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Medical and Social Characteristics and Quality of Life of Children with Urinary System Diseases (on the Example of Urinary System Infection)

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ABSTRACT

Introduction: The effects of chronic disease on the general condition of the child can be assessed by studying the quality of life, which is one of the most popular areas in modern medicine [1].

The purpose: of this was to study the quality of life of children with urinary tract infection living in the city.

Materials and methods: To assess the quality of life, the Pediatric Quality of Life Inventory questionnaire (PedsQL ™ 4.0) was used, which was validated in Russia [2, 3, 4, 5, 6]. In the future, using this database, you can quickly find the necessary information (previously entered into it) and create reports with the help of Epi Info ™ and perform statistical data processing. The study involved 780 children aged 3 to 14 years and their parents, who permanently reside in the city of Yakutsk.

Results and discussion: The quality of life of children with diseases of the urinary system (n = 389) in comparison with the indicators of the quality of life of children of the same age (n = 391) when a questionnaire was filled in, respectively, by parents and children, the quality of life parameters of children with urinary system infection is significantly lower on all scales of functioning than in healthy children: emotional (by 38.2%, (p <0.005), social (by 38.6% (p <0.005), physical (by 32.2%, (p <0.05) and role-playing (by 36.6%, (p <0.05).

Keywords: quality of life, urinary tract infection, children, patients.

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INTRODUCTION

The main priorities of state policy are the preservation and strengthening of public health on the basis of ensuring the quality and accessibility of medical care [7,8,9]. Children's health in the modern world has a special socio-economic significance, as it serves as the basis for the social well-being of the nation, its economic and social prosperity [10].

One of the directions of studying the quality of life in medicine is to assess the impact of a chronic disease on the general condition of a child. A comparison of the parameters of the quality of life of healthy and sick children allows us to determine the general patterns of violation of the quality of life during the development of a chronic disease, the influence of the severity and duration of the disease on the quality of life.

In Russia, a medical and social study was conducted, in particular, the determination of age-gender standards of quality of life, the identification of factors affecting this indicator, regional characteristics of quality of life, the study of the possibilities of using quality of life as a parameter for assessing the health status of a child population. Also, the method of assessing the quality of life of children opens up the possibility of studying the ideas of parents regarding the health and well-being of their own children and comparing these ideas with the subjective opinion of the children themselves [2,3,4,5,6].

OBJECTIVE

To study the quality of life of children with urinary tract infections living in the city.

MATERIALS AND METHODS

The Pediatric Quality of Life Inventory questionnaire (PedsQL ™ 4.0), which was validated in Russia (Nikitin T.P., 2004, Vinyarskaya I.V., 2006), was used to assess the quality of life, and is one of the most popular questionnaires in the world, also translated into more than 20 languages of the PedsQL Questionnaire. This tool is convenient for filling in, statistical processing and interpretation of the results; it has forms for filling in by children and parents; can be used to study the quality of life of healthy children and patients with various diseases, including in dynamics, during treatment and rehabilitation. Four of its forms were chosen - for filling out by children 2-4, 5-7, 8-12 years old (children's form) and their parents (parent form), as well as for filling out by children 13-17 years old and for filling out by parents.

The child and parental forms of the questionnaire are identical in terms of number and content of questions, format, method of completion and statistical processing. The differences between the forms of the questionnaire are the unequal grammatical design of the questions, the different wording of some phrases, while maintaining the main meaning of the questions and scales.

At the first stage, an electronic database was formed containing possible options for the socio-hygienic characteristics of each child. In the future, using this database you can quickly find the necessary information (previously entered into it) and use Epi Info ™ to create reports and carry out statistical data processing.

The study involved 780 children aged 3 to 14 years and their parents, permanently residing in the city of Yakutsk. Patients were divided into 2 groups: group 1 comprised 389 (49.0 ± 2.2) children, 201 of them were girls (51.7%), 188 boys (48.3%), who underwent laboratory and instrumental examination and physical examination revealed IMVS, group 2 - 391 (51.0 ± 8.3) children, of which 208 girls (53.2%), 183 boys (46.8%), who undergo laboratory, instrumental and physical examinations inspection did not reveal UTI.

RESULTS AND DISCUSSION

Quality of life for healthy children

We studied the quality of life indicators for schoolchildren aged 3-14 using the general Pediatric Quality of Life Inventory - PedsQLTM 4.0 Generic Core Scales (Varni et al., USA, 2001) using leading factors and assessed the health status of children without chronic pathology.

