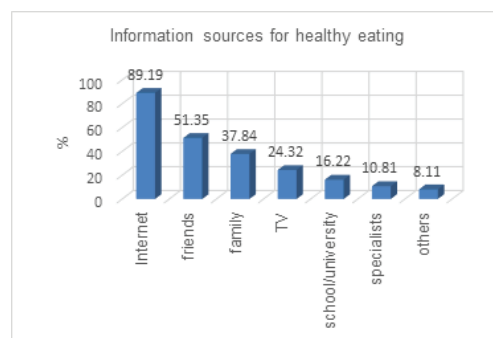


Figure 2. Information sources for healthy eating

The awareness of PHE, harmful and beneficial foods, various dietary regimes, etc. based largely on internet sources raises the following important question to contemporary society: what is the influence of different specialists, influencers, separate individuals, who have achieved visible results from keeping healthy weight and who are spreading their subjective, unreliable and at times harmful opinions on healthy dietary regimes? In such diverse and chaotic information pool people without medical training can hardly evaluate the reliability of sources.

Table 1. Impact of the subjective evaluations on the awareness and practical application of PHE on the desire for weight loss

Dependent variable	Independent variable/Factor	Degrees of the independent variable	Mean of dependent variable	ST DEV	F	p	t-test
Desire for personal weight loss	Awareness of PHE	No	3.33	0.57	10.22	$p < 0.005$	$t_{1,2} = 2.38$ $p < 0.05$
		Partially	1.90	0.72			
	Application of PHE	No	4.00		5.72	$p < 0.01$	$t_{1,3} = 3.38$ $p < 0.005$
		Partially	2.37	0.74			
		yes	1.60	0.54			

3.2 Observance of PHE

In comparison to PHE awareness, students' self-evaluations on the degree to which they observe/apply them does not show a markedly different trend. About one third (32%) of the respondents are certain to apply them in practice, whereas the majority of students claim to partially observe them during eating (Figure 3).



Figure 3. Observance of the principles for healthy eating

The correlation and dispersion analysis have found statistically significant dependences that students who have expressed their observance/ application of PHE:

- Have increased their consumption of fruit and vegetables ($R = 0.42$; $p < 0.05$).
- More often consult informed friends or specialist coaches or nutritionists on eating,
- Have a lower BMI ($R = -0.60$; $p < 0.05$), due to which they more rarely follow a dietary regime ($R = -0.62$; $p < 0.05$), and because of this they claim a weaker statistically significant intent for personal weight correction ($F = 5.72$; $p < 0.05$), compared to students who more rarely claim that they observe/ apply PHE (Table 1).
- Have reduced the consumption of confectionery ($R = -0.47$; $p < 0.05$), bread ($R = -0.35$; $p < 0.05$) or meat products ($R = -0.32$; $p < 0.05$).
- More rarely read the labels for food ingredients ($R = -0.55$; $p < 0.05$).

The latter can be explained with students' knowledge of healthy and harmful foods, which makes it unnecessary to inform themselves about food contents from the labels. In comparison, students who think that they rarely observe PHE tend to read the labels more often, which means that they probably try to obtain useful information.

On the whole, the data analysis has found that only 24.32% of the students always read food labels, whereas the majority (59.46%) only sometimes inform themselves about the content of food products. The smallest group is composed of students who never read the labels - 16.22%. The main reason for those who have chosen "sometimes" and "never" is the lack of time - 68.92%, the individual preference and liking

of the product, regardless of the label information - 66.22%, or knowledge of the contents of the product - 45.27%.

It is necessary to direct the attention of children and young adults to the importance of information, contained in the labels of food products since their school age. The legal authorities in each developed country require producers to provide a detailed description of the food content on the label, because in recent decades foods have included many additives and a higher amount of carbohydrates, fats, etc. in order to achieve a lower price, preferred taste, longer expiry date and possibility for long distance delivery of products.

Perhaps as a result from the wish to maintain healthy weight, the largest group of students have a normal BMI - 64.86%, below norm - 5.41%, pre-obese - 16.22%, and 10.81% have first degree obesity. It is plausible that only 2.70% have second degree obesity, and none has developed a third degree. In addition, the study has found that students have a realistic idea of healthy weight and 54.05% correctly determine their weight as normal. Students who have a second degree obesity claim that they want to lose 10 kg on average, whereas cases which require personal weight loss of 25 - 30 kg are rare.

