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Evaluation of Analgesic Use in Patients Presenting to Pediatric Dental Clinic With Pain

Merve Erkmen Almaz[1*], Esra Hato[1]

1. Kırıkkale University Faculty of Dentistry, Department of Pedodontics Kırıkkale, Türkiye.

***Corresponding author**: Almaz E. M., Assoc. Prof., Kırıkkale University Faculty of Dentistry,Department of Pediatric Dentistry, Kırıkkale-Türkiye.
E-mail: dt.merveerkmen@gmail.com
Orcid no: 0000-0001-8118-6756
DOİ :

Abstract

Aim: The aim of this study was to evaluate the use of analgesics, the doses used and the level of knowledge of patients about analgesics in patients presenting with pain to the pediatric dentistry clinic.
Materials and Methods: A questionnaire was applied to the parents of 120 children aged 3-15 years who referred to ……. University Faculty of Dentistry, Department of Pediatric Dentistry, with pain. The questionnaire included following data; the duration of the pain, the type and dose of the analgesic used, the intensity of the pain before and following analgesic use based on the VAS scale, knowledge about the maximum daily dose of the analgesic used. The data were analyzed statistically with Chi-square and Mann-Whitney U test.
Results: One hundred and twenty patients were included in the study. The mean age of children using analgesics was 8.2±2.6 years. Paracetamol was the most frequently used analgesic in this population (64,2%) followed by ibuprofen (45%). 18,3% of children were taking more than one analgesic. Although 66,6% of the parents were unaware of the maximum daily dose, only three of the children exceeded this limit (using paracetamol). Also 65% of the parents were unaware of side effects of the analgesics. Parents taking analgesics on medical advice were not more aware of the maximum daily dose.
Conclusıons: We found that paracetamol was the first analgesic preferred by parents for toothache. A large portion of the parents were unaware of the maximum daily dose and side effects of analgesics used in children. Dentists treating cases with pain should inform patients about the use of analgesics, side effects and maximum doses.

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Key words: Dental pain, children, analgesics.

Introduction

According to the International Association for the Study of Pain: “Pain is an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage" (1). Pain is a complex, multifactorial phenomenon. Its perception in children may be modulated by their cognitive abilities, maturity and emotional or situational factors (2).

Toothache is defined as pain originating from a tooth and its supporting structures, and it is often described as the most common type of orofacial pain (2). Toothache is a common problem in the general population and studies have shown that this condition impacts patients' quality of life. Toothache can negatively affect learning, communication, nutrition, and other activities necessary for normal growth and development in children and adolescents (3). Dental caries lesions are the main cause of toothache occurrence, but tooth eruption and exfoliation, traumatic dental injuries, molar-incisor hypomineralization, oral ulcerations, and lesions can also cause toothache (2).

Analgesics are among the most used drugs and are also frequently used in self-medication (4). Self-medication is traditionally defined as "the taking of medicines, herbs, or home remedies on one's initiative or the advice of another person without consulting a physician" (5). There are two types of nonprescription medicines defined by their accessibility.

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These are over-the-counter (OTCs) drugs and behind-the-counter (BTCs) drugs. OTC drugs are used to relieve simple everyday ailments and are sold directly to patients without the need to see a healthcare professional. Over-the-counter medicines include such as analgesics, vitamins, and mineral supplements (6).

Drugs available for acute pain management belong to two major groups: non-narcotic analgesics (e.g., non-steroidal anti-inflammatory drugs and paracetamol) andopioids (or narcotics) (7,8). The most used non-narcotic analgesics in dentistry are aspirin, ibuprofen, and paracetamol; all of which are available as 'over the counter' medications. Acetaminophen (paracetamol), a very common drug used to treat toothache, relieves acute toothache and is often taken by patients with toothache (7,9).

When the manufacturer's recommended dosing is followed, these medications are very safe (10). However, various side effects occur in overdose of analgesics (7,10,11). Analgesics cannot replace proper dental treatment but can support treatment (4).

Pain assessment in children is difficult, because of their limited ability to understand assessment instructions and articulate descriptions of their pain. Two approaches were used in the previous studies: parental report and self-report. Self-report measures (e.g., visual analogue scale) are more reliable than a parental report; however, it depends on sufficient intellectual development from the child to understand the question asked and use the scale appropriately (12–14).