Table 1: Quality of life parameters for healthy children from 3 to 14 years old (M ± σ; according to the answers of children and parents)

QOL parameters	According to the answers of children 3-7 years old (n=176)	According to the answers of children 8-14 years old (n=215)	According to the answers of parents 3-7 years old (n=176)	According to the answers of parents 8-14 years old (n=215)	p
Ff	84,0±14,5	86,2±12,8	78,6±14,2	82,6±14,8	>0,05
Ef	76,8±12,8***	62,6±12,5***	74,4±12,6	71,8±14,5	<0,005
SF	86,5±10,8	88,6±11,3	83,4±12,8*	88,6±12,6*	<0,05
RF	78,4±16,5***	72,8±12,8***	80,5±12,6	72,4±12,4	<0,05
PSF	82,5±11,6*	74,6±11,6*	76,2±12,8	78,4±8,6	<0,05
ALL	82,2±21,5*	75,8±12,2*	77,4±14,7	78,6±16,8	>0,05

Note: p>0.05 - no reliable statistical data, * p<0.05, *** p<0.005, statistically significant difference

Table 1 presents the QOL indicators of children 3-14 years old who do not have a chronic pathology (n = 391) depending on age, respectively, by children and parents. The study of QOL of healthy children revealed distinct age-related features: a decrease in emotional (by 18.4%, p <0.005) and role-based functioning (by 10%, p <0.05) and an increase in social functioning with age (p <0.05). Reliably high differences in the total QOL scale were revealed in children 8-14 years old: psychosocial functioning by 12.4% and total score by 8.2% (p <0.05). The highest number of points was obtained on the scale of social functioning, and the lowest QOL indicators were found in assessing emotional functioning, as in children aged 8-14, but a significant decrease (p <0.005) in emotional functioning was noted in schoolchildren according to children's responses. This is consistent with data from other studies on the presence of problems in the emotional and personal sphere, increased anxiety, vulnerability, emotional imbalance, and excessive sensitivity of children in this age group. Lower indicators of QOL on the scale of the emotional functioning of the children's questionnaire in comparison with those in the parental version indicate an insufficiently adequate representation of the parents about the emotional well-being of their children. According to the answers of their parents, the least number of points was obtained on the scale of role functioning, which reflects the anxiety of parents about learning, difficulties experienced by the child at school.

The age-related features also included an increase in the level of social functioning in children aged 8-14: in the answers of parents, a statistically significant increase on the scale of social functioning by 8.4% (p <0.05), with the answers of children the difference is not significant (p> 0.05) When parents filled out the questionnaire, statistically significant differences were identified on all scales (p <0.001).

In children, there was a gap between the parameters: higher values of physical and social functioning and lower values of emotional and role functioning, while in adolescents this gap is much larger (in children 3-7 years old: 14.8 - 16.5%, in children 8-14 years: 26.4 - 16.5%).

We found that parents of children 3-7 years old tend to underestimate QOL score in comparison with the responses of the children themselves on the scales of physical, emotional, role and overestimate on the scale of social functioning (p> 0.05). Parents of children 8-14 years old, on the contrary, somewhat overestimate QOL score on the total scale of psychosocial scaling (p> 0.05). The uneven assessment of the quality of life by children of different ages was shown earlier in studies abroad [214], which, along with the results of our study, indicates age-related differences in the child's perception of his physical, emotional and social functioning.

Thus, the quality of life of healthy children 0-14 years old in the city of Yakutsk has features, the quality of life in children 3-7 years old is higher on the scales emotionally (p <0.005), role-based functioning (p <0.03) and overall score (p <0, 05); perhaps this is due to the recent increase in neuropsychic tension, an increase in mental stress during study, with age, there is an increase in the level of social functioning against the background of a decrease in emotional and role, a gap between the parameters is noted: higher values of physical and social functioning and lower - emotional and role-playing, while in schoolchildren aged 8-14 this gap is much larger (in children 3-7 years old: 14.8 - 16.5%, in children 8-14 years old: 26.4 - 16.5%), parents ambiguously evaluate QOL children. The overestimation of QOL indicators on the scales of emotional and role functioning in adolescents 13-18 years old may indicate a lack of awareness of parents about the violation of the psycho-emotional adaptation of their children in society.

Quality of life for children with urinary tract infection

We studied the quality of life indicators for children with UTI 3-14 years old by leading factors and assessed the degree of the disease's effect on their quality of life. The study included 389 children with UTI (3-7 and 8-14 years old) and their parents (one of the parents of the child participating in the study), selected by the continuous sampling method.

