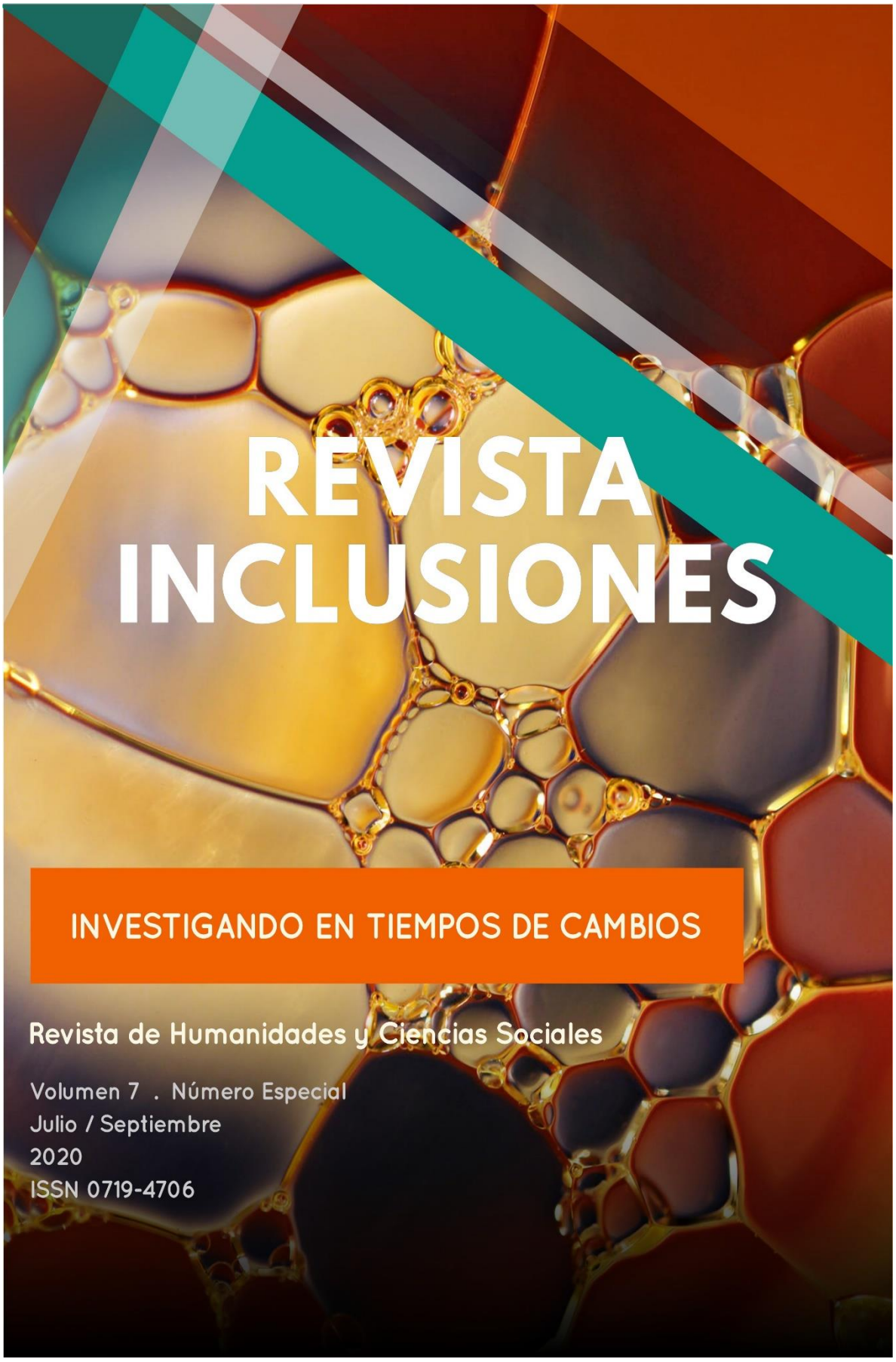

REVISTA INCLUSIONES

INVESTIGANDO EN TIEMPOS DE CAMBIOS

Revista de Humanidades y Ciencias Sociales

Volumen 7 . Número Especial
Julio / Septiembre
2020
ISSN 0719-4706

REVISTA
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REVISTA DE HUMANIDADES
Y CIENCIAS SOCIALES

CUADERNOS DE SOFÍA
EDITORIAL

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REVISTA INCLUSIONES
REVISTA DE HUMANIDADES Y CIENCIAS SOCIALES

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Revista Inclusiones, se encuentra indizada en:

BIBLIOTECA UNIVERSIDAD DE CONCEPCIÓN

REVISTA INCLUSIONES
REVISTA DE HUMANIDADES Y CIENCIAS SOCIALES

CUADERNOS DE SOFÍA EDITORIAL

ISSN 0719-4706 - Volumen 7 / Número Especial / Julio – Septiembre 2020 pp. 311-320

FOOD LITERACY AS A COMPONENT OF A PERSON'S ECONOMIC SECURITY

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Fecha de Recepción: 02 de mayo de 2020 – **Fecha Revisión**: 20 de mayo 2020

Fecha de Aceptación: 24 de junio – **Fecha de Publicación**: 01 de julio de 2020

Abstract

The study relevance is triggered by the need for the food formation literacy of the population as one of the main economic security conditions of an individual, which is especially relevant in modern conditions of increasing social and demographic threats. The purpose of the article is to study Russian and European practices in food literacy formation of the population, in order to develop recommendations for its improvement and testing. The leading method is the systematic or integrative method, which requires the analysis of economic, legal, medical and other prerequisites for the comprehensive competencies formation of students in the field of food literacy. As a result, it could be concluded that modern educational programs should meet the current trends, among which the vital one is healthy lifestyle and proper nutrition. Practical relevance lies in the possibility of using the training modules and programs to increase food literacy in higher educational institutions; in addition, the results of the study may be useful both to education specialists in the field and general public.

Keywords

Food security – Food literacy – Proper nutrition – Educational program – Student

