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Approach to Pain in Pediatric Oncology Patients: A Cross-Sectional Survey

Pediatrik Onkoloji Hastalarında Ağrıya Yaklaşım: Kesitsel Araştırma

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ABSTRACT Objective: Pain is a serious medical problem in children as well as in adult patients diagnosed with cancer. Recognition and correct treatment of pain is one of the important points for cancer treatment. Although there are pain guidelines, the lack of a standardized approach creates difficulties in pain control. **Material and Methods:** A questionnaire was prepared with the algology clinic to question and manage pain in pediatric oncology physicians' patients. The questions were open-ended, multiple-choice. The data obtained were analyzed by the biostatistics department. **Results:** We questioned pediatric oncology physicians about pain questioning and treatment approaches in pediatric patients with cancer. Questionnaires prepared for this reason were applied to 100 physicians. The data obtained were analyzed. the average professional experience of the physicians participating in the survey was 20 years. The rate of physicians who regularly questioned patients was 65%, while the group that did not question pain was 5%. Approximately 50% of physicians stated that they used scales in pain questioning. The rate of working together with algology was 75%. There were reservations about the use of narcotic analgesics. **Conclusion:** It is important to evaluate and treat the pain status of pediatric patients with cancer for patient compliance and well-being.

Keywords: Cancer pain; childhood cancer; pain management

ÖZET Amaç: Ağrı, kanser tanısı almış yetişkin hastalarda olduğu kadar çocuklarda da ciddi bir tıbbi sorundur. Ağrının tanınması ve doğru tedavisi kanser tedavisi için önemli noktalardan biridir. Ağrı rehberleri olmasına rağmen standart bir yaklaşımın olmaması ağrı kontrolünde zorluklar yaratmaktadır. **Gereç ve Yöntemler:** Algoloji kliniği ile birlikte pediatrik onkoloji hekimlerinin hastalarında ağrının sorgulanması ve yönetimi için bir anket hazırlandı. Sorular açık uçlu, çoktan seçmeli idi. Toplanan veriler biyoistatistik birimi tarafından analiz edildi. **Bulgular:** Çocuk onkoloji hekimlerine kanserli çocuk hastalarda ağrı sorgulaması ve tedavi yaklaşımlarını sorguladık. Bu amaçla hazırlanan anketler 100 hekime uygulandı. Elde edilen veriler analiz edildi. Ankete katılan hekimlerin ortalama mesleki deneyimi 20 yıldı. Hastaları düzenli olarak sorgulayan hekimlerin oranı %65 iken, ağrıyı sorgulamayan grup %5 idi. Hekimlerin yaklaşık %50'si ağrı sorgulamasında ölçek kullandığını belirtti. Algoloji ile birlikte çalışma oranı %75'ti. Narkotik analjezik kullanımında çekinildiği görüldü. **Sonuç:** Kanserli çocuk hastaların ağrı durumunun değerlendirilmesi ve tedavi edilmesi, hasta uyumu ve iyiliği için önemlidir.

Anahtar Kelimeler: Kanser ağrısı; çocukluk çağı kanseri; ağrı yönetimi

Pain is one of the most critical issues faced by pediatric cancer patients, with an incidence ranging from 35-70%.[1-4] Pain significantly affecting a patient's quality of life can be disease-related, secondary to treatment, or seen in patients with end-stage cancer.[5] Bone and soft tissue tumors often cause pain.[1-3] These tumors cause pain when they compress or invade surrounding tissue due to their rapid growth. Granulocyte colony-stimulating factor (GCSF) is used for neutropenia, mucositis, and neu-

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ropathy, which are side effects of chemotherapy drugs that cause pain. Interventional procedures such as venipuncture, bone marrow aspiration biopsy, and lumbar puncture are other causes of pain. Providing analgesia during these procedures reduces the anxiety and fear of both the patient and the patient's family. Asking the right questions and treating the pain are essential to reduce stress and increase adherence.[4-8] Several pain assessment scales have been developed. The Riley Infant Pain Scale and the Faces Legs, Activity, Cry and Consolability scale can be used for patients under 3 years of age, while the Wong-Baker Face Scale, Numerical Rating Scale, and Visual Analog Scale can be used for older children.[8,9] These scales are used to determine pain intensity and evaluate treatment options. Eliminating the cause of the pain is also one of the main goals of treatment. The first line of treatment for pain in children over 6 months of age is acetaminophen and non-steroidal anti-inflammatory drugs (NSAIDs). However, both marrow involvement and chemotherapy-induced myelosuppression may cause thrombocytopenia, limiting NSAID use. Opioid analgesics are the 2nd line of treatment, with weak opioids being the priority. NSAIDs can be added to these. Adjuvant therapeutic agents are also helpful in treating some types of pain. Interventional pain management is an alternative, especially beneficial for patients with end-stage cancer when medical treatment is insufficient.[8-12]

