

Results of the study on the impact of eye disease on child quality of life

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Background: Visual function impairment in early childhood affects the development of child's perception of the world. There is an increase in the importance of studies on not only characteristics of vision impairment, but also on the impact of these characteristics on the quality of life (QoL), for predicting subsequent full-blown socialization of the child and the potential for effective treatment of a detected eye condition or correction of an eye with a refractive error.

Purpose: To examine the impact of eye disease on the components of QoL of children from various age groups.

Material and Methods: Eight hundred and twenty-four parents of children of various age groups voluntarily and anonymously responded to the adapted version of the Children's Visual Function Questionnaire (CVFQ) while their children were having an examination of eye functions.

Results: The presence of eye disease affected child QoL, with a reduction in the mean total score of child QoL of 17.8% for the age cohort of children under 3 years of age, and of 19.3% for the age cohort of children above 3 years of age. Visual function impairment affected the scores of General Health, General Vision, Competence and Personality domains, particularly, the score of the child's capacity to get along well with peers and friends.

Conclusion: Studies on child quality of life demonstrate the impact of visual function impairment on the child's potential for socialization, and still provide a means for getting feedback from the patient when there is a need for prolonged observation of changes in his/her visual functions.

Keywords:

pediatric eye disease, quality of life

Introduction

The prevalence of eye disease is still on the rise globally. Globally, at least 2.2 billion people have a vision impairment or blindness, and of these, at least 1 billion people have a vision impairment that could have been prevented by timely use of current prevention and treatment technologies, especially for refractive errors (like myopia, hypermetropia or astigmatism), glaucoma, cataract, etc. [1-5].

The prevalence of eye disease among children has been also increasing. The results of Ukrainian studies demonstrated that as much as 60% of patients with the diseases of the eye and ocular adnexa that were diagnosed in early childhood should be on secondary prevention (i.e., prevention of disease progression and complications) and receive early correction and treatment.

Numerous WHO initiatives on the development and implementation of Vision 2020, particularly, the 73rd World Health Assembly Resolution on 'Integrated people-centered eye care, including preventable blindness and impaired vision', encourage considering and developing integrated people-centered eye care and implementing it globally, primarily with the purpose of reducing the burden of eye disease since childhood based on best practices [1].

Because there is a raise in the prevalence of the diseases of the eye and ocular adnexa, particularly, among early children, it is important to investigate the potential impact of these diseases on the components of quality of life (QoL) of children from various age groups in order to receive feedback from the patient and family members in

the course of prolonged medical observation, and to predict subsequent full-blown socialization of the child on the basis of individual features and the potential for effective treatment of a detected eye condition or correction of an eye with a refractive error.

In addition, studies on the impact of early eye disease on the components of quality of life of children from various age groups have been conducted mostly in the developed countries, but there is paucity of such studies in Ukraine, which makes conducting them in this country important.

The purpose of this study was to examine the impact of eye disease on the components of quality of life of children from various age groups.

Material and Methods

Eight hundred and twenty-four parents (including the main group of 634 individuals and the control group of 190 individuals) of children of various age groups voluntarily and anonymously responded to the adapted version of the Children's Visual Function Questionnaire (CVFQ) while their children were having an examination of eye functions, and the results of this sociological study were used in the current study. The surveyed parents were split into two groups based on the age of their child (266 parents of children under 3 years of age and 558 parents of children above 3 years of age), and assessed their child's quality of life domains and visual functions. An examination of visual functions by an ophthalmologist included visual acuity, skiascopy, refractometry, slit lamp examination, and ophthalmoscopy. Sociological and medical and statistical methods were used in the research (a total CVFQ score was computed, and sigma as well as responder sample representativeness was determined). Statistical analysis of responses to the questionnaire was performed using Statistica 8.0 and Microsoft Excel software and classical analysis of variance (ANOVA).

Inclusion criteria for the main group were visual function impairment with an eye disease that was clinically diagnosed more than 3 months ago and no uncompensated chronic comorbidity in the child. Exclusion criteria were the presence of non-ocular chronic disease or less than 3 months after surgery for disease of the eye or ocular adnexa in the child.