Para Citar este Artículo:

Sausheva, Oksana; Lizina, Olga; Ilyakova, Irina y Fedonina, Oksana. Food literacy as a component of a person's economic security. Revista Inclusiones Vol: 7 num Especial (2020): 311-320.

Introduction

At present, ensuring food security is becoming an urgent task for the whole world: developing countries solve the problems of hunger and malnutrition, while the developed ones are concerned about high-quality and affordable nutrition. The need to ensure food security, related both to the food economic affordability for the population and the physical availability of quality nutrition, has long been recognized in the world. The right to food is one of the fundamental human rights enshrined in the international law. It is the right of any person to enjoy constant access to the production resources in order to receive or buy enough food, not only to prevent hunger, but also to maintain health and well-being. An important role in ensuring human food security is played by the availability of information about food, as well as the person's well-formed idea of proper and rational or optimal nutrition. In other words, this is what foreign studies call "food literacy".

A significant increase in nutritional diseases, which is a threat to economic security, necessitates the formation of knowledge about proper and rational nutrition among the population. Food literacy of the population, which means the availability of information and the possibility of obtaining new knowledge about food, is becoming a factor that largely determines the health of each person and the preservation of the nation's gene pool, etc. Ideas about a balanced diet should occur as early as high school years.

It must be noted that this problem should be considered as interdisciplinary. That is physicians are actively developing nutritional science. This is a scientific discipline specializing in the study of issues closely related to various aspects of nutrition[1]. Specialists in the agricultural sector improve the food quality by developing organic farming[2]. Economists study the financial aspects of the problem and its impact on the country's food and economic security[3].

