HEALTHY LIFESTYLE. DISEASE PREVENTION

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The Health of Children in Yakutsk according to the Automated Technology of Preventive Medical Examinations (ASPONd-AKDO)

ABSTRACT

The article presents the results of the survey of children aged 3-15 years according to the program of computer - dispensary complex ACPEP-ACPME.

It was revealed that a preliminary assessment of the probability of detection of disease and its profiling dispensary examinations using a computer complex ACPEP-ACPME should reduce costs through targeted allocation of health care resources in the Republic Sakha (Yakutia).

Keywords: children, automated systems, health survey.

INTRODUCTION

Personnel deficit on certain medical professions still runs to 40-60% in the most territories of our country. Doubtless the fact that we need circumspect way to make pediatric physicians, highly specialized doctors and school doctors work hand in hand and also to make clear succession in their work [3,4]. Lack of clear arrangement of receiving and aggregation of information, medical data analysis automation and processing is one of the reasons of patients' dissatisfaction of health care delivery in medical center [1].

Considering severe conditions in our Republic, it's very difficult to hold variety of activities that are navigated by Health and Social Development Ministry of Russian Federation, especially in Arctic regions. Particularly it impacts on preventive/clinic examinations.

Basic laws and regulations that are very difficult to be accomplished in our Republic are given below:

1. Russian Federation Ministry of Health and Medical Industry order of 14.03.1995 № 60; regulation of school and pre-school children's preventing examination based on medical-economic standard.

2. "About clinic (preventing) examination standard of children during their first year after birth" order of 28th of April, 2007 N 307.

3. "About carrying out health survey of orphans and children in hardship who are in inpatient facility" order of 3rd of March, 2011 N162n, "About detailed health survey of teenagers" letter of 30th of June, 2011 N 15-2/10/2-6334.

Within this framework, duty of computer technology is presented in the Republic of Sakha (Yakutia) through already used clinic programmes ACPEP-ACPME (automated complex of preventive examination of population and automated complex for prophylactic medical examination). 8177 children have been examined with the help of this complex. Pathology profiles have been built based on the research findings. In such a manner, one of the very present day issues in the Republic of Sakha (Yakutia) is adoption of idea of pathology profile with the help of computer technology for every child, school, kindergarten, village, district and region at large which will help to solve a lot of management, economical and social problems. At present there are clinic information technologies in the Republic of Sakha (Yakutia) which document examined patients' data only. However we need more profound and clear preventive/clinic computer programme which can minimize specialists work or make information aggregation and processing more extensive without involving of highly specialized doctors. As it was told earlier we need to make clear succession in the co-operative work of pediatric physicians, highly specialized doctors and school doctors [2]

The medical centers of Saint Petersburg were the first clinics in Russia, that create and use the Automated Systems for Screening Diagnostic (ASSD). In 1983 against order of the Central office of Leningrad city in healthcare the researchers of Biotechnological Institute began to create software and devices for automated health assessment (AHA). The efficiency of this system was shown by clinical tests. AHA can provide:

- Improvement of healthcare assessments' efficiency in 3–4 times
- Reduction in expenditure of medical services
- Doctors' dispensation from routine "paper" operations
- Fast achievement of results etc.

The truthfulness of diagnostic with AHA was more than 80% against 11% for "traditional" health assessment.

Purpose:

To analyze the results of a survey of children's with the help of computer-dispensary complex ACPEP-ACPME and prove practicability of using children's pathology profile when delivering outpatient care for children in the Republic of Sakha (Yakutia).

