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ROLE OF LIFESTYLE FACTORS IN IMPROVING THE HEALTH OF CHILDREN WITH RESPIRATORY DISEASES

Polunina N.V., Polunina V.V.

Because of the reduction in children population, increase of morbidity rate in general and respiratory diseases in particular it is necessary to study in detail peculiarities of morbidity in this group of children and factors, which cause negative health indicators. We have examined 1257 children and have studied the patterns of diseases, morbidity rate, basic parameters of medical activity of parents and children. This allowed determining the most important risk factors. The acquired data formed the basis of a complex of recreational measures for children with unfavourable health indicators. Their introduction provoked positive change in medical behavior of parents and helped to improve their children's health.

Key words: morbidity, children, medical behavior, risk factors, recreational measures.

РОЛЬ ФАКТОРОВ ОБРАЗА ЖИЗНИ В УЛУЧШЕНИИ СОСТОЯНИЯ ЗДОРОВЬЯ ДЕТЕЙ, СТРАДАЮЩИХ БОЛЕЗНЯМИ ОРГАНОВ ДЫХАНИЯ

Полунина В.В., Полунина Н.В.

Снижение численности детского населения, рост уровня заболеваемости в целом, в том числе болезней органов дыхания, свидетельствуют о необходимости детального изучения особенностей заболеваемости данной

группы детей, и факторной обусловленности формирования неблагоприятных показателей здоровья. Было обследовано 1257 детей, проанализированы уровень и структура их заболеваемости, изучены основные характеристики медицинской активности родителей и детей. Это позволило выявить наиболее значимые факторы риска. Полученные данные легли в основу разработки мероприятий по оздоровлению детей с неблагоприятными показателями здоровья. Реализация предложенных рекомендаций дало возможность позитивно изменить медицинское поведение родителей и улучшить состояние здоровья детей.

Ключевые слова: заболеваемость, дети, медицинская активность, факторы риска, оздоровительные мероприятия.

Introduction: The health of population and of the coming generation plays an important role in economic, social and cultural development of the society [1]. Protection of children's health and detection of various factors which can improve it is the most important strategic task of present-day children's health care system, because the health of the population in general, as well as increasing its active life expectancy and creative potential depends on the health of the oncoming generation. Loss of health in childhood leads to a number of serious medical, social, economic and demographic problems. [6,9].

According to research and official statistics, among criteria, which characterize children's health are the increase of morbidity rate, growth in percent of children with frequent and long-lasting diseases, chronic pathology and increase in the number of disabled children [2,3,7,8]. Searching for ways to improve the health of children and adolescents is a primary task of present-day medicine and health care [5,6]. Modern social and economic conditions, adoption of compulsory health insurance, modernization of health care system in many cases have a negative impact on the majority of population and children in particular, who are especially responsive to the

change in the living environment. Thus, it is necessary to develop health-related recreational measures aimed at improving health indicators of child population [4,5].

Analysis of published materials shows a decrease in the number of births since 1990. Minimum value was characteristic of year 2000 - 1 266 800 of newly-born children (pic. 1). The subsequent moderate growth of births is on the one hand connected with the fact that a more numerous generation of women born in 1980-es reached fertile age, and on the other hand, with an increase in birth intensity. [9].