According to the answers of children with UTI, QOL parameters are statistically significantly higher in children 8-

14 years old on all scales: emotional (by 24.4%, p <0.05), social (by 32.6%, p <0.005), role (by 18.8%, p <0.05), except for physical functioning by 10.5% (p> 0.05) according to the responses of children. According to the answers of parents, significantly higher differences in QOL were revealed on social scales by 14.4% (p <0.05), role by 20.0% (p <0.05) and total psychosocial functioning by 12.9% (p <0 , 05) in children 8-14 years old with UTI (Table 2).

Table 2: Quality of life parameters for children with UTI from 3 to 14 years in (M ± σ; according to the answers of children and parents)

QOL parameters	According to the answers of children 3-7 years old (n = 190)	According to the answers of children 8-14 years old (n = 199)	According to the answers of parents 3-7 years old (n = 190)	According to the answers of parents 8-14 years old (n = 199)	p
Ff	64,6±12,8	70,8±12,4	66,4±16,5*	72,6±16,8*	<0,05
Ef	56,4±12,6*	68,4±12,8*	58,4±18,5	60,8±18,8	<0,05
SF	62,8±14,6*	84,4±16,4*	72,2±14,8*	82,4±14,6*	<0,05
RF	56,5±14,0*	66,2±14,8*	54,4±18,6*	66,4±16,4*	<0,05
PSF	56,6±12,6***	72,2±14,6***	62,8±14,2*	70,5±12,4*	*<0,05 ***<0,001
ALL	58,4±14,4*	70,5±14,2*	64,2±12,6	69,6±14,8	<0,05

Note: * p<0.05, *** p<0.005, statistically significant difference

The gap between the QOL parameters on the scales of physical and emotional (by 16%), social and role functioning (14.2%) in children 3 to 7 years old, and on the scales of social and role functioning (22.4%) in children also draws attention 8-14 years old.

Tables 3 and 4 show the QOL indicators of children with UTI 3-14 years old (n = 389) depending on age and gender when filling out the questionnaire, respectively, by children and parents.

Table 3: Quality of life parameters for children with UTI from 3 to 14 years depending on age and gender (M ± σ; according to the responses of children)

QOL parameters	Children from 3 to 7 years old (n=190)		Children from 8 to 14 years old (n = 199)		p
	Boys (n=88)	Girls (n=102)	Boys (n=100)	Girls (n=99)	
Ff	62,4±12,6	58,7±10,4	62,5±12,4*	84,0±14,6*	<0,05
Ef	58,8±10,8**	45,5±10,6**	66,5±16,6	68,7±14,8	<0,01
SF	66,2±12,0	65,2±14,8	78,4±18,6*	92,6±10,2*	<0,05
RF	57,8±12,4	54,4±15,7	64,5±14,2	68,5±12,5	>0,05
PSF	58,6±10,0	51,1±12,7	66,4±12,7	76,5±11,4	>0,05
ALL	62,0±12,2	57,3±11,8	64,2±10,6*	80,5±12,4	<0,05

Note: p>0.05 - no reliable statistical data, * p<0.05, *** p<0.01, statistically significant difference.

In children with UTI 3-7 years old, we revealed reliably low QOL parameters on the emotional functioning scale in girls according to the responses of children (32.6%, p <0.01) and parents (38.2%, p <0.05) In children of 8-14 years of age, no significant differences in QOL on the scale of emotional functioning were revealed by the responses of children; according to the answers of parents, a significantly high emotional functioning was revealed in girls (by 46.6%, p <0.01).

Table 4: Quality of life parameters for children with UTI from 3 to 14 years depending on age and gender (M ± σ; according to parents' answers)

QOL parameters	Children from 3 to 7 years old (n=190)		Children from 8 to 14 years old (n = 199)		p
	Boys (n=88)	Girls (n=102)	Boys (n=100)	Girls (n=99)	
Ff	63,5±14,7	60,8±12,5	66,5±14,8	72,2±12,0	>0,05
Ef	65,2±18,4*	47,3±12,8*	54,8±22,6**	78,6±18,4	**<0,01 *<0,05
SF	74,4±14,6	72,5±12,2	74,4±16,4**	95,4±14,6**	<0,01
RF	56,4±16,4	46,5±12,4	52,8±18,2**	84,4±14,6	<0,01
PSF	62,5±12,7	54,4±11,0	58,6±14,8*	85,8±12,0*	<0,05
ALL	66,4±10,2	54,8±12,8	62,7±14,6**	84,6±18,4**	<0,05

Note: p>0.05 - no reliable statistical data, * p<0.05, ** p<0.01, statistically significant difference.

