



Incidence and Treatment of Pain in Patients who Attend the Emergency Department of a Children's Hospital in Dominican Republic, January - March, 2019

Marleni Regalada Torres Núñez¹, Aldo Yewed Majluta Yeb², Wendy Cristhyna Gómez García³ and Michael Silbermann^{4*}

¹Pediatric Resident Nicklaus Children's Hospital, United States

²Pediatric Resident Nicklaus Children's Hospital, United States

³Oncology Unit & Palliative Care Coordinator, Dr. Robert Reid Cabral Children's Hospital, Dominican Republic

⁴Middle East Cancer Consortium, Israel

Abstract

Pain, one of the most prevalent symptoms in pediatric patients who visit the emergency department, is frequently underestimated and managed incorrectly.

Objective of this study: To specify the incidence, intensity, frequency of identification by the medical staff, perception of the intensity by the parents, management and the progression of acute pain.

Methodology: A cross-sectional descriptive study was conducted during a three-month period in the emergency department of Dr. Robert Reid Cabral Children's Hospital (Santo Domingo, Dominican Republic). A questionnaire of seven multiple choice questions was implemented, addressed to the parents or legal guardians of the patient, to determine the presence of pain, its intensity, management and progression.

Results: 550 (47%) of the 1,182 children and adolescents surveyed identified pain as a symptom for which they visited the emergency department. 36.5% of patients reported pain of moderate intensity, followed by 30.4% who indicated mild pain. 84% of parents or legal guardians denied the use of scales for pain assessment. 36% of the patients who suffered pain received treatment. Regarding the progression of pain intensity, 48.5% of cases showed improvement, 44.0% remained unchanged and 4.2% worsened.

Keywords: Pain; Pediatrics; Management; Evaluation; Emergency; Opioids

Methods

Study sample

After receiving approval from the hospital's ethics committee, the study was carried out in the emergency department of the Dr. Robert Reid Cabral Children's Hospital, the primary pediatric hospital in the Dominican Republic, during the period of January-March, 2019. After a detailed explanation of their participation in the study, along with the signing of the informed consent, the data was collected through questionnaire-type interviews addressed to parents or legal guardians. Pediatric patients were observed and verbal interaction was conducted to make use of the scales for the classification of pain [1].

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Corresponding author: Michael Silbermann, Middle East Cancer Consortium, Haifa, Israel, E-mail: cancer@mecc-research.com

Study participants

The study consisted of 7,613 participants with a sample of 1,182 patients, more than the statistically significant figure calculated, with a confidence level of 99% and a margin of error of 4%. 54% were male and 46% were female, with ages ranging from one month to five years (47%), six to ten years (27%), 11 to 15 years (21%) and over 15 years (5%). As the study was observational, patients younger than one month of age were excluded (Table 1).

Pain definition

Pain is an unpleasant sensory and emotional experience associated with, or described in terms of, actual or potential tissue damage. Pain is subjective. Each individual learns the meaning of the word 'pain' through early experiences related to injuries. Biologists recognize that these stimuli or diseases that cause pain can damage tissues. Consequently, pain is an experience that we associate with actual or potential tissue damage. Pain is always unpleasant and is, therefore, an emotional experience [2].

Survey methods

The study, conducted between January - March of 2019, comprised patients between the ages of one month to 18 years who presented to the emergency department of the Dr. Robert Reid Cabral Children's Hospital with pain as one of their main symptoms. Each completed a questionnaire, which was conducted in the emergency area. Patients were categorized by age, sex, primary complaint, whether pain was

evaluated using an age-appropriate scale, and the pain intensity they presented at the time of the survey. (The FLACC scale was used for children between one month and three years old; the non-verbal scale using facial expressions of pain for children from 3 to 8 years old; and the visual analog scale of pain for children over eight years old). Each received the applicable type of treatment in accordance with the severity of their pain. As a data collection instrument, questionnaire-type interviews were used with closed questions and the informed consent attached at the back, printed on blank sheets. The parents or legal guardians of the patients completed the questionnaire. During this investigation, the privacy and confidentiality of the participants' personal information were protected and maintained. The signature of a legal informed consent confirmed that a complete and fair explanation of the research was provided, and that the parent/guardian understood the nature of the patient's participation. The data was analyzed and interpreted in percentages using tables and graphs from the Excel program; correlations were made between the various variables using axis tables.