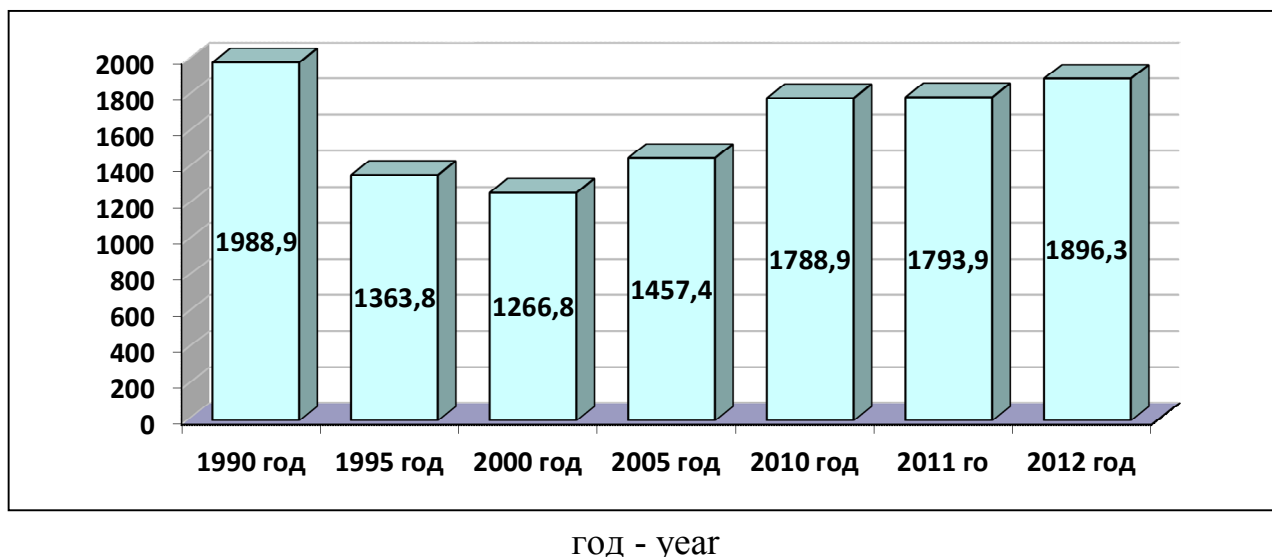


Fig. 1. Growth dynamics of the number of newly-born children in the Russian Federation (thousands of people).

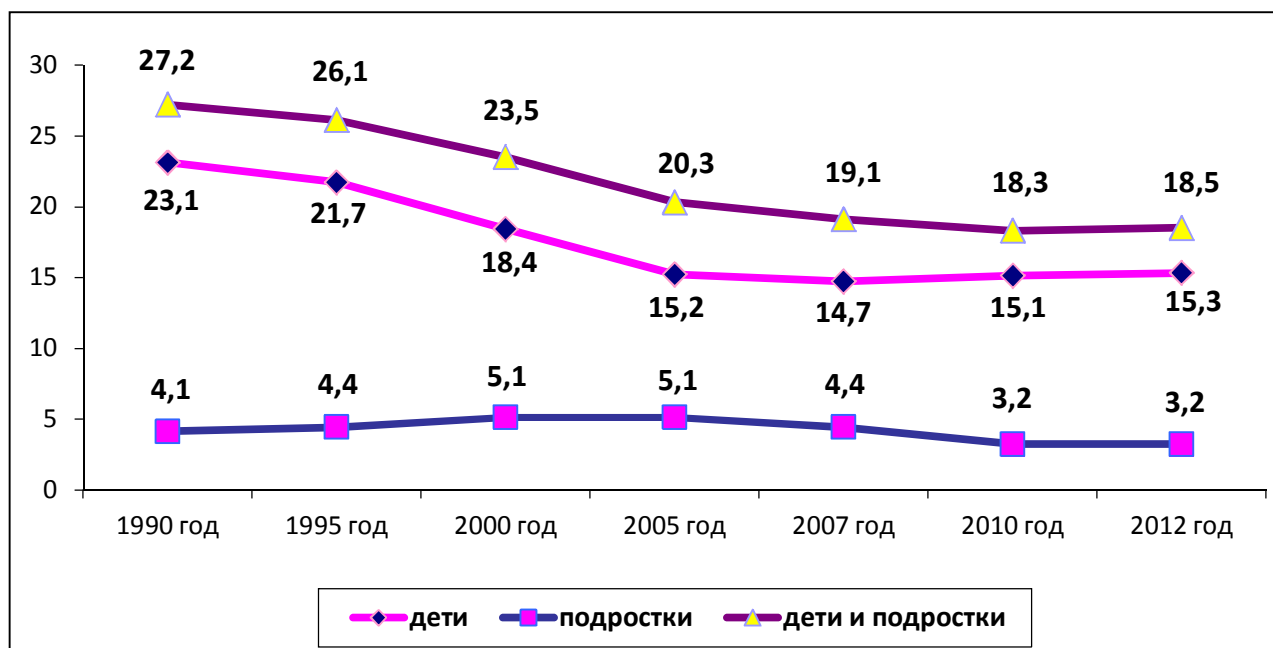
At the same time despite positive dynamics in the number of newly-born children there is a decrease in the percent of children in the total population from 23,1% in 1990 to 15,3% in 2012 (pic. 1).