According to the parents' answers, also high QOL parameters on other life activity scales in girls of 8-14 years old: social (by 33.9%, p <0.01), role (by 65.3%, p <0.01) and, accordingly, total psychosocial functioning (by 47.6%, p <0.01) and the total score (by 37.4%, p <0.05).

Thus, the effect of chronic disease on QOL of children 3-7 years old was gender-specific depending on age. Children with UTI 3–7 years of age suffered more from emotional functioning in girls. Children with UTI 8-14 years old suffered more physical, emotional and role-based functioning in boys. In general, the QOL of boys with UTI of 8-14 years is lower in comparison with girls - peers on all life activity scales.

The revealed differences indicate the need for a gender approach to the development of preventive and treatment programs.

Socio-demographic characteristics of the families of a child with UTI

Of the studied social factors, the following had a negative impact on QOL: fullness of the family, parenting, poor financial situation of the family, poor social and hygienic conditions of the family, unfavorable psychological conditions, reduced self-esteem of the child, and lag in physical development. From Figure 1, we see that according to the responses of children with UTI and parents, QOL parameters are statistically significantly higher in children from complete families on the role functioning scale by 38.4% (64.5 ± 12.6 versus 46.2 ± 8.6, p <0.001) in children and 38.6% (62.6 ± 12.6 versus 46.2 ± 14.2, p <0.05) in parents.

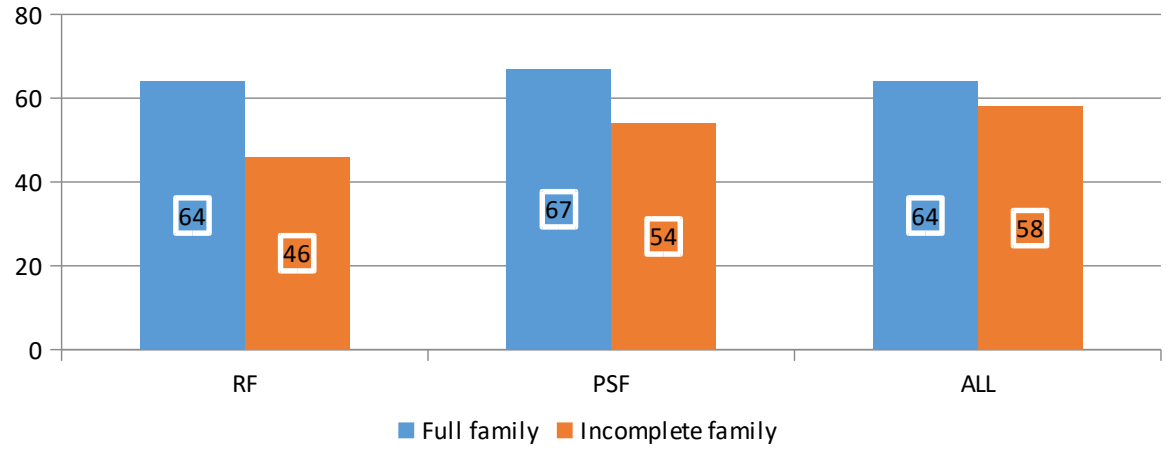

Fig. 1: The influence of family completeness on QOL of children with UTI (M; according to the responses of children). The difference in all indicators between the groups is statistically significant (p <0.05).

In families with low mother education, QOL of children is significantly lower on physical scales by 36.6% (44.6 ± 16.4 versus 68.6 ± 14.6, p <0.05) and social functioning by 36.4% (46.8 ± 8.4 vs 76.6 ± 12.2, p <0.05), the total score is 22.6% (54.2 ± 12.2 vs 64.5 ± 12.5, p < 0.05) according to the answers of children than among more educated parents (Fig. 2).

