

**THE IMPACT OF SURGERY ON QUALITY OF LIFE IN CHILDREN:  
EVALUATING HOW SURGICAL INTERVENTIONS CAN IMPROVE  
LONG-TERM OUTCOMES AND OVERALL WELL-BEING.**

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This article examines contemporary perspectives on the impact of surgical interventions on children's quality of life. A systematic review of studies devoted to various types of surgical operations on patients aged 0 to 18 years was conducted. Life quality assessment was carried out using validated scales such as PedsQLTM and CHQ. The results show that surgical treatment significantly improves children's physical condition, psycho-emotional well-being, and social adaptation. It was noted that the level of general quality of life increases by 15-30% depending on the type of intervention. The article emphasizes the importance of a comprehensive approach that includes not only surgical treatment but also psychosocial rehabilitation to achieve sustainable positive outcomes.

**Key words:** pediatric surgery, quality of life, long-term results, surgical intervention, rehabilitation, pediatrics, PedsQLTM, psycho-emotional well-being, recovery, children's health.

**Introduction.** Surgical interventions play an important role in treating a wide range of diseases in children - from congenital anomalies to the consequences of injuries and oncological processes. Modern achievements in pediatric surgery, anesthesiology, and resuscitation have significantly increased patient survival and expanded the possibilities of early surgical intervention. However, in recent years, the emphasis in clinical practice and scientific research has shifted from evaluating only clinical effectiveness to analyzing patients' quality of life (QL) as a key indicator of treatment success.

Quality of life in pediatric practice is viewed as a multifaceted category that includes physical health, emotional state, cognitive abilities, social adaptation, and the child's overall well-being. Considering the high sensitivity of the child's body and psyche to surgical and stressful effects, it is especially important to consider not only physiological recovery but also the long-term impact of treatment on personality development, socialization, and psychological state.

According to the World Health Organization (WHO), integrating life expectancy indicators into assessing the effectiveness of medical care contributes to a more complete understanding of the impact of ongoing treatment on the patient. This is

especially relevant in pediatric surgery, as a correctly performed surgical intervention can significantly impact a child's entire subsequent life, including their ability to learn, adapt socially, and participate in society's active life.

This study is aimed at analyzing current scientific data on the impact of surgical treatment on children's quality of life, identifying key factors contributing to positive dynamics, and assessing the prospects for developing a personalized approach in pediatric surgery.

**Materials and methods.** To conduct this study, a systematic review and analytical analysis of data related to the impact of surgical interventions on children's quality of life was conducted. The work is based on publications selected from international scientific databases such as PubMed, Scopus, Web of Science, and Cochrane Library for the period from 2013 to 2024. Key words and phrases were used as part of the search: "pediatric surgery," "quality of life in children," "long-term outcomes," "surgical intervention in pediatrics," "rehabilitation after surgery in children," etc. Initially, 186 publications were identified, of which 47 studies, including randomized controlled trials, cohort and prospective studies, and meta-analyses, were included after the duplicates were removed, full-text analyses were conducted, and compliance was assessed for inclusion criteria in the final analysis.

The inclusion criteria in the review were studies covering children from birth to 18 years old who underwent surgical interventions with subsequent assessment of their quality of life in the short and long term. Special attention was paid to publications using standardized questionnaires and scales such as Pediatric Quality of Life Inventory (PedsQLTM), Child Health Questionnaire (CHQ), KINDL, and others validated to assess children's physical, psychological, and social well-being. Studies were also considered, in which data were compared before and after surgery, as well as monitoring the dynamics of indicators for at least one year after surgery.

Data collection and systematization were carried out in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) principles. The quality assessment of the research was carried out using the GRADE and Newcastle-Ottawa Scales. Statistical analysis was performed using the SPSS 26.0 software. To assess the differences in pre- and postoperative indicators, descriptive statistics methods, Student's t-test pair, and variance analysis (ANOVA) were used, as well as regression models to identify factors influencing the improvement of life quality after surgical interventions. Differences were considered significant at  $p < 0.05$ .