2007 was marked with the smallest percent of children (14,7%) in the total population (pic.2).

Demographic policy and an increase of the birth rate from 11.3% in 2007 to 13.3% in 2012 resulted in the proportion of children being 15.5% of the total number of people. However, children population from 1990 till present has decreased by 12.6

mln.

We can observe a decrease in the proportion of adolescents only since 2007, which can be explained by the maturity of 15 year-old children, who were previously less in number.



дети – children, подростки – adolescents, дети и подростки - children and adolescents, год - year

Pic. 2. Dynamics of change of proportion of children and adolescents in the Russian Federation (% of the total population)

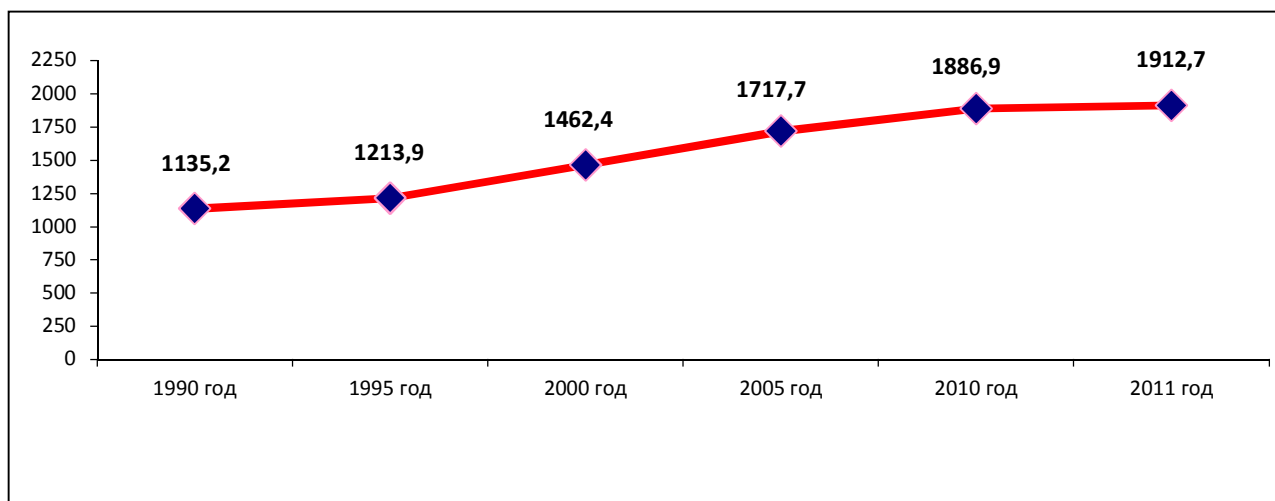
In general, the number of adolescents from 1990 to 2012 decreased by 1.6 mln. This makes the problem of health protection of oncoming generation the highest priority of health care system.

Children morbidity rate is essential in estimating the health of child population as knowledge of the level and patterns of morbidity helps not only to objectivize the degree of loss of health, but to calculate the amount of medical, social and economic damage and develop priority guidelines in improving the health of the population group in question. Provided that in case of an illness of a child parents tend to seek

medical advice, the study of morbidity indicators can help to gain the fullest information on the health of children from the catchment area [10,11]. Thus, the analysis of morbidity indicators is of primary importance in estimation of children's health.