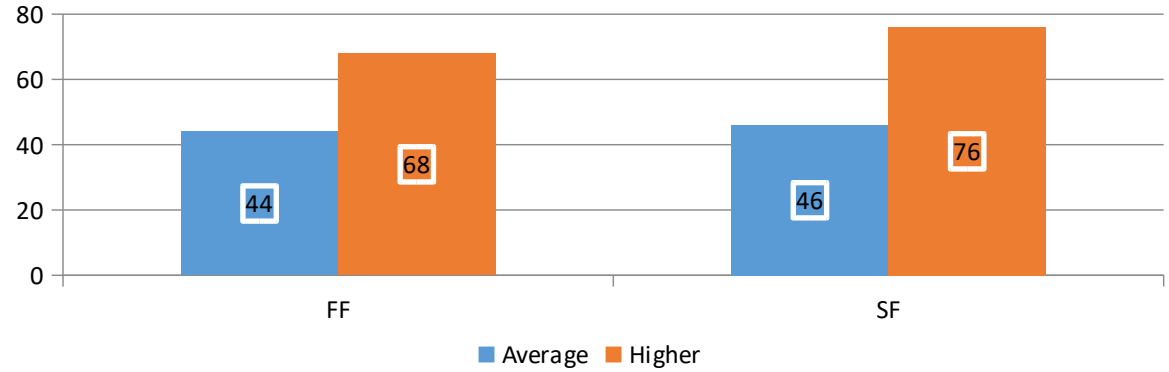

Fig. 2: The effect of maternal education on the QOL parameters of children with UTI (M; according to children's responses). The difference in all indicators between the groups is statistically significant (p <0.05).

According to the answers of parents, QOL of children is statistically significantly lower in families with a low level of maternal education on emotional scales by 42.2% (52.8 ± 16.2 versus 82.1 ± 12.8, p <0.05), social by 38 5% (56.4 ± 18.6 versus 84.7 ± 16.5, p <0.05), role by 42.6% (42.2 ± 12.6 versus 64.8 ± 14.5, p <0.05), psychosocial functioning by

36.6% (48.6 ± 16.5 versus 72.7 ± 12.6, p <0.05), total score by 36% (49.2 ± 16, 7 against 73.5 ± 14.6, p <0.05).

In families with a low educational level of the father, the quality of life of children is statistically significantly reduced on physical scales by 32.6% (56.2 ± 14.5 versus 76.5 ± 14.6, p <0.05), social by 36.6% (56.5 ± 12.4 vs 78.8 ± 14.3, p <0.05), role-based functioning by 34.6% (48.4 ± 12.8 vs 72.6 ± 12.2, p < 0.05) according to the responses of children (Fig. 3).

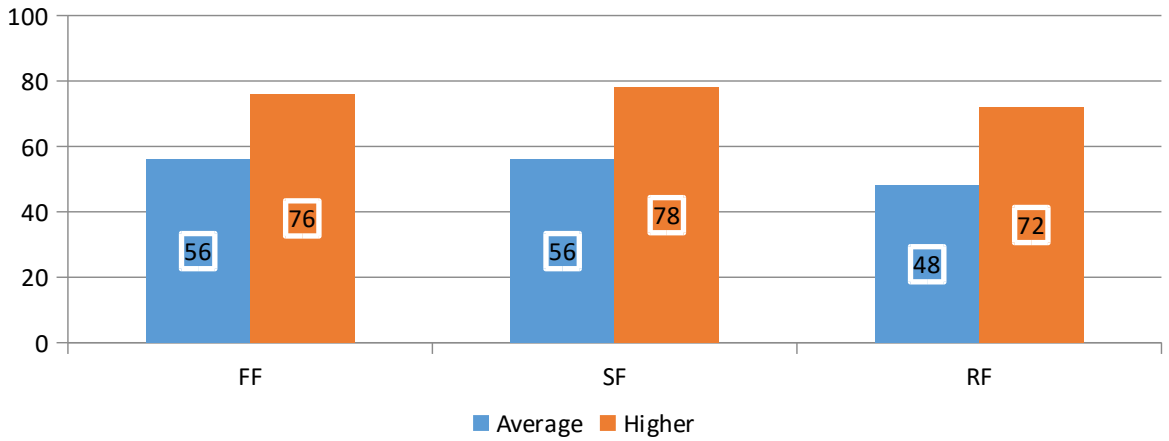

Fig. 3: The influence of father's education on the QOL parameters of children with UTI (M; according to the responses of children). The difference in all indicators between the groups is statistically significant (p <0.05).

According to the answers of parents, QOL of children is significantly lower on all scales of functioning: physical by 42.8% (42.5 ± 14.3 versus 74.8 ± 16.8, p <0.05), emotional by 41.2% (44 , 2 ± 12.3 against 68.8 ± 16.0, p <0.05), social by 54.4% (44.2 ± 12.9 against 80.4 ± 14.6, p <0.05), role functioning by 42.4% (36.4 ± 12.6 versus 66.4 ± 12.8, p <0.05).

Reliably reduces the patient's QOL, the poor financial situation of the family on the physical scales by 36.6% (48.2 ± 12.5 versus 68.4 ± 12.8, p <0.05), social - by 44.6% (41.8 ± 12.8 vs 74.6 ± 12.8, p <0.05), psychosocial functioning by 34% (42.6 ± 12.2 vs 64.6 ± 14.6, p <0.05), total a score of 36% (48.6 ± 8.8 versus 68.8 ± 14.4, p <0.05) according to the responses of children (Fig. 4).