Results

Incidence of pain in the emergency room

Figure 1 shows a sample of 1,182 participants, selected from a total of 7,913 patients who received care in the emergency department. Of these patients surveyed at the Dr. Robert Reid Cabral Children's Hospital, 47% reported going to the hospital due to suffering from pain. The remaining 53% stated that they visited the emergency department because of other complaints or symptoms.

Sample characteristics

Table 1 represents the sociodemographic data of the study sample. The majority of patients, 46.9%, were between one month and five years of age, followed by 26.9% who were between six and 10 years old. The gender distribution was 54.2% male and 45.8% female.

Symptoms and clinical findings added to the pain

Figure 2 shows that 266 (44.1%) of the patients surveyed in the ED of the Dr. Robert Reid Cabral Children's Hospital reported pain

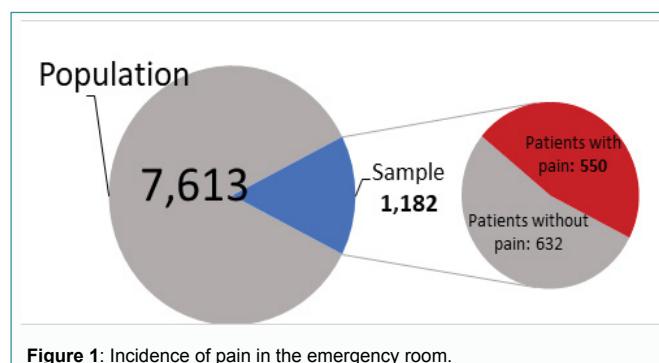


Figure 1: Incidence of pain in the emergency room.

Table 1: Sociodemographic Data.

	No.	%
Gender (n=550)		
Male	298	54.2
Female	252	45.8
Age group (n=550)		
1 month - 5 years	258	46.9
6 years - 10 years	148	26.9
11 years - 15 years	114	20.7
> 15 years	30	5.5

as the only symptom for which they sought medical attention; 95 (15.8%) of the patients experienced emesis and 76 (12.6%) presented with the symptom of fever in addition to pain.

Pain intensity

Table 2 indicates the pain intensity classification of the study participants. The majority of patients, 201 (36.5%), suffered pain of moderate intensity at the time of the survey while 167 (30.4%) patients presented with mild pain. Figure 3 shows that, from the population surveyed in the emergency department of the Dr. Robert Reid Cabral Children's Hospital, a small percentage (13%) of the patients stated that the doctor classified the pain intensity during their evaluation; 84% did not classify it.

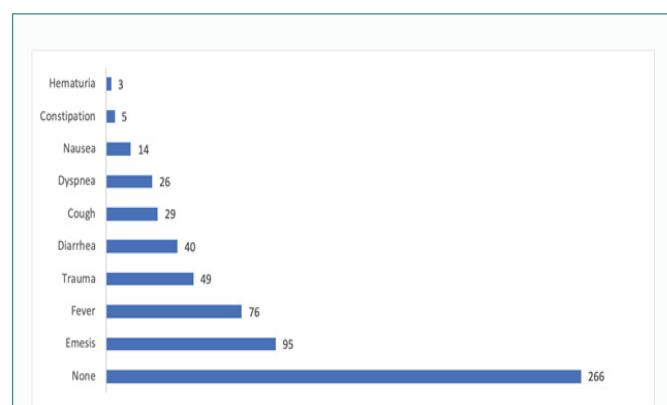


Figure 2: Clinical and physical findings associated with pain.

Table 2: Pain Intensity.

n=550	No.	%
Exclusive to history	19	3.5
Mild	167	30.4
Moderate	201	36.5
Severe	163	29.6

Treatment

Table 3 represents the establishment of a pain treatment plan. 61% of participants stated that they were not provided with a treatment plan after their evaluation by the medical personnel. Only 36% already had already obtained a treatment plan at the time of being surveyed.

Pain progression

Table 4 depicts that, of the 550 patients surveyed, 267 (48.5%) reported an improvement in their pain after being assisted by hospital medical personnel, while 242 (44%) stated that their pain remained unchanged.

