

Analgesia in trauma patients in emergency department

Analgesia em pacientes de trauma no serviço de emergência

Analgesia en pacientes de trauma en el servicio de emergencia

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Abstract: Objective: to assess analgesia effectiveness and agreement between the Numerical and Faces scales in trauma patients in the emergency department. **Method:** a cross-sectional study with 173 patients performed from February 2013 to September 2014. Pain was assessed on admission and one hour after analgesia by using the Numerical and Faces scales. To compare pain before and after analgesia, the Spearman Correlation Coefficient was used and. To analyze agreement between the scales, Kappa Index was used. **Results:** on admission, most patients reported moderate and severe pain. There was pain relief, but 36.0% of patients remained with mild pain and 33.7% moderate pain, requiring analgesic supplementation. Agreement between the scales was considerable before analgesia (Kappa = 0.31, p-value <0.0001) and moderate after (Kappa = 0.56, p-value <0.0001). **Conclusion:** the majority of patients obtained pain relief after analgesia, and there was agreement between the scales.

Descriptors: Pain; Analgesia; Wounds and injuries; Pain measurement.

Resumo: Objetivo avaliar a eficácia da analgesia e a concordância entre as escalas Numérica e de Faces em pacientes de trauma no serviço de emergência. **Método:** estudo transversal com 173 pacientes, realizado de fevereiro-2013 a setembro-2014. A dor foi avaliada na admissão e uma hora após analgesia, pelas escalas Numérica e de Faces. Para comparar a dor antes e após analgesia, utilizou-se o Coeficiente de Correlação de *Spearman* e, para analisar a concordância entre as escalas, o Índice Kappa. **Resultados:** na admissão, a maioria dos pacientes relatou dor moderada e intensa. Houve melhora da dor, porém 36,0% dos pacientes permaneceram com dor leve e 33,7% moderada, necessitando de complementação analgésica. A concordância entre as escalas foi considerável antes da

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analgesia (Kappa = 0,31; p-valor <0,0001) e moderada após (Kappa = 0,56; p-valor <0,0001). **Conclusão:** a maioria dos pacientes obteve melhora da dor após analgesia, sendo que houve concordância entre as escalas.

Descritores: Dor; Analgesia; Ferimentos e lesões; Medição da dor

Resumen: Objetivo: evaluar eficacia de analgesia y concordancia entre las escalas Numérica y de Faces en pacientes de trauma en servicio de emergencia. **Método:** Estudio transversal con 173 pacientes, realizado de febrero-2013 a septiembre-2014. Dolor fue evaluado en admisión y una hora después de analgesia, por escalas Numérica y de Faces. Para comparar dolor antes y después de analgesia, se utilizó el Coeficiente de Correlación de Spearman, para analizar la concordancia entre las escalas, el Índice Kappa. **Resultados:** en admisión, la mayoría de pacientes relató dolor moderado e intensa. Se ha mejorado el dolor, pero el 36,0% de pacientes permanecieron con dolor leve y el 33,7% moderado, necesitando de complementación analgésica. La concordancia entre las escalas fue considerable antes de analgesia (Kappa = 0,31; p-valor <0,0001) y moderada después (Kappa = 0,56; p-valor <0,0001). **Conclusión:** la mayoría de pacientes obtuvo mejora del dolor después de analgesia, y hubo concordancia entre las escalas.

Descriptorios: Dolor; Analgesia; Heridas y lesiones; Dimensión del dolor

Introduction

Pain in trauma is an important symptom, as it can signal the severity and type of injury, as well as indicate suspicion of severe complications and patient deterioration. Systemic approach and pain management are part of patient assessment.¹

According to the World Health Organization's WHO Global Status Report on Road Safety, over one million two hundred people die annually on the world's roads and more than 50 million people are injured.² Trauma accounts for one in six hospital admissions.³ One of the main consequences of trauma is pain and often little attention is given to pain control in these patients.³

