UNIVERSIDADE FEDERAL DE SERGIPE
CENTRO DE CIÊNCIAS BIOLÓGICAS E DA SAÚDE
DEPARTAMENTO DE MEDICINA

RAPHAEL ALMEIDA SANTIAGO DE ARAUJO

AVALIAÇÃO DAS PROPRIEDADES PSICOMÉTRICAS DA VERSÃO BRASILEIRA DA BEHAVIORAL PAIN SCALE EM VÍTIMAS DE TRAUMATISMO CRANIOENCEFÁLICO.

Aracaju/SE
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Monografia apresentada à Universidade Federal de Sergipe como requisito parcial à conclusão do curso de Medicina do Centro de Ciências Biológicas e da Saúde.

Orientadora: Prof.ª Dra. Maria do Carmo de Oliveira Ribeiro

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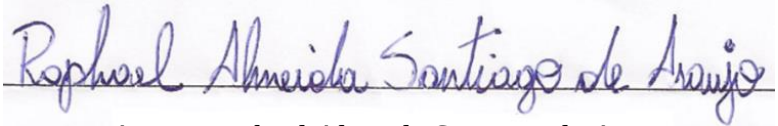
Aracaju, 09 de janeiro de 2017



Autor: Raphael Almeida Santiago de Araujo

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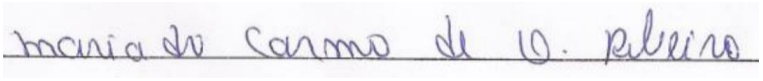

Orientadora: Profª Drª Maria do Carmo de Oliveira Ribeiro

Universidade Federal de Sergipe

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“Sejamos gratos às pessoas que nos fazem felizes. Eles são os jardineiros encantadores que fazem nossas almas florescerem.” (Marcel Proust, 1896)

RESUMO

Introdução: a avaliação da dor de pacientes críticos não comunicativos é um desafio para as equipes assistenciais, sobretudo em vítimas de traumatismo cranioencefálico. Apesar das escalas comportamentais serem consideradas adequadas e consistentes, são escassos os estudos que envolvam essa população. **Objetivos:** avaliar a dor em vítimas de traumatismo cranioencefálico criticamente enfermas. **Método:** estudo observacional, prospectivo e analítico desenvolvido nas unidades de terapia intensiva clínica e cirúrgica de um hospital geral, público, de alta complexidade em Aracaju, Sergipe, Brasil. A amostra foi não probabilística e de conveniência, composta por 37 vítimas de traumatismo cranioencefálico moderado à grave, sedados e mecanicamente ventilados. Foram coletados dados sociodemográficos, clínicos, relacionados ao trauma, à sedação e à analgesia prescrita. Os escores de Ramsay e Richmond Agitation Sedation Scale (RASS