Despite the actions taken by scientists and practitioners, the level of food literacy of the population remains quite low, which confirms an increase in the share of Russian citizens with a diagnosis of obesity. This is directly related to premature hypertension, atherosclerosis, diabetes and cancer. As a result, there is an increase in demographic and social threats, which ultimately creates a threat to national security. Russian obesity indicators are almost close to American, in five years, the number of overweight people in Russia increased by 30%. The share of Russians diagnosed with obesity from 2016 to 2017 increased by 6% and amounted to 1.3% of the population (i.e. 1.9 million people). Among children and adolescents under the age of 18, in Russia, the growth in the number of obese people at the end of 2017 was 5.3%, i.e. almost 451 thousand of children. Over the past five years, the share of obese Russians has grown rapidly by 30%.

Low food literacy of the population is actively exploited by business. The producers are striving to increase profits. However, it leads to the increased use of the so-called "problematic" innovations (food additives for increasing the attractiveness for customers,

[1] V. A. Tutelyan, "Evolyutsiya i revolyutsii na puti formirovaniya sovremennoy nutritsiologii. Integrativnaya i tsifrovaya nutritsiologiya kak blizhaysheye budushcheye", Nutrition Issues, Vol: 5 num 87 (2018): 21–22.

[2] Anna Shcherbakova, "Organicheskoye zemledeliye v Rossii", In the World of Scientific Discoveries, Vol: 4 num 9 (2017): 151–173.

[3] A.V. Ravino, "Printsipy i kriterii organicheskogo sel'skogo khozyaystva", Proceedings of BSTU. Series 5: Economics and Management, Vol: 1 num 196 (2017): 195–199.

increased shelf life, replacing natural raw materials with cheaper ones; food the poor, etc.), which negatively affect the population health and life expectancy[4]. Unfortunately, the problem is not sufficiently disclosed in scientific papers and it determines the relevance of this study.

Materials and Methods

Research Methods

While the research was conducted, a number of methods was used such as theoretical (i.e. analysis; synthesis; analogy method; modeling); diagnostic (i.e. testing; "case study"); empirical (i.e. the study of domestic and foreign pedagogical theory and food literacy practice); as well as mathematical statistics methods and results graphic representation.

Experimental Research Base

The experimental base of the research was the Federal State Budgetary Educational Institution of Higher Education National Research Mordovian State University named after Ogaryov N.P.

Research Stages

First stage: domestic and foreign studies theoretical analysis; the goal, tasks and research methods identified; target groups identified (i.e. economics students year four and five). Second stage: food literacy model formed; a list of competencies substantiated for assessing the food literacy level, which was also used as the basis for special educational modules for students (or introduced into existing ones); initial and final monitoring of food literacy level carried out; conclusions drawn from the results of the study. Third stage: experimental work completed; theoretical and practical conclusions clarified; results obtained generalized and systematized.

Results

Structure and Content of the Food Literacy Model

A number of developed countries, faced nutritional disease problem at the end of the 20th century. Seeing this, educational programs of food literacy have been actively promoted for the second decade. However, they are designed primarily for preschool and school children and almost none of them forms nutritional skills in students. For Russia, this problem is highly relevant, since the food literacy level of the population is very low, which poses a threat to the country's economic security. There is a significant number of studies on the formation of economic, financial, environmental literacy of the population, however, research on food literacy in domestic science is still lacking, despite its significance.

Systematic integrative approach gave basis for the food literacy model formation, which comes from the premise of the direct relationship between food literacy, food security and economic security of an individual (Figure 1). It was concluded that the formation of food

[4] A. E. Varshavskiy, Problemnyye innovatsii. Riski dlya chelovechestva. Ekonomicheskiye, sotsial'nyye i eticheskiye aspekty (Moscow: Lenand, 2014).

literacy should include comprehensive knowledge of all stages of the reproductive food process (i.e. production, distribution, exchange and consumption of food). The main competencies were identified, they will form the necessary level of food literacy. The created model demonstrated the distinctive features of food literacy formation in Russia and abroad. First of all, the greater importance of various food sources for the population of Russia (a significant amount of food comes from their own personal subsidiary farms). The mechanisms for reducing food poverty are also different. This model demonstrates that there is the relationship between the food literacy of the population with the food availability (through knowledge of what sources of food are available), with the economic food availability (knowledge of how much we can spend on food and how to optimize these costs), as well as with food and environmental safety (knowledge of what food consists of and what effect it may bring to one's health).

