

Effects of otoplasty on quality of life in children: a literature review

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Abstract: Otoplasty is a common procedure performed on children with ear deformity defects to improve the appearance of the ear and reduce its psychosocial effects. The literature reveals three themes: physiological effects of otoplasty in children, psychological effects after otoplasty in children, and social participation and support after otoplasty in children. Social isolation, academic performance decline. Otoplasty can significantly improve these psychological problems, enhancing children's self-confidence. In conclusion, otoplasty positively affects improving the quality of life of children with ear deformity, especially at the psychological level. Future studies should focus more on the psychological experience and family support system of children after surgery while considering the influence of economic and cultural background on surgical satisfaction. Research in this field in China is still insufficient, necessitating further studies to fill this gap.

Keywords: Otoplasty; Children; Quality of life; Physiological effects; Psychological impact; Complication

1. Introduction

Improved quality of life in the era of health care savings has also been shown to be an important argument to justify health care spending^[1]. In addition, in addition to surgery to treat disease and prolong life, there is also a growing contemporary focus on providing healthcare to improve quality of life^[2]. Children with congenital ear deformity mainly faced negative experiences of aesthetic dissatisfaction before surgery, and most of them experienced aesthetic dissatisfaction and teasing by peers^[3]. At the same time, these children often face challenging and distressing social interactions^[4]. While children do not necessarily suffer physical harm, self-image stress can cause psychological harm^[2]. Furthermore, adverse social experiences have a profound impact on children's physical and mental development^[5], so there is an obvious motivation for such children to seek surgery.

Quality of life is a broad-based concept that takes into account health in terms of mental and social life in addition to physical aspects^[2]. In developed countries, people are more inclined to use health-related quality of life to describe and measure health status, rather than focusing on traditional health indicators such as mortality and life expectancy, which include physical, psychological, and social aspects^[2]. Psychological impressions could not be detected when assessing the quality of life of children after surgery^[1]. Therefore, many researchers use different questionnaires for evaluation and measurement to provide a reliable basis and comprehensively evaluate postoperative children's satisfaction and quality of life from the results of the questionnaire^[6]. Therefore, this literature review sought to explore the effects of otoplasty on children's physical and mental health, family dynamics, social interactions, and overall quality of life.

The ICF framework is an international standard developed by the World Health Organization (WHO) for describing health-related conditions^[7,8,9]. Icf-cy is a child-specific version of ICF, which is based at its core on a biopsychosocial model to assess and classify health status, functional performance, and health-related quality of life in children and adolescents^[9]. Therefore, this framework is of great value in guiding the experience related to the quality of life of children after otoplasty.

2. Search strategy

Six databases were searched (CINAHL Complete, Academic Search Complete, ScienceDirect, MEDLINE Complete, PubMed, Wiley online library). Identify articles that may be included in this

review. Use keywords that combine Boolean operators (" and "and" or ") to search for all related articles to include (*Appendix--PRISMA 2020 Flow Chart*). Initially, a total of 488 articles were screened, all of which were imported into Zotero for deduplication and then screened according to strict inclusion criteria. The inclusion criteria are summarized as follows:

Population under 18 years of age. Full English version published after January 2014. In this study, children with congenital auricular malformation were included, and children with auricular plasty and other operations due to acquired factors were excluded. Children with mental illness are also excluded. After title, abstract and full text screening, 16 articles were included in the review.

3. Common themes of the review

3.1 Physiological effects of otoplasty in children

Postoperative complications are important factors affecting the quality of life of children after surgery. Complications of otoplasty include hematoma, infection, suture compression, and adverse cosmetic outcomes^[2]. It is worth noting that the findings regarding postoperative complications are slightly different. Widodo et al^[6] identified post-operative infection as the most common complication, while Mandelbaum et al reported that exposure to frame cartilage was the main complication, followed by infection^[6,10]. Similarly, Smets, Gordts, and Foulon(2023)^[11] found that early complications mainly included local wound infection, wound dehiss, and postoperative bleeding. Common complications in the late stage include significant recurrence, hyperplastic scarring, sensory disturbance, and compression of the suture. Recurrence is a major complication in patients with pathological scarring, surgical wound infection, and bleeding after treatment with modified mustard technology combined with reverse spiral anterior curettage^[11]. In contrast to these findings, Fu et al^[12] observed that delayed wound healing was the most common complication^[6,12]. Both postoperative infection and poor wound healing are associated with graft failure^[6,13]. By analyzing the reasons for the differences in study results, it was found that the incidence of complications varied according to the surgical technique and operator^[14]. Improving the quality of reconstructive surgery should primarily focus on reducing postoperative infection^[6]. In addition, further research is needed to explore the best surgical approach and improve operator proficiency.

In summary, the results of studies on complications after otoplasty, but it is generally believed that infection, hematoma, suture compression and recurrence are the main problems. Surgical technique and operator proficiency are the key factors affecting the incidence of complications. Improving the quality of surgery, especially reducing postoperative infection, is an important measure to improve the quality of life of children after surgery.

