

ABSTRACT
of the dissertation work of Doskabulova Daria Toleukyza
on the topic «The health of children and adolescents in the cities of Western
Kazakhstan and the development of measures to preserve and strengthen it»
for the degree of Doctor of Philosophy (PhD)
in the specialty 6D110200 – «Public health»

Relevance of the research topic

President of the Republic of Kazakhstan Kassym- Jomart Tokayev declared 2022 the "Year of Children". At the same time, the most serious attention is paid to the future of the younger generation, great hopes are placed on the youth. The state should create all conditions for the harmonious comprehensive development of boys and girls. The President stressed that in order to protect children and adolescents, the authorities should take concrete measures in the direction of healthcare, education, and social support. "The harmonious development and happy childhood of the younger generation is our national task," the head of state said. Preserving and strengthening the health of children and adolescents in the Republic of Kazakhstan is one of the most important urgent tasks that should always be in the spotlight.

In the strategy of the World Health Organization (WHO) – "Health 2020", the preservation of the health of the younger generation is an urgent, important, socio-economic and political problem. In the field of healthcare, the central place is occupied by solving problems related to the impact of social and environmental determinants on the health of children and adolescents. Determining the future workforce and demographic basis of the state, the health of children and adolescents is of particular importance. The problem of health, development of children and adolescents remains the most important state task of modern society. The formation of the health of children and adolescents is influenced by lifestyle, ecology, socio-economic, household factors that lead to the development of morbidity, and increase the burden on the services of the health system.

In this regard, the World Health Organization (WHO) supported the development and synthesis of an evidence base for the development of measures to improve the health of children and adolescents, identifying various non-medical determinants affecting their health. According to the methodology of Health Behavior in School-aged Children (HBSC), applied by the World Health Organization (WHO), currently in 51 countries, the correct formation of behavior, mental and physical health, the fight against bad habits is of great importance for providing effective policy programs and practices related to strengthening and improving the health of the younger generation, rational eating behavior, healthy social environment.

The dissemination of lifestyle risk factors for children and adolescents, which are a priority direction of the policy of forming a healthy lifestyle in the Republic of Kazakhstan, is an integral part of national research. Studies conducted by the National Center for the Formation of a Healthy Lifestyle and the National Center for Public Health revealed a high degree of overweight among children and adolescents in Kazakhstan. Studies conducted in many countries have shown high consumption of fats and trans fats, which leads to higher rates of obesity, lower life expectancy and

quality of life of people.

In order to identify the leading risk factors, it was important to conduct epidemiological studies to identify not only lifestyle and health indicators of children and adolescents aged 11,13,15 years, but also the morbidity of children and adolescents, assess the impact of adverse environmental factors on health, as well as the development of measures aimed at preserving and strengthening the health of children and adolescents. Moreover, such comprehensive studies have not been conducted in the Republic.

In this regard, in accordance with the methodology of the World Health Organization (WHO), it is important to identify the impact of some non-medical determinants on the health and well-being of children and adolescents aged 11,13,15 years living in the cities of Aktau, Aktobe, Atyrau and Uralsk of Western Kazakhstan; assessment of their health status, as well as the introduction of preventive measures aimed at preserving and strengthening the health of children and adolescents, which is the subject of this doctoral dissertation.

The purpose of the dissertation research - Is to develop measures to preserve and strengthen the health of children and adolescents based on a comprehensive study of the formation of the health of children and adolescents in cities of Western Kazakhstan.

Research objectives

1. To determine the impact of non-medical determinants on the health and well-being of children and adolescents.

2. To conduct a study of morbidity based on medical documentation of the study of the health of children and adolescents.

3. To assess the relationship between the index of atmospheric air pollution and morbidity among children and adolescents.

4. Develop and evaluate the effectiveness of measures to promote the health of children and adolescents.

Research methods

Analytical, informational-analytical, statistical, descriptive.

The object of the study

Cities of Western Kazakhstan: Aktau, Aktobe, Atyrau, Uralsk; secondary schools – 5,7,9 classes; children and teenagers 11,13,15 years old.

Subject of research

Determination of the influence of non-medical determinants, environmental factors, development and implementation of measures aimed at preserving and strengthening the health of children and adolescents.

