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THE LIFE QUALITY OF SCHOOL AGE CHILDREN DURING THE ENT ORGANS DISEASES

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Abstract

The diseases of the upper respiratory tracts take the first place in the structure of children morbidity. The assessment of the clinical effectiveness of ENT diseases preventive measures requires the study of life quality parameters.

The study of life quality is one of those important indicators that provide objective information on the effectiveness of the programmes implemented during the pathology and preventive services.

The study was conducted during 2011-2013 years. Three randomly selected schools of Yerevan were chosen as logistics for the survey: school after L. Tolstoy – 104 pupils, after M. Heratsi – 228 pupils, after L. Shant - 111 pupils. Chronic ENT diseases were detected as a result of the ENT survey data analysis conducted among 443 school-age children and 237 pupils. The incidence was high in the age group of 6-10 (62.2±4.6%). The same index was accounted 57.7±4.8% in the group of patients from 11 to 14 years, while for those aged from 15 to 17 years it was 4.4±3.3%. The pharynx diseases take the first place among the school age children (60.6±3.2 %) in the structure of chronic ENT, the nose diseases are in the second place (28.0±3.0%), and the ear diseases in the third (11.4±1.4%).

These predictors of life quality (positive and negative), which dynamics changes have features and are sensitive during the use of preventative measures have been substantiated. It turned out that the chronic ENT pathology and the incidence of respiratory diseases among school age children are influenced by the following risk factors: adverse psychological climate in family, parents with chronic ENT pathology, low physical activity of pupils, the presence of related chronic diseases, prolonged allergic anamnesis, pathological pregnancy, pathology of intranatal and prenatal periods, sedentary lifestyle, diet. It has been proved that the influence of ENT diseases on the main parameters of life quality has age, sex and nosological features.

Keywords: *school age, life quality, PedsQL, assessment of life quality, ENT pathology.*

Introduction

The methodology of life quality survey is a new actual area of interdisciplinary research. The concept of "life quality survey" logically rests on the WHO definition of health and offers a comprehensive assessment model of school age children health status [*Randhawa P et al., 2011; Varni J et al., 2011; 2012; Nutakki K et al., 2013*].

Assessment of life quality is a simple and reliable method for assessing human general welfare. The life quality of one person, a group of people, various strata of the population and whole society can be estimated. The screening of different population groups in different regions and the monitoring can be carried out for the requisite period of time. Thus, the study of life quality is a method for the social human welfare assessment [*Abdullayeva N, 2013; Wiksten J et al., 2013; Abdullayeva N et al., 2014; Dunamalyan R, 2014; Frendl D, Ware J, 2014*].

The life quality indicators can be very useful in evaluating the effectiveness of treatment various approaches and workout of optimal variants for a

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disease therapy [*Vavilov V et al., 2010; Boronina L et al., 2013*]. The study of life quality indicator in dynamics provides very useful information for evaluating the effectiveness of dispensary events in individuals with chronic diseases. The periodic review of life quality should be carried out in patients receiving constant medical therapy [*Varni J et al., 2011; Tatar E et al., 2013; Therezita M et al., 2013*].

The method of questionnaire is used for the assessment of life quality indicator. Currently, one of the most famous and widely used questionnaires is Pediatric Quality of Life Inventory version 4.0 (PedsQL$^{TM4.0}$) developed by the Boston Institute of Health. The questionnaire is used for group comparisons taking into account the general concept of health and welfare that is the parameters that are specific for different age and nosological groups [*Varni J et al., 2012; Blank S et al.,* 2014].

Many indicators have an impact on the human life quality. One of the most significant among them is the state of health. This factor determines the vitality and physical abilities of the individual. Chronic diseases have a significant negative impact on health status and, therefore, the human life quality. They not only constantly limit physical capabilities, but also have a significant negative impact on the mental health component [*Nutakki K et al., 2013*; *Rosenfeld R et al., 2013; Tatar E et al., 2013; Therezita M et al., 2013*]. Health status includes comprehensive and profound understanding of physical, psychological and social factors for that part of population [*Rosenfeld R et al., 2013; Saki N et al., 2014*].