It was found that during 1995 till present the number of children with in-born illnesses or those who developed illnesses during the first days of their lives has increased by 1.7% (from 383.3 thousand to 667.5 thousand) and the number of children with perinatal pathology has increased 2.4 times (from 407.7 to 988.1). It was found, that the number of newborn children with in-born congenital anomalies and malformations does not change (39,2 – 34,6 cases per 100 quick-born children) [9].

The study of child morbidity showed the tendency to its growth over the past 20 years (pic.3). In general child morbidity rate during the period has increased by 68.4%.



Pic. 3. Dynamics of child morbidity during 1990-2011 (per 1000 children)

Important is the incidence of respiratory diseases, which make more than a half of the number of illnesses of children. Decrease in morbidity rate in this category of illnesses alone could result in decrease of the total number of child morbidity.

This explains why respiratory diseases present a serious medical and social

problem both in the European Union and in the Russian Federation as their rate is extremely high. The pathology often results in disability, which affects the quality of life and life expectancy of the population. More than 25.4 mln. cases of respiratory diseases among children and adolescents are reported annually in the Russian Federation, about 3 thousand children become disabled and about 2 thousand children die.

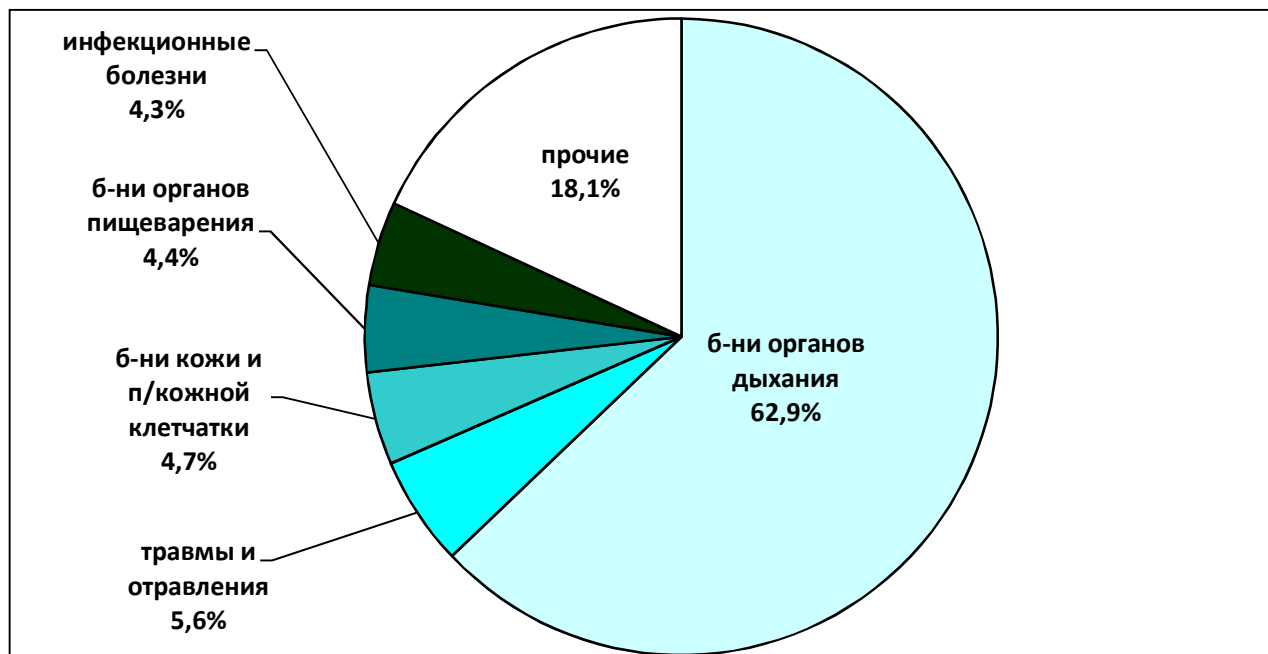
Materials and Methods. The study conducted during 2008 – 2011 at Public Health and Health Care Department of Russian National Research Medical University named after N.I. Pirogov of the Ministry of Health of the Russian Federation looked at medical and social aspects of recreation measures for 7-14 year-old children with respiratory diseases. In the course of study we looked at morbidity rate and socio-hygienic characteristics of 1257 school children, developed recreational measures for the group in question and advised on the efficiency of their implementation.