Pain is a harrowing experience associated with actual or potential tissue damage with sensory, emotional, cognitive and social component.⁴ It causes physiological responses, such as elevated blood pressure; heart and respiratory rate; increased cardiac work and decreased peripheral blood perfusion. Sweating, pallor, anxiety, and psychomotor agitation may occur. Therefore, its repercussions are potentially harmful to the body. In hemorrhagic conditions, nociceptive stimuli may even aggravate shock. Thus, pain control should be considered in

the immediate assistance to the traumatized, aiming at the improvement of vital functions, besides being necessary for patient comfort, who is already facing a process of physical and mental stress.⁵

Pain is part of the traumatized disease process and recognition, assessment and treatment are essential for health professionals directly involved in care.⁶

A study conducted in a pediatric inpatient unit in Londrina, Paraná State, Brazil, which aimed to analyze the perception of the nursing staff regarding pain assessment and management, showed that less than half of the professionals attended training courses for pain assessment. However, most reported performing pain assessment as the fifth vital sign. The face scale was the most used by the team, and 44% of professionals correctly described their technique of use. One third of professionals reported not using any scale to assess pain, which may be associated with lack of technical-scientific knowledge and resources, such as institutional analgesic protocols.⁷

Since the number of pain score assessments and reassessments and their documentation are associated with the safe use of analgesia⁸ and pain may be related to the clinical condition of the victim,⁹ pain assessment systems have been used in clinical practice. It is necessary to analyze its applicability in different populations and care settings.¹⁰

As pain is a frequent reason for seeking emergency services and its adequate assessment can provide quality and humanized care, the research question of this study is: is analgesia of trauma patients adequate and is there agreement between the scales that assess pain in these patients? Thus, the objectives of this study are to assess analgesia efficacy and to verify the agreement between the Visual Numeric and Faces scales in trauma patients in the emergency department.

Method

An analytical cross-sectional study with a quantitative approach, performed in the emergency room of the emergency service (ES) of a university hospital, located in the south of São Paulo, Brazil.

The sample was obtained by convenience and consisted of trauma patients, over 18 years old, admitted to the surgical emergency room, in all shifts, from February 2013 to September 2014, coming directly from the event scene and with Glasgow Coma Scale score equal to 15. Patients who had used analgesics before arrival at the hospital were excluded from this study.

To characterize participants, structured questionnaires were used, with the following variables: age, sex, education, marital status, occupation, declared color, per capita income, religion, existence of prehospital care, means of transport to the hospital, mechanism of trauma, type of external cause, pain score, and administered analgesia.

To assess pain intensity, the Visual Numerical Scale (VNS) and Face Scale (FS) were used, which were explained to the participant before its application. VNS consists of a graduated line from 0 to 10, where zero is associated with no pain and 10, the worst pain imaginable, intermediate numbers from 1 to 4, mild pain; 5 to 7, moderate; and from 8 to 10, intense. Patients verbalized which number represented the intensity of the pain. FS consists of 6 face figures that gradually range from the expression of joy to the expression of crying, and seek to translate the degree of suffering caused by pain. Face number zero is associated with no pain; 1 and 2, mild pain; 3 and 4, moderate pain; and 5, severe pain. Participants indicated on this scale which face was most identified at assessment time.¹¹

The scales were applied by the researcher to all patients in the study on admission to the FS and within one hour of analgesic administration. In cases where no analgesic was administered, they were applied at admission and after one hour. Patients' first pain assessment occurred after the initial care recommended by Advanced Trauma Life Support.¹⁰

For the descriptive analysis of continuous variables, mean, standard deviation, median, minimum and maximum were calculated, and for categorical variables, frequency and percentage.

To compare VNS and FS at both moments and the variables of interest, the ANOVA test was used. To compare pain scores before and after analgesia for both scales, the Spearman correlation coefficient was used. The agreement analysis between the scales was performed by the Kappa Index, which is a measure of agreement whose maximum value is 1 and the negative values suggest that the agreement was smaller than expected by chance (Chart 1).

Chart 1. Interpretation of Kappa values.

Kappa values	Interpretation
<0	No agreement
0-0.19	Poor agreement
0.20-0.39	Considerable agreement
0.40-0.59	Moderate agreement
0.60-0.79	Substantial agreement
0.80-1.00	Excellent agreement

Source: Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics*. 1977;33:159-74.