Table 3: Treatment Plan.

n=550	No.	%
Yes	198	36
No	334	60.7
Unknown	18	3.3

Table 4: Pain Progression.

n=550	No.	%
Resolved	18	3.3
Improved	267	48.5
No change	242	44
Exacerbated	23	4.2

Correlation of medication and pain intensity

Figure 4 shows that 43.9% of the surveyed patients who received NSAIDs (non-steroidal anti-inflammatory drugs) as treatment for pain had mild pain; of those who received opioids, 55.6% had severe pain.

Correlation of intensity and progression of pain

A total of 95 (56.9%) patients classified with mild pain reported an improvement in their pain intensity; 94 (46.8%) of the patients with moderate pain and 84 (51.5%) of the patients with severe pain stated that their pain remained unchanged two hours after the initial medical evaluation (Figure 5).

Correlation of treatment - progression of pain

Figure 6 shows that 88.9% of the patients treated with opioids, 70.7 % of the patients treated with NSAIDs and 51.6% of the patients treated with acetaminophen stated an improvement in their pain intensity.

Correlation of age and treatment plan

Of the 334 participants who did not receive a treatment plan for the pain, 171 (66.28%) were between the ages of one month and five years and 88 (59.46%) were between six and 10 years; these two age ranges represented the majority within the study sample (Figure 7).

Discussion

The study entailed a probability sample of 1,182 patients, of whom 550 (47%) reported pain as a symptom during their visit (Figure 1).

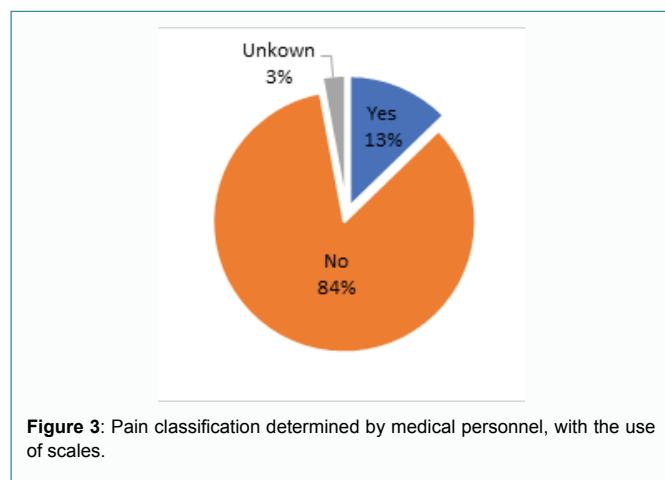


Figure 3: Pain classification determined by medical personnel, with the use of scales.

This percentage corresponds with a Canadian study, which determined the incidence of pain in the pediatric population to be 47% [3]. With regard to the classification of pain intensity using the different scales according to age, 201 (36.5%) patients reported moderate pain, 167 (30.4%) had mild pain, 163 (29.6%) severe pain and 19 (3.5%) had no pain according to the FLACC scale, although their parents stated that the reason for the ED visit was that their child was in pain (Table 2). These results go hand-in-hand with those obtained in the study carried out at the Federico Gómez Children's Hospital in Mexico, where results showed a higher prevalence of moderate pain (60.55%) [4]. The percentage of patients who visited the emergency department with pain as the predominant symptom was 44% (n = 266); this number is comparable to a national survey that was carried out in Spain in 2014 by Barrientos, where pain as a main symptom for the ED visit was 42.8% [5]. Other clinical and physical findings associated with pain during this investigation were vomiting (15.8%) and fever (12.6%); a smaller percentage of patients had a history of trauma and respiratory symptoms, such as dyspnea (Figure 2). Of the patients who were identified with pain; 61% of the parents or guardians denied having received a treatment plan from the doctor after their initial evaluation; 36% claimed to have received instructions for a management plan and 3% did not know if a plan had been established (Table 3). Similarly, the Canadian study conducted in 2008 by Taylor showed that, of the 241 hospitalized patients interviewed, 77% presented with pain during admission. When patients who had experienced pain during admission were questioned, 44% said they had not received pain relievers in the past 24 hours. This was validated by reviewing the patient's record, where it was confirmed that, in the previous 24 hours, 42% of the children who had experienced pain during admission had not received analgesia [6]. With regard to the classification of pain by the medical team, 84% of the surveyed patients denied that a scale was used to determine the intensity of pain and only 13% of patients (said they?) were classified (Figure 3). The high percentage that failed to show an adequate classification correlates with the study carried out in 2012 in Brazil, where 73% of pediatric patients who presented with pain did not show a classification by means of a scale in the records [1]. Concerning the correlation between treatment and pain intensity, it was found that, of the patients who received NSAIDs as monotherapy, 43.9% experienced mild pain, 24.4% presented with severe pain and 22% with moderate pain. Regarding those that were treated with acetaminophen, 35.5% of the patients presented with mild pain, followed by 32.3% with severe pain. Of patients who were prescribed opioids, 55.6% had severe pain, 22.2% had moderate pain and 22% had mild pain (Figure 4). It is important to mention that the