Results. The acquired data shows that child morbidity rate has made 2 168,4‰, with 2 452,5‰ for 7-10 year-old children, 1 886,7‰ – for 11-14 year-old children.

The highest morbidity rate was discovered in children with frequent and long-lasting illnesses, who tend to develop chronic illnesses more often. There is evidence that the morbidity rate among children with frequent and long-lasting illnesses is conclusively 1.6 higher and makes 3 512,8‰. It varies from 3997,5‰ at the age of 7-10 to 3037,5‰ at the age of 11-14.

Morbidity pattern is a qualitative characteristic of morbidity and helps to detect leading pathology for the group of population in question, as well as dynamics of its change and concentrate on detecting risk factors provoking it. Respiratory diseases in child population form the largest group of the pattern and place first (pic.4), injuries and intoxications form the second group, diseases of skin and subcutaneous tissue take the third place, diseases of the digestive system – the fourth, infectious and parasitic diseases – the fifth. The five groups make 81,9% of the total number of

diseases.



болезни органов дыхания - respiratory diseases, травмы и отравления - injuries and intoxications, болезни кожи и подкожной клетчатки - diseases of skin and subcutaneous tissue, болезни органов пищеварения - diseases of the digestive system, инфекционные и паразитарные болезни - infectious and parasitic diseases
прочие - other

Fig. 4. Morbidity patterns of 7-14 year-old children inclusive (% of total)

Thus, respiratory diseases, which form the largest group of the pattern, make from 73,6% to 48,9% of all the pathologies depending on the age.

This category of diseases makes the highest percent, which is 1 806,2‰ in 7-10 year-old children to 922,4‰ in 11-14 year olds. Important is the high rate of respiratory diseases among children with frequent and long-lasting illnesses (2237,6‰).

Respiratory diseases can be subdivided into acute and chronic diseases (Table 1). Acute diseases make 81,3% with prevailing acute respiratory viral infection, whose share varies depending on the age from 75,8% до 78,5%. The second largest

group in respiratory diseases category is acute and chronic nasopharyngitis, sinusitis and influenza. These make from 85,6% to 88,3% of the total number of respiratory diseases among school children.

Table 1

Age categorization of the groups of diseases within respiratory diseases category

Diseases	7-10 years old		11-14 years old	
	number of cases per 1000 children	% of the total	number of cases per 1000 children	% of the total
Acute respiratory viral infection	1418,0	78,5	699,2	75,8
Acute and chronic nasopharyngitis and sinusitis	97,7	5,4	57,2	6,2
Influenza	79,5	4,4	33,2	3,6
Acute and chronic bronchitis	74,0	4,1	49,9	5,4
Acute and chronic laryngotracheitis	55,9	3,1	34,2	3,7
Acute and chronic tonsil and adenoid diseases	45,1	2,5	25,8	2,8
Acute and chronic pneumonia	23,4	1,3	7,5	0,8
Other	12,6	0,7	15,5	1,7
Total	1806,2	100,0	922,4	100,0

Chronic respiratory pathology was diagnosed in every fifth child (18,7%). Diseases of upper respiratory airways (adenoids, tonsillitis, and rhinitis) are most common in chronic respiratory diseases category of the pattern; bronchitis, bronchial asthma and pneumonia place second.