The significance level considered for all analyzes was 5% (p value < 0.05).

This study was conducted according to Resolution n. 466/12 rules of the Brazilian National Health Board (*Conselho Nacional de Saúde*) of the Ministry of Health. Thus, data collection began after approval by the Research Ethics Committee of *Universidade Federal de São Paulo* (UNIFESP), having favorable Opinion n. 192.144 of 02/01/2013.

Results

The study sample consisted of 173 trauma patients, most of them male, 111 (64.2%), aged between 30 and 49 years (40.5%), white 86 (49.7%), Catholics. 104 (60.1%), with complete high school 55 (31.8%) and employees (73.4%). The item answered per capita income 162 patients,

whose mode was 2,000.00 *reais* (*reais* is a Brazilian currency that corresponds to about 500 US dollars), corresponding to about two minimum wages.

Among patients who received prehospital care (57.8%), most were attended by the Fire Department Rescue Unit (UR) 193 (35.3%). The most frequent accidents were those related to transportation, which included automotive (43.4%) and run over (9.8%), followed by falls (39.9%) and aggressions (1.7%), which in total configured 97.1% of blunt trauma (Table 1).

Table 1. Trauma patients by means of transport to arrival, prehospital care, trauma mechanism and type of external cause. São Paulo/SP, 2013-2014. (N=173)

Variables	n (%)	Variables	n (%)
Prehospital care		Trauma mechanism	
Yes	100 (57,8)	Blunt	168 (97,1)
No	73 (42,2)	Penetrating	2 (1,2)
		Burn	3 (1,7)
Mean of transport		Type of external cause	
SAMU-192	31 (17,9)	Car accident	75 (43,4)
RU-193	61 (35,3)	Fall	69 (39,9)
ASU-193	1 (0,6)	Run over	17 (9,8)
Removal Ambulance	7 (4,0)	Stab wound	2 (1,2)
Police	14 (8,1)	Burn	3 (1,7)
Own means	59 (34,1)	Aggression	3 (1,7)
		Others	4 (2,3)

SAMU: Brazilian Mobile Emergency Care Service (*Serviço de Atendimento Móvel às Urgências*). UR: Rescue Unit. ASU: Advanced Support Unit.

No patient received analgesics in prehospital care and 121 (70.0%) received after the initial assessment in the ES. Of the 30.0% who did not receive analgesia, 13.5% refused and the remaining percentage was not offered medication. Five analgesics were used: dipyrone, paracetamol, ketoprofen, tramadol and morphine, and seven combinations of two or more of these drugs. The most commonly used analgesic without association was dipyrone (56.2%),

followed by tramadol (12.4%). In 90.1% of subjects, the route of administration was intravenous (IV). They received complementary analgesia after at least one hour of the first dose, 9.2% of patients. In these cases, the most commonly used analgesics were tramadol (45.5%) and morphine (18.2%). The five types of analgesics were grouped by class for statistical comparison (Table 2).

Table 2. Distribution of analgesic classes and associations administered to trauma patients. São Paulo/SP, 2013-2014

Analgesic class and associations	N=121	Analgesic class and associations	N=11
	n (%)		n (%)
Admission		After one hour	
AAT	70 (57.9)	Opioids	7 (63.6)
Opioids	20 (16.5)	AAT + Opioid	2 (18.2)
AAT + NSAI	14 (11.6)	AAT	1 (9.1)
AAT + Opioid	11 (9.0)	AAT + NSAI	1 (9.1)
NSAI	3 (2.5)		

AAT- Analgesic and Athermic (dipyrone and acetaminophen). NSAI: Non-Steroidal Anti-Inflammatory

In the measurement of VNS pain on admission, 6 (3.5%) patients reported no pain, 21 (12.1%) mild pain, 58 (33.5%) moderate pain and 88 (50.9%) pain. intense. One hour after analgesia 20 (11.6%) reported no pain, 62 (36.0%) mild pain, 58 (33.7%) moderate pain and 32 (18.6%) severe pain.