MATERIALS AND METHODS

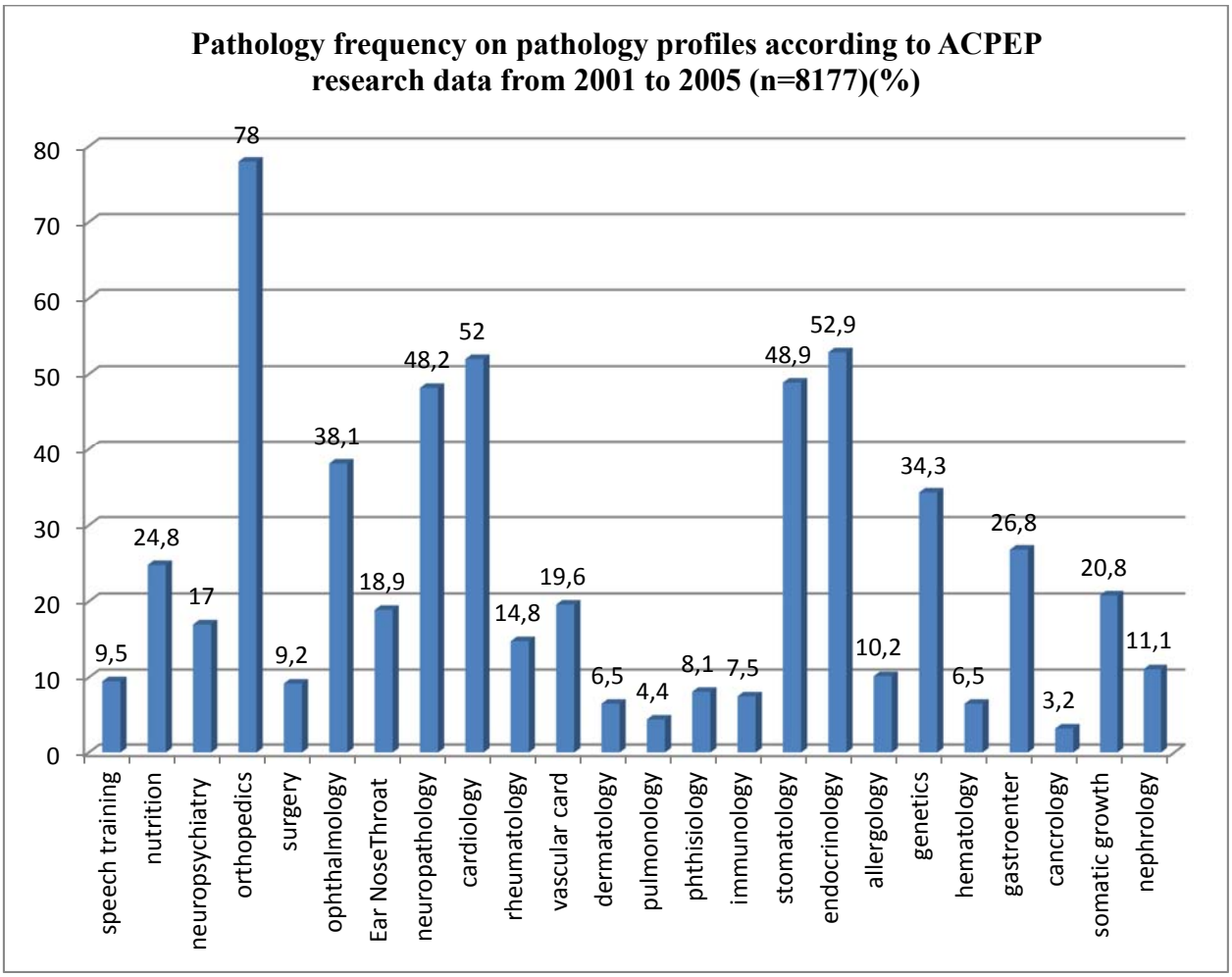
Paediatric population that enters to schools and pre-school institutions of Yakutsk city has been researched in the function of model population for creating pathology profiles. Altogether 8177 children were examined with the help of computer clinic complex ACPEP.

RESULTS

ACPEP office in Yakut Municipal Hospital №3 in Yakutsk city has been working from 2001 to 2005 as part of preschool and school department.

General percent of patients' pathology profiles that were examined through ACPEP during 5 years is presented in the picture (1).

Fig. 1



In the structure of pathology profile 5 leading rank places belong to apparatus system pathology, cardiovasculare pathology, endocrine pathology, alimentary (stomatology, gastroenterology) pathology, excitatory system pathology and psychic field pathology (in common). Specialists who are most required in school and pre-school institution were found out. Based on examination through ACPEP programme, pathology profiles were separated into junior, middle and senior age groups. Pathology profiles in junior age group which is from 3 to 7 ages are presented in the table (1), (n=1726, 858 are boys, 868 are girls).

