International Journal of Medical Sciences And Clinical Research

VOLUME Vol.06 Issue04 2026
PAGE NO. 146-148
DOI 10.37547/ijmscr/Volume06Issue04-27

# Comparative Analysis of Anxiety Levels Before Invasive Procedures in Pediatric Oncohematological Patients Across Age Groups

Amiriddin Bektemirov

Student, Faculty of General Medicine No. 2, Tashkent State Medical University (TSMU), Uzbekistan

Alpamis Amangeldiev

Doctoral student, Teaching Assistant, Departmant of Pedagogy and Psychology, Tashkent State Medical University (TSMU), Uzbekistan

**Received:** 18 March 2026; **Accepted:** 04 April 2026; **Published:** 30 April 2026

**Abstract:** This prospective observational study investigated the level of anxiety before invasive procedures in children with oncohematological diseases across different age groups. A total of 60 patients aged 3–17 years were included in the study, conducted at the Republican Oncology and Radiology Center in Tashkent. Anxiety levels were assessed 10–15 minutes prior to the procedures using standardized evaluation tools.

In younger children, a visual analog scale (based on emotional facial expressions) was applied. In school-aged children and adolescents, questionnaires based on a 10-point rating system were used.

The results demonstrated that the highest level of anxiety was observed in preschool children aged 3–6 years (M = 8.0). A moderate level was identified in school-aged children aged 7–12 years (M = 5.0), while the lowest level was observed in adolescents aged 13–17 years (M = 3.4). A statistically significant inverse correlation between age and anxiety level was identified.

These findings provide scientific justification for the development of age-appropriate psychological approaches and individualized psychoprophylactic programs when working with pediatric patients.

**Keywords:** Oncohematology, children, anxiety, invasive procedures, age characteristics, psycho-emotional state, visual analog scale, correlation.

**Introduction:** Pediatric oncology remains one of the most important fields of modern medicine. According to the World Health Organization (WHO), more than 400,000 children worldwide are diagnosed with cancer annually. This makes oncological diseases one of the most widespread chronic pathologies among children.

Unfortunately, 30–40% of these cases are oncohematological diseases, including malignant disorders of the blood and hematopoietic system. The most common pediatric cancer worldwide is acute lymphoblastic leukemia (ALL), accounting for approximately 25–30% of all childhood cancers. Despite optimistic treatment outcomes, more than 100,000 children in developing countries die annually from these diseases.

In the Republic of Uzbekistan, pediatric oncohematology represents a significant clinical and social problem. According to statistical analyses conducted by the Ministry of Health between 2022 and 2024, approximately 700 children are newly diagnosed with malignant tumors each year. Currently, around 3,000 children are under dispensary supervision, requiring continuous monitoring and treatment. The geographical distribution of these diseases varies across regions and the Republic of Karakalpakstan, with delayed diagnosis more common in areas with lower levels of urbanization and limited access to medical services.

Moreover, the incidence rate per 100,000 children appears lower than the international average, which experts attribute to limited diagnostic capabilities. Key challenges include underdeveloped diagnostic infrastructure, restricted access to specialized centers, and delayed initiation of treatment. Notably, in 2025, the establishment of an international academic hub for pediatric cancer in Uzbekistan marked the beginning of systemic reforms aimed at increasing the one-year survival rate of children with oncohematological diseases from 34% to 90%.

The treatment of oncohematological diseases is complex, as pediatric patients must undergo multiple invasive procedures, including bone marrow puncture (sternal or iliac), lumbar puncture, central venous catheter implantation, and other diagnostic and therapeutic interventions. These procedures cause not only physical discomfort and pain but also significant psycho-emotional stress, anxiety, and fear. Pre-procedural anxiety in children has been shown to reduce treatment effectiveness, complicate cooperation, and in some cases require additional sedation or anesthesia (Uman et al., 2008; Bukola & Paula, 2017).

**Aim of the Study**

The aim of this study was to comparatively evaluate anxiety levels before invasive procedures in pediatric oncohematological patients across different age groups.

The study was conducted at the Republican Oncology and Radiology Center and included 60 children diagnosed with oncohematological diseases. The participants were divided into three age groups:

- Group 1: 3–6 years (n = 20)
- Group 2: 7–12 years (n = 20)
- Group 3: 13–17 years (n = 20)

Inclusion criteria included confirmed oncohematological diagnosis, planned invasive procedures, and parental consent.