In the case of FS on admission, 6 (3.5%) patients reported no pain, 29 (17.0%) mild pain, 97 (56.7%) moderate pain and 39 (22.8%) severe pain and after one hour, 23 (13.5%) no pain, 72 (42.4%) mild pain, 66 (38.8%) moderate pain and 9 (5.3%) severe pain.

The pain score assessed by VNS and FS one hour after analgesia showed a significant decrease in relation to the admission pain score, as shown in Table 3.

Table 3. Pain score of traumatized patients at admission and one hour after analgesia. São Paulo/SP, 2013-2014

Variables	Mean (SD)	p value*
VNS inbound (n = 173)	7.0 (2.6)	<0.0001
VNS after 1 hour of analgesia (n = 172)	4.5 (2.8)	
FS on admission (n = 171)	3.4 (1.3)	<0.0001
FS after 1 hour of analgesia (n = 170)	2.2 (1.4)	

VNS: Visual Numerical Scale. FS: Face Scale. * Spearman correlation coefficient.

There was no statistically significant relationship between VNS and FS pain score (at both times) with age, sex, education, marital status, occupation, declared color, per capita income, religion, existence of prehospital care, means of transport. to the hospital, trauma mechanism and type of external cause.

When comparing the VNS and FS scales, considerable agreement was observed before analgesia (Kappa = 0.31; p-value <0.0001) and moderate after (Kappa = 0.56; p-value <0.0001).

Discussion

Pain is one of the main consequences of trauma and its repercussions can be potentially harmful to the body. Proper analgesia in these cases can minimize the physical and emotional consequences, providing comfort and safety in traumatized patients care.¹²

Regarding prehospital care (PHC), no patient in this study received analgesia during PHC. Among the main difficulties for not performing analgesia in the PHC are the poor conditions of care and the difficulty of anamnesis and physical examination at the event site, in addition to the need for immediate transportation to the hospital.¹³

A study with traffic accident victims found that in the first pain assessment by the Visual Analog Scale, 56.0% of patients presented severe pain and 29.0% moderate pain, corroborating our research. In the same study, the second assessment showed that the group had pain improvement, with 26.0% reporting severe pain, 38.0% moderate pain. Nevertheless,

most patients who presented pain, only 48.0% received analgesia, in contrast with this study, in which most patients received some analgesic medication. Despite the improvement in pain reported by patients in the second assessment, the percentage of moderate and severe pain was still high.¹⁴

Regarding care in the ES, a survey of 450 patients in an Iranian public hospital, where most suffered injuries to the extremities (injuries, bruises and fractures), found that 66% of patients were assessed for pain. Only 5.5% received any analgesic medication, the most used being pethidine, followed by fentanyl and acetaminophen, although most patients rated pain as moderate.¹⁵ These findings differ from this study where dipyron was the most commonly chosen analgesic, together with associations, the most commonly used being analgesics and non-steroidal anti-inflammatory drugs (NSAIDs).

Dipyron is widely used in clinical practice, and its administration alone is more indicated for the relief of moderate and severe pain, but in some post-traumatic situations, the analgesic effect may be insufficient, and the use of opioids is necessary. These medications provide pain relief and patient well-being in acute traumatic situations. However, their use may be limited by the fact that they may cause chemical dependence, and due to potential adverse effects such as lowered consciousness, nausea, vomiting and constipation.¹²

The World Health Organization suggests standardizing analgesic treatment at three levels according to pain intensity. At the first level, it is recommended to use simple and anti-inflammatory painkillers for mild pain. At the second level, it indicates weak opioids in association or not with simple and anti-inflammatory analgesics. At the third level, it recommends the use of strong opioids in combination or not with simple and anti-inflammatory analgesics.¹⁶ In this study, most patients reported moderate and severe pain at the first assessment, received simple analgesic without association with other drugs, and

most remained in pain after one hour of analgesia. These data reinforce the importance of a more rigorous pain assessment, the appreciation of pain reported by patients and standardization of analgesic use in trauma patients.¹⁷

Regarding the use of assessment scales, VNS and FS, when compared with each other, showed considerable agreement before and after analgesia. A Brazilian study aimed at assessing the influence of pain intensity on the responses in one-dimensional measurement scales identified the influence of pain intensity on the responses of the scales, with greater agreement in cases of more intense pain.¹⁸ This is similar to our study in which agreement was considerable prior to analgesia.

