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## IDENTIFICATION OF PRIORITY MEASURES TO OPTIMIZE THE QUALITY OF LIFE OF CHILDREN WITH OBESITY BASED ON THE STUDY OF THE MAIN ASPECTS OF THE PROBLEM

Визначення пріоритетних заходів щодо оптимізації якості  
 життя дітей з ожирінням  
 на основі вивчення основних аспектів проблеми

### Abstract

**Purpose of the study.** Identify measures to optimize the quality of life of children and adolescents with obesity.

**Materials and methods.** Bibliographic, statistical and sociological methods.

**Results.** It is noted an insufficient level of registration of obesity among children. During the study it was found that true prevalence of obesity and overweight in children and adolescents in Kharkiv was  $151,0 \pm 5,2$ . 22 factors of risk had a reliable impact on the development of overweight in children and adolescents. The main risk factors for the formation of the overweight were biological and social and hygienic. It was proved that the relative average life quality index of children and adolescents with obesity was  $60,7 \pm 0,5\%$ , and the most significant were restrictions in the physical ( $R_x = -6,8$ ) and psychological and emotional ( $R_x = -4,4$ ) spheres. The revealed shortcomings of medical assistance were: insufficient level of timely detection of the disease, medical-diagnostic process, a very low level of coverage by clinical supervision ( $29,6 \pm 2,7\%$ ), insufficient medical and hygienic education of the parents and, as a result and an unreasonable loading on specialized care. Based on the results of the research, the main measures to optimize the quality of life of obese children were identified.

**Conclusions.** Thus, to solve the problem of obesity in children such structures as local governments, educational institutions, healthcare institutions

### Резюме

**Мета дослідження.** Визначити заходи щодо оптимізації якості життя дітей та підлітків із ожирінням.

**Матеріали та методи.** Бібліографічні, статистичні та соціологічні методи.

**Результати.** Відзначається недостатній рівень реєстрації ожиріння серед дітей. Під час дослідження було встановлено, що справжня поширеність ожиріння та надмірної ваги у дітей та підлітків у Харкові склала  $151,0 \pm 5,2$ . 22 фактори ризику мали надійний вплив на розвиток зайвої ваги у дітей та підлітків. Основними факторами ризику формування зайвої ваги були біологічні та соціально-гігієнічні. Доведено, що відносний середній показник якості життя дітей та підлітків із ожирінням становив  $60,7 \pm 0,5\%$ , а найбільш значущими були обмеження у фізичному ( $R_x = -6,8$ ) та психологічному та емоційному ( $R_x = -4,4$ ) сфери. Виявленими недоліками медичної допомоги були: недостатній рівень своєчасного виявлення захворювання, лікувально-діагностичний процес, дуже низький рівень охоплення клінічним наглядом ( $29,6 \pm 2,7\%$ ), недостатня медико-гігієнічна освіта батьків і як результат необґрунтоване навантаження на спеціалізовану допомогу. На основі результатів дослідження були визначені основні заходи щодо оптимізації якості життя дітей з ожирінням.

**Висновки.** Таким чином, для вирішення проблеми ожиріння у дітей слід обов'язково залучати такі структури, як органи місцевого самоврядування,

*and public organizations should be obligatory involved. In particular, leading measures to optimize medical care were identified.*

**Keywords:** *overweight, obesity, children, prevalence, quality of life, risk factors, medical care.*

*навчальні заклади, заклади охорони здоров'я та громадські організації. Зокрема, були визначені провідні заходи щодо оптимізації медичної допомоги.*

**Ключові слова:** *зайва вага, ожиріння, діти, поширеність, якість життя, фактори ризику, медична допомога.*

## INTRODUCTION

Obesity has become a serious problem worldwide. Today, over a billion people on Earth are overweight and obese. Of particular concern is the spread of this condition among children and over the past decade, this trend has become characteristic of Ukraine [1–3]. Obesity has adverse physical and psychological effects on children and adolescents, and it is the direct cause of diseases of many organs and systems. In addition, childhood obesity can contribute to behavioral and emotional disorders, such as depression, and can lead to stigmatization, social exclusion and lower quality of life in general. Thus, overweight children not only suffer from diseases and mobility limitations, but also have a number of problems, which exist in relation to them in society. Therefore, a comprehensive study of the problem and the development of measures to improve the quality of life of obese children is an important task for modern health care [4–8].