The diseases of the respiratory tract are the most common in the population, and particularly the pathology of ENT organs. Almost everyone carries a disease of the ear, nose and throat every year that may cause a temporary disability [*Davydova I, 2011; Goncharov G, Nadezhdin D, 2012*].

Thus, the aim of the present work is to determine the life quality of persons with pathology of upper respiratory tract and evaluate the specified index in patients with various ENT diseases.

Materials and Methods

The study was conducted during 2011-2013years. The study project had been discussed and recommended at the meeting of Yerevan State Medical University Ethics Committee. Three randomly selected schools of Yerevan city served as the logistics for the study: school after L. Tolstoy – 104 pupils, after M. Heratsi – 228 pupils, after L. Shant – 111 pupils. Totally 443 school-age children with diseases of the ear, nose and throat participated in the study. PedsQL$^{TM4.0}$ questionnaires were handed out to them. The following age group were identified: 6-10 years, 111 patients (37.8±4.6%), 11-14 years – 104 (42.3±4.8%), 15-18 – 228 (52.6±3.3%) (Table 1).

A questionnaire survey was carried out for the assessment of life quality using PedsQL$^{TM\ 4.0}$ questionnaire. The life quality integral indicators of physical and mental components of health were calculated by the existing "key" parameters of physical functioning, role physical functioning, role emotional functioning, vitality, mental health, social functioning, the intensity of pain and general health. The digital results of the life quality study are counted with 100 score scale, i.e. the higher total value, the better the life quality.

Statistical analyses were performed using application package Microsoft Office Excel, Statistica for Windows.

Results and Discussion

Data analysis of ENT survey, conducted among 443 school age children showed that chronic ENT diseases were detected among 237 (53.5±2.4%) students. The morbidity level was high in the age group of 6-10 (62.2±4.6%) in 11 to 14 years patients.The rate of chronic ENT diseases was 57.7±4.8%, while in the age group of 15 to 17 years it was amounted 47.4±3.3%. Pharyngeal diseases take the first place in the structure of chronic ENT diseases among

Table 1.

The distribution of students of different ages, depending on the presence of ENT pathology

Age groups (Years)	With ENT pathology		WithoutENT pathology	
	n	M±m	n	M±m
6-10	69	62.2±4.6	42	37.8±4.6
11-14	60	57.7±4.8	44	42.3±4.8
15-17	108	47.4±3.3	120	52.6±3.3
Total	237	53.5±2.4	206	46.5±2.4

school children (60.6±3.2%). The diseases of nose are in the second place (28.0±3.0%) and: ear diseases in the third place (11.4±1.4%).

It should be mentioned that the age group of 6-11 years the rate of boys ENT pathology was higher in comparison with the girls and was amounted 67.8%, while in the 15-17 age group girls indicator was higher (44.3%) than the boys (38.2%) (Table 2).

The average integral indicator of health physical component was 82.4±14.0 in total sample (all age groups). The psychological component of health was 72.2±12.0. The parameter "physical function" was low in children with ENT diseases in all three experimental groups. The second important parameter of life quality is the "emotional function". The children with ENT pathology irrespective of age feel the sense of fear, malice, sadness, and anxiety more often than healthy children during the analysis of the received data (Table 3).

The elementary school children with chronic ENT pathology have statistically significant lower life quality parameters in comparison with the practically healthy children corresponding life quality parameters according to the PedsQL questionnaire (Table 3).

The impact of main common ENT nosologies on life quality parameters was also estimated in this age group (6-10). The most common overgrowth of adenoids among 6-10 year old children affects on children's mental health and social functioning. The role psychosocial function of a child is more affected in this case (Fig. 1).