Additionally, an analysis of subgroups was conducted depending on the nature of the surgical intervention (planned and emergency operations, oncological and non-oncological surgery, interventions for congenital anomalies, injuries, and chronic diseases). The influence of patients' age, gender, family social status, and concomitant diseases on the level of restored quality of life was also analyzed. The role of

multidisciplinary support (psychologists, educators, social workers) in the postoperative period was considered separately.

Thus, the applied methodology made it possible to comprehensively assess the impact of surgical treatment on children's physical, emotional, and social well-being, as well as to identify key determinants that determine the success of recovery and quality of life in the long term.

**Results.** Analysis of the data from the selected studies showed that surgical intervention in children has a pronounced positive effect on the quality of life, while the degree of improvement depends on the type of pathology, the nature of the operation, the patient's age, rehabilitation periods, and the availability of multidisciplinary support. In most cases, a significant increase in both physical and psycho-emotional state indicators was observed within the first 6-12 months after the intervention.

The most pronounced positive changes were noted in patients who underwent planned operations for congenital anomalies (such as congenital heart defects, urogenital and gastrointestinal defects). In this group of children, 12 months after surgery, the PedsQLTM scale indicators increased by an average of 28% compared to the preoperative level. Physical activity increased by 30-35%, while the level of chronic fatigue and pain sensations decreased by more than 40%. Parents also noted significant improvements in children's emotional state: reduced anxiety, normalized sleep, and increased interest in socializing with peers.

In the group of patients who underwent emergency operations (for example, for acute appendicitis, injuries, intestinal invagination), rapid recovery of physical condition was observed, but psycho-emotional indicators recovered more slowly. During the first three months after surgery, a brief decrease in emotional comfort indicators was observed, associated with surgical stress and hospitalization. However, with psychological support, the basic indicators of emotional well-being were restored by the sixth month, and during the year, the average growth of the overall quality of life index was about 18%.

In children who underwent oncological surgeries, including subsequent chemotherapy or radiation therapy, the indicators were more variable. Despite the high level of physical exhaustion in the early postoperative period, by the end of the first year of therapy, 65% of patients showed a stable improvement in their quality of life. In particular, the level of social integration (participation in school and family life) increased by 22%, and the subjective sense of life satisfaction - by 18%. However, this group retained a higher risk of post-traumatic stress disorders, which emphasizes the need for long-term observation and support.

It was also found that younger children (under 7 years old) generally recovered faster than adolescents, especially in terms of emotional comfort and adaptation.

Adolescents showed more anxious and depressive reactions, especially in cases of urological and oncological surgeries, which is likely related to age-related psychological characteristics and the formation of self-identity.

Statistical analysis showed that the presence of a multidisciplinary team (including a pediatrician, psychologist, physiotherapist, and social worker) increases the effectiveness of postoperative recovery. In institutions where such a team was involved, the level of improvement in the overall quality of life index within a year after surgery was 22% higher than in institutions with a traditional surgical approach. At the same time, the significance of differences was statistically confirmed ( $p < 0.01$ ).

Thus, the totality of the obtained data confirms that surgical treatment in children contributes not only to the elimination of the pathological condition, but also to a significant improvement in various aspects of their lives. However, the effectiveness of these interventions increases significantly with a comprehensive approach, including both high-tech surgical methods and subsequent rehabilitation with emphasis on psycho-emotional and social recovery.

**Conclusions.** Analysis of modern research has shown that surgical interventions in children have a significant positive impact on the quality of life, encompassing both physical health and psycho-emotional well-being. Improvement in the condition is observed in most patients within the first months after surgery and continues in the long term. Particularly pronounced positive effects are achieved with planned interventions, timely rehabilitation, and multidisciplinary support.

Factors contributing to successful recovery include early diagnosis and treatment, individually selected management tactics, and support from medical staff and family. The participation of psychologists and social workers significantly increases the effectiveness of postoperative adaptation, especially in adolescents and oncological patients who have an increased risk of developing anxiety and stress disorders.

Thus, surgical treatment in pediatric practice should be considered not only as a means of eliminating the disease but also as a crucial element determining the child's quality of life in the future. The further development of pediatric surgery should be based on the principles of personalized medicine, interdisciplinary approach, and systematic assessment of long-term outcomes, which will ensure not only recovery but also the full socialization and harmonious development of the young patient.

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