

MODEL OF MEDICAL-SOCIAL MONITORING OF OBESITY IN CHILDREN (STRUCTURE AND FUNCTIONS AT THE LEVEL OF HEALTH CARE INSTITUTION)

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ABSTRACT

The aim: To substantiate conceptual directions and organizational technology of medico-social monitoring of obesity and risk factors of its development in schoolchildren at the level of health care institution.

Materials and methods: Modern strategies and recommendations for the prevention of obesity in children, local normative documents for the organization of preventive medical examinations of children were analyzed. The basis for developing a functional-structural model of medical and social monitoring of obesity in children based on the results of own research, its concept and organizational technology are developed on the basis of methodology of systematic approach and systematic analysis using information-analytical method.

Results: In the process of monitoring we saw the health of children and the harmony of their physical development, nutrition and lifestyle, hereditary risk factors for overweight, and the dynamics of the child's physical development. The program of medical and social monitoring of obesity in schoolchildren allows to check among the attached for medical care children the risk factors for the development of overweight, predict health disorders that are associated with it, plan preventive programs.

Conclusions: The model of organization of medico-social monitoring of obesity in children is developed for the health care institution, the peculiarities of which are:

- enhancing the role of primary care physicians in the provision of medical assistance to the pediatric population in monitoring the health of children and implementing of preventive measures;
- involving parents in monitoring of the risk factors for overweight and preventing obesity at the individual level.

KEY WORDS: children, obesity, health

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INTRODUCTION

Obesity is one of the most serious public health problems in the 21st century [1]. Adverse medical, social and economic consequences, adversely affecting the health of an adult that had obesity in childhood [2, 3]. Prevention of obesity and associated disease among children is highly important, the reduction of the prevalence of overweight and obesity among adolescents is enshrined in an additional indicator of the relevant target document «Health-2020».

Nowadays, in the conditions of imperfection of the existing system of prevention and diagnostics of obesity in children, low level of awareness of primary care physicians in the detection of children and adolescents with overweight and obesity, which leads to late diagnosis and correction of overweight and its damage to health it is necessary to improve the system of dynamic monitoring health of students and to search for new forms and methods of obesity prevention [4,5,6]. Introduction of medical and social monitoring of obesity among schoolchildren – a system of dynamic monitoring of the health status of schoolchildren with the possibility of early detection of

diseases associated with overweight, as well as risk factors for their development (hereditary, family and behavioral), according to modern WHO initiatives, can be considered as WHO tool for improving the system of prevention of the development of noninfectious diseases.

THE AIM

The aim was to substantiate conceptual directions and organizational technology of medico-social monitoring of obesity and risk factors of its development in schoolchildren at the level of health care institution.

MATERIALS AND METHODS

The information base for the scientific substantiation of the model of medico-social monitoring (MSM) of obesity in schoolchildren was the results of research, current strategies and initiatives of WHO and Centers for Disease Control and Prevention in the USA, international recommendations and protocols. The basis for the development of

a functional and structural model of MSM was the results of studies of national scientists and analysis of the medical law base for the organization of preventive medical examinations of children and results of own research (thematic clinical audit, 2017) [7]. Conceptual areas and organizational technology of MSM are developed on the basis of methodology of systematic approach and systematic analysis using information-analytical method. The research was carried out within the framework of the dissertation work for the degree of Doctor of Philosophy on the theme «Medical and social substantiation of the improvement of the system of prevention of excess body weight of children in terms of a multidisciplinary health care institution», the methodology of its implementation and methods approved by the commission on issues of ethics of the State Scientific Institution «Scientific and Practical Center for Preventive and Clinical Medicine» State Administrative Department (SIS «RPC PCM» SAD), as such that meet modern ethical standards and principles for conducting clinical research (protocol № 2 from 03.02.2017)

RESULTS

In order to improve the quality of preventive work among children at the level of health care institution, we have developed a functional and structural model for improving the system of prevention of obesity in school-age children, which was implemented at the Children’s Consultative Center of the SIS «RPC PCM» SAD by carrying out medical- social monitoring (Fig. 1).

