

ORIGINAL ARTICLE

PRIORITY RECOMMENDATIONS FOR SOLVING THE PROBLEM OF CHILDREN OBESITY BASED ON THE RESULTS OF THE RESEARCH

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ABSTRACT

The aim: Of the work was to study and evaluate the risk factors and the level of primary medical care for children with overweight and obesity.

Materials and methods: A sociological survey was conducted in main (413 persons) and control group (396 persons) and the copying from the history of the child's development (f.112/a) of 280 obese children was conducted.

Results: It was defined that on the development of excess weight in children and adolescents, biological and social and hygienic factors had a significant impact ($\eta \geq 3\%$; $p < 0,001$) and that the level of primary medical care for obese children (proved diagnosis of obesity in the history of the child (f. №.112/a) had only $61,7 \pm 2,7\%$ of patients) was insufficient.

Conclusions: Identification of comprehensive priority activities for solving problem of children overweight and obesity based on the results of conducted research were done.

KEY WORDS: obesity, children, risk factors, medical care

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INTRODUCTION

Relevance, the problem of obesity is that the number of overweight people is progressively increasing. This growth is 10% of their previous number for every 10 years. It is estimated that if this trend continues, then by the middle of the next century the entire population of economically developed countries will be obese. This, in turn, will lead to the fact that the material costs that have to be borne by the health care of various countries in connection with obesity and its complications will increase significantly [1-6]. However, it should be noted that the most alarming situation is an even greater increase in overweight and obesity among children and adolescents than among adults, which further exacerbates this problem for public health and poses a threat to the next generation.

This rapid increase in this epidemic is associated with an increase in the availability of food and a decrease in physical activity of the population. In addition, foods high in fat and sugar are among the cheapest. Obesity can be seen as a disease and as a consequence of modern civilization. Children and adolescents prefer unhealthy food and are overly addicted to such achievements of humanity as TV, computers, etc. They have no time, and often no desire, for moderate to vigorous physical activity necessary for the normal growth and development of a child [2,3].

Despite such a pronounced problem, the current state of obesity treatment remains unsatisfactory. It is known that most of those in need of treatment cannot start it because of fear of the need to follow a monotonous half-starved diet for a long time. Most of those who started treatment do not manage to achieve normal body weight, and the

results achieved are often significantly less than expected. In most patients, even after successful treatment, there is a relapse of the disease and restoration of the original or even greater body weight [5].

Therefore, one of the priorities of the healthcare system is to improve medical assistance for such patients on primary level.

THE AIM

The aim of this research was to study and evaluate the risk factors and the level of primary medical care for children with overweight and obesity.

MATERIALS AND METHODS

The following methods were used: data copying, sociological, statistical, and analytical. The main sources of information in the study were the responses of children aged 9 to 17 years and their parents, who were the main (413 persons) and control group (396 persons) and data from the history of the child's development (f.112/a) of 280 obese children. The conclusion of ethical commission of KhNMU recognized methods of investigation adequate for such kind of research.

RESULTS

Identification of risk factors for the development of the disease was carried out using analysis of variance, which makes it possible to install significant differences in factors

in the main and control groups. The study of the proved factors was carried out by calculating the indicators of the strength of the influence of factors (η -%) and the ratio of chances (OR).

During the processing of the obtained results it was found that 22 factors had a significant impact on the development of excess body weight. All factors were divided into 4 groups: medical and biological, social and hygienic, social and economic and psychological.

The results of the study indicate that on the development of excess weight in children and adolescents, biological factors had a significant impact. It was found that patients in the main group were much more likely to be overweight in one or two parents compared with the control group – 64,4±2,4% and 34,3±2,4%, respectively (η -9%; p <0,001; OR=3,5; CI=2,6–4,6). Thus, overweight of both family members was observed in 22,5 (35,0%)±2,1% of cases in the main group against 15,0 (43,4%)±1,8% of cases in the control group. Overweight in one parent was observed in 41,9 (65,0%)±2,4% of families in the main group and in 19,4 (56,6%)±2% of families in the control group. In both the main and control groups, overweight was more common among mothers than among fathers – 46,7 (53,8%)±2,4%; 40,1 (46,2%)±2,3% and 25,3 (51,5%)±1,9%; 24,0 (48,5%)±1,9%, respectively.

Aggravated heredity of hypertension, diabetes mellitus and other endocrine pathology was found in 59,3±2,4% of relatives of patients in the main group and only in 34,3±2,4% of relatives of patients in the control group (η -6%; p <0,001; OR=2,8; CI=2,1–3,7).