This study aimed to evaluate the use of analgesics, the doses used, and the level of knowledge of patients about analgesics in patients presenting with pain to the pediatric dentistry clinic.

Material and Method

Patient selection

The questionnaire study was applied to the parents of pediatric patients (between 3 and 15 years old) who came to the …….. University Faculty of Dentistry Pedodontics clinic for a routine pedodontics examination.

A total sample size of 119 patients was required for power calculation (with a power of >90% at the 5% significance level). Sample size estimation was performed by using the G*Power version 3.0.10 (Kiel, Germany © 1992–2008) software.

The inclusion criteria for the study were; patients aged 3-15 years who presented to the pediatric dental clinic with pain complaints, had no systemic disease, were taking analgesics for pain complaints and agreed to participate in the study. This study was performed following the ethical standards of the Declaration of Helsinki (1964) and its subsequent amendments. The compliance of this study with the scientific, ethical rules was approved by Kırıkkale University Non-Invasive Clinical Research Ethics Committee (19/01-20.11.2018).

Before inclusion in the study, the written consent form stating that parents agreed to participate was obtained. Individual results were not disclosed in any way to ensure privacy and confidentiality.

Analgesics and doses used

A questionnaire of 11 questions was designed and administered to the parents of the patients to evaluate the use of analgesics.

The questionnaire includes questions to determine age, gender, duration of pain, type and amount of analgesic used, severity of pain before and after using analgesics according to the VAS scale, the parent's knowledge about the maximum daily dose of analgesic used, and whether they have been informed by a healthcare professional.

In the present study, a catalogue with the picture of the drug package of the most frequently analgesics was provided to the patient to facilitate remembering the name of the used analgesics and to improve the quality of the data collection.

Statistical Analysis

All data were statistically analyzed using IBM SPSS Statistics version 23 (IBM, Armonk, NY, USA). The questionnaire was analyzed by descriptive analysis and correlation analysis combined with the chi-square ($\chi 2$) test and the Mann-Whitney U test. The significance level was set at 0.05.

Results

A total of 120 parents participated in the study to fill out the questionnaire. The mean age of the children participating in the study was 8.2±2.6 years.

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Of the participants, 48.3% were girls and 51.7% were boys.

The frequencies and percentages of the answers given to the survey questions are presented in Table 1. Of the participants, 77 parents used paracetamol, 54 parents used ibuprofen, 3 parents used dexketoprofen, 2 parents used diclofenac potassium, and 1 parent used flurbiprofen. In our study, paracetamol was the most used analgesic (64.1%), followed by ibuprofen (45%). 18.3% of children used more than one type of analgesic.

Table 1. Frequency and percentage of answers given to survey questions

Age	Under the of age 10	83	69,1
	Age of 10 and over	37	30,9
Gender	Female	58	48,3
	Male	62	51,7
Which analgesic have you used for your child? (You could select multiple options)	Parasetamol	77	64,2
	İbuprofen	54	45
	Deksketoprofen	3	2,5
	Diklofenakpotasyum	2	1,7
	Flurbiprofen	1	0,8
Who did you consult when you decided to use analgesic for your child?	Consulting a doctor, dentist or pharmacist	53	44,2
	Consulting no one	67	55,8
How did you get the analgesic that you were given to your child?	Pharmacy with prescription	60	50
	Pharmacy without prescription	57	47,5
	I used the analgesics already at home	3	2,5
Have you already been informed by your doctor, pharmacist or other health staff about the usage information and side effects of the analgesic that you use for your child?	Yes	26	21,7
	No	94	78,3

Before using analgesics, 55.8% of respondents reported that they did not consult anyone; 44.2% reported that they consulted a doctor, dentist, or pharmacist. 21.7% of patients had been previously informed by a physician, pharmacist or other health personnel about the drug's usage information and side effects. While 50% of the parents obtained analgesics with a prescription, 47.5% obtained them from the pharmacy without a prescription, 2.5% used home medicines.