It turns out that almost one third of the students (29.05%) have followed a diet, and a very big part have partially tried to stick to a dietary regime - 65.54%. This fact may be viewed as optimistic with respect to maintaining good health and healthy weight through diets and dietary eating.

As for dietary regimes, it turns out that more than half of the students - 59.46%, typically eat three times a day, 16.22% eat four times a day, 10.81% eat twice daily, and a very small part once daily (5.41%). These who eat more than four times a day are 8.1%.

Despite the established good knowledge of the list of harmful foods, unfortunately, almost 2/3 of the students often consume sugar-rich products - 64.86%, fried food - 58.78%, soda drinks 40.54%, and pastries - 37.84%. Fast food - 37.16%, crisps 35.14%, sausages - 24.32%, and margarine - 15.54% are also included in the dietary regime of the respondents, yet at a lower degree (the percentile total may be more than 100%, because respondents gave more than one answer).

Fruit consumption may be determined as a positive eating habit for 64.86% of all students, and vegetable consumption for 69.59% of them. Meat (for 27.03%) and dairy products (16.22%) are taken regularly by a relatively small group of respondents.

Another well adopted principle of healthy eating is the consumption of a sufficient amount of liquids. Daily water intake is encountered in the following distribution: 1L of water daily is taken by 16.7% of all students, 19.44% drink 1.5 L daily, 33.33% - 2 L per day, 13.89% take 3 L, 11,11% - 4 L, and 5.55% - more than 4 L of water daily.

Student campuses generally provide conditions for purchasing warm and freshly prepared food. The study shows that even though all students have indicated that they can reach a canteen nearby, only 30.41% have used it. The majority of students prefer to eat at home (89.19%), or to prepare their meals alone (43.24%). Fast food restaurants are preferred by 21.62% of the respondents, and take away meals from supermarkets are purchased by 18.92%. The fast pace and the overloaded schedule of healthcare students requires them to spend more time on learning and preparation, which for those of them who live without their parents and do not cook, means that they have a limited access to quality food.

Similar studies on the awareness and application of PHE and food selection behaviour by groups of people with specific characteristics can help research on motivation for eating behaviour and the development of strategies for promoting healthy eating [13].

4. Conclusions

- The results from the study show that young peoples' awareness of PHE is on the whole insufficient. Therefore, healthcare and educational institutions in Bulgaria need to emphasize and exert intense effort in developing strategies and implement various practices to promote healthy eating among the general public.
- In addition, it is necessary to create official reliable channels of information based on scientific proof both on the internet, in electronic media - TV and radios, and in curricula at educational institutions for various demographic groups. Thus, the chaos and malpractices encountered in the process of obtaining information may be overcome.
- In the study it was found that subjective evaluations of high awareness do not determine the subjective assessment of the high applicability of PHE to the personal life of young people, but they lead to a healthy change of the dietary regimes and habits. This fact directs to the following two hypotheses:
 - A. It is possible that limiting subjective self-evaluation may be overcome through studying dependences with behavioral facts, which must be considered in future research.
 - B. The importance of awareness for applying PHE may be increased by developing and promoting healthy alternatives to fast food, consistent with real life

conditions characterized by time deficiency, dynamics and stress. Such alternatives must replace in terms of palatability the widely and stereotypically preferred unhealthy foods, and make them financially accessible to young consumers.

- This might increase the motivation for healthy eating behaviour and PHE awareness, and significantly provoke their practical observance/ application.
- On the other hand, it is also necessary to direct the attention of children and young adults to the significance of the information contained on the labels of food products.
- The study adds information to the profile of young adults who are familiarizing themselves with and applying the principles of healthy eating. However, the question for the motivation which may enable the awareness to become an active application of PHE in the everyday life of people remains unclear.
- One of the main limitations of this study is that the analysis is based mostly on self-evaluations, which are often imprecise and non-systematic. Another limitation is the specifics of the respondents – healthcare students who probably have a more purposeful attitude to the problems of healthy eating compared to students from other majors and young people outside universities.
- To clarify the problem of healthy eating in young adults it is necessary to study more specific motives for the practical implementation of healthy eating practices and regimes under real life conditions.

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