The main diseases of nasal and paranasal sinuses affect on all the life quality parameters of children. "Psychosocial function" and "role function" are the most affected. It should be mentioned that the chronic allergic rhinitis among nasal and paranasal sinuses has the most negative impact on life quality parameters (Fig. 2).

Table 2.

The peculiarities of age and sex with ENT pathology at school age children

Sex	Age groups (years)			Total
	6-10	11-14	15-17	
Boys	67.8±5.4	52.9±5.4	38.2±7.0	55.4±5.4
Girls	58.0±5.9	51.3±5.8	44.3±6.1	51.3±3.4
Total	62.2±4.6	57.7±4.8	47.4±3.3	53.5±2.4

Notes: *the total score was calculated according to the group percentage correlation from studied 443 pupils.*

Table 3.

Comparative characteristics of children's life quality parameters depending on the availability of ENT pathology (M±m)

Groups	Life Quality Parameters					Total score
	«Physical function»	«Emotional function»	«Social function»	«Role function»	«Psychosocial function»	
elementary school (6-10 years)						
Practically healthy	82.4±14.0	72.2±13.5	90.3±18.9	83.3±14.9	72.2±12.0	86.2±14.7
Patients with END diseases	69.2±22.2	62.9±21.3	67.6±22.7	60.2±22.2	54.3±17.5	58.8±18.3
secondary school (11-14 years)						
Practically healthy	88.1±21.9	86.7±19.5	91.3±18.4	92.3±13.0	82.7±8.8	89.6±10.4
Patients with END diseases	69.4±8.8	77.3±8.3	75.7±15.3	70.6±11.4	77.5±11.6	77.7±10.9
high school (15-17 years)						
Practically healthy	89.1±21.9	88.7±19.5	93.3±18.4	94.3±13.0	85.7±8.8	90.6±10.4
Patients with END diseases	64.4±8.8	69.3±8.3	70.7±15.3	73.6±11.4	50.8±11.6	70.7±10.9

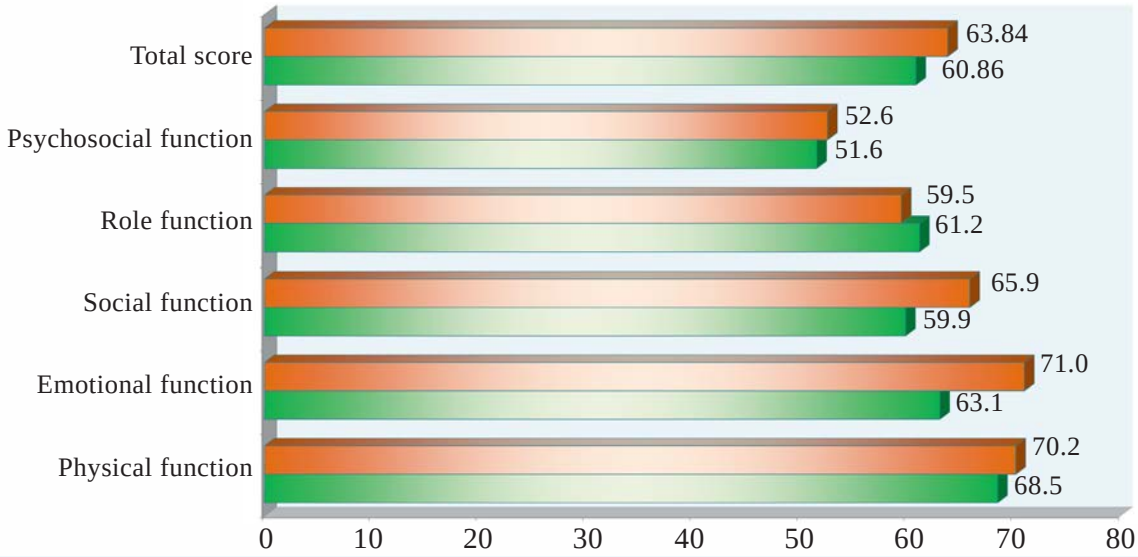

Figure 1. *Impact of nasal and paranasal sinuses main chronic diseases on 6-10 years old school age children life quality parameters (PedsQL questionnaire).*
Notes: Chronic tonsillitis – light turquoise line, Adenoids – dark turquoise line

The highest level of physical health component integral index was detected in patients of 15-17 years age group. The highest integral indicator of the health psychological component was revealed in the 11-14 years age group (Table 3). Thus, the maximum health self-assessment, despite the presence of upper respiratory tract disease, diagnosed in patients of 15-17 years age group. The indicators of physical and mental health component are progressively reduced in secondary and high school age groups.