Analysis of chronic illnesses in children shows that most often children seek medical advice on the matter of ingravescence of chronic diseases rather than new acute diseases.

As the result of the conducted study we have divided the observed children into

2 groups. Children with chronic respiratory diseases and children with frequent illnesses (21.9%), who have 4 and more cases of an illness a year were referred the group with negative health indicators - the main group. Children without any chronic pathology who have illnesses only occasionally (0-3 illnesses per year) were referred to control group.

The study of peculiarities of medical behavior of parents of the children showed that parents of children from the main group as compared to parents of children from control group 2.8 times more often seek medical advice only on the 3-4th day of the child's illness, 1.8 times more often do not follow doctor's advice, 1.7 more often do not think regular medical check-ups of a child necessary (table 2).

It was conclusively established that mothers of children of the main group had burdened maternal obstetric history (abortions, miscarriages, complications during present pregnancy or birth) conclusively more often than those of control group. Smoking present in the family despite its obvious harmful effects on the health of children and adults and a well-known fact that it can cause diseases of bronchopulmonary system is illustrative of their attitude to medical recommendations. Significant is a considerably higher percent of smokers among parents and their smoking in the presence of children in the main group (table 2).

Improper medical behavior of parents results in improper medical behavior of their children. It was found that children from the group with negative health indicators (the main group), have a lower level of physical activity as compared to the children from control group, undersleep more at night, spend more time in front of a computer or a TV-set (table 3).

Table 2

Negative socio-hygienic factors of medical behavior of parents of examined children (per 100 respondents)

№	Socio-hygienic factors, which characterize medical behavior of parents	Health groups		Fidelity criterion <i>p</i>
		main	control	
1.	Not following doctor's recommendations	72,4	39,7	< 0,00001
2.	Seeking medical advice at a late stage of the child's illness	68,2	24,6	< 0,00001
3.	No regular medical check-ups of a child	22,1	12,7	< 0,00001
4.	Burdened maternal obstetric history of the child's mother	43,7	36,2	< 0,05
5.	Father smoking in the presence of the child	55,2	18,9	< 0,00001
6.	Mother smoking in the presence of the child	49,1	11,2	< 0,00001
7.	Child's father is a smoker	43,6	27,4	< 0,00001
8.	Child's mother is a smoker	30,1	13,6	< 0,00001

In general, there are 7-8 negative factors per child from the main group, while among children of control group they were conclusively 1.7 times less ($p < 0,05$). The acquired data shows high morbidity rate among children, which decreases as they grow up, and the prevalence of respiratory diseases in all age groups, whose percent ranges from 49% to 74%.

Table 3

**Negative socio-hygienic factors of medical behavior in surveyed children
 (per 100 respondents)**

№	Socio-hygienic factors, which impact medical behavior of children	Health groups		Fidelity criterion <i>p</i>
		main	control	
1.	lack of physical activity in a child	73,7	61,6	< 0,001
2.	undersleeping at night	57,3	32,7	< 0,000001
3.	eating disorders	47,3	39,7	< 0,01
4.	the child spends more than 2 hours in front of a computer daily	54,7	37,9	< 0,00001
5.	the child spends more than 2 hours in front of a TV daily	48,2	31,7	< 0,00001

Acute respiratory diseases make the largest percent of the diseases of respiratory system. Children with chronic or frequent illnesses form the least favourable health group. There is evidence that children with negative health indicators have little physical activity.

The obtained data was used in development of recreation programmes, aimed at introduction of the elements of healthy lifestyle, which are essential for children with respiratory diseases.

The programme primarily meant to eliminate negative health factors and introduce positive habits, which would improve children's health. The programme included lectures and discussions on healthy lifestyle and the role of the individual in sustaining and improving their health. The undertaken measures helped to change lifestyle of parents and their children and improve health indicators.