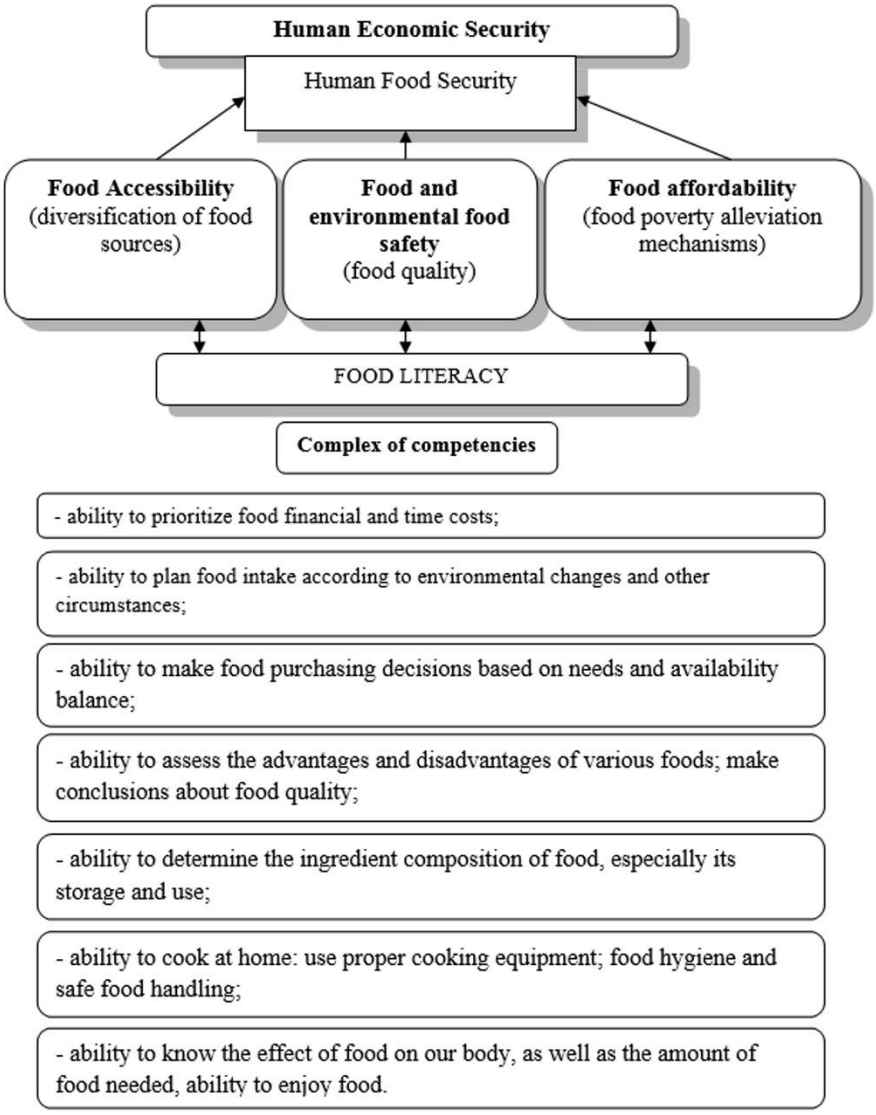

Figure 1
Integrative Food Literacy Model

Model Implementation Stages

The model effectiveness evaluation involved the following stages of experimental work:

- food literacy basic knowledge verification among target groups;
- development and implementation of educational programs such as "Economic Security of the Person" (module "Food Security of the Person") and "Food Security";
- food literacy formation among students while implementing the project called "The European Union: global foresight into accessible and quality food" within the framework of the Erasmus +: Jean Monnet Modules program;
- final testing and questioning of target groups to assess the food literacy competencies.