Over the past 20 years, research on pediatric cancer-related pain has increased. The World Health Organization (WHO) has published Guidelines for Managing Cancer Pain.[10] Despite increased research on pediatric cancer-related pain and the WHO's Guidelines for Managing Cancer Pain, a standardized approach to pain management in pediatric oncology has yet to be established in our country. This study aims to explore pediatric oncology physicians' approaches to cancer-related pain management to develop a standardized protocol.

MATERIAL AND METHODS

STUDY DESIGN

A questionnaire was developed for pediatric oncology physicians to inquire about their patients' pain status and their approach to pain management. The questionnaire consisted of 12 questions, including multiple-choice, open-response, and multiple-response formats (Figure 1). The questionnaire was administered face-to-face to 85 physicians attending the 22nd National Pediatric Oncology Congress. Fifteen physicians who were unable to participate in the congress were surveyed online. The participating physicians were asked to provide demographic information such as age, gender, length of service, and the institution where they were employed. Additionally, there were questions about the presence of an algology department in the institution where they worked and their collaboration with this department. Physicians were asked how often and in what way they asked about pain in both inpatients and outpatients. Information on the use of pain scales, which scales are preferred, the types of pain the physicians' patients are presenting with, and when they are presenting with pain was collected. The physicians' approaches to treating their patients' pain, the analgesia used during interventional procedures, and techniques for managing pain in the terminal phase were examined.

Inclusion Criteria

Physicians specialized in pediatric oncology were included in the study. Participation in the survey was voluntary.

Exclusion Criteria

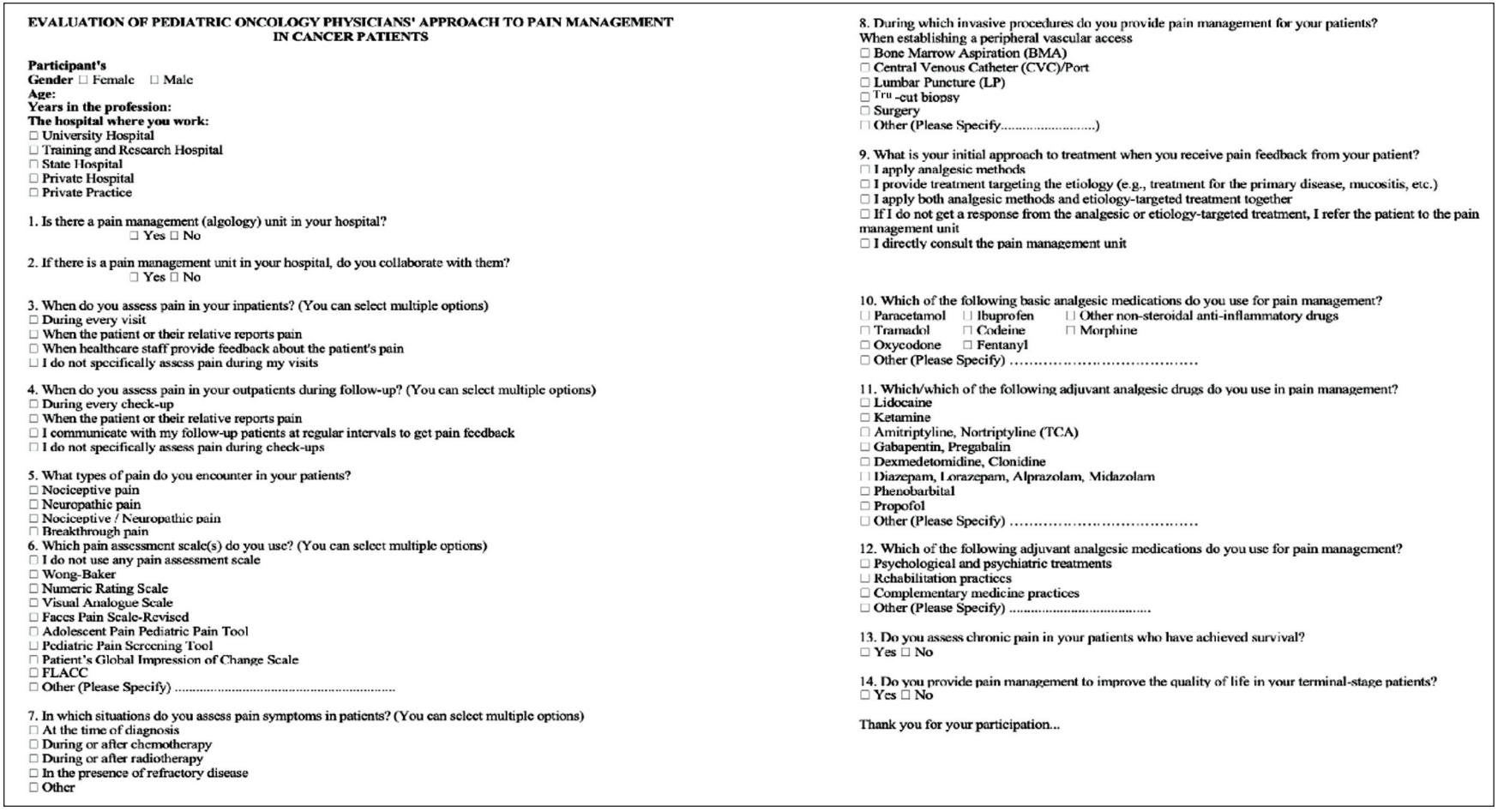
Physicians who were pediatric residents, pediatric specialists, or pediatric oncology subspecialty residents were not included in the study. Incompletely completed questionnaires were excluded from the study.