## PURPOSE OF THE STUDY

Identify measures to optimize the quality of life of children and adolescents with obesity based on an analysis of the main aspects of the problem in the pediatric population.

## MATERIALS AND METHODS

During the study bibliographic, statistical and sociological methods were used and conducted: evaluation of the quality of life of children with obesity, the study of the prevalence of overweight and obesity, risk factors for the development of illness among children and adolescents, the quality of medical care for sick children and analysis of worldwide experience on the problem of childhood obesity.

## RESULTS AND DISCUSSION

It is noted that due to the low level of alertness and awareness of the population and the health care system in Ukraine there is an insufficient level of registration of obesity among children (13,5 per 1000 children aged 0–17 years inclusive (or 1,3%)) and often these patients first time seek medical care because of complaints related to the development of obesity complications, which significantly impair the quality of their life.

The prevalence of obesity and overweight in

children and adolescents in Kharkiv was studied. The information base of the study were the results of copying the necessary data from the official medical records of the clinic institution (polyclinic) of a representative sample of 4789 children aged 6–17 inclusive. The processing of the data was performed by calculating and evaluating the BMI according to age and sex using the method recommended by WHO experts. The general and special relative indicators for 1 thousand children population were calculated. According to the analysis, it was found that true overweight prevalence among children and adolescents exceeds official statistics in the Kharkiv region (15,1‰). Thus, the level of excess body weight and obesity was  $151 \pm 5,2\%$ , in boys and girls –  $164,5 \pm 7,6\%$  and  $136,3 \pm 7\%$ , respectively. It was found that the highest prevalence of overweight and obesity among boys and girls was observed in the age group of 6–9 years ( $189,9 \pm 9,6\%$ ), and the lowest in the group of 14–17 years ( $109,5 \pm 9\%$ ).

The identification of risk factors of overweight development was carried out according to a sociological survey of 809 children and adolescents with their parents of the main (413 overweight and obese persons) and control group (396 normal persons who belonged to a group of practically healthy children).

It was found, that 22 factors had a reliable impact on the development of overweight in children and adolescents. All factors were divided into basic and secondary, with influence force of 3% or more ( $\eta \geq 3\%$ ) and less than 3% ( $\eta < 3\%$ ) respectively. The main risk factors for the formation of the disease were biological and social and hygienic. Social and economic and psychological factors had a secondary impact on the development of the research pathology. The leading biological factors were family propensity to overweight ( $\eta = 9\%$ ;  $p < 0,001$ ; OR = 3,5; CI = 2,6–4,6); presence of burdened heredity ( $\eta = 6\%$ ;  $p < 0,001$ ; OR = 2,8; CI = 2,1–3,7), perinatal and postnatal factors. Significant social and hygienic factors were: irrational nutrition ( $\eta = 7\%$ ;  $p < 0,001$ ; OR = 3,0; CI = 2,2–4,0); diet disorders ( $\eta = 7\%$ ;  $p < 0,001$ ; OR = 2,9; CI = 2,2–3,9); reduced motor activity ( $\eta = 5\%$ ;  $p < 0,001$ ; OR = 2,6; CI = 2,0–3,5) and consumption a significant amount of food ( $\eta = 5\%$ ;  $p < 0,001$ ; OR = 2,7; CI = 2,0–3,6).