The obtained results confirm the significant influence of perinatal factors on the development of excess body weight. Thus, in the analysis of pregnancy it was noted that preeclampsia, threats of abortion, extragenital pathology and overweight during pregnancy were observed in 41,2±2,4% of mothers of obese children and overweight and in 24,7±2,2% of mothers of children with normal body weight (η -3%; p <0,001; OR=2,1; CI=1,6–2,9). According to the obstetric anamnesis, the frequency of complications in childbirth in mothers of obese patients and overweight was 26,2±2,2%, and in mothers of children with normal body weight – 14,1±1,7%, which also indicates a probable difference of indicators (η -2%; p <0,001; OR=2,2; CI=1,5–3,1).

Careful study of postnatal development of the child, namely: the dynamics of weight gain and the nature of breastfeeding in the first year of life is a necessary task in studying the development of many conditions, including childhood obesity. Thus, together with the assessment of prenatal and birth history, a study of the dynamics of postnatal development of children in the control and main groups was conducted. When evaluating anthropometric data at birth and the dynamics of weight gain of children during the first year of life, it was found that 39,5±2,4% of children in the main group had a birth weight of more than 3500 g. and/or there was excessive weight gain at the first year of life. In the control group, the corresponding indicator was significantly lower and amounted to 22,5±2,1% (η -3%; p <0,001; OR=2,2; CI=1,7–3,1). We analyzed data

that reflect the characteristics of children's nutrition during the first year of life. It was found that 33,7±2,3% of children in the main group were on artificial, mixed feeding and/or there was an early introduction of complementary foods and a predominance in the structure of the diet of semolina and cow's milk. In the control group of children, the value of the corresponding indicator was 17,7±1,9% (η -3%; p <0,001; OR=2,4; CI=1,7–3,3) respectively.

According to a sociological survey of adolescents and their parents in the main group, it was found that 55,2±2,5% of children almost daily in the diet was dominated by foods high in fat in the form of sausages, cheeses or offal and easily digestible carbohydrates in the form of bakery products and sweet desserts, as well as insufficient consumption of fish dishes, seafood, cereals, vegetables and fruits. Against this background, it was found that in the vast majority of cases, these children and adolescents preferred to quench their thirst with sweet carbonated drinks instead of ordinary water, juices and compotes (63,9±2,4%). In the control group, the indicator characterizing the diet was significantly lower – 29,3±2,3%, respectively (η -7%; p <0,001; OR=3,0; CI=2,2–4,0). In comparison with the quality, the amount of food consumed also had an impact on the development of the studied condition, but not so significant – 45,3±2,5% in the main group against 23,7±2,1% in the control group, (η -5%; p <0,001; OR=2,7; CI=2,0–3,6) respectively. When evaluating the diet, it was found that 58,4±2,4% of children in the main group ate less than three times a day or did not have a certain time and frequency of meals during the day and often missed breakfast and/or ate just before bedtime. In the control group, these dietary features were observed only in 32,3±2,3% of children (η -7%; p <0,001; OR=2,9; CI=2,2–3,9). At the same time, it should be noted that children with obesity and overweight significantly more often than children with normal body weight visit fast food enterprises – 33,4±2,3% and 17,2±1,9%, respectively (η -3%; p <0,001; OR=2,4; CI=1,7–3,4). It was found that 21,3±2% of parents of children in the main group do not prohibit the consumption of high-calorie foods, and 36,8±2,4% of parents in this group said that they often encourage their children with delicious food for good behavior or academic marks. In the control group, only 9,8±1,5% of parents do not forbid their children to eat high-calorie foods (η -2%; p <0,001; OR=2,5; CI=1,7–3,7) and 24,7±2,2% often encouraged children to eat tasty food, respectively (η -2%; p <0,001; OR=1,8; CI=1,3–2,4). In 16,2±1,8% of parents of children in the main group against 10,4±1,5% of parents in the control group there was insufficient awareness of nutrition issues, and they could not give a realistic estimate of calorie and fat intake with food (η -1%; p <0,05; OR=1,7; CI=1,1–2,5). In addition, the majority of respondents in the main group (54,2±2,5%) did not consider it necessary to have scientifically proven information on nutrition and, as a rule, received information from the media, friends, acquaintances, books and magazines (79,2±2,0%), and when choosing food were more often guided by taste and price, rather than health benefits (80,4±2,0%). In addition, it was found that 15,3±1,8% of parents in the main group

can not fully control the nutrition of children during the day, and in the control – only $8,3 \pm 1,4\%$, respectively ($\eta=1\%$; $p<0,01$; $OR=2,0$; $CI=1,3-3,1$).