Pain intensity measurement scales use is associated with a higher percentage of analgesic administration. In a randomized study conducted in the emergency department of a tertiary university hospital with 216 trauma patients, it was evidenced that the proportion of patients who received analgesia in the group in which the pain score was measured was 6.5% higher compared to the group in which it was not measured. In addition, the mean time in minutes for drug administration was shorter for the first group, and as the pain score increased, the percentage of patients receiving analgesia was higher.¹¹

Pain treatment in FS is complex. Many reasons may be associated with its inadequate control in trauma patients, such as misinformation about the techniques and instruments available for their assessment and pharmacology of analgesic drugs, as well as the adverse conditions of emergency environments and the different types of treatment employed to victim patients. of trauma. However, none of these factors justify inadequate pain management in these situations.¹⁹

Conclusion

This study concluded that there was a significant decrease in pain in trauma patients after analgesia in relation to pain on admission. When comparing these scales with pain assessment, there was considerable agreement before and after pain analgesia.

The limitations of this study were the size of the sample and its performance in a single center with limited financial resources, which may not represent the reality of other health institutions. However, authors used scales that are easy to understand and apply, demonstrating that pain assessment is feasible in emergency services. This improves the quality of care, minimizes suffering, anxiety and physiological repercussions that untreated pain can cause on patients.

This study is expected to sensitize health professionals to more carefully assess and treat trauma patient pain, and to promote the development of specific protocols aimed at improving the quality of care and patient satisfaction.

References

1. Ahmadi A, Bazargan-Hejazi S, Zadi ZH, Euasobhon P, Ketumarn P, Karbasfrushan A, et al. Pain management in trauma: a review study. *J Inj Violence Res* [Internet]. 2016 [acesso em 2018 set 04];8(2):89–98. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4967367/pdf/jivr-08-89.pdf> doi: 10.5249/jivr.v8i2.707
2. World Health Organization [Organização Mundial da Saúde]. Global status report on road safety 2013: supporting a decade of action. Geneva: Organização Mundial da Saúde; 2013.
3. Settervall CHC, Domingues CA, Sousa RMC, Nogueira LS. Preventable trauma deaths. *Rev Saúde Pública* [Internet]. 2012 [acesso em 2018 ago 28];46(2):367-75. Disponível em: <http://www.producao.usp.br/bitstream/handle/BDPI/38255/S0034-89102012000200020.pdf?sequence=1&isAllowed=y>
4. Williams AC, Craig KD. Updating the definition of pain. *Pain* [Internet]. 2016 [acesso em 2018 ago 28];157(11):2420-3. Disponível em: https://www.aaalac.org/BOD/AdhocNewsletter/Updating_the_definition_of_pain_Pain2016.pdf doi: 10.1097/j.pain.0000000000000613