The main provisions submitted for protection

1. Children and adolescents aged 11,13,15 years living in the cities of Western Kazakhstan have a number of systemic eating disorders in the form of irregular breakfast, insufficient consumption of vegetables and fruits, a tendency to unhealthy food, leading to a mismatch in weight and height indicators.

2. When studying the morbidity of children and adolescents aged 11,13,15 years, the first place is occupied by diseases of the respiratory system, the second - diseases of the digestive system, which became the basis for the development of

measures to strengthen the health of children and adolescents.

3. In most of the studied cities, the increase in atmospheric air pollution over 10 years (2012-2021) has the character of a steady trend. The Atmospheric pollution index (API) is largely associated with diseases of the respiratory system in children and adolescents aged 11,13,15 years, and also has a positive correlation with diseases of the digestive system.

4. Measures have been formed and implemented to create a School that promote the health of children and adolescents, namely: close interaction between teachers, parents and students within the framework of the established school Committee, educational trainings, preparation of basic and control questionnaires on nutrition, highly effective principles of healthy nutrition of students.

Description of the main results of the study

1. The nature of the assessment of non-medical determinants, according to the results of the HBSC questionnaire survey, showed a violation of the nutrition structure of adolescents. Eating disorders were associated with low levels of fruit and vegetable consumption among the study groups. In boys, a lower frequency of breakfast consumption and fruit consumption was revealed. The highest rates of fruit and vegetable consumption in the cities were - the city of Uralsk, then the city of Aktobe, Aktau and Atyrau. From the point of view of studying body weight, children and adolescents of the city of Uralsk are most satisfied with their body weight. In Aktau and Atyrau, the survey participants were also satisfied with their weight. Most of the children and teenagers of Aktobe consider their weight to be very low. At the same time, in the age aspect, overweight is observed in children aged 11 years of both sexes. Among 13-year-old children, compliance with WHO standards was revealed only in girls in Aktobe, the rest of the children of this age category were found to be overweight, regardless of gender. In male adolescents at the age of 15 years according to Aktobe and Uralsk have comparable values of compliance with WHO standards; girls are both overweight and deficient in Uralsk. Among 11-year-olds, both girls and boys have a slight increase in growth rates compared to the standards in all cities.

2 In the period from 2012 to 2021, according to ICD-10 (blood diseases, endocrine diseases, diseases of the nervous system, eye diseases, diseases of the respiratory system and digestive system), the incidence of the 6 most common classes was studied. A retrospective study of the prevalence of diseases among children and adolescents in all four cities of Western Kazakhstan over a 10-year period revealed the following dependencies: the first place is occupied by diseases of the respiratory system, the second place is occupied by diseases of the digestive system, the third place is occupied by eye diseases, the fourth place is diseases of the blood system, the fifth place is diseases of the nervous system, the sixth place is endocrine diseases. There were no significant differences in the incidence rate among boys and girls.

3. The use of correlation and regression analysis showed the presence of dependence of morbidity on the quality of atmospheric air. It was found that in all cities except Uralsk, the tendency to increase the index of atmospheric air pollution (API) prevails during the study period. According to the results of correlation analysis in children of all age groups in Aktau, the dependence of API with

respiratory system diseases and endocrine diseases was revealed; in children aged 13 years in Aktau and 11 years in Atyrau, closer relationships of the API indicator with diseases of the blood system were revealed; in children aged 13 years - with endocrine disorders in Atyrau; in children aged 13 years in Aktobe and Aktau - with diseases of the digestive system; in 15-year-olds - with diseases of the nervous system. Regression analysis also revealed statistically significant dependences of the morbidity rate on the index of atmospheric air pollution in children and adolescents of the studied cities: - the incidence of endocrine diseases among 11-year-old children living in Aktau; among 13-year-old children with diseases of the respiratory and digestive systems. In general, based on the results of regression analysis, it is possible to predict with caution a further increase in this incidence with an increase in API.