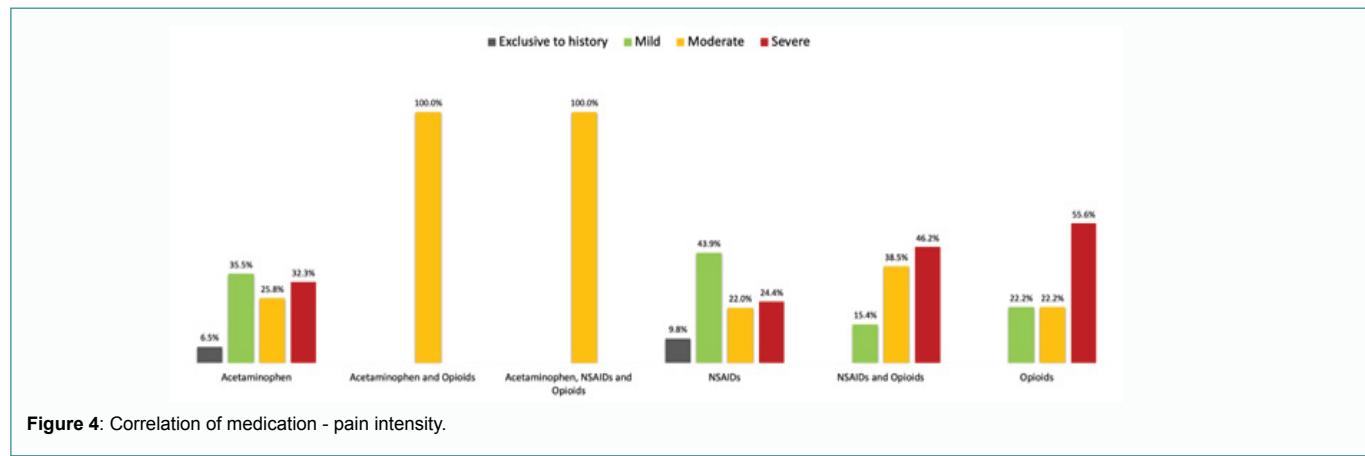


Figure 4: Correlation of medication - pain intensity.

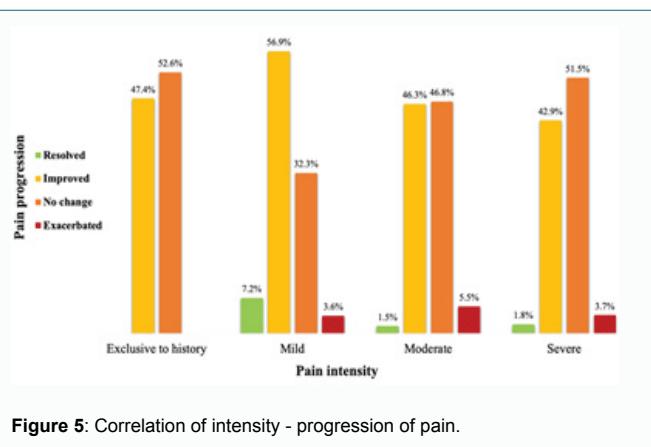


Figure 5: Correlation of intensity - progression of pain.

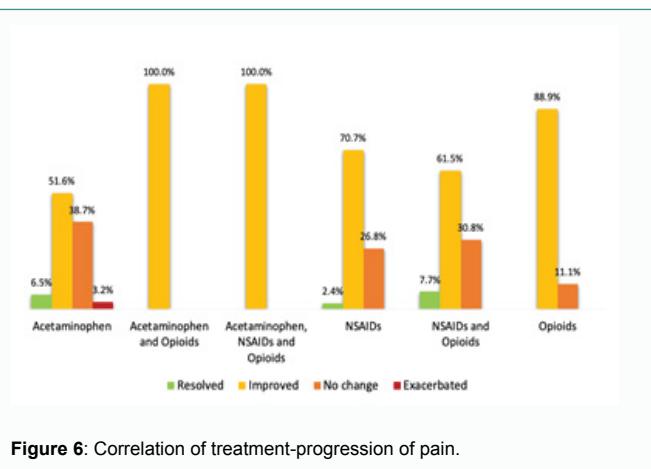


Figure 6: Correlation of treatment-progression of pain.