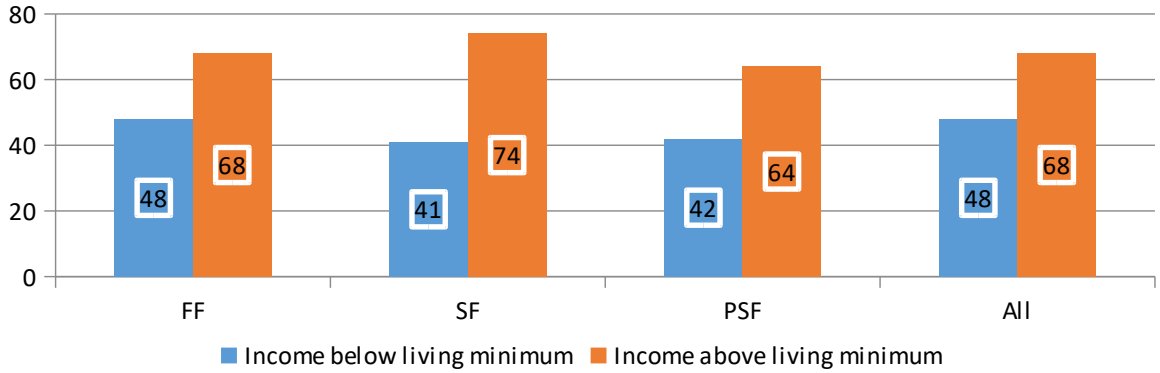

Fig. 4: The influence of financial standing on the QOL parameters of children with UTI (M; according to the responses of children). The difference in all indicators between the groups is statistically significant (p <0.05).

Also revealed statistically significant differences in QOL of children 8-14 years old with UTI living in families with an unsatisfactory socio-hygienic characteristic on role scales by 48.6% (36.6 ± 12.8 versus 68.5 ± 12.6, p < 0.05) according to the responses of children and physical functioning by 28.6% (58.4 ± 12.0 versus 76.6 ± 14.6, p <0.05) according to the answers of parents (Fig. 5).

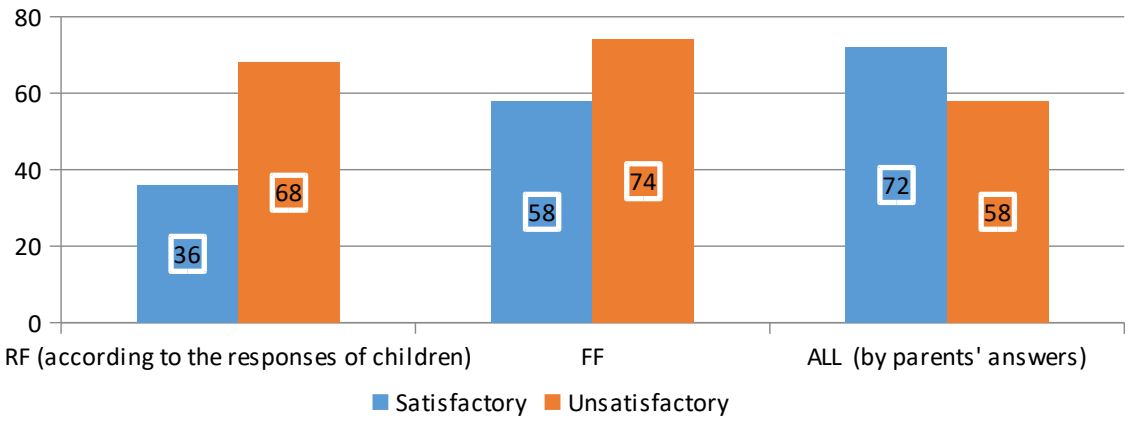

Fig. 5: The influence of financial standing on the QOL parameters of children with UTI (M; according to the responses of children). The difference in all indicators between the groups is statistically significant (p <0.05).

According to the answers of children with UTI and parents, QOL parameters are statistically significantly higher in children from families where there are no conflicts on the scale of social functioning by 22.4% (78.5 ± 16.2 versus 58.8 ± 16.0, p <0, 05 in children and 82.6 ± 14.2 versus 57.3 ± 18.6, p <0.005). According to the answers of parents, QOL of children is statistically significantly lower on the scale of psychosocial functioning by 34.6% (54.6 ± 18.7 versus 70.4 ± 14.5, p <0.05) (Fig. 6).