Table 1

Age groups and total amount of examined people through ACPEP-ACPME programme

Age groups	Altogether		Gender			
	Total amount of children	%	Boys	%	Girls	%
Junior group from 3 to 7 ages	1726	21,1	858	10,5	868	10,6
Middle group from 8 to 13 ages	4223	51,6	2086	25,5	2137	26,1
Senior group from 14 and later	2228	27,3	1077	13,2	1151	14,1
Total	8177	100	4021	49,2	4156	50,8

Based on the research findings, dominating pathologies in **junior age group** are orthopedics, cardiology and stomatology. Orthopedic pathology is found in the majority of examined children and equals to 68% (73,9% - boys, 62,2% - girls), cardiological pathology comes up to 53,3% (55,6% - boys, 49,1% - girls), dental pathology comes up to 48,5% (49,2% – boys, 47,8% - girls), everything is presented in the table (2). According to our sources, junior group boys' pathology dominates on all the profiles, especially in neurologic and surgical pathology.

Table 2

The most expressed defections in health condition on pathology profiles ACPEP in the junior age group

Junior group. Total: 1726	Altogether		Gender			
	Total amount of children	%	Boys	%	Girls	%
Orthopedics	1174	68		73,9		62,2
Cardiology	903	52,3		55,6		49,1
Stomatology	837	48,5		49,2		47,8

In the **middle age group** a lot of children have orthopedic, dental, endocrinologic and cardiologic pathology. Orthopedic pathology amount has increased more than in junior age group and comes up to 79,2% , second place belongs to both dental and endocrinologic pathologies. Dental pathology makes 52,1% (54,3% - boys, 49,9% - girls) and endocrinologic pathology makes 52,1% (52,1% - boys, 52,2% - girls), third place belongs to neurologic pathology which comes up to 49,8% (55,4% - boys, 44,4% – girls). It's presented in the table (3).

Table 3

The most expressed defections in health condition on pathology profiles ACPEP in the middle age group

Middle age group Total: 4223	Altogether (total: 4223)		Gender (total: boys - 2086, girls - 2137)			
	Total amount of children	%	Boys	%	Girls	%
Orthopedics	3343	79,2		85,5		72,9
Stomatology	2201	52,1		54,3		49,9
Endocrinology	2202	52,1		52,1		52,2
Neurology	2105	49,8		55,4		44,4

In the **senior age group** there are a lot of children with orthopedic, endocrinologic and cardiologic pathology. Orthopedic pathology makes 83,7% (87,5% - boys, 80,1% - girls), endocrinologic

pathology comes up to 69,7% (70,7% - boys, 68,8% - girls), cardiologic pathology makes 56,2% (57,1% - boys, 55,3% - girls). It's presented in the table (4).