The comparison of average indicators of secondary school age children life quality resulted the same image, which has been recorded for elementary schoolchildren. However, the average level of life quality parameters of this age group was higher than that of children aged 6-10. The lowest life quality parameters of high school children were "Physical function" and "Psycho-social function". The impact of chronic and acute ENT diseases was analyzed on the key parameters life quality. According to the analysis results, it was found that

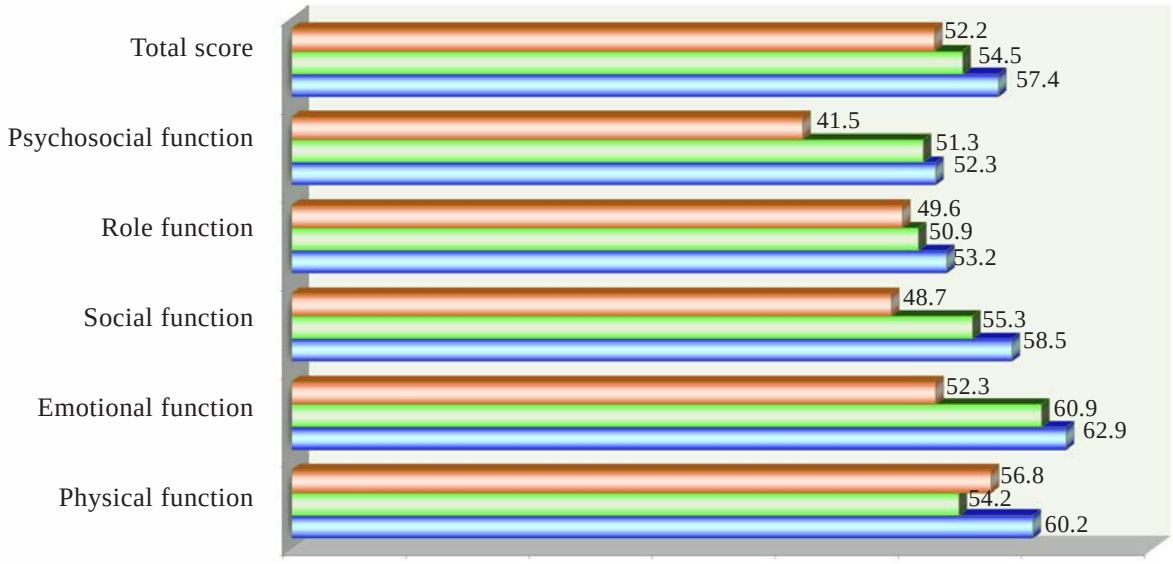

Figure 2. *Impact of pharynx main nosologies on 6-10 years old school age children life quality parameters (PedsQL questionnaire).*
Notes: Chronic allergic rhinitis – light green line, Chronic hypertrophic rhinitis – green line, Chronic catarrhal rhinitis – dark green line.

TABLE 4.