The model of medical and social monitoring is based on the organizational system of providing primary and secondary (specialized) medical care to children in the conditions of multidisciplinary health care facility using:

- 1) existing elements involved in the health care system attached to the medical care of children: pediatric counseling center, paediatricians, district pediatricians; specialists with basic and incomplete medical education working with pediatricians;
- 2) existing components of the health care system, but partly modified by their functional optimization: extension of functions by specialists with basic and incomplete medical education (conducting a questionnaire of parents, calculation of the index «body mass index»); raising the level of knowledge and awareness of healthcare professionals about the prevention of obesity and diseases associated with overweight at the educational center «Institute of Postgraduate Education» SIS «RPC PCM» SAD within the work of the implemented system of continuous medical education; systematization of information on the health of children and their physical development in the conditions of the local medical information system of SIS «RPC PCM» SAD, which provides electronic document flow of accounting medical forms, in particular forms 112 / o («History of child development»), questionnaires, registers of patients according to the observation groups, the formation of individualized prevention programs;
- 3) qualitatively new elements: forms of accounting for risk factors for the development of overweight in children (family form of accounting for hereditary, anamnestic

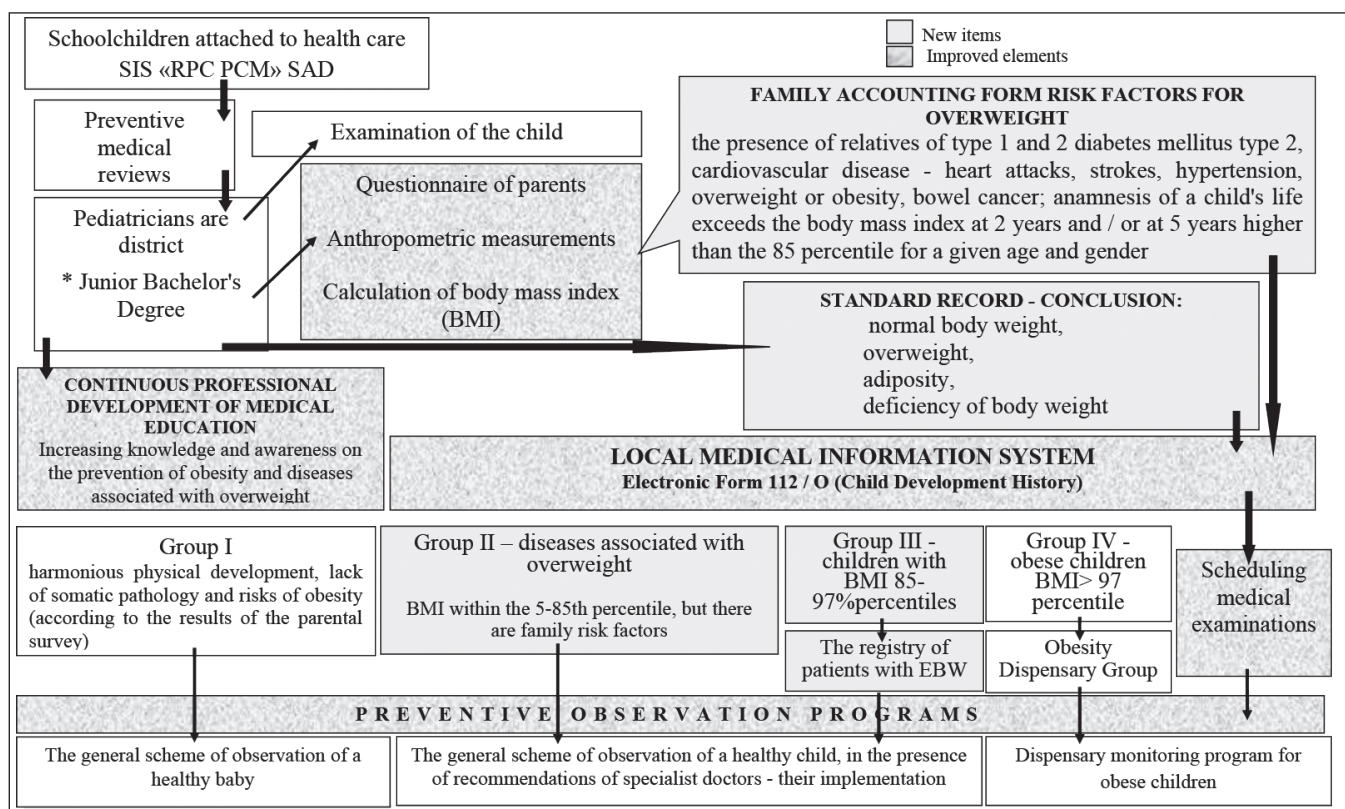


Fig 1. Functional-structural model of improving the system of obesity prevention in children at the institution level

and behavioral risk factors, the register of patients with overweight); forms of registration of harmony of physical development of the child in electronic form 112 / o (recording development of the child – normal body weight, excess body weight, obesity, deficiency of body weight); observation groups that are formed based on the presence of overweight risk factors (a group of children who have family risk factors for overweight and diseases associated with it, but whose “body mass index” is in the range of 5-85th percentiles and the group children who are overweight); measures to prevent obesity in children, to increase the role of the family through the formation of family traditions and values.