Table 4

Change in lifestyle in the surveyed families after delivering lectures and holding discussions on proper medical behavior among parents and their children

Characteristics of medical behavior in families with children	Discussions on healthy lifestyle		Fidelity criterion <i>p</i>
	before	after	
Non-smoking mother	69,9	77,9	< 0,05
Non-smoking father	56,7	65,7	< 0,05
Ultimate nutrition of a child	62,7	82,3	< 0,0001
Good quality sleep of a child	42,7	69,1	< 0,00001
Child spending no more than 2 hours in front of a computer daily	45,3	58,4	< 0,01
Mother not smoking in the presence of the child	50,9	75,8	< 0,00001
Father not smoking in the presence of the child	44,8	69,9	< 0,00001
Child watching TV no more than 2 hours daily	51,8	68,1	< 0,001
More than 2 hours long everyday walks	40,2	64,5	< 0,0001
Tempering procedures (for the child)	21,6	41,5	< 0,001
Exercising (for the child)	28,7	39,7	< 0,05

The lectures and discussions helped to increase physical activity of children, reduce the amount of time spent in front of a computer or TV, children in most families started consuming more dairy products, meat, fish, fruit, vegetables and reduced the consumption of fast foods, chips and carbonated drinks (table 4).

Parents started giving more attention to their children exercising and being involved in tempering procedures. Important is reduction in the number of smoking parents, including smoking in the presence of a child.

Table 5

Time history of health indicators of children after implementation of the recreation programme

Indicators	Recreational measures		Fidelity criterion <i>p</i>
	before	after	
Well-being and good spirits of a child (%)	46,3	78,6	< 0,05
Ratio of illnesses (number of cases per year)	3,6	2,2	< 0,05
Ratio of respiratory diseases (number of cases per year)	2,7	1,6	< 0,05

There has increased medical activity in the families with children, including frequency of seeing pediatrician not only in case of an illness, but to seek professional advice, the percent of parents who follow doctor's advice to the full extent (74,6% vs 62,1% before introduction of the recreation programme) and the trust to pediatricians (from 58,2% to 80,7%).

Implementation of a full complex of recreational measures has increased the percent of well-being in children (table 5) and reduced the number of illnesses per year in general, including respiratory diseases.

Conclusions.

The conducted study allowed analyzing the peculiarities of child morbidity and detecting the level and pattern of morbidity of surveyed children.

Study of medical activity of parents of children from the main group allowed detecting risk factors, which influence medical behavior of parents and their children, and negative health indicators of children.

This allowed developing a complex of recreational measures, whose introduction has fostered positive change in the lifestyle of parents and children and improving health indicators of children.

Thus, it is necessary to wider apply medical and social recreational measures to children with frequent and long-lasting illnesses, which could reduce not only morbidity rate, but the number of respiratory diseases among child population.

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DATA ABOUT THE AUTHORS

Polunina Natalja Valentinovna, Professor, Corr. Member of RAMS, Head of Department Department Public Health Service, Health Economics of Pediatric Faculty

Pirogov Russian National Research Medical University

1, Ostrovityanova st., Moscow, 117997, Russia

nvpol@rambler.ru

Polunina Viktorija Valerevna, Professor of Department Rehabilitation and Sporting
Medicine

Pirogov Russian National Research Medical University

1, Ostrovityanova st., Moscow, 117997, Russia

vikt025@gmail.com

ДАнные ОБ АВТОРАХ

Полунина Наталья Валентиновна, д.м.н., профессор, член-корр. РАМН, зав.
кафедрой общественного здоровья и здравоохранения, экономики
здравоохранения педиатрического факультета

ГБОУ ВПО РНИМУ им. Н.И. Пирогова Минздрава России

ул. Островитянова, д.1, г. Москва, 117997, Россия

nvpol@rambler.ru

Полунина Виктория Валерьевна, д.м.н., профессор кафедры реабилитации и
спортивной медицины педиатрического факультета

ГБОУ ВПО РНИМУ им. Н.И. Пирогова Минздрава России

ул. Островитянова, д.1, г. Москва, 117997, Россия

vikt025@gmail.com