ETHICAL CLEARANCE

For the study, permission was obtained from the Ankara Bilkent City Hospital Ethics Committee (date: December 11, 2024; no: E2-23-3580). This study was made in accordance with the principles of the Declaration of Helsinki.

STATISTICS

This descriptive study summarized the data distribution using numbers, percentages, and median (mini-



EVALUATION OF PEDIATRIC ONCOLOGY PHYSICIANS' APPROACH TO PAIN MANAGEMENT IN CANCER PATIENTS

Participant's
Gender ☐ Female ☐ Male
Age:
Years in the profession:
The hospital where you work:
☐ University Hospital
☐ Training and Research Hospital
☐ State Hospital
☐ Private Hospital
☐ Private Practice

1. Is there a pain management (algology) unit in your hospital?
☐ Yes ☐ No

2. If there is a pain management unit in your hospital, do you collaborate with them?
☐ Yes ☐ No

3. When do you assess pain in your inpatients? (You can select multiple options)
☐ During every visit
☐ When the patient or their relative reports pain
☐ When healthcare staff provide feedback about the patient's pain
☐ I do not specifically assess pain during my visits

4. When do you assess pain in your outpatients during follow-up? (You can select multiple options)
☐ During every check-up
☐ When the patient or their relative reports pain
☐ I communicate with my follow-up patients at regular intervals to get pain feedback
☐ I do not specifically assess pain during check-ups

5. What types of pain do you encounter in your patients?
☐ Nociceptive pain
☐ Neuropathic pain
☐ Nociceptive / Neuropathic pain
☐ Breakthrough pain

6. Which pain assessment scale(s) do you use? (You can select multiple options)
☐ I do not use any pain assessment scale
☐ Wong-Baker
☐ Numeric Rating Scale
☐ Visual Analogue Scale
☐ Faces Pain Scale-Revised
☐ Adolescent Pain Pediatric Pain Tool
☐ Pediatric Pain Screening Tool
☐ Patient's Global Impression of Change Scale
☐ FLACC
☐ Other (Please Specify) .....

7. In which situations do you assess pain symptoms in patients? (You can select multiple options)
☐ At the time of diagnosis
☐ During or after chemotherapy
☐ During or after radiotherapy
☐ In the presence of refractory disease
☐ Other

8. During which invasive procedures do you provide pain management for your patients?
When establishing a peripheral vascular access
☐ Bone Marrow Aspiration (BMA)
☐ Central Venous Catheter (CVC)/Port
☐ Lumbar Puncture (LP)
☐ Tru -cut biopsy
☐ Surgery
☐ Other (Please Specify.....)