The management of the MSM at the level of the SIS «RPC PCM» SAD are the administration, the children’s counseling and treatment center, department of medical statistics, information-analytical and methodological work. Its functions are to create the conditions for medical and social monitoring, to organize information processes, to organize the work of doctors, to analyze the results of medical and social monitoring.

The object of MSM are school-age children who are attached to a children’s counseling center and schoolchildren families.

The object of observation includes: the health and physical development of children; behavioral characteristics of children and their families, risk factors for overweight and obesity in schoolchildren.

In the process of MSM, the following indicators are monitored: the harmony of physical development according to the «body mass index», health of children, the characteristics of nutrition and lifestyle (physical activity, regime of the day), risk factors for the development of overweight (hereditary and dynamics of physical development of the child).

Management decisions are made on the basis of the feedback between the child health status and risk factors for overweight and obesity, diseases associated with overweight.

The strategic direction of management decisions is a system of measures aimed at improving primary and secondary prevention of obesity. Primary prevention includes health education measures to promote healthy lifestyles, nutrition and physical health skills, and identify and eliminate obesity risk factors.

Secondary prevention is realized by timely detection of excess body weight, health disorders of overweight schoolchildren and the provision of qualified medical assistance to schoolchildren.

The tactical direction of the model ensures the distribution of functional roles between schoolchildren and their families, district pediatricians and specialists with basic and incomplete medical education who work with them, pediatric specialists.

Operational direction of management decisions is the organization of direct contact between schoolchild and his family with the district pediatrician, who determines the program of monitoring of the health of the child, and, if necessary, sends the child for consultation to the specialist.

Implementation of primary and secondary prevention of obesity in school-age children is entrusted to district pediatricians, who provide routine preventive work among the kids. At the level of primary contact of medical professionals with the child, the parents are surveyed according to the questionnaires developed by us and the assessment of anthropometric measurements by the «body mass index» and according to their results, groups of dynamic observation are formed, depending on the degree of individual risk of overweight development. Group I children follow the general scheme for a healthy child. Children of group II – under the general scheme of observation of a healthy child, and in the presence of recommendations from specialist doctors – carry them out under the supervision of a pediatrician of the polyclinic. Children who have excess body weight (EBW) – III group of surveillance – form a registry of patients with EBW. Such children are referred for consultation of an endocrinologist who examines the child for the presence of a EBW and to a child specialist who conducts an examination to identify diseases associated with overweight. Depending on the results of the examination, such children are prescribed a set of measures for primary and secondary prevention of obesity. The parents of the II and III groups of supervision are provided by the district pediatrician with individualized recommendations for correction of the diet and the regime of the day. Children of group IV are observed under the program of dispensary observation of children with obesity, among them secondary prevention of obesity and diseases accompanying overweight is carried out.

DISCUSSION

The introduction of MSM obesity in schoolchildren allows identifying and assess risk factors for overweight and obesity in children, predicting health disorders associated with overweight and obesity, plan preventive interventions among community-based attending health care providers previous authors’ publications [8, 9].

Some elements of the model of social monitoring of obesity have been introduced into the work of healthcare institutions. An analysis of the implementing acts received showed that the monitoring program enables the detection of 100% overweight children. As a result of improving the diagnosis of obesity, doctors observed an increase the number of children in the dispensary group for obesity by 20% due to the first detected cases. Health care facilities with a local medical information system have started accounting for overweight children by establishing a registry of such patients, which has improved the quality of preventive medical examinations and the organization of follow-up of children at risk for obesity and pathological conditions associated with overweight. Obesity prevention target group formation efficiency is 80%, prevention of diseases associated with overweight – 70%, monitoring of physical development of children – 100%, increasing family motivation to a healthy lifestyle – 50%; prevention and early detection of diseases associated with overweight – 30%.