3.2 Psychological effects on children with otoplasty

Children's mental health is influenced at all times by a combination of social, psychological and biological factors that affect their overall quality of life^[15]. While ear deformities may not result in functional limitations, they can significantly affect a child's psychosocial health due to associated aesthetic deficits^[16]. In addition, protruding ears can expose children to teasing and bullying, which can lead to psychological harm^[17,18]. It is clear from the literature that numerous studies have shown that prominent ears can cause considerable psychological stress, emotional trauma, and behavioral problems in children^[18]. Given the prevalence of mental health problems during childhood and adolescence with adverse effects on children's quality of life (QoL), it becomes critical that clinicians adequately measure children's quality of life after surgery^[15]. In addition, patients are provided with early intervention recommendations and plans to minimize the psychological impact on children. It is clear from reading the literature that children with protruding ears often experience severe psychological distress^[18]. Because they are teased both at school and in their own families, this can profoundly affect their behavioral and psychosocial development^[19]. As a result, this can lead to a range of psychological stressors, emotional trauma, and behavioral problems that ultimately affect the child's overall well-being^[19]. However, in some cases, family members may not fully understand the difficulties these children face. Some parents recognize low self-esteem, lack of confidence, and social isolation in their children's behavior^[19]. Low self-esteem, a general lack of confidence, and social isolation have also been cited as factors that influence parents' decisions to undergo otoplasty for affected children^[18]. This concept is also supported by research by Carvalho et al. (2023)^[3], who found that children with ear deformity mainly experience psychological effects such as low self-esteem,

social isolation, and decreased academic performance, and that the great psychological stress experienced by these children often manifests as low self-esteem, lack of confidence, social isolation, and even clinical anxiety or depression in about half of cases. Leading to academic struggles and social difficulties at home and school^[19]. In addition, children with ear deformity can be targets of bullying and teasing, which can be an indicator of psychological and emotional distress in some people^[19]. A study investigating the effect of pre-operative negative experiences on post-operative Glasgow Scale of Child Welfare (GCBI-b) scores showed that bullying was the only factor that showed significant improvement, possibly due to surgical intervention addressing the focus of aggression^[3]. Cosmetic procedures such as ear deformity correction not only correct anatomical defects, but also alleviate psychological and social suffering, effectively achieving double benefits for patients^[3]. The most serious consequences include depression and psychiatric problems, as shown in a study conducted by psychiatrists, children with ear deformity are more likely to experience depression, decreased academic performance, reduced self-esteem, and social difficulties^[19]. This highlights the enormous challenges facing this group of children. For example, even after surgery, some children experience a decrease in quality of life after surgery due to reduced self-esteem caused by ear deformities. Therefore, it is important to note that surgical intervention alone cannot address the psychological vulnerability of such individuals^[3]. In addition, some children may require treatment in psychiatric clinics due to heightened anxiety and psychological stress caused by ear deformities^[20]. Songu(2014)^[18] concluded that referring these highly anxious and stressed children with ear abnormalities to a pediatric psychiatric clinic improves anxiety levels, alleviates depressive symptoms, social problems, cognitive difficulties, internalization/externalization problems, overall social competence, and all behavioral problems caused by otoplasty. In addition, children with marked facial differences appear to be at increased risk of exhibiting negative psychosocial behaviors that may manifest as emotional disorders^[21]. At the same time, children with craniofacial abnormalities face a range of psychosocial difficulties, such as social disintegration, low self-esteem, learning difficulties, poor academic performance, and significant anxiety and depression^[21,22]. This can take the form of bullying, social exclusion or behavioural problems, and impaired academic performance^[18,21]. These challenges have a profound psychosocial impact on both patients and caregivers^[21,23]. In addition, specific studies have shown that the presence of craniofacial disorders in 8-10 year olds is associated with higher levels of depression, anxiety, and peer difficulties (such as teasing and bullying) compared to 11-17 year olds^[21,24]. Similar psychosocial problems are particularly evident in patients with ear malformations^[21,25]. After surgical intervention, there was a significant increase in self-confidence, a decrease in self-awareness and emotional behavior, an increase in leisure activities and social interactions, and successful reconstruction of the auriculas, all of which had significant psychosocial benefits for most children^[18,19].

In summary, ear deformity may not lead to functional limitations, but it can seriously affect psychosocial development in childhood; Therefore, otoplasty should not be considered merely as a cosmetic intervention^[16]. Most children with ear deformity will experience varying degrees of psychological challenges before surgery and need to be provided with appropriate psychological support^[19,20]. Corrective surgery has been shown to improve psychological problems in children with ear deformities^[19,20], highlighted the importance of timely surgical intervention to protect patients' mental health^[21].

