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Assessment and Management of Pain and Anxiety in Pediatric Patients in Emergency

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ABSTRACT

Objective: To assess pain level in pediatric patients presented with dental pain at the emergency department of Jinnah Postgraduate Medical Center, Karachi. **Study design:** A cross-sectional study. **Place and Duration:** The study was conducted in a Pediatric Emergency Department at the Jinnah Postgraduate Medical Center, Karachi, for 6 months from March 2024 to September 2024. **Methodology:** Total 230 hospitalized children over 6 months were assessed the pain levels of these children on admission and 8 hours after admission. Analgesic treatment was given to children and pain was assessed according to Wong-Baker Faces Pain Rating Scale. SPSS version 27 was used for data analysis. Descriptive statistics, such as means and standard deviations, were used to summarize the quantitative variables. **Results:** Paracetamol was the most given analgesic to the patients as 41.7%, whereas brufen and intravenous analgesics were given as 30.0% and 10.0%, respectively. There were 19.6% patients who had no pain at admission, 19.6% had mild pain, 37.8% had moderate pain and 23.0% had severe pain. Whereas, 110 (47.8%) patients had no pain after analgesics, 35.2% had mild pain, 13.5% and 3.5% had severe pain. The association of severity of pain at admission and after analgesics was statistically significant, ($p<0.001$). **Conclusion:** Pain scales are indeed valuable tools for assessing and managing pain in children, as they provide a standardized and systematic way to measure and communicate pain levels. Pain relief and management are important aspects of patient care, as untreated or poorly managed pain can have detrimental effects on a patient's physical and emotional well-being.

INTRODUCTION

Assessing and managing dental pain and anxiety in pediatric patients in an emergency setting requires a combination of clinical skills, effective communication, and the ability to create a calm and supportive environment[1]. Initial assessment begins by assessing the patient's overall condition and vital signs if necessary. Ensure that the child is stable and does not have any medical emergencies[2]. Failing to assess and manage pain in hospitalized children can have significant negative consequences. Pain assessment is an important aspect of pediatric healthcare, and it impacts not only the child's physical well-being but also their emotional and psychological health[3].

Untreated or inadequately managed pain can lead to suffering, distress, and a reduced quality of life for the child[4]. Managing pain effectively can help children recover more quickly from their illnesses or injuries. When pain is well-controlled, children are often more willing to participate in rehabilitation and other therapies that aid in recovery[5]. It is often referred to as the "fifth vital sign" in addition to the traditional four vital signs: heart rate, blood pressure, respiratory rate, and

body temperature[6]. The concept of pain as the fifth vital sign gained prominence in the late 20th century as healthcare providers recognized the importance of addressing and managing pain in patient care[7].

The Wong-Baker Faces Pain Rating Scale, also known as the Wong-Baker FACES Scale, is a widely used self-report tool for assessing pain, especially in children and individuals with communication difficulties[8]. It was developed by Donna Wong and Connie Baker in 1986. The scale consists of six line-drawn faces that represent different levels of pain, ranging from a happy face (indicating no pain) to a very distressed face (indicating the worst pain)[9]. The American Academy of Pediatrics (AAP) has indeed emphasized the importance of addressing pain in pediatric patients and has acknowledged certain obstacles to effective pain management[10].

The World Health Organization (WHO) provides guidelines for pain management in children consisting of two step management strategy. In the first step, physician assesses the child's pain and categorizes it as "mild, moderate or severe" pain[11]. For mild pain, the recommendation is to use non-opioid analgesics at fixed maximal doses. These analgesics can include medications like acetaminophen (paracetamol) and non-steroidal anti-inflammatory drugs (NSAIDs) like ibuprofen[12]. If the child's pain is categorized as "moderate-to-severe," stronger interventions are needed. In this step, strong opioids are indicated. The WHO recommends using weight-appropriate starting doses of strong opioids in these cases[13].

METHODOLOGY

A cross-sectional study was conducted in a Pediatric Emergency Department at the Jinnah Postgraduate Medical Center, Karachi, involving 230 hospitalized children over 6 months from March 2024 to September 2024. The study aimed to assess the pain levels of these children on admission and 8 hours after admission. The study was started after ethical approval from hospital's ethical board. The assessment involved using a self-constructed questionnaire that incorporated two pain assessment scales: the FLACC scale for children less than 4 years old and the Wong-Baker scale for children aged 4 years and above. Demographics and basic information of study like vital signs, admission date, administration of analgesics, duration of hospital stay, discharge date were recorded.

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) program. Descriptive statistics, such as means and standard deviations, were used to summarize the quantitative variables. This suggests that the study calculated measures like the average and variability of numerical data to provide an overview of the data distribution. For categorical variables, proportions and percentages were used to summarize the data. The Chi-square test was used to test the statistical significance of differences between categorical variables. Differences between categorical variables were considered significant if the p-value was less than 0.05.

RESULTS

Overall, 230 patients were included in this study with mean age 5.10±2.31 years. Most of the patients 164 (71.3%) were >4 years of age. There were 158 (68.7%) males and 72 (31.3%) females. According to cause of pain, 81 (35.2%) patients had dental & bony fracture, 129 (56.1%) had odontogenic infection and 20 (8.7%) had soft tissue injury. (Table. I).