The quality of life study in children and adolescents with obesity was carried out in two stages: at the first stage, an individual written interview of 280 children was performed. At the

second stage, the analysis of the coefficients of quality of life and restrictions of certain spheres of life was carried out according to the received data. The relative indicator of quality of life by the special author's formula, regression coefficients were calculated and a model of the main components of life quality of obese children was built. The individual elements of each selected sphere of the restriction were determined.

It was proved that the relative average life quality index of children and adolescents with obesity was  $60,7 \pm 0,5\%$ , ranged from  $39,3\%$  to  $90,6\%$  and corresponded to an average level of variability ( $12,9\%$ ). It was found that the average life quality index is significantly lower in patients with complicated forms of the disease than without complications –  $48,3 \pm 1,0\%$  and  $62,6 \pm 0,4\%$  ( $p < 0,001$ ) respectively.

According to constructed model of main components of life quality was defined that  $94,3\%$  of the factors that affect the quality of life of children with this disease relating to restrictions in physical, psychological and emotional spheres, social and everyday life. At the same time, the most significant were restrictions in the physical ( $R_x = -6,8$ ) and psychological and emotional ( $R_x = -4,4$ ) spheres.

The main factors of the physical sphere were: limitation in performing heavy physical activity ( $67,9 \pm 3,0\%$ ), moderate exercise ( $46,4 \pm 3,2\%$ ), and climbing up the stairs ( $56,1 \pm 3,2\%$ ), complaints of rapid fatigue ( $37,8 \pm 3,2\%$ ) and shortness of breath and palpitation ( $55,7 \pm 3,2\%$ ). The following factors were found to have a significant effect on the quality of life in the psychological and emotional sphere: anxiety ( $39,7 \pm 3,2\%$ ), depression ( $41,4 \pm 3,2\%$ ), irritability ( $36,3 \pm 3,1\%$ ) and low self-esteem ( $51,5 \pm 3,3\%$ ).

The evaluation of the quality of health care for obese children was conducted on the basis of a sociological survey of 280 parents of obese children and copying data from accounting medical records (child development histories (f. No. 112/a)). The following parameters were studied: the state of the medical and diagnostic process, the coverage by clinical supervision (follow up), attendance and satisfaction with the work of specialists and parent awareness.

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. No. 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 treatment recommendations were obtained only in  $11,1 \pm 1,8\%$  of cases); a very low level of

coverage by clinical supervision ( $29,6 \pm 2,7\%$ ), insufficient medical and hygienic education of the parents and, as a result and an unreasonable loading on specialized care, which was confirmed by the predominance in the structure of appeals for medical assistance on obesity and its complications of visits to specialists (to the district pediatrician 3 or more times about the disease  $21,9 \pm 2,5\%$  of children and adolescents were applied, to endocrinologist –  $34,9 \pm 2,6\%$ , to cardiologist –  $16,4 \pm 2,2\%$ , to gastroenterologist –  $11,5 \pm 1,9\%$ , to neuropathologists –  $10,9 \pm 1,7\%$ , and to other specialists –  $9,4 \pm 1,7\%$ , respectively).

Based on the results of the research, the main measures to optimize the quality of life of obese children were identified.

Thus, leading measures to reduce the spread of obesity and its effects, which lead to a significant deterioration in the quality of life of children are changing the stereotypes and environment that contributes to the emergence of disease and optimization of quality of medical care, especially at primary level.

In order to take action to eliminate adverse environmental factors in practice, it is necessary that based on laws and policies at the state level were coordinated action and produced a common tactic of the solving problem. On this basis, appropriate administrative decisions should be taken to control marketing activities and recommendations should be developed for all structures and organizations related to the area of nutrition, trade, planning and arrangement of adjacent territories for providing an environment conducive to a healthy lifestyle. Thus, to solve the problem of obesity in children such structures as local governments, educational institutions, healthcare institutions and public organizations should be obligatory involved.