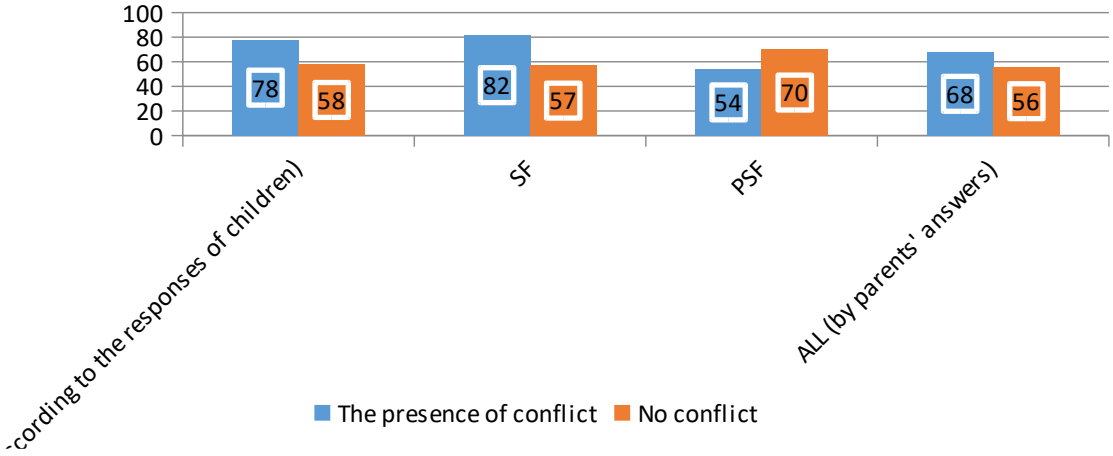

Fig. 6: The influence of an unfavorable psychological situation on the QOL parameters of children with UTI (M; according to the responses of children). The difference in all indicators between the groups is statistically significant (p <0.05).

We also revealed a statistically significant relationship between QOL and the psychological health of the child, the higher the child's self-esteem, the higher the QOL: on the physical scales by 22.2% (72.6 ± 12.5 versus 58.3 ± 18.1, p <0, 05), social by 26.7% (74.4 ± 8.8 against 62.6 ± 12.5, p <0.01), psychosocial functioning by 24.6% (68.2 ± 14.6 against 54 , 6 ± 14.2, p <0.01), the total score is 25% (68.3 ± 12.6 versus 58.2 ± 12.4, p <0.01) according to the responses of children.

Also on all scales of functioning according to the answers of parents: physical by 21.6% (74.6 ± 16.0 versus 56.8 ± 18.6, p <0.01), emotional by 25.5% (67.8 ± 21.2 vs. 52.5 ± 18.0, p <0.01), social by 26.2% (84.6 ± 14.4 versus 66.4 ± 21.4, p <0.01), role by 24.8% (82.4 ± 15.6 against 66.4 ± 18.4, p <0.002), psychosocial functioning by 28.6% (76.6 ± 12.6 against 52.8 ± 18.5 , p <0.001) and a total score of 26.6% (74.4 ± 12.6 versus 56.8 ± 16.5, p <0.001).

We found a statistically significant (p <0.05) effect of physical development on QOL, with normal physical development higher than QOL on emotional scales by 14%, psychosocial functioning by 11%, and a total score of 8% according to children's response.

Thus, psychosocial factors that have a negative effect on the QOL of children with UTI of 8-14 years have been identified. Based on the socio-hygienic indicators of families, it can be concluded that most parents have the conditions and the opportunity to participate in rehabilitation activities.

Comparative characteristics of the quality of life of children with UTI and healthy children. Figures 7 and 8 show the quality of life of children with diseases of the urinary system (n = 389) in comparison with the quality indicators of children of the same age from the comparison groups (n = 391) when filling out the questionnaire, respectively, by children and parents. The QOL parameters of children with

UTI are significantly lower on all functioning scales than healthy peers: physical (by 32.2%, (p <0.05), emotional (by 38.2%, (p <0.005), social (by 38.6% (p <0.005), role-playing (36.6%, (p <0.05)