Food Literacy Result in Students

One hundred ninety economic security students (year four and five) of Mordovia State University were involved (i.e. nine groups). The first stage was entrance testing, which showed an extremely low awareness of students about balanced nutrition. The analysis of respondents' answers helped come to some conclusions. Firstly, despite the fact that the respondents knew the definition of proper nutrition (87.4% of correct answers) and stated that a) they could buy food of the desired quality (62.1% of respondents) and b) their income allowed to follow the good nutrition principles (76.6% of answers), almost a half of all respondents (47%) reported that they would increase the amount of food purchased in case of rising incomes. Secondly, 99% of respondents agreed that the food consumed affected the state of human health, however, only 60.8% of respondents paid attention to the purchased food "naturalness". Thirdly, despite the fact that the answers to theoretical questions were correct (students knew or worked out the correct answers, which indicates the problem solving potential), the practical implementation of this knowledge was quite low; in particular, 20.8% of respondents did not pay attention to the presence of food additives, and 34% did not do this systematically. Fourthly, only 18.3% constantly evaluated the content of protein, fats and carbohydrates in food, which also contradicted the assumption of a high level of nutritional literacy. It should be noted that this is quite strange due to the fact that 85.8% of respondents stated that their food was of significant benefit[5]. After two training courses, students received some information on issues like hunger as a global problem; food consumption as an indicator of life quality; food access improvement as the prioritized state task; rural areas sustainable development; food law of foreign countries; Codex Alimentarius as a global dialogue on food safety; modern innovative technologies in agricultural production (HACCP system); environmentally friendly food market development; food biosafety issues; the state and equal access to food[6].

[5] O. S. Sausheva; Gorin V. A. and Zemskova E. S, "Formirovaniye prodovol'stvennoy gramotnosti molodezhi v rossii i stranakh Yevropeyskogo Soyuza" Financial Economics, Vol: 6 num 10 (2018): 1216–1223.

[6] L. A. Kormishkina et al., Food Security: European Union Experience (Saransk: Mordovian State Pedagogical Institute, 2018) y L. A. Kormishkina et al., "Food security in the system of relations of the standard and quality of life," World Applied Sciences Journal, Vol: 25 num 11 (2013): 1536–1541.

In addition, within the framework of "The European Union: global foresight into accessible and quality food", some business games and round tables and were held, which made it possible to ensure the connection of the main level competencies (i.e. I know-I can-I use), which, according to project participants, it will contribute to youth involvement in food literacy. Active learning methods involving students in obtaining skills process, as well as "proper nutrition" and healthy lifestyle popularization, can be considered as the main directions for expanding the "healthy eating" lifestyle not only among young people, but also in more age-related groups.

Students' knowledge was tested at the end of the experiment; they had to answer some questions regarding their food literacy. The test results demonstrated a high level of food literacy. State participation is one of the key options in these processes. Russia is currently starting to formulate state projects aimed at promoting a healthy lifestyle, but it is necessary to involve not only schools, but also higher levels of education in disseminating these food literacy programs.

Further development of this research is of particular interest. Especially if it improves the skill assessing tools in the field of "healthy nutrition" as well as the search for the state participation most effective directions in nutritional literacy promotion. In this regard, foreign experience can be considered as one of the key trends in this area.