4 Evaluation of the effectiveness of the School's health promotion activities, tested among children and adolescents aged 11, 13 and 15 (grades 5,7,9), allowed the development of motivational activities for Committee members. Conducting training activities contributed to changing the eating behavior and eating habits of students: the regularity of breakfast consumption increased; the daily consumption of fruits and vegetables increased; the consumption of fast food decreased; the consumption of sweets purchased in stores decreased; the consumption of carbonated drinks decreased. The implementation of measures by the Committee made it possible to improve interaction in the school environment on student nutrition. Awareness of healthy eating has increased. The future needs for the continuation of the functions of the Committee related to the involvement of an additional specialist nutritionist, as well as further improvement of the motivation of students and teachers on improving health literacy are identified. In general, the School, which contributes to improving health, allowed students to competently form a healthy diet, thereby proving its effectiveness.

Justification of scientific novelty. For the first time:

A comparative comprehensive analysis of the health status of children and adolescents aged 11,13,15 years living in the cities of Aktau, Aktobe, Atyrau and Uralsk of Western Kazakhstan, taking into account the influence of non-medical determinants and environmental factors on morbidity, was carried out.

It has been established that technogenic environmental pollution associated with the tendency of deterioration of atmospheric air quality is closely related to the health indicators of children and adolescents aged 11,13 15 years.

In Western Kazakhstan, the effectiveness of the event based on the creation of a School to improve health literacy among students based on the introduction of behavioral characteristics, eating behavior of children and adolescents aged 11,13,15 years, as well as motivational nature in the field of healthy nutrition by teachers, parents and students has been tested and proven.

Practical significance of the results obtained

The assessment of the impact of non-medical determinants on children and adolescents made it possible to prepare comprehensive measures to improve the educational process in schools, preserve and strengthen the health of children and adolescents. Assessment of the state of atmospheric air pollution in the studied

regions made it possible to identify their impact on the health of children and adolescents, to propose the development of sanitary and hygienic measures.

The school for improving the educational process, which promotes the health of schoolchildren and increases literacy in the field of nutrition, has been introduced in schools of the West Kazakhstan region. According to the results obtained, the system of monitoring the health and quality of life of schoolchildren can become an additional element contributing to the further development of state policy in the field of protecting and strengthening the health of children and adolescents and can be used in the implementation of regional health development programs.

It is advisable to develop programs aimed at improving the psychological and social health of children and adolescents at school bases by combining efforts in this direction of teachers, parents and schoolchildren themselves.

Characteristics of atmospheric air quality and indicators of morbidity in the regional aspect provide prerequisites for improving the effectiveness of sanitary and hygienic and environmental monitoring. There is a need for interdepartmental actions aimed at preserving and strengthening the physical, mental, and social health of schoolchildren and improving their health literacy.

Personal contribution of a doctoral student

The doctoral student independently analyzed domestic and foreign sources of literature on the topic of the dissertation work. During the research work, she conducted a questionnaire on the study of the behavior of school-age children and adolescents in relation to health in the cities of Aktau, Aktobe, Atyrau and Uralsk of Western Kazakhstan. Conducted a comparative analysis of the incidence of children and adolescents. Assessed the impact of atmospheric air quality on the health of children and adolescents. On the example of a comprehensive school, a School model has been developed and tested that promotes the health of students. Conducted statistical processing. All sections of the dissertation, goals, objectives and research programs, collection and processing of material, the main provisions of the dissertation, conclusion and practical recommendations are formulated and presented by the doctoral student independently

Conclusions:

1. The examined children and adolescents had a violation of eating behavior and nutrition culture. 6.5% of boys and 6.0% of girls do not eat breakfast, the structure of fruit and vegetable consumption is not rational. At the same time, the majority of respondents consume them 2-4 times a week. Excess weight is observed in 11-year-old children of both sexes in all cities, except for girls in Aktau ($p < 0,05$). In terms of growth indicators, there is also a discrepancy with WHO standards. Among boys aged 13 and 15, there is a certain growth deficit ($p < 0,034$). In general, there is no standardized system of epidemiological surveillance of childhood obesity among primary school students in the Republic of Kazakhstan, and it should be organized locally.

2. A study of the prevalence of morbidity among children and adolescents in all four cities of Western Kazakhstan over a ten-year follow-up period revealed that diseases of the respiratory system took the first place, diseases of the digestive system took the second place, and eye diseases took the third place. Teenagers in Aktau and

Aktobe have high rates of average annual growth in endocrine disorders from 6.1% to 12.5%.