Table 4

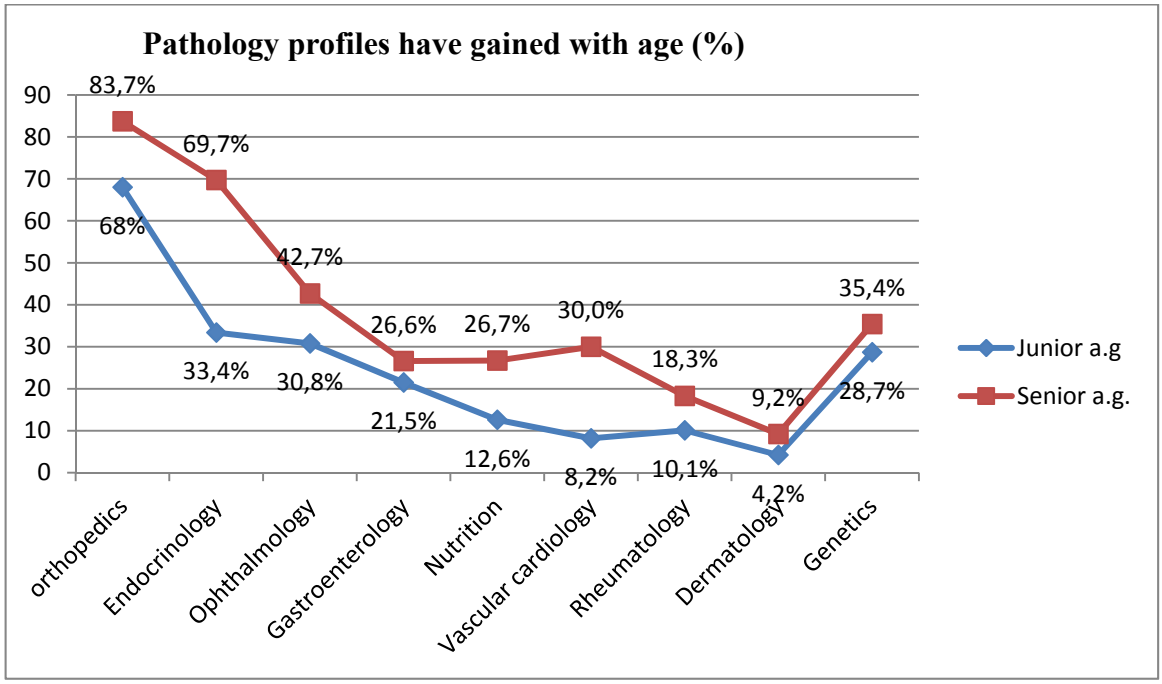
The most expressed defections in health condition on pathology profiles ACPEP in the senior age group

Senior group Total: (2228)	Altogether		Gender			
	Total amount of children	%	Boys	%	Girls	%
Orthopedics	1865	83,7		87,5		80,1
Endocrinology	1554	69,7		70,7		68,8
Cardiology	1252	56,2		57,1		55,3

Also it's possible to observe segment dynamics of the found pathology profiles. It's presented on the pictures (2, 3, 4).