3.3 Experience related to quality of life after otoplasty in children (including social adjustment and support)

The full impact of ear deformity on patients' quality of life is a multi-dimensional issue, involving psychological, social and emotional aspects. According to Mierau et al. (2020)^[15], the assessment of quality of life covers a wide range of areas. Papadopulos (2015)^[1] evaluated the quality of life after surgery in children of different age groups using standardized assessment tools, revealing the positive effects of surgical intervention in improving all aspects of their lives. For example, post-surgery children experienced increased self-esteem and self-confidence, reduced depression associated with ear deformity, and reduced bullying^[2,5,27]. In addition, they experienced improved body image, greater emotional stability, reduced negative emotions, and improved social skills^[28]. However, financial reasons are often the main reason why families of patients with ear malformations refuse surgery. Nevertheless, we must recognize that viewing surgical intervention as an investment to improve a patient's ear morphology is a wise decision. While the initial financial burden can be stressful for families, in the long run it can prevent children from experiencing potential consequences such as bullying, harassment, and possibly secondary depression. These consequences can lead to long-term physical and mental health problems that require more counseling, psychological support, and investment in overall well-being in the future^[2]. Further research into the economic feasibility of

auricoplasty is essential to assess its cost-effectiveness in public healthcare resources, while also providing a basis for patients and their families to make informed decisions. Auricoplasty has been shown to be beneficial to patients, improving the patient experience by reducing instances of bullying and harassment, and alleviating psychological distress following the procedure^[2]. Therefore, it is important to deeply understand the impact of ear deformity on patients' lives and explore how to provide more comprehensive support and improve their quality of life through multi-faceted efforts.

4. Discussion

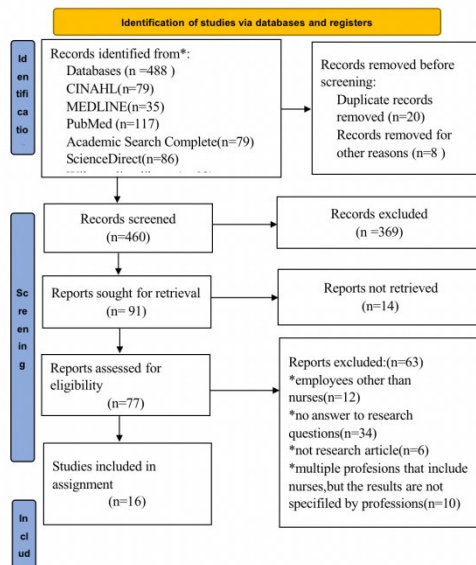
A total of 16 original studies were included in this review, of which 93.75% (15/16) adopted quantitative research methods, as this method can clearly examine the problem through the data^[29]. All study designs used prospective and retrospective cohort studies to account for multiple potential risk factors simultaneously^[26]. Compared with retrospective studies, prospective studies track patients' quality of life in real time and reduce retrospective designs that may lead to information bias^[26]. Only one qualitative study used questionnaires to collect data that explored uncharted territory related to postoperative quality of life in children who underwent otoplasty. In terms of data collection, 93.75% (15/16) used questionnaire survey, and only 6.25% (1/16) used interview. Questionnaire survey is suitable for collecting large amount of data quickly, efficiently and at low cost. The interview method is suitable for acquiring in-depth and individualized data^[26]. This result is consistent with the chosen research method. In terms of sampling methods, all the papers adopted convenience sampling to show a high degree of consistency. Although the sampling method has the advantages of simple operation and wide adaptability; However, there are also fatal shortcomings such as poor representation and the risk of bias, which are questionable in terms of reliability and validity^[26]. In addition, the problem of small sample size and single center is common in this review. Therefore, the results of this review need to be interpreted dialectically, and it is recommended that more rigorous sampling and larger sample sizes and sources be conducted in the future to enhance their reliability.

This review brings together existing evidence to deepen our understanding of children's quality of life after aurinoplasty and to provide a scientific basis for future interventions. However, this review also reveals limitations of previous studies, almost all of which failed to take into account extrinsic factors that affect the quality of life of children and their families after surgery and reported information biases by parental agents that may affect the completeness and accuracy of results. The most common keywords in the literature are "quality of life", "complications", "psychological impact" and "psychological intervention", emphasizing the close correlation between children with ear deformity and psychological function. However, quantitative studies have been unable to adequately capture complex human experiences and feelings^[29]. Therefore, it is necessary to conduct a qualitative analysis of these children and dig into the multi-dimensional related influences for a comprehensive understanding of their quality of life. This not only directly benefits children and their families, but also has profound implications for medical practice, social policy, and scientific research. More exploration is proposed to fill this gap in the future. In addition, a comprehensive literature search did not find any research data on the post-otoplasty experience of Chinese children. China is a populous country, and the lack of data highlights the urgent need to pay attention to the mental health and quality of life of children after otoplasty, and to further investigate the status of postoperative quality of life of children with ear deformity in China.

5. Conclusion

Otoplasty has a wide range of benefits for children. While the outcome of surgery may not be satisfactory to everyone, and some children may have post-operative complications, we should pay close attention to the psychological impact on such children. As a vulnerable group, children need family and social support in the process of physical and mental development, and timely detection and solution of problems is crucial. Healthcare professionals should further research and develop personalized psychological interventions to help diagnose and treat children.

Appendix --PRISMA 2020 Flow Chart



From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: <http://www.prisma-statement.org/>

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