The mean pain score on the VAS scale was 5±0.9 before analgesic intake and 2.1±1.2 after analgesic use.

Figure 1 shows the number of days patients experienced pain before visiting the dentist. Almost half of the patients (50.8%) waited in pain for more than 3 days before going to the pediatric dental service. One patient mentioned a 3-month period of pain before coming for dental treatment.

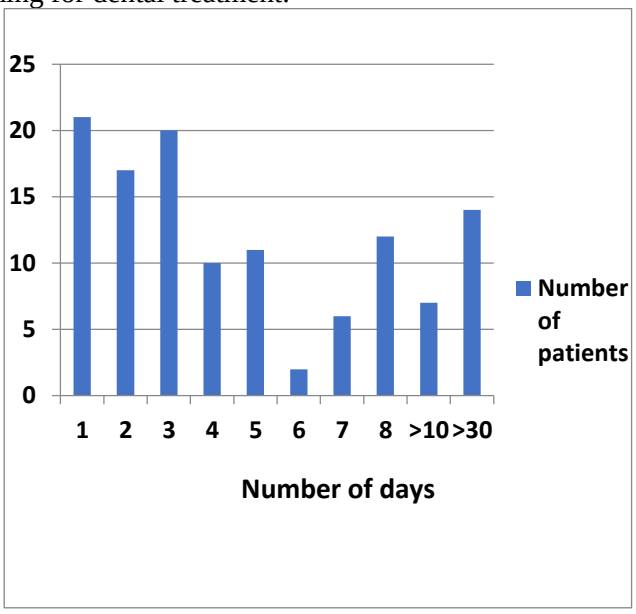

Figure 1. Number of days in pain before subjects visited the pediatric dentistry department.

Figure 2 shows the percentage values in parents' knowledge of the maximum daily dose and the side effects of the analgesics. Although 66.7% of the parents did not know the maximum daily dose, only three children exceeded the maximum dose (when using paracetamol). None of the parents who exceeded the daily maximum dose knew the daily maximum dose. Only 33.3% of the participants stated that they knew the maximum daily dose. And 65% of parents do not know the side effects of analgesics.

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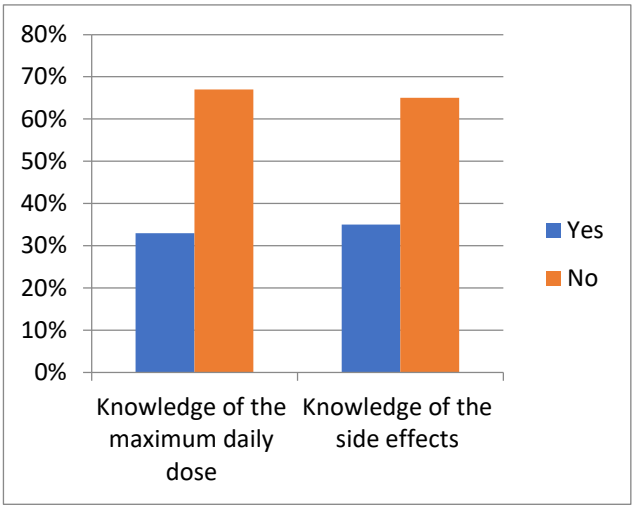

Figure 2. Percentage values in parents' knowledge of the maximum daily dose and the side effects of the analgesics.

Discussion

Toothache, a public health problem, is one of the main reasons for seeking dental care. Toothache can negatively impact oral health-related quality of life and subsequently lead to dental anxiety. Identifying the causes of dental pain and treating them earlier could minimize the consequences (15).

The use of nonprescription analgesics for dental pain is widespread, and public awareness of the safe use of acetaminophen is known to be low (16). In our study, paracetamol was the most used analgesic (64.1%), followed by ibuprofen (45%). 18.3% of children used more than one type of analgesic. In other studies in the literature, it was observed that the most commonly used analgesics were paracetamol and ibuprofen, respectively (4,11,17). The reason these drugs are the most used analgesics may be their widespread availability and low cost.