9. What is your initial approach to treatment when you receive pain feedback from your patient?
☐ I apply analgesic methods
☐ I provide treatment targeting the etiology (e.g., treatment for the primary disease, mucositis, etc.)
☐ I apply both analgesic methods and etiology-targeted treatment together
☐ If I do not get a response from the analgesic or etiology-targeted treatment, I refer the patient to the pain management unit
☐ I directly consult the pain management unit

10. Which of the following basic analgesic medications do you use for pain management?
☐ Paracetamol ☐ Ibuprofen ☐ Other non-steroidal anti-inflammatory drugs
☐ Tramadol ☐ Codeine ☐ Morphine
☐ Oxycodone ☐ Fentanyl
☐ Other (Please Specify) .....

11. Which/which of the following adjuvant analgesic drugs do you use in pain management?
☐ Lidocaine
☐ Ketamine
☐ Amitriptyline, Nortriptyline (TCA)
☐ Gabapentin, Pregabalin
☐ Dexmedetomidine, Clonidine
☐ Diazepam, Lorazepam, Alprazolam, Midazolam
☐ Phenobarbital
☐ Propofol
☐ Other (Please Specify) .....

12. Which of the following adjuvant analgesic medications do you use for pain management?
☐ Psychological and psychiatric treatments
☐ Rehabilitation practices
☐ Complementary medicine practices
☐ Other (Please Specify) .....

13. Do you assess chronic pain in your patients who have achieved survival?
☐ Yes ☐ No

14. Do you provide pain management to improve the quality of life in your terminal-stage patients?
☐ Yes ☐ No

Thank you for your participation...

FIGURE 1: Questionnaire

FLACC: Faces, legs, activity, cry and consolability

mum-maximum). The relationship between the responses received from the questionnaire questions, the relationship between one dichotomous and one ordinal categorical variable was analyzed with the pair-wise correlation coefficient, the relationship between 2 dichotomous categorical variables was analyzed with the chi-square test statistic, and the relationship between 2 ordinal categorical variables was analyzed with the polychoric correlation coefficient. The Type 1 error rate was taken as 0.05 to evaluate the statistical hypotheses established to test the correlational analyses. Correlation coefficients were calculated using the "CorrToolBox" library in R software (R Core Team (2013). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL http://www.R-project.org/

TABLE 1: Demographic information

Information		%
Work place	University hospital	54
	Training and research hospital	28
	Others	18
Algology in hospital	Yes	85
	No	15
Working with algology	Yes	75
	No	15
Questionnaire for inpatient	Every visiting	65
	Never	5
Questionnaire for outpatient	Sometimes	65
	Never	35
	With phone	13
Questionnaire scale	Yes	50
	No	50
Pain type	Nociceptive-neuropathic pain	66
	Others	34

RESULTS

Our study included a total of 100 pediatric oncologists. The average age of participants was 45.1±9 years, and the average tenure was 20.8±9 years. Among the participants, 64 were female, and 36 were male. Of the participants, 54% worked at a university hospital, and 28% at a teaching and research hospital. While 65% of physicians asked patients about their pain at every visit, 5% reported that they did not ask patients about their pain at every visit. In the outpatient setting, 65% of physicians asked patients about their pain when they or their family members complained. The proportion of physicians who called their patients to ask about their pain was 13%. Physicians reported that 2/3 of their patients reported having combined neuropathic and nociceptive pain. Notably, nearly half of the participants (48%) reported not using a pain scale, despite the recognized importance of these tools in assessing and managing pediatric pain. The Face Pain Scale Revised (26%), Numerical Rating Scale (19%), and Visual Analog Scale (17%) were the most commonly used scales. Physicians reported that the rate of pain at diagnosis was 87%. They also reported a 90% rate of pain during and after chemotherapy and a 70% rate of pain during radiation therapy. It was found that 88% of patients with relapsed refractory disease had complaints of pain. For interventional procedures, including bone marrow aspirates, lumbar punctures, and central venous lineages, clinicians reported providing pain relief to over 90% of their patients, and 3% received pain relief during venipunctures. Among treatment approaches, half of the physicians provided both pain etiology treatment and concurrent analgesic treatment. The rate of physicians who referred patients to algology when the treatment was ineffective was 16%. Paracetamol was the most preferred analgesic, followed by ibuprofen. Tramadol was the most preferred narcotic analgesic, followed by morphine and fentanyl. Gabapentin was the first choice for adjuvant therapy. In addition to these medical treatments, psychological support and rehabilitation services are also preferred for pain control. Six percent of physicians preferred complementary medicine for their patients. Half of the physicians asked about chronic pain in patients who had finished their treatment. In the last stage of the disease, all physicians prioritized pain control in their patients (Table 1).