Paracetamol was the most given analgesics to the patients as 96 (41.7%), whereas brufen and intravenous analgesics given as 69 (30.0%) and 23 (10.0%), respectively. (Figure. I). There were 71 (30.9%) patients had no pain at admission, 67 (29.1%) had mild pain, 59 (25.7%) had moderate pain and 33 (14.3%) had severe pain. Whereas, 124 (53.9%) patients had no pain after analgesics, 97 (42.2%) had mild pain and 9 (3.9%) had moderate pain. The association of severity of pain at admission and after analgesics was statistically significant, (p=0.005). (Table. II).

Table 1

Demographic variables of the study patients

Variable	Frequency	Percentage
Age (years)		
Mean±S.D	5.10±2.31	
≤4 years	66	28.7
>4 years	164	71.3
Gender		
Male	158	68.7
Female	72	31.3
Cause of pain		
Dental and bony fracture	81	35.2
Odontogenic infection	129	56.1

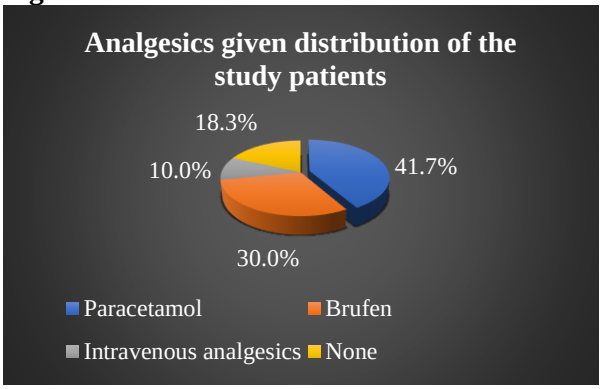
Soft tissue injury	20	8.7
Mean±S.D		

Table 2

Association of severity of pain at admission and after analgesics

Pain at admission	Pain after Analgesics				Total	P-value
	No	Mild	Moderate	Severe		
No	31	36	4	0	71	
Mild	32	31	4	0	67	
Moderate	45	13	1	0	59	0.005
Severe	16	17	0	0	33	
Total	124	97	9	0	230	

Figure 1



DISCUSSION

Assessing and managing pain in young children who are unable to communicate their discomfort can be a significant challenge in the emergency care department. This is particularly important because unaddressed pain can lead to distress and potentially complicate their medical conditions. To address these communication challenges different measuring scale and scoring systems were introduced with the passage of time. Indeed, implementing certain measures can be effective in minimizing the risks of over-treatment with analgesics, particularly in patients with milder pain who might benefit from alternative pain management methods[14,15].

In this study it was observed that there was association of patients age and gender with pain intensity and its management. A study was conducted by Do et al[16] and reported that there was no significant difference in pain levels among different age groups or between genders. This suggests that pain was uniformly distributed across age and gender categories. Elsayedet al[17] conducted a study on this topic and reported similar findings as there was no association between pain and gender.

In this study prevalence of pain at admission was 79.4%. This figure is in close agreement with a previous study conducted by Taylor et al[18], which reported a prevalence rate of 77%. This suggests that both studies found a high incidence of pain in children upon admission, with only a slight difference in the reported percentages (79.4%vs. 77%). Prevalence of moderate and severe pain scores in this study was 37.8% and 23% respectively, and this percentage is in agreement with the findings of Kozlowski et al[19], who reported a prevalence of moderate-to-severe pain between 25% and 64%.

There was an improvement in the pain score 8 hours after administering analgesics when compared to the pain score at the time of admission before the administration of analgesics. In this study paracetamol is the most common drug used relieve of pain in children and 2nd most common was Brufen. Study conducted by Wong et al[20] identified the common use of non-opioid agents for pain treatment in both adults and children. This study suggests that acetaminophen and non-steroidal anti-inflammatory drugs (NSAIDs) are the most commonly used drugs for pain management.

In a study Cardile et al[21] investigated the use of non-steroidal anti-inflammatory drugs (NSAIDs) in a sample of 51 patients in Italy. The study found that ibuprofen was the most commonly used NSAID, with 68.6% of the patients using it. Study conducted by Thikkurissyet al[22] in 2012 involved 300 parents of children with dental pain, and it found that 76% of these parents self-medicated their children with at least one dose of over-the-counter analgesics which is NSAIDS.

In this study we used face representation WBFPS in children below 4 years and verbal scale in above 4 years' children. A systematic review of the literature on face scales, particularly self-evaluation scales, has found that children tend to prefer the Wong-Baker FACES Pain Rating Scale (WBFPS) because the faces depicted on this scale closely resemble those of children. This resemblance to child-like faces is believed to promote better cooperation and engagement when

children are asked to use the scale for self-assessment or reporting their feelings[23].

In this study according to cause of pain, 35.2% patients had dental & bony fracture, 56.1% had odontogenic infection and 8.7% had soft tissue injury. A similar study was reported by Zenouaki et al reported 37.4% pediatric patients presented at emergency due to infectious complications followed by 8.1% tooth fracture and 4.1% because of periodontal trauma.

CONCLUSION

Pain scales are indeed valuable tools for assessing and managing pain in children, as they provide a standardized and systematic way to measure and communicate pain levels. Pain relief and management are important aspects of patient care, as untreated or poorly managed pain can have detrimental effects on a patient's physical and emotional well-being.

Limitations

Emergency department studies often have limited access to a diverse pool of pediatric patients due to ethical and logistical constraints. This can result in a small sample size, making it challenging to draw broad conclusions or generalize the findings to a larger population.

Recommendations

To address these limitations, researchers must carefully design their studies, consider potential biases, and interpret the results with caution.

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