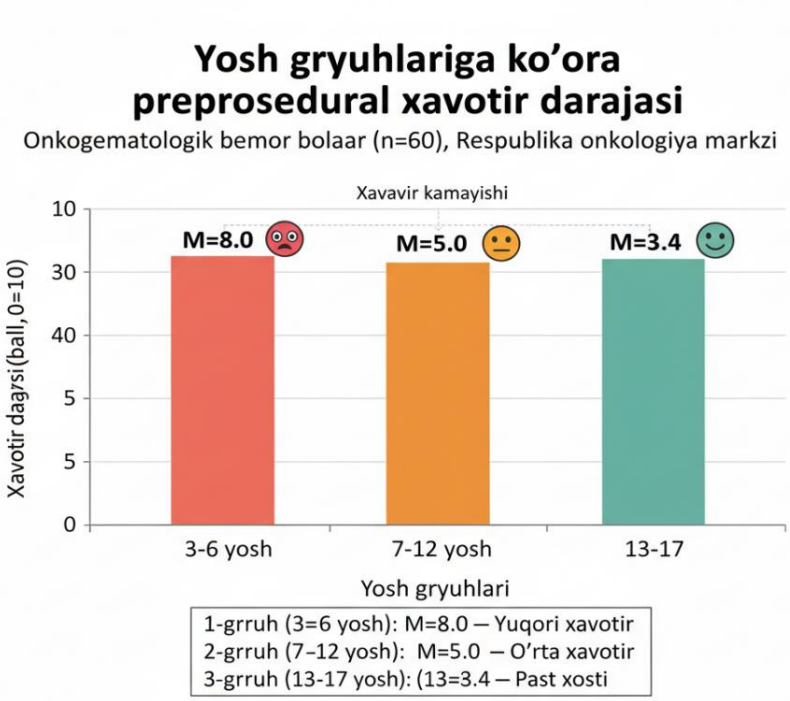
Anxiety levels were assessed 10–15 minutes before the procedures. Due to the difficulty of using standard questionnaires in children aged 3–6 years, a visual analog scale based on emotional facial expressions was used. For children aged 7–17 years, standardized questionnaires with a point-based system were applied.

The results were expressed as mean values and standard deviations. Comparative statistical analysis methods were used to evaluate differences between groups.

**RESULTS**

The study results demonstrated statistically significant differences in anxiety levels between age groups prior to invasive procedures. The highest anxiety level was observed in children aged 3–6 years, with a mean value of M = 8. In children aged 7–12 years, the anxiety level was moderate (M = 5). In adolescents aged 13–17 years, the anxiety level was relatively low (M = 3.4).

These findings confirm that anxiety levels decrease progressively with increasing age. This trend can be explained by the development of cognitive abilities, improved understanding of medical situations, and enhanced emotional regulation as children grow older.



## DISCUSSION

The obtained empirical results can be explained by the psychological characteristics inherent to different stages of ontogenetic development. In children aged 3–6 years, abstract-logical thinking is not yet sufficiently developed; therefore, medical procedures are perceived within limited cognitive frameworks as threatening and incomprehensible events, leading to high levels of fear and anxiety.

In children aged 7–12 years, basic understanding of medical procedures begins to form, allowing partial rationalization of the situation and resulting in moderate anxiety levels.

In adolescents, the maturation of the prefrontal cortex and the development of metacognitive abilities enable logical evaluation of situations, voluntary emotional control, and the application of adaptive coping strategies. Consequently, lower anxiety levels are observed.

These findings are consistent with international research, including studies by Kain et al., which also demonstrated an inverse correlation between age and pre-procedural anxiety. This pattern highlights the importance of strengthening psychoprophylactic and corrective interventions, particularly in younger pediatric patients, within the fields of hospital pedagogy and clinical psychology.

## CONCLUSION

In conclusion, anxiety levels before invasive medical procedures in pediatric oncohematological patients vary depending on the stage of ontogenetic development. The highest levels were observed in preschool children aged 3–6 years, while the lowest levels were found in adolescents.

These findings scientifically justify the need for differentiated, age-specific psychological approaches. Strengthening psychological preparation in younger children can enhance their adaptive capacity to medical procedures. Additionally, coordinated efforts between healthcare professionals and parents, taking into account the child's emotional and psychological state, can improve treatment outcomes and facilitate more effective patient management.

## REFERENCES


1. Uman, L. S., Chambers, C. T., McGrath, P. J., & Kisely, S. (2008). A systematic review of randomized controlled trials examining psychological interventions for needle-related procedural pain and distress in children and adolescents: An abbreviated Cochrane review. Journal of pediatric psychology, 33(8), 842-854.
2. Bukola, I. M., & Paula, D. (2017). The effectiveness of distraction as procedural pain management technique in pediatric oncology patients: a meta-analysis and systematic review. Journal of pain and symptom management, 54(4), 589-600.
3. World Health Organization. Cancer in children. Geneva: WHO; 2021.
4. International Agency for Research on Cancer.Global Cancer Observatory (GLOBOCAN 2020). Lyon: IARC; 2020.
5. McMurtry CM, Pillai Riddell R, et al. Far from "just a poke": Common painful needle procedures and the development of needle fear. The Clinical Journal of Pain. 2015.
6. Nelson Textbook of Pediatrics. 21st ed. Philadelphia: Elsevier; 2020.
7. Rang & Dale's Pharmacology. 9th ed. Elsevier; 2020.
8. O'zbekiston Respublikasi Sog'liqni saqlash vazirligi. Bolalar onkologik kasalliklari bo'yicha milliy hisobotlar. Toshkent; 202.
9. Amangeldiev, A. B. (2025). The Role Of The Teacher In The Psychological And Pedagogical Support Of Children Undergoing Long-Term Hospitalization. Library of Frontline Social Sciences and History Journal, 5(09), 12-16.
10. Askarova, N. A., Bekmirov, T. R., Nurbaeva, K. B., Muminova, N. B., & Amangeldiev, A. B. (2024). PERSONAL CHARACTERISTICS IN CHILDREN'S PSYCHOLOGY AS AN OBJECT OF RESEARCH.