The study found that a sedentary lifestyle was an important factor. It was found that $51,3 \pm 2,5\%$ of children with obesity and overweight had reduced physical activity on weekends and/or they did not attend sports sections, physical education classes at school. In addition, it was noted that a significant proportion of patients in the main group do not perform morning exercise ($60,8 \pm 2,4\%$), rarely walk ($47,9 \pm 2,5\%$), climbs stairs ($56,7 \pm 2,4\%$) and more often ($67,3 \pm 2,3\%$) prefer inactive leisure activities (reading, computer games, etc.). Lack of physical activity was observed only in $28,5 \pm 2,3\%$ of children with normal body weight ($\eta=5\%$; $p<0,001$; $OR=2,6$; $CI=2,0-3,5$). Sedentary lifestyle, in turn, was complicated by two other factors in this group. This is a long time spent on electronic devices and a significant mental load. Thus, $50,8 \pm 2,5\%$ of children in the main group against $32,1 \pm 2,3\%$ of children in the control group noted that on average they spend more than 3 hours a day on electronic devices ($\eta=4\%$; $p<0,001$; $OR=2,2$; $CI=1,6-2,9$). Intensive mental load, namely: training in gymnasiums, lyceums, additional classes – was found in $24,5 \pm 2,1\%$ of children in the main and in $16,2 \pm 1,8\%$ of children in the control group ($\eta=1\%$; $p<0,01$; $OR=1,7$; $CI=1,2-2,4$). When assessing other factors, it should be noted that $31,2 \pm 2,3\%$ of respondents in the main group prefer to eat in front of the TV, computer or desk, while in the control group this trend was observed in $18,2 \pm 1,9\%$ of respondents ($\eta=2\%$; $p<0,001$; $OR=2,0$; $CI=1,5-2,8$).

It was found that the state of medical care for children with this disease is due to the low level of primary care. The revealed shortcomings include: insufficient level of timely detection of the disease (proved diagnosis of obesity in the history of the child (f. №.112/a) had only $61,7 \pm 2,7\%$ of adolescents, and in $36,1 \pm 2,9\%$ of children, the corresponding diagnosis was found as a result of self-appeal to an endocrinologist), medical-diagnostic process (data of complete minimum-necessary examination had $15,0 \pm 2,1\%$ of children, and comprehensive recommendations were obtained only in $11,1 \pm 1,8\%$ of cases).

DISCUSSION

Therefore ensuring healthy eating and promoting regular physical activity are key factors in combating this epidemic among children. Parents can influence their children's behavior by purchasing healthy food and drink, as well as providing, supporting and encouraging physical activity. At the same time, parents are encouraged to lead and promote healthy lifestyles, as children's behavior is often shaped by observation and adaptation. At the same time, it is very important for infants and young children to ensure exclusively breastfeeding, regulating energy consumption; consumption of proper nutrients required for optimal development, and the exclusion of sugars and starches when feeding baby dry mixtures.

For children and adolescents, it is necessary to: provide healthy food, limit the consumption of high-calorie foods

with low nutrients (for example, ready snacks in packages); promoting the consumption of fruits and vegetables; limiting the consumption of sugary soft drinks; organizing lunches and dinners in the family circle; limiting the impact of marketing (such as restricting television viewing), providing information and training in healthy food choices. To stimulate physical activity, it is advisable to: make physical activity part of the daily life of the family, allocating time for family walks or joint active games, and reduce the time of inactive activities (for example, the time spent in front of electronic devices).

Thus, the role of local governments and educational institutions in combating the problem of childhood obesity is important, and they need to ensure the following: limiting the consumption of high-calorie foods with a low content of nutritious micronutrients; limiting the consumption of sugary soft drinks; providing health education so that pupils can acquire the knowledge, attitudes, beliefs and skills necessary to make informed decisions, choose healthy behaviors and create conditions conducive to health; providing information and skills for healthy food choices; improving access to healthy food in schools through school food programs (eg breakfast, lunch and / or reduced price snacks); installing vending machines only for the sale of healthy foods such as water, dairy products, juices, fruits and vegetables, sandwiches and low-fat snacks; ensuring that food provided in schools meets nutritional standards; promotion of health promotion by school health services and referral to appropriate specialists if necessary; using school gardens and vegetable gardens to develop knowledge about the origin of food.

Activities in relation to the promotion of physical activity are: offering a variety of daily physical education activities, taking into account the maximum number of needs, interests and abilities of pupils; organization of social events – school sports activities and school programs of a non-competitive nature (for example, activities between lessons); encouraging safe ways to travel to school and other social events without using personal and public transportation; ensuring that students and the community have access to appropriate places and equipment for physical activity; encouraging physical activity for students, teachers, parents and the community.

The above results confirm the fact that many doctors do not consider obesity to be a serious disease and do not include in their tasks the implementation of measures aimed at preventing and treating this disease. This state of affairs is due to the fact that for many doctors obesity is perceived rather as a personal problem of the patient, rather than a specific metabolic disease, and often, when a doctor expresses a desire to lose weight, he does not make specific recommendations, leaving the desire to lose weight nothing more than a wish. While obese and overweight children should be monitored from the time of diagnosis. It is not fully understood that the treatment of obesity, like, by the way, the treatment of any other chronic disease, must be continuous. That is, a set of measures aimed at actively reducing excess body weight should in no case end with

the patient's return to the usual diet and lifestyle for him and his family. It should smoothly transition into a set of measures aimed at maintaining the achieved result.