Results

In the cohort of children under 3 years of age, the mean age at which the diagnosis of eye disease was made was 1.6 ± 1.2 years. The mean age of children under 3 years of age at the time of parental responding to the questionnaire was 2.03 ± 0.27 years for the main group and 1.7 ± 0.83 years for the control group. The following disorders contributed to the overall majority (90.29 ± 2.06 %) of diagnosed eye diseases in the main group of children under 3 years of age: myopia (31.07 ± 3.22 %); strabismus (22.33 ± 2.90 %); hypermetropia (20.39 ± 2.81 %); dacryocystitis in newborns (7.77 ± 1.87 %); astigmatism (5.83 ± 1.63 %); and amblyopia (2.91 ± 1.17 %).

In the cohort of children above 3 years of age, the mean age at which the diagnosis of eye disease was made was 5.7 ± 4.1 years. The following disorders contributed to the overall majority (91.59 ± 1.34 %) of diagnosed ocular diseases in the main group of children above 3 years of age: myopia (42.99 ± 2.39 %); strabismus (20.56 ± 1.95 %); hypermetropia (14.02 ± 1.68 %); astigmatism (6.07 ± 1.15 %); amblyopia (4.67 ± 1.02 %), chalazion (2.34 ± 0.73 %) and dacryocystitis or lacrimal duct obstruction (0.93 ± 0.46 %). The mean age of children above 3 years of age at the time of parental responding to the questionnaire was 9.3 ± 4.0 years for the main group and 9.05 ± 4.5 years for the control group.

We compared the two age cohorts of children with eye disease and found that, with an increase in age, there was an increase in the percentage of children diagnosed with myopia or astigmatism. QoL components for main and control groups of the two age cohorts were also studied. Six subscales (General Health, General Vision, Competence, Personality, Family Impact, and Treatment-Associated Limitations) from the adapted version of the Children's Visual Function Questionnaire were used for the parental assessment of the impact of eye disease on the quality of life components, and scoring was performed as per the methodological guidelines for scoring responses to the questions of the adapted version of questionnaire.

We compared the mean total score of child QoL for the main group with that for the control group, and found, that the presence of eye disease caused a 17.8% reduction in the mean total score of child QoL in the age cohort of children under 3 years of age (with a mean total score of child QoL of 0.60 ± 0.09 for the main group versus 0.73 ± 0.12 for the control group), and a 19.3% reduction in the mean total score of child QoL in the age cohort of children above 3 years of age (with a mean total score of child QoL of 0.67 ± 0.09 for the main group versus 0.83 ± 0.07 for the control group).

For the age cohort of children under 3 years of age, Family Impact (0.51 ± 0.17) was the domain most impacted by the detected eye disease, followed by General Vision (0.55 ± 0.17); General Health (0.57 ± 0.18), and Treatment-Associated Limitations (0.69 ± 0.18). In addition, for this age cohort, the scores of Competence and Personality domains were rather high (0.82 ± 0.17 and 0.72 ± 0.17 , respectively).

The presence of eye disease affected practically all the domains of the quality of life in the age cohort of children older than 3 years, with significantly lower QoL scores in the domains of General Vision (0.55 ± 0.15), General Health (0.59 ± 0.21), Family Impact (0.60 ± 0.15), Competence (0.63 ± 0.16), Personality (0.66 ± 0.12) and Treatment-Associated Limitations (0.72 ± 0.20). Parents of visually impaired children older than 3 years were worried that their child would not be able to read, watch TV, or drive a car, with a relevant mean score of 0.31 ± 0.24 for the main group versus 0.82 ± 0.22 for the control group. In addition, these parents (a) believed that their child's

eyesight made it difficult for him/her to learn to walk, run, skip, or jump (0.60 ± 0.21), find something on a crowded shelf or in a closet (0.60 ± 0.21), and locate a small piece of food and grasp it (0.66 ± 0.26) and (b) reported that their child tripped over curbs or steps (0.57 ± 0.23) and bumped into people, walls or furniture (0.61 ± 0.25).