Our parents' questionnaire on the behavioral characteristics of families in which children are raised provides the effectiveness of obtaining information about the family's behavioral status at 100%, the individualization of a healthy lifestyle program at the family is 80%, and the ability to monitor families behavioral status in the process of monitoring the health of the child and family members – 100%

CONCLUSION

The model of organization of medical and social monitoring of obesity in children is substantiated and developed for the health care institution, the peculiarities of which are:

- enhancing the role of primary care physician in providing medical assistance to children in monitoring the health of children and implementing preventive measures;
- involving parents to monitor family risk factors for overweight and prevent obesity at the individual level.

The components of the implemented model are: screening of anthropometric indicators with determination of the child's body mass index – medical form of accounting; the study of eating habits and the level of physical activity of the child – family form of accounting (filled in according to the questionnaire of parents); determining the patient's route for further medical prophylactic monitoring (planning an annual prophylactic examination) and, if necessary, consulting the appropriate specialist physician; preventive counseling.

The monitoring program is in line with the current WHO initiatives presented in the Non-behavioral Studies in School-aged Children (HBSC) study (2002-2014), the results of the protocols of the European Childhood Obesity Surveillance Initiative (COSI) (2016), and the strategies on the classification of information on the effectiveness of measures to prevent overweight and obesity (WHO. European Health Information Initiative: Seventh Meeting of the European Health Information Initiative Steering Group, Copenhagen, Denmark, 2017).

REFERENCES

1. Global status report on noncommunicable diseases 2014. World Health Organization; 2014; 302. Available from: <https://www.who.int/nmh/publications/ncd-status-report-2014/en/>
2. Noorzada O. Adverse Childhood Experiences and the Association with Childhood Obesity: A Cross-Sectional Study of the U.S. National Survey of Children's Health (NSCH), 2011-2012. Thesis : Georgia State University; 2016, 152 p. Available from: https://scholarworks.gsu.edu/cgi/viewcontent.cgi?article=1516&context=iph_theses
3. Tremmel M., Gerdtham Ulf-G., Nilsson P.M. et al. Economic Burden of Obesity: A Systematic Literature Review. *Int J Environ Res Public Health*. 2017; 14(4): 435-452. doi.org/10.3390/ijerph14040435
4. Statistichno-analitichnij dovidnik dityachogo endokrinologa za 2016 rik [Statistical and analytical directory of pediatric endocrinologist for 2016]. Kyiv: Ministry of Health of Ukraine. 2017; 98. (UA)
5. Hrechyshkina N.V., Hruzieva T.S. Vivchennya obiznanosti ta stavlennya likariv pervinnoyi lanki shodo profilaktiki neinfekcijnih zahvoryuvan [Study of awareness and attitude of primary care physicians of shod prevention of noncommunicable diseases]. *Family Medicine*. 2015; 6(62): 22-24. (UA)
6. Dyachuk D.D., Matiukha L.F., Zabolotna I.E. Obiznanist simejnih likariv z pitan nadlishkovoyi masi tila ta ozhirinnya u ditej (za danimi anketuvannya likariv zagalnoyi praktiki – simejnih likariv) [Awareness of family doctors about the overweight and obesity in children (according to the questionnaire of general practitioners-family doctors)]. *Family Medicine*. 2017; 3(71): 69-72. (UA)
7. Dyachuk D.D., Zabolotna I.E. Obgruntuvannya organizaciyi mediko-socialnogo monitoringu ozhirinnya u ditej u bagatoprofilnomu zakladi ohoroni zdorov'ya [Rationale of the organization of medical and sociological monitoring of obesity in children in a multidisciplinary healthcare institution]. *Bulletin Of Social Hygiene And Public Health Protection Organization Of Ukraine*. 2017; 4(74): 41-47. (UA) doi.org/10.11603/1681-2786.2017.4.8652
8. Dyachuk D.D., Yashchenko Yu.B., Zabolotna I.E. Stan zdorov'ya shkolyariv z nadlishkovoyu masoyu tila ta ozhirinnyam za danimi profilaktichnih oglyadiv [The state of health of schoolchildren is with overweight and obesity from data of prophylactic reviews]. *Problems of Endocrine Pathology*. 2019; 4: 38-44. (UA) doi.org/10.21856/j-pep.2019.4.05
9. Dyachuk D.D., Zabolotna I.E., Yashchenko Yu.B. Analiz poshirenosti ozhirinnya sered ditej shkilnogo viku ta ocinka rizikiv rozvitku zahvoryuvan asociovanih z nadlishkovoyu masoyu tila [Analysis of the extension of childhood expectations and evaluation of the risks of the development of diseases associated with overweight]. *Wiad Lek*. 2018; 3: 546-550. (UA) PMID: 29783222

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The Authors declare no conflict of interest.

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