3. In all cities of the region, with the exception of Uralsk, the trend for further API growth prevails. The strongest correlations with API indicators (at the level of $R \geq 0.7$, $p < 0.05$) were revealed in children of all age groups from Aktau with respiratory diseases; in children of all age groups from Aktau with endocrine diseases. At the same time, the dependence of the incidence of endocrine diseases on API among 11-year-old children living in Aktau (R^2 0.61, p 0,038) was established. API dependence with respiratory and digestive system diseases was established among 13-year-old children (R^2 0.72, p 0,001; R^2 0.69, p 0,001). In general, it is possible to predict with caution a further increase in the incidence of these classes of diseases in Aktau with an increase in API.

4. The measures developed to create a School that promotes health promotion have contributed to changing the eating habits of students: in all three classes. Regular breakfast consumption increased by a third ($p < 0.001$), daily fruit consumption by students improved by 49.0%, consumption of fast food and carbonated drinks decreased ($p < 0.05$). The awareness of schoolchildren about the diet, including the consumption of proteins, carbohydrates, fiber and fats, has increased. The students themselves began to actively participate in the school environment, where, cooperating with the work of the Committee, they began to work on improving the organization of nutrition. The implementation of measures by the Committee made it possible to improve the relations of children and subspaces in the school environment.

Approbation of the results of the dissertation

The main results of the study were discussed at the cathedral meeting, in the joint scientific problem commission of the West Kazakhstan Medical University named after Marat Ospanov, and also reported at international conferences: 1. "Internationalization of continuing medical education. A look into the future " April's Science Week" was presented at the III International Scientific and Educational Conference of ZKMU named after M. Ospanova, the journal "Panminerva Medica" Indexed by BIOSIS Previews, Current Contents, Clinical Medicine, EMBASE, PubMed, MEDLINE, Science Citation Index Expanded (SciSearch), Scopus (Impact Factor 2,102). - Aktobe, 2019; 2. VIII International Scientific and Practical Conference "Topical Issues of Medicine and "The Second Satellite Forum on public health and health policy". - Azerbaijan, Baku, 2019; 3. "Modern medicine: a new perspective and current research". International Scientific and practical conference of the ZKMU named after M Ospanova. - Aktobe, Medicina (Kaunas);57 (Supplement 2):29, 2021.

Publications

A total of 17 scientific papers have been published on the topic of the dissertation. Scopus (Elsevier) and Web of Science (Clarivate Analytics) data articles in the International Journal Open Access Macedonian Journal of Medical Sciences for the nearest issue (E-ISSN:1857-9655).-2020.-Site Score-0.7.-Percentage-49 – 1; Articles in journals recommended by the Quality Assurance Committee in the field of education and science of the Ministry of Education and Science of the Republic of

Kazakhstan – 3; Abstracts at international scientific and practical conferences - 3; Scientific articles and abstracts – 4; Methodological recommendations – 1; Acts of introduction of research work - 4; Certificate of entry of information into the state register of rights to objects protected by copyright – 1.

Implementation of research results

The developed measures to assess the effectiveness of the school's activities that promote health promotion contributed to improving health literacy among students on the example of secondary school No. 72 in Aktobe. Methodological recommendations on the topic have been developed: "Balalar men zhasospirimder densaulygyn nygaituga zhane tagamtanu salasy boyynsha sauattylygyn arttyrugy ykpal etetin Mektep" (A school that promotes the health of children and adolescents to improve nutrition literacy) in the Kazakh language. Methodological recommendations were approved by the Educational and Methodological Council of the West Kazakhstan Medical University named after Marat Ospanov (Protocol No. 4 of 07.04.2021). Certificates of implementation were received from school No. 28 of Aktau, school No. 72 of Aktobe, school No. 22 of Atyrau, School No. 1 of Uralsk. A certificate of entering information into the state register of rights to objects protected by copyright has been obtained.

Scope and structure of the dissertation

The dissertation consists of the content, definitions, designations and abbreviations, introduction, literature review, research methods and materials, research results and discussions, conclusion, used literature and appendices. The dissertation work is 142 pages of computer skin. The structure consists of 38 tables and 104 figures. The list of references is 140, 36 domestic, 39 Russian, 65 foreign scientific articles. The applications were registered at the end of the dissertation.