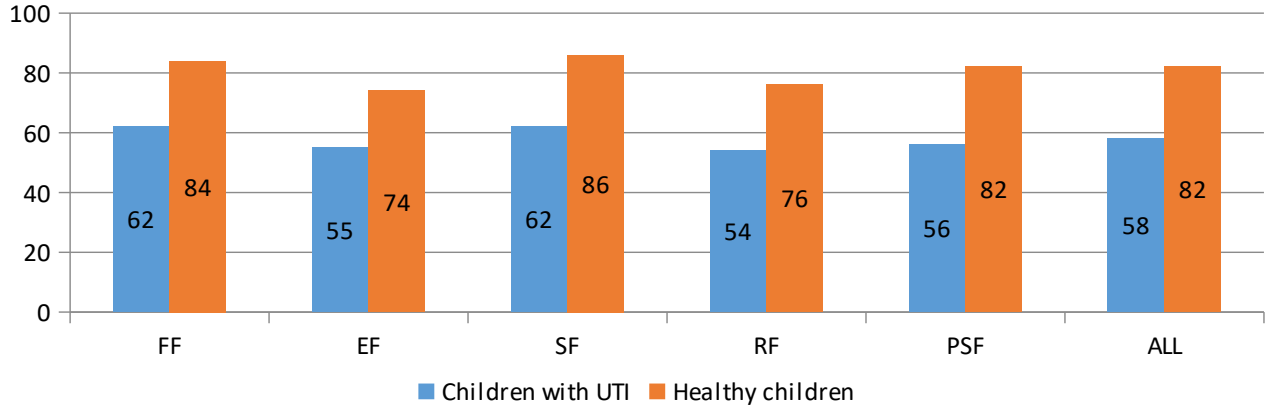

Fig. 7: Comparative characteristics of quality of life parameters for children with UTI and healthy children (M; according to the responses of children). The difference in all indicators between the groups is statistically significant (p <0.05).

According to the total QOL scale of children with diseases of the urinary system, it is 36.8% lower in comparison with healthy peers (p <0.05) according to children's answers.

According to the answers of parents, the total assessment of QOL of children with diseases of the urinary system is lower than QOL of healthy children by 24% (p <0.001): all levels of life are affected.

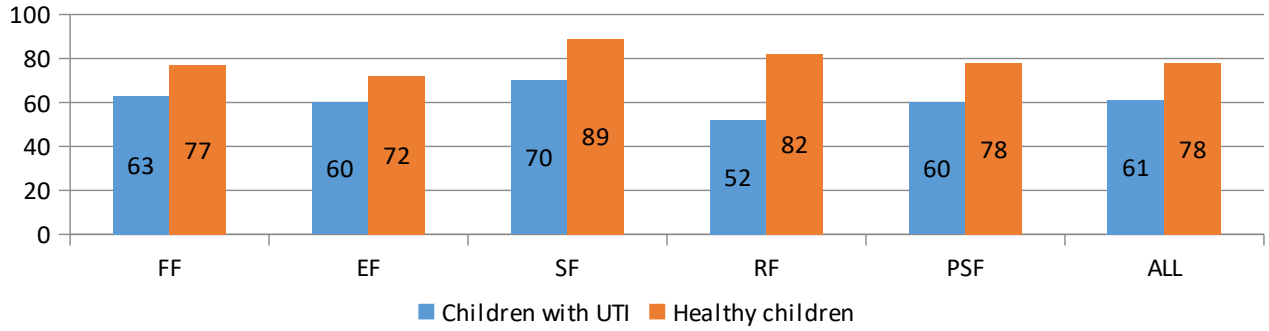

Fig. 8: Comparative characteristics of quality of life parameters for children with UTI and healthy children (M; according to the answers of parents). The difference in all indicators between groups is statistically significant (p <0.001).

In children with UTI and their peers, there are no significantly significant differences on the scales of emotional, social, role functioning (p> 0.05), only physical functioning is statistically significantly lower (by 22.6%, p <0.05) according to the responses of children. According to the answers of parents, there are statistically significant differences (p <0.001) on all scales of life: physical (by 14.8%), emotional (by 15.5%), social (by 8.4%), role (by 11.4 %), psychosocial functioning (by 13.5%).

According to the answers of parents in both age groups, there are statistically significant differences on all scales of the questionnaire (p <0.001), but unlike the answers of children, the difference is smaller on the scales of physical, emotional, social (respectively: 24.6%, 25.6%, 18.5%) and more on the scale of role functioning (49.4%). According to the literature, parents indicated lower quality of life indicators than sick children [1,2,3,4,5,6,7,8,9,10].

CONCLUSION

Thus, as a result of the study, it was shown that IMVS leads to a significant decrease in all constituent components of QOL, namely, the physical, emotional and social functioning of the child and his family, compared with healthy children. At the same time, the level of social activity is least affected, which is a favorable factor for the sufficient integration of patients with UTI in society.

In boys with UTI 8-14 years old, physical and role functioning are more affected, in girls 8-14 years old - emotional. This indicates the need for a gender approach to the development of preventive and treatment programs.

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