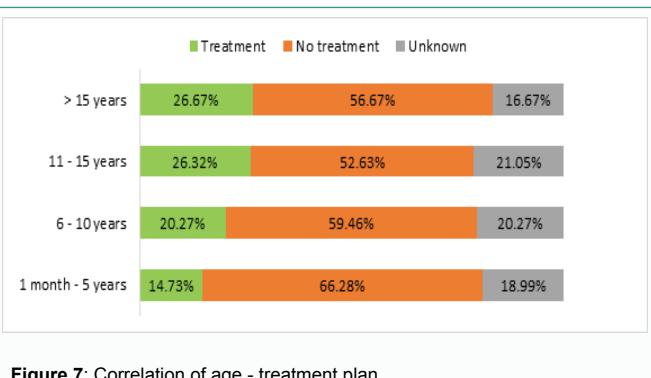


Figure 7: Correlation of age - treatment plan.

only opioid used during the investigation period was nalbuphine; this might be due to barriers facing the medical team, such as mistrust of using morphine in pediatric populations and the potential side effects such as respiratory depression. The correlation between the intensity and the progression of pain determined that, of the patients presenting with mild pain, 56.9% showed an improvement, while 32.3% claimed to remained unchanged. As for moderate pain, 46.8% of the patients claimed to remain the same. In patients with severe pain, 51.5% remained unchanged, 42.9% improved, in 3.7% pain had exacerbated and, in only 1.8%, the pain disappeared. These results indicate a failure in the management of moderate and severe pain (Figure 5). 70.7% of the patients who were treated with NSAIDs and 88.9% who were treated with opioids (nalbuphine) showed an improvement in their pain two hours after the initial medical evaluation; likewise, 61.5% of the patients who were treated with NSAIDs and opioids as

bimodal therapy reported a relief in their pain (Figure 6). In relation to the age of the patient and the failure to establish a treatment plan, it was evident that the highest percentage (66.28%) of patients that did not receive treatment were in the age range of one month to five years (Figure 7). The study carried out in 2003 in Chicago by John Alexander, published in the journal of the American College of Emergency Medicine, supports this data, expressing those children under two years of age receive less analgesia than older patients [7]. The results obtained in the treatment plan for a given pain intensity shows poor implementation of the different care protocols that are available and globally accepted for the treatment of pain in pediatrics; among these is the pediatric pain management guide established by the World Health Organization (WHO), which uses a two-step strategy. The first step manages mild pain with drugs such as acetaminophen or ibuprofen; in the present study this measure was well-implemented, as NSAIDs as monotherapy were mostly used for mild pain (43.9%). The second step in managing pain recommends the use of morphine to treat moderate to severe pain; as evidenced by this study, the second step was never implemented.

Conclusions

Almost half (47%) of the study population suffered pain at the time of filling out the questionnaire, however, there was a lack of interventional algorithms that would have allowed for an adequate evaluation and timely therapeutic measures. Pain, a debilitating symptom, is frequently experienced by children admitted to the emergency department. Pain is defined by the International Association for the Study of Pain as 'an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage'. As the relief of pain and the quality of life of the patient is paramount, pain must be correctly evaluated during the prognosis. A variety of scales, which have been developed and are currently available for assessing pain in pediatrics, are instrumental for establishing timely and optimal treatment. It is a global reality that pediatric patients receive less pain relief compared to adult patients who present the same clinical picture, prompting the execution of a variety of studies to list responsible factors, including: disagreement among caregivers of the child regarding the pain intensity, limited understanding of pain assessment tools and methods available for treating pediatric pain, and misconceptions about the use of opioids for relieving pain. The objective of this study was to determine the incidence and treatment of pain in patients who come to the emergency area of Dr. Robert Reid Cabral Children's Hospital. In the study, we documented (1) the incidence of pain during the period of January-March, 2019, (2) the timely classification of pain by medical personnel, (3) pain management according to the guidelines of the WHO and (4) progression of the pain after medical management.

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