In a study conducted in Brazil, the rate of self-medication was 69.8%. In our study, self-medication was observed in more than half of the participants (17). A study conducted during the COVID-19 pandemic period reported that an extremely high prevalence (70.2%) of self-medication was found in children with dental problems in Northern Turkey (6). Although the study was conducted before the COVID-19 pandemic, it showed that half of the participants in our study used self-medication.

Pape et al. reported that 85.5% of the patients used paracetamol in self-medication (18). In the same study, it was reported that paracetamol was obtained from the pharmacy without a prescription (44.7), from the pharmacy with a previous prescription (29.9) or with paracetamol already available at home (10.9). Macit et al. reported that., 84 of the 173 participants purchased analgesics from the drugstore with a prescription, whereas 74 individuals did so without one (19). In our study while 50% of the parents obtained analgesics with a prescription, 47.5% obtained them from the pharmacy without a prescription, 2.5% used home medicines. It is essential not to ignore that taking analgesics unconsciously can have significant risks, and one should limit its self-use. Considering this, using analgesics directly for self-treatment without a dental check-up would not be a rational decision.

Hommez et al. (4) reported that 76.6% of the participants exceeded the maximum daily dose in the use of ibuprofen and 32.4% in the use of acetaminophen. George et al. reported that 2 patients exceeded the maximum daily dose of acetaminophen.

Pape et al. reported that 27 of the patient's using paracetamol had overdose and some of these patients had clinical signs of hepatoxicity (18). In our study only three children exceeded the maximum dose (when using paracetamol). It was observed that more than half of the parents participating in our study did not know about the maximum daily dose. It may be that more than half of the parents do not know the maximum daily dose, but do not give high doses to protect their children.

Accessible and simple to use analgesics can have serious side effects in both young and old people, such as liver and renal impairment. Although acetaminophen is usually considered as a safe drug, this medicine is associated with hepatotoxicity at high doses (20) and is the main cause of drug intoxication and acute liver failure worldwide (21). Since acetaminophen is available over-the-counter, patients can take supratherapeutic doses without realizing it or appreciating the dangers (20).

Concerning patients, it has been shown that there is a lack of knowledge about safe self-medication, particularly in the context of dental pain, which leads to a considerable number of acute medical admissions due to accidental acetaminophen overdose. Therefore, it is important for parents to be aware of the proper analgesic dosage, as well as the signs and consequences of an overdose. To prevent the need for analgesics due to toothaches, regular dental appointments are crucial.

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The difficulty in recognizing and assessing pain in children is one of the obstacles in treating this pain. The use of pain assessment tools is usually necessary to confirm the presence of pain, assess its intensity, determine the analgesic agents needed, and evaluate the effectiveness of the treatment initiated (22). The VAS is widely used throughout the world as a measure of pain intensity. VAS has been shown to be a valid, reliable and interval scale. VAS has high test-retest reliability and repeatability (23).We also used VAS to help us study pain score. The mean pain score on the VAS scale was 5±0.9 before analgesic intake and 2.1±1.2 after analgesic use. Patients reported a reduction in the pain of their teeth after the use of the analgesic.

The high incidence of toothache suggests that ineffective and delayed pain management is a significant risk factor for the abuse of over-the-counter and other analgesics (4). Almost half of the patients (50.8%) waited in pain for more than 3 days before going to the pediatric dental service. One patient mentioned a 3-month period of pain before coming for dental treatment. The variability in the onset of pain and admission to the clinic was similar to that in other studies (4,24). The optimal advice for patients experiencing pain is to immediately seek dental treatment, as this is the only solution for predictable and effective pain relief. The use of analgesics is solely complimentary to accurate dental treatment.

Limitations

This study was monocentric, and a larger sample size would have been advantageous to generate a more representative and reliable sample. The validity of our findings may be diminished if we rely on patients to remember the dosage of analgesic they had taken because they might forget how much medication they self-prescribed.

Conclusion

In our study, we found that paracetamol was the first analgesic preferred by parents for toothache.

A large portion of the parents were unaware of the maximum daily dose However, very few parents exceeded the maximum analgesic dose.

Parents' level of knowledge about side effects of analgesics used in children was insufficient.

Dentists treating cases with pain should inform patients about the use of analgesics, side effects and maximum doses.

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