DISCUSSION

The prevalence of pain in cancer patients is significant, ranging from 40-78%, with rates exceeding 60% in those with metastatic or end-stage disease.[13,14] Pain reduces the comfort level of patients. It can lead

to problems such as difficulty adhering to treatment, anxiety, and sleep disturbances.[15,16] Pain assessment and control are important in every patient and should be considered part of cancer care and approached in a multidisciplinary manner. In collaboration with algology, pediatric oncology should provide maximum pain control for the patient, which should be the main goal of pain management. Pain can be related to the tumor and surrounding tissue, as well as to causes such as intratumoral bleeding, stretching of the capsular membrane, compression of the surrounding tissue or nerve, and invasion. Additionally, patients undergoing cancer treatment may develop pain as a result of drug side effects such as osteonecrosis, mucositis, ileus, neuropathy, or an immune response related to the biological agent. Bone pain associated with GCSF is another cause.[8-11] Many interventional procedures are performed on cancer patients during diagnosis and treatment: biopsy, central venous catheterization, bone marrow aspiration and biopsy, lumbar puncture, peripheral vascular access, and so on. Providing analgesia for all these procedures reduces the anxiety that may be present in the patient.[12,17] The topic of cancer and pain has rapidly gained importance in the last 20 years. At the beginning of the 21st century, less than 10% of patients were questioned about pain, while today, this figure stands at 75%. Despite the existence of guidelines for pain management, a standardized approach has yet to be achieved. This is largely because the guidelines are mostly aimed at adult patient groups. The same things cause pain in children as in adults, but the differences are important. It is a fact that fear and anxiety are higher in children, which undoubtedly increases the perception of pain. Defining pain in pediatric patients and organizing their management accordingly is essential.[11,16,18] The most commonly used pain scales are the Wong-Baker Face Scale and pain-face scales, as various alternatives have been developed. Scales are used for pain level assessment and treatment response measurement in approximately 40-65% of cases.[8,9,13] In our study, we definitively established this rate to be among these rates. The lack of standardized questioning directly results in a lack of a standard approach. Consequently, cancer pain treatment remains an afterthought in cancer care.

The severity of the pain determines the most effective pain treatment. If you don't ask about pain, the treatment you receive may not be complete or may not be appropriate for your needs. Strong opioids should never be used for mild pain, and paracetamol is inadequate for severe pain. Once the pain level is established, the appropriate analgesia must be administered, and the treatment process must be followed, with a response evaluation at the end. Analgesia in interventional procedures is being provided at increasing rates, and we will also provide it for peripheral vascular access in children other than those with cancer.[6,10,14,18] In our survey, the number of physicians providing pain control in this regard was very low. In addition to local analgesia, the most effective methods utilize suggestions, watching videos, and distraction. Studies have shown that pain control is achieved in interventional procedures when patients are distracted from their perception of the procedure.[19,20] Our physicians have not questioned this method, but there are areas of application in daily life. There are definitive studies investigating approaches to managing cancer pain among physicians. The physicians participating in these studies were divided into groups according to their specialty. These groups included oncologists, general practitioners, physicians working in care centers, and pediatricians. Furthermore, there are more studies on allied health personnel. Between 50-65% of physicians question their patients about their pain.[5,6,21,22] A survey of 10 Southeast Asian countries revealed a clear discrepancy between what physicians and patients believe about pain management. While 90% of physicians said they regularly inquire about pain, only 50% of patients reported that their physicians do so. Objective pain assessment using pain scales will prevent this rate difference. In the same study, scale use was 50%.[10] We found that the physicians who responded to our survey had significantly more experience than most of the studies, with more than 10 years of professional experience. Given that cancer pain has developed in the last 20 years, it is evident that stereotypes play a significant role in this regard. There is a severe lack of collaboration with teams experienced in pain. On the other hand, the field of algology is still in its infancy regarding children's pain.