Discussion

The food literacy problem is highly relevant for many countries in the world. Prof. Donna Pendergast noted in her studies that at the end of the 20th century, educational institutions were reluctant to include training courses related to improving food literacy, due to the prevalence of "lofty topics" in universities, and on the other hand, due to stereotypical gender perceptions, i.e. as far as cooking was concerned, it was a purely female occupation, and there could be no science here[7]. However, the situation began to change gradually, and in 2009-2011 a two-year program with five pilot projects was implemented in Europe, which included the formation of food literacy competencies in young people aged from 5 to 16 years old regarding diet, active lifestyles and energy balance. This program has reached an agreed, relevant and accurate consensus to support everyone involved in food education. One of the most well-known studies in this field was carried out in 2010, when medical experts working on obesity epidemic consequences asked the public and universities to "provide a compulsory food literacy program" for students across the country. As previously noted, this "may be one of the best investments a society could make" [8]. This paper reports on an international study of nutritional literacy. Respondents from around the world answered a number of topic-related questions using an online survey; later that data was collected. Altogether, 1,188 respondents from 36 different countries shared their views. Among the main findings, there were differences in understanding the essence of "food literacy".

[7] Donna Pendergast; Susanne Garvis and Harry Kanasa, "Insight from the Public on Home Economics and Formal Food Literacy", Family and Consumer Sciences Research Journal, Vol: 39 num 4 (2011): 415–430, accessed March 21, 2020, http://doi.wiley.com/10.1111/j.1552-3934.2011.02079.x; D. Pendergast, and Yvonne Dewhurst, "Home economics and food literacy – An international investigation," International Journal of Home Economics, Vol: 5 num 2 (2012): 245–263.
[8] Alice H. Lichtenstein, "Bring Back Home Economics Education", JAMA, Vol: 303 num 18 (2010): 1857.

Let us single out several approaches to understanding this term. A number of scientists are exploring the concept of "food literacy" as a specific area of health literacy. In their works, the relationship between nutrition and disease prevention was studied, the nutrients value, "label reading" skills and proper diet skills[9]. Some scientists consider food literacy exclusively from a nutritional point of view. However, this problem is broader and more complex, including economic, environmental, medical and social aspects.

Despite approach differences, all researchers note the importance of food literacy. According to Louisa Ming Yan Chung[10], food illiteracy is one of the reasons for the significant number of chronic diseases cases associated with diet, and therefore there is an urgent need to improve food literacy in order to promote healthy eating in society.

Recent studies have highlighted the importance of developing skills and knowledge related to food and specific aspects of food literacy, as adolescents around the world prefer unhealthy fast food and convenience foods. Research in Australia has shown that nutrition-related skills improve diet and quality of life. Due to increased food literacy, people are more likely to take measures to improve the quality of their nutrition and the consumption of essential nutrients, which will favorably affect the level of food security[11].

Prof. Pendergast stated that the wrong choice of food and low quality diet are associated with a lack of understanding of what is used for food production, how to read food labeling information and the technology for preparing healthy and safe food[12]. Thus, the term "food literacy" was coined to address the issue of synthesizing the functional, interactive and critical aspects of the aforementioned knowledge, skills, transformation and empowerment which people collide with in a modern economy and environment [13].

Various food literacy approaches were generalized as part of the study in which a group of food experts and a group of young people aged from 16 to 25 years old studied food literacy; it all resulted in a new term being coined[14]. This new term of food literacy included eleven components, such as the ability to prioritize financial and time food expenses; to plan food intake according to changes in circumstances or environment; to make food decisions based on needs and available resources; to evaluate food advantages and disadvantages; to determine what food ingredients are and how to store and use them; to judge the food quality; to use proper equipment for cooking delicious food; to apply food hygiene and safe food handling; to understand the food on a body; to understanding a healthy portion size and enjoy food.