Priority measures to improve the quality of health care for children and adolescents with obesity should include: regular monitoring of the growth and development of children in schools and health care facilities, obligatory monitoring of BMI when carrying out preventive examinations of children and adolescents, implementation of information system for accounting, monitoring of health status and physical development of such children. These measures will facilitate early diagnosis of the disease, timely treatment and prevention of complications of obesity and will give the opportunity to receive information on obesity in time and develop appropriate preventative measures.

The main methods for the prevention and treatment of obesity are a rational diet and adequate exercise, so it is advisable to treat patients with obesity at the primary care level. The family physician or district pediatrician should play a leading role in the development of treatment plans and recommendations for the optimal combination of diet and exercise for patients with the disease, as

well as in monitoring the health of such children.

In addition, it should be noted that when providing medical assistance to obese children, it is necessary to take into account the psychological aspects of the disease, which were also identified in the study. Therefore, psychological correction for this purpose recommended, using modern techniques such as motivational interviewing.

## CONCLUSIONS

1. The results of a comprehensive study of the main aspects of overweight and obesity among children have revealed the following: the true prevalence of obesity among children and adolescents in Kharkiv is significantly different from the official statistics in Kharkiv region ( $151 \pm 5,2\%$ ); biological and socio-hygienic factors were identified as the leading risk factors for the formation and development of overweight in children and adolescents ( $p < 0,001$ );

the quality of life of obese children is primarily due to limitations in the physical ( $R_{xy} = -6,83$ ) and psycho-emotional ( $R_{xy} = -4,42$ ) spheres; the state of health care for children with obesity is ineffective, which is mainly confirmed by the insufficient level of timely detection of the disease and the medical-diagnostic process.

2. Thus, planning of activities to optimize the quality of life of children should aim at changing the existing stereotypes, living environment and improving the quality of medical care with the obligatory involvement of such structures as: local government, general education institutions, health care institutions and public organizations. In particular, 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.

## REFERENCE

1. Dyachuk DD, Zabolotna IE. Rationale for the organization of medical and sociological monitoring of obesity in children in a multidisciplinary healthcare facility. *Visnyk sotsialnoyi hihiyeny ta orhanizatsiyi okhorony zdorovya Ukrainy*. 2017; 4: 41–47.

2. Dyachuk DD, Matyukha LF, Zabolotna IE. Family physicians' awareness of overweight and obesity in children (according to questionnaires from GPs and family doctors). *imeyna medytsyna*. 2017; 3: 69–72.

3. Zelinska NB, Rudenko NH. State of health care delivery for children with endocrine pathology in Ukraine in 2014. *Ukrainian. Ukrayinskyy zhurnal dytyachoyi endokrynolohiyi*. 2015; 2: 5–13.

4. Zelinska NB. Obesity in children: definition, treatment, prevention. *Clinical Practical Guidelines of the Endocrinological Society. Part 1. Ukrayinskyy zhurnal dytyachoyi endokrynolohiyi*. 2017; 3–4: 48–63.

5. Kalinichenko DO. Medical and social factors of health preservation for the contingent of children 15-17 years. *Aktualni problemy suchasnoyi medytsyny: Visnyk ukrayinskoyi medychnoyi stomatolohichnoyi akademiyi*. 2016; 16 (4) chastyna 2: 251–255.

6. Kosovtsova GV, Nikitina LD, Yudchenko OI. Features of physical and sexual development in adolescents with obesity. *Ukrayinskyy zhurnal dytyachoyi endokrynolohiyi*. 2014; 2: 81–82.

7. Machado AP, Lima BM, Laureano M.G et al. Educational strategies for the prevention of diabetes, hypertension, and obesity. *Rev Assoc Med Bras*. 2016; 62 (8): 800–808. DOI: 10.1590/1806-9282.62.08.800

8. Nechytyaylo YM, Kovtyuk NI. Overweight and obesity in school-age children. *Bukovynsky medychnyy visnyk*. 2016; 20 (3): 132–135.

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