There was a marked negative impact of eye disease on worries of parents of visually impaired children under 3 years of age when (a) other people commented on the child's vision or eyes when the parent took him/her to a store or mall (0.55 ± 0.3 for the main group of the age cohort of children under 3 years of age versus 0.66 ± 0.25 for the main group of the age cohort of children older than 3 years); (b) the child was feeling different from others (0.44 ± 0.3 versus 0.73 ± 0.25 , respectively); (c) parents noticed other children looking at their child (0.57 ± 0.32 versus 0.68 ± 0.25 , respectively) or (d) the child was teased because of his/her vision problems (0.60 ± 0.23 versus 0.71 ± 0.22 , respectively). In addition, an eye disease in children older than 3 years negatively affected their capacity to get along well with peers and friends (0.69 ± 0.19 for the main group versus 0.76 ± 0.16 for the control group); enjoyment of playing with others (sisters and brothers or friends) (0.76 ± 0.2 for the main group versus 0.84 ± 0.14 for the control group); enjoyment of watching television, videos or playing videogames (0.78 ± 0.19 for the main group versus 0.85 ± 0.2 for the control group). These children had reduced enjoyment of drawing, painting or other art activities (0.67 ± 0.25 for the main group versus 0.75 ± 0.25 for the control group).

Discussion

The discovered negative impact of eye disease on the components of quality of life of children from various age groups indicate that it is important to implement (a) measures for early detection of visual impairment and (b) strategies for prevention of visual impairment as early as in early childhood. When being diagnosed with an eye disease or treated (for example, while wearing a patch or glasses or when taking eye drops or medication), children of both age cohorts were uncomfortable (0.65 ± 0.24 for the main group of children under 3 years of age and 0.72 ± 0.25 for the main group of children older than 3 years). In addition, parents reported that children were less active when treated (for example, while wearing a patch or glasses or when taking eye drops or medication) (0.65 ± 0.25 for the main group of children under 3 years of age and 0.75 ± 0.25 for the main group of children older than 3 years). Parents were worried when their children refused treatment (for example, pulled off the patch or glasses, or squeezed eye shut when trying to put in eye drops) and tried to make their children follow the treatment plan (0.63 ± 0.25 for the main group of children under 3 years of age and 0.59 ± 0.34 for the main group of children older than 3 years).

Moreover, visual impairment resulted in a reduced capacity for the development of competencies with an increase in child's age (0.82 ± 0.17 for the main group of children under 3 years of age and 0.63 ± 0.16 for the main group of children older than 3 years) and the development of personality (0.72 ± 0.13 for the main group of children under 3 years of age and 0.66 ± 0.12 for the main group of children older than 3 years). The above provides ground for hypothesizing that visual impairment affects all the components of child quality of life, and, moreover, that this negative impact increases with child's age, which should be taken into account while planning a set of measures for prevention and treatment in the course of prolonged medical observation as a visually impaired child grows older.

Conclusion

Visual function impairment affects the child's quality of life. Myopia was substantially more common than other diseases of the eye and ocular adnexa, presenting in almost half of the main group of the age cohort of children older than 3 years. The impact of impaired visual functions on child quality of life increases with an increase in child's age, primarily due to the impact on the development of personality traits, particularly on the child's capacity to get along well with other children and friends (0.59 ± 0.25 for the main group of children under 3 years of age and 0.69 ± 0.19 for the main group of children above 3 years of age). An eye disease makes a child feeling different from others (0.44 ± 0.3 for the main group of children under 3 years of age and 0.73 ± 0.26 for the main group of children above 3 years of age). Parents noticed other children looking at their visually impaired child (0.57 ± 0.32 for the main group of children under 3 years of age and 0.68 ± 0.23 for the main group of children above 3 years of age) and reported that their child was teased because of his/her vision problems (0.60 ± 0.23 for the main group of children under 3 years of age and 0.71 ± 0.22 for the main group of children above 3 years of age).

A quality of life study investigating the impact of eye disease on the domains of child quality of life from the early childhood may become an essential component of feedback from the patient and family members, aiming for effective prolonged medical observation and identification of and taking into account individual features related to child's adherence to prescribed correction and treatment.

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