[9] Heather Gibbs and Karen Chapman-Novakofski, "Establishing Content Validity for the Nutrition Literacy Assessment Instrument", Preventing Chronic Disease, Vol: 10 (2013): 120267.
[10] Louisa Ming Yan Chung, "Food Literacy of Adolescents as a Predictor of Their Healthy Eating and Dietary Quality", Journal of Child and Adolescent Behavior, Vol: 5 num 3 (2017): e117.
[11] Elena T. Carbone and Jamie M. Zoellner, "Nutrition and Health Literacy: A Systematic Review to Inform Nutrition Research and Practice", Journal of the Academy of Nutrition and Dietetics, Vol: 112 num 2 (2012): 254–265.
[12] D. Pendergast and Yvonne Dewhurst, "Home economics and food literacy... y Donna Pendergast, Susanne Garvis and Harry Kanasa, "Insight from the Public on Home Economics...
[13] D. Pendergast and Yvonne Dewhurst, "Home economics and food literacy...; Donna Pendergast, Susanne Garvis, and Harry Kanasa, "Insight from the Public on Home Economics...
[14] Helen Anna Vidgen and Danielle Gallegos, "Defining food literacy and its components", Appetite, Vol: 76 (2014): 50–59.

Food literacy affects a person's ability to evaluate information about food choices, understand food labels, follow food safety precautions, use good cooking methods and apply nutritional guidelines. Seeing this, it is important that educators evaluate and improve youth's skills in food literacy. Stakeholders, including government, food producers, health care providers, educators and businesses, also have a role to play in ensuring food security for the population.

Most developed countries have a state policy implemented to control and improve food quality, the main areas of which include the Codex Alimentarius and the HACCP system. At the same time, modern science is conducting numerous studies to optimize the diet for the prevention of major chronic diseases. EU governments annually allocate funds to promote a healthy lifestyle and healthy eating. Infographic tools have become very popular, which take into account the national characteristics of the food pyramid, which visually shows the recommended amount of different foods. Within the framework of these programs, a great deal of attention is dedicated to improving the food literacy level of the population.

WHO studies suggest that malnutrition is a major threat to food security in Europe and Central Asia. The regional economic development results indicate important changes in the diet of residents. These changes indicate a shift in the diet towards the so-called western diet, i.e. a diet high in sweeteners and vegetable and animal fats and low in cereals. Following this diet inevitably leads to overeating and weight-related problems.

This problem is extremely relevant for Russia. It should be noted that in our country there are no food literacy studies, however there are a significant number of personal food security publications as well as on food safety, rational and proper nutrition. However, the relevance of the problem is recognized at the highest level.

The year of 2017 saw the "Formation of a Healthy Lifestyle" project approvement. Its implementation is aimed at increasing the number of citizens who are responsible for their health and leading a healthy lifestyle, including those who are systematically engaged various sports, reduce tobacco consumption, etc.; improving legislation in the field of advertising related to alcohol, tobacco, and poor nutrition.

The project stages are communication campaign implementation on healthy eating with manufacturing companies participating; increasing employers' responsibility for their employees' health; as well as citizens responsibility for their own health, etc. The project target group includes schoolchildren, parents and teachers, whose motivation is proposed to be increased, as well as employees of organizations and their employers. The priority project does not affect neither young people nor students. Meanwhile, students from 17 to 22 years gain their independence and often do not find time to think about their health and have something to eat on time.

The literature and educational practice analysis has led to the conclusion that the targeted formation of food literacy among students is not given due attention. Even the fact that students have theoretical knowledge about proper nutrition does not contribute to the observance of these rules in life. At the same time, the theoretical analysis and educational institutions experience showed that with some proper approach, students could successfully develop understanding the importance of good nutrition and a healthy lifestyle.

Conclusion

It was established that the food literacy formation among students will be successful if the development of competencies in this area is organized as a complex integrative process, covering all stages of the reproduction process, based on the use of various educational technologies.

The materials in this article may be useful for food security experts and university professors involved in interdisciplinary research in food literacy. The study practical significance lies in the possibility of using the developed training modules and programs to improve food literacy in higher educational institutions; besides, the study results may be useful both to education specialists and general public.

The research process aroused some new questions and problems that need to be solved. It is necessary to continue forming food literacy among various social groups.

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