General practitioners must necessarily operate with the following concepts: calorie content and nutritional composition of foods and dishes; the body's needs for energy, as well as for certain nutrients, depending on gender, age and type of human activity, on the presence or absence of certain diseases, on the presence or absence of a tendency to obesity.

Very often doctors overestimate the role of various medicines in the treatment of obesity and, which is completely unjustified, of biologically active food additives.

We emphasize that in obesity, as it can be, in no other disease, diet is the only self-sufficient method of treatment, and a universal component of weight loss programs is monitoring of food eaten in the form of a food diary, which also notes daily physical activity, therefore it is the doctor primary care should play a key role in providing care to these patients.

It should be noted that careful history taking and physical examination are necessary to identify syndromes that can cause obesity, and timely diagnosis of its complications. Finding out the age at which excess weight gain began can identify risk factors that contribute to the persistence of obesity. Such factors may include gestational diabetes in the mother or the onset of obesity in early childhood. Information about body weight at birth, dynamics of growth and body weight, about the peculiarities of psychomotor development, about a hereditary history of obesity is important.

Taking a dietary history (assessment of actual nutrition) does not allow for an objective assessment of the amount of food consumed, however, completing a 24-hour food diary and short questionnaires regarding the consumption of juice, milk, sugary drinks, fast food, snacks and high-energy snack foods (chocolate bars, chips, cookies, ice cream), allows you to identify the use of foods that should be limited or excluded from the diet. Questions about the length of walks, the amount of time spent on physical activity and sports, and the duration of television viewing are needed in order to determine the level of physical activity of the child and, if necessary, give recommendations on how to optimize physical activity.

At each appointment, the doctor should conduct detailed conversations with the parents about the child's lifestyle, analysis of nutrition in the family, and, if necessary, a food diary. These conversations should be conducted by both a pediatrician or adolescent doctor and a pediatric endocrinologist. It is necessary to regularly remind of what a balanced diet is, to focus on the main mistakes of parents in organizing nutrition: night feedings, the introduction of easily digestible carbohydrates in the form of sweets, juices (in addition, parents often do not take into account the calorie content of drinks – juices, dairy, fermented milk products) and snacks, replacing meat dishes with sausages. Parents should tune in to the need for adequate physical activity for their children, that is, as early as possible (from

2–4 years old) plan for them regular exercise in sections or at home.

Observation of overweight children of preschool and primary school age can be carried out by both a pediatrician and a pediatric endocrinologist to exclude endocrine causes of obesity.

Overweight and obesity cause many problems for a child. They lower self-esteem and affect relationships with peers. According to some experts, social and psychological problems are the most serious consequences of obesity. Almost 70% of children have a high level of personal and school anxiety, emotional instability, and psychosomatic disorders. It is very important to pay attention to the emotional state of the child, since overweight children are prone to depressive states due to the fact that they consider themselves flawed and ugly in comparison with their peers.

Obesity can also be preceded by depression in childhood and adolescence, often caused by stressful family situations.

Parents need to support the child, try to find solutions together, build a plan of action. If you cannot cope with this problem on your own, you should seek psychological help.

Therefore, the main areas of improving the quality of medical care for obese children include:

1. Mandatory monitoring of body mass index among children from 3 years of age and assessment of the harmony of physical development;
2. Introduction of an information system for accounting, monitoring of obesity and overweight and the main risk factors (electronic medical record of the patient);
3. Introduction of patient registers at the territorial and regional level;
4. Preferential supervision by the family doctor, involvement of all experts, including the psychologist (carrying out psychological correction);
5. Raising public awareness at the group, individual level;
6. Timely identification of risk factors, formation of risk groups, organization of dynamic monitoring, creation of differentiated prevention programs and study of public awareness of the main risks of overweight;
7. Advanced training of doctors, conducting training seminars and trainings on nutrition.

CONCLUSIONS

1. The obtained results of risk factors for overweight and obesity studying shows that on the development of excess weight in children and adolescents, biological and social and hygienic factors had a significant impact ($\eta \geq 3\%$; $p < 0,001$) and planning of activities to solve the problem of children obesity should aim at changing the existing stereotypes and living environment with the obligatory involvement of such structures as local government and general education institutions.
2. It was noted insufficient level of primary medical care for obese children and proved diagnosis of obesity in the history of the child (f. №. 112/a) had only $61,7 \pm 2,7\%$ of patients. Therefore, in order to optimize the quality of medical care, it is recommended implementation

of obligatory monitoring of the BMI of children and adolescents, the overwhelming observation of such patients by family doctors and conducting of psychological correction.

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Conflict of interest:

The Authors declare no conflict of interest.

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