The life quality parameters of respondents with chronic or acute ENT pathologies

Nosological description	Life quality parameters (M±m)								
	Physical function	Role physical function	Role emotional function	Vitality	Mental component of health	Social function	The intensity of pain	General health	Physical component of health
Acute inflammatory diseases of general ENT organs	90.3±14.2	67.3±12.8	72.1±13.0	57.0±12.2	63.3±12.4	67.6±12.7	55.6±11.9	60.0±12.1	75.2±12.2
Chronic inflammatory diseases of general ENT organs	82.8±13.2	63.2±12.6	64.4±12.6	56.7±12.3	62.9±12.4	67.3±12.8	65.5±12.8	57.7±13.5	71.5±12.1
Acute inflammatory diseases of nose and paranasal sinuses	92.9±14.3	73.7±13.7	75.4±13.2	58.8±11.8	65.8±12.5	71.3±13.4	58.9±11.9	63.0±12.4	78.9±13.2
Chronic inflammatory diseases of nose and paranasal sinuses	76.3±13.5	52.0±11.8	52.9±11.9	50.7±11.8	55.7±11.9	59.3±11.9	58.2±11.8	51.5±11.7	64.0±12.5
Acute inflammatory diseases of ear	83.8±13.5	50.0±11.9	62.7±12.1	52.4±11.9	59.3±11.8	62.5±12.8	49.0±10.9	52.9±11.8	67.6±12.8
Chronic inflammatory diseases of ear	85.8±13.4	73.1±13.2	76.9±13.5	69.6±12.8	74.5±12.5	71.2±13.5	78.1±12.5	62.3±12.2	77.0±12.2
Acute inflammatory diseases of larynx	89.7±13.7	62.2±12.4	70.9±13.1	57.4±12.0	62.3±12.2	66.0±12.0	53.3±11.8	59.0±11.8	73.7±12.1
Chronic inflammatory diseases of larynx	90.6±13.9	72.6±12.9	74.2±13.2	57.1±12.0	65.9±12.4	75.4±13.7	69.0±12.4	64.2±12.2	78.8±12.7

the physical component of life quality was high in the third age group (15-17 years) in comparison with the first (6-10 years) and the second (11-14 years) age groups.

The effect of acute (117 patients – 38.9±2.8%) and chronic (102 patients – 33.9±2.7%) ENT diseases on life quality parameters are shown in table 4. The patients with diseases of the nasal septum deviation, tumors, trauma weren't shown in the table because this pathology is very individual and has a specific effect on the studied parameters. The most negative impact on the health status has had nasal and paranasal sinuses chronic inflammatory diseases. Moreover, there has been recorded a low level of physical and psychological components of quality of life.

During acute (18.9±2.3%) and chronic (16.9±2.2%) diseases of nasal and paranasal sinuses the most affected life quality scales are general health, role physical activity and vitality.

The most affected life quality parameters during the chronic diseases of the pharynx (10.3±1.8%) are vitality, general health, mental health. The most affected scales of life quality at acute diseases of the pharynx (13±1.9%) are vitality, the intensity of pain, as well as general health state.

The most affected life quality parameters during chronic (2.4±0.9%) and acute (1.3±0.7%) diseases of larynx are physical, role emotional and social functioning.

The most affected life quality parameters during the ear chronic (4.3±1.2%) diseases are vitality, role physical activity, mental health. The most affected life quality scales at acute inflammatory diseases of the ear (5.7±1.3%) are the intensity of pain, the role physical activity, as well as mental health. Acute inflammatory diseases of the larynx have a negative impact on the psychological component of health (62.3±12.2), while maintaining at an average level of physical components (73.7±12.1).

According to our research data, the impact of chronic and acute ENT diseases on the quality of