There are reservations about pediatric patients. Similarly, the use of opioids in drug selection is still a point of contention. This cautious approach is likely due to concerns about opioid addiction and abuse, which complicates their use, particularly in pediatric populations.[23,24] A new study in Türkiye evaluated the pain status in children with cancer between 2018-2023. Paracetamol is the first choice for pain control in patients; fentanyl is the second option in patients who cannot be controlled with it. Adjuvant agents were preferred after NSAIDs. No interventional methods were used.[25] In their review on opioid use in pediatric cancer patients, Hall et al. recommend morphine spray therapy used after hematopoietic stem cell transplantation and the combination of morphine and gabapentin for neuropathic pain during immunotherapy for neuroblastoma. In our clinic, both oral morphine solutions are used in the treatment of mucositis in the transplant patients and morphine and gabapentin are applied simultaneously with drug infusion in neuroblastoma patients on immunotherapy.[26] We must control cancer pain, even though we still don't fully understand how it happens. The best way to treat it is to support the patient and their family. Untreated cancer pain can and will lead to depressive moods. Depression makes the patient's pain worse. This vicious cycle makes cancer treatment difficult and reduces the chances of success. To effectively control pain, a team must work together, question pain, treat it according to its degree and type, and reevaluate treatment based on how the patient responds to it.[4,7,8,11,14] Alternative medicine practices are used in conjunction with medical treatment. Supportive therapies effectively manage cancer pain at every stage, particularly in end-stage patients. These include therapy, hypnosis, acupuncture, yoga, and more.[27-29]

The sick child and their family were asked to assess their child's pain using digital applications as part of a meta-analysis on alternative pain assessment. The research results are clear: 34% of the applications are effective, while only 5% are not beneficial.[2] Our country has not yet achieved standardization for pain assessment in children, but these practices will lead the way. Alternatively, 13% of our physicians perform telephone pain questioning in pediatric cancer patients. The physicians who responded to our inquiry were those who practice in private clinics or hospitals. However, we also learned that physicians in tertiary care centers do not typically have the opportunity to do so due to the demanding nature of their work and the numerous tasks that fall within their purview, such as managing patient volume and handling official correspondence. In the context of our nation's healthcare landscape, the pediatric oncology department is a challenging area of practice to prefer due in large part to its limited workforce and associated work conditions. Consequently, the workload of the active team remains considerable. These circumstances result in some disruptions in the management of cancer and pain. The ratio of inpatients to physicians and the number of outpatients per capita result in inadequate pain assessment. Notably, while the rate of algology units in the hospital is 85%, the highest cooperation rate is 75%. Two potential explanations for this phenomenon may be postulated. The 1st reason is that pediatric oncology physicians prefer to manage pain using their knowledge and experience. The 2nd reason is that algology physicians lack sufficient experience with pediatric patients, which results in them remaining in a supporting role. Pain control can be achieved in adult patients through interventional techniques. In instances where analgesic intervention proves inadequate, regional anesthesia can improve patient quality of life. Both departments can collaborate on creating a joint protocol, thereby facilitating advancements in pain management. Pain management is a critical aspect of cancer diagnosis and treatment, as well as post-treatment follow-up. A further point of interest is the provision of pain relief for end-stage cancer patients. In cases where the patient is experiencing severe pain and is overwhelmed by the burden of the disease, their pain must be evaluated meticulously. The objective is to ensure the patient's pain is effectively managed and their comfort is maintained. All of the physicians involved in our study indicated that they were cognizant of this concern in patients nearing the end of their life.

CONCLUSION

Cancer pain, particularly in pediatric patients, remains a growing concern in modern medicine. Anxiety and

fear negatively impact the treatment process for both pediatric and adult patients. Implementing routine pain assessment using validated scales in both inpatients and outpatients will help prevent this issue from becoming a secondary problem. Furthermore, there is potential for a beneficial increase in survival rates among patients whose pain is effectively treated. Further research and the implementation of standardized pain management protocols are necessary to improve pediatric cancer patients' quality of care and survival rates.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Sırma Karamercan, İnci Ergürhan İlhan;* ***Design:*** *Sırma Karamercan, Şeref Çelik, Selcen Yüksel;* ***Control/Supervision:*** *Sırma Karamercan,Seda Şahin;* ***Data Collection and/or Processing:*** *Sırma Karamercan, Seda Şahin, Arzu Yazal Erdem, Derya Özyörük;* ***Analysis and/or Interpretation:*** *Sırma Karamercan, Selcen Yüksel, Neriman Sarı;* ***Literature Review:*** *Sırma Karamercan, Şeref Çelik, Erkan Yavuz Akçaboy;* ***Writing the Article:*** *Sırma Karamercan;* ***Critical Review:*** *İnci Ergürhan İlhan, Şaziye Şahin.*

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