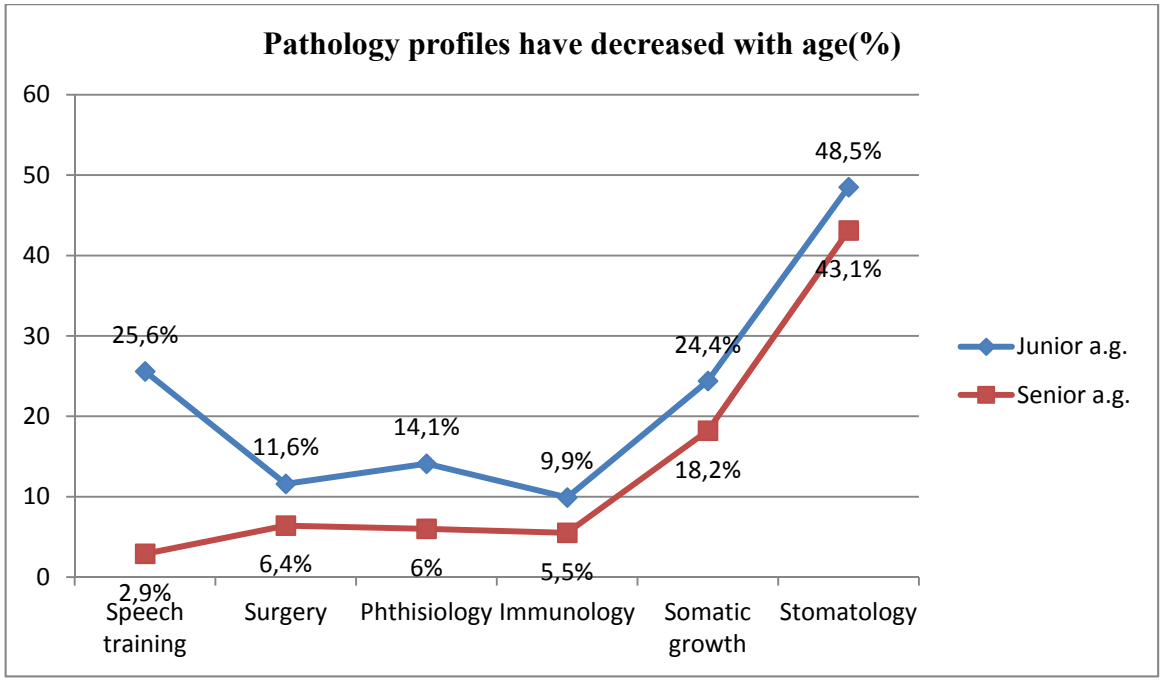
Fig. 2

Segment dynamics of the found pathology profiles



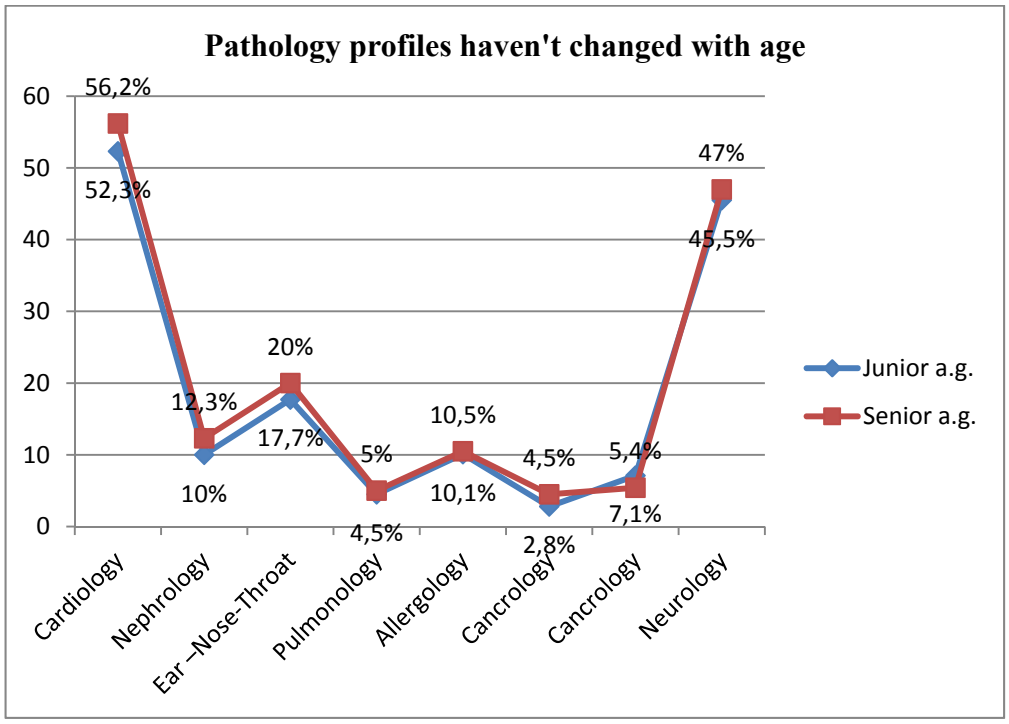
Based on the research findings, on the profiles of orthopedics, endocrinology, ophthalmology, gastroenterology, nutrition, vascular cardiology, rheumatology, dermatology and genetics amount of children with the found pathology is increasing with age.

Fig. 3



Segments that have **decreased** with age: speech training, surgery, phthisiology, immunology, somatic growth, stomatology.

Fig.4



Segments that haven't changed with age: cardiology, nephrology, Ear –Nose-Throat, pulmonology, allergology, cancrology, hematology and neurology.

Dynamic of changes of its individual segments expression with age is the foundation for work planning for highly specialized doctors in the future.

CONCLUSION

This technology with the help of ACPME gives a specialist opportunity not only to replace body of specialists and expand variety of found pathologies, and also to improve medical efficiency for 5-6 times, to forget about "paper documents" technology and to reduce costs for health survey.

On the results of the preliminary and the first steps ACPME programme automatically builds pathology profiles, sets diagnostic programme, analyzes which doctors definite child needs and makes timetables of highly specialized doctors. Highly specialized doctors don't examine indiscriminately, they examine those children who truly need to be examined only and they can help more kids at one appointment. It dictates necessity of preliminary classification of potential patients for planning rational examination procedure. Also work succession of school and pre-school doctors, highly specialized doctors and primary care pediatrician improves. Since formed f.30 swipe card of health survey can be exported to all the health facilities.

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