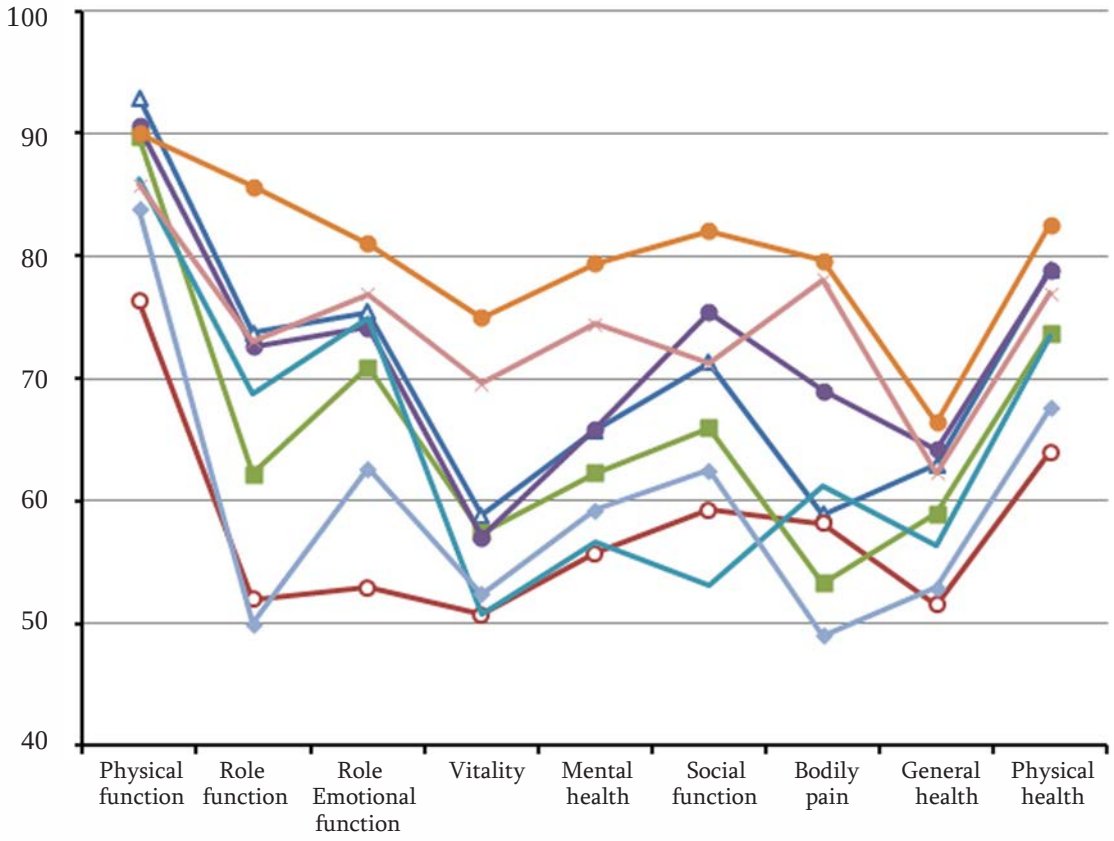

Figure 4. *Impact of acute and chronic ENT pathologies on the life quality parameters.*
Notes:
Acute inflammatory diseases: dark blue line - nose and paranasal sinuses, green line - pharynx, light blue line - throat,
Chronic inflammatory diseases: red line - nose and paranasal sinuses, purple line - pharynx, orange line - throat.

life also depends on the nosology (Fig. 3).

Summarizing the data, it should be noted that the acute inflammatory diseases of ENT organs do not have such negative effect (PCH – 75.2±12.2, MCH – 64±14.4) on life quality parameters as chronic ENT diseases, (PCH – 71.5±15.3, MCH – 62.1±15.5), especially in the cases of nasal and paranasal sinuses chronic diseases. It should be noted that there is a correlation between the clinical signs of a disease and studied indicators. In addition, the most affected is the psychological component of quality of life. The mentioned pathologies are displayed by the following complaints nasal breathing difficulties, pain in nasal area, leak from nose, smelling disabilities (PCH – 66.4±18.5, MCH – 53.3±16.9).

Conclusion

The health physical component integral index based on the data received from PedsQL questionnaire scale during the ENT pathology was 73.1±14.2, and the mental indicator was 62.7±15.6.

Chronic diseases of nasal and paranasal sinuses have the most negative effect on the life quality parameters of physical component of health – 64±15.2, mental component of health – 54.2±12.8.

The average score of the adolescents' health psychological component in two reference groups was low compared to the physical component of health status, which indicates the low level of adolescents' psychophysical culture.

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