5. Berben SAA, Meijs THJM, van Grunsven PM, Schoonhoven L, van Achterberg T. Facilitators and barriers in pain management for trauma patients in the chain of emergency care. *Injury* [Internet]. 2012 [acesso em 2018 ago 28];43(9):1397-402. Disponível em: <https://doi.org/10.1016/j.injury.2011.01.029>
6. Scholten AC, Berben SAA, Westmaas AH, van Grunsven PM, de Vaal ET, Rood PPM, et al.; Emergency Pain Study Group. Pain management in trauma patients in (pre)hospital based emergency care: current practice versus new guideline. *Injury* [Internet]. 2015 [acesso em 2018 ago 28];46:798-806. Disponível em: <https://doi.org/10.1016/j.injury.2014.10.045>
7. Blasi DG, Candido LK, MTGM Tacla, Ferrari RAP. Avaliação e manejo da dor na criança: percepção da equipe de enfermagem. *Semina Cienc Biol Saude* [Internet]. 2015 [acesso em 2018 ago 28];36(1):301-10. Disponível em: <http://dx.doi.org/10.5433/1679-0367.2015v36n1Suplp301>
8. Cross R. Time to analgesia and pain score documentation best practice standards for the Emergency Department: a literature review. *Australas Emerg Nurs J* [Internet]. 2016 [acesso em 2018 set 24];19(1):26-36. Disponível em: <https://doi.org/10.1016/j.aenj.2015.11.001>
9. Bertoncello KCG, Cavalcanti CDK, Ilha P. Diagnósticos reais e proposta de intervenções de enfermagem para os pacientes vítimas de múltiplos traumas. *Rev Eletrônica Enf* [Internet]. 2013 [acesso em 2018 set 24];15(4):905-14. Disponível em: <http://dx.doi.org/10.5216/ree.v15i4.19497>
10. American College of Surgeons. The committee on trauma: advanced trauma life support manual. 10th ed. Chicago: ACS; 2018.
11. Fortunato JGS, Furtado MS, Hirabae LFA, Oliveira JA. Escalas de dor no paciente crítico: uma revisão integrativa. *Rev HUPE* [Internet]. 2013 [acesso em 2018 set 24];12(3):110-7. Disponível em: http://revista.hupe.uerj.br/detalhe_artigo.asp?id=426 doi:10.12957/rhupe.2013.7538
12. Calil AM, Pimenta CAM. Gravidade da lesão e analgesia em pacientes que sofreram acidentes de transporte. *Acta Paul Enferm* [Internet]. 2008 [acesso em 2018 set 24];21(3):398-403. Disponível em: <http://dx.doi.org/10.1590/S0103-21002008000300003>
13. Parker M, Rodgers A. Management of pain in pre-hospital settings. *Emergency Nurse* [Internet]. 2015 [acesso em 2018 set 24];23(3):16-21. Disponível em: <https://doi.org/10.7748/en.23.3.16.e1445>
14. World Health Organization [Organização Mundial da Saúde]. Alivio del dolor y tratamiento paliativo en el cáncer infantil. Genebra: Organização Mundial da Saúde; 1999.
15. Alavi N M, Aboutalebi M S, Sadat Z. Pain management of trauma patients in the emergency department: a study in a public hospital in Iran. *Int Emerg Nurs* [Internet]. 2017 [acesso em 2018 set 24];33:53-8. Disponível em: <https://doi.org/10.1016/j.ienj.2016.10.005>
16. Rahman NHNA, Ananthanosamy C. The display effects of patients' self-assessment on traumatic acute pain on the proportion and timing of analgesics administration in the emergency department. *Int J*

Emerg Med [Internet]. 2014 [acesso em 2018 set 24];7:36. Disponível em:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4306068/pdf/s12245-014-0036-1.pdf> doi: 10.1186/s12245-014-0036-1

17. Dadalt GT, Eizerik DP. Trauma físico: nível de dor relatado e analgésico prescrito. Rev Bras Farm [Internet]. 2013 [acesso em 2018 set 24];94(2):89-93. Disponível em: <http://www.rbfarma.org.br/files/rbf-94-2-1-2013.pdf>

18. Ciena AP, Gatto R, Pacini VC, Picanço VV, Magno IMN, Loth EA. Influência da intensidade da dor sobre as respostas nas escalas unidimensionais de mensuração da dor em uma população de idosos e de adultos jovens. Semina Cienc Biol Saude [Internet]. 2008 [acesso em 2018 set 24];29(2):201-12. Disponível em: <http://dx.doi.org/10.5433/1679-0367.2008v29n2p201>

19. Oliveira PEP, Pereira LV, Santos NR, Souza LAF. A enfermagem no manejo da dor em unidades de atendimento de urgência e emergência. Rev Eletronica Enf [Internet]. 2016 [acesso em 2018 set 24];18:e1171. Disponível em: <http://dx.doi.org/10.5216/ree.v18.37309>

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How to cite this article

Lopes MCBT, Santana NDS, Costa KAL, Okuno MFPO, Batista REA, Campanharo CRV. Analgesia em pacientes de trauma no serviço de emergência. Rev. Enferm. UFSM. 2019 [Acess at: 2019 jun 15];vol e26:p1-p14. DOI:<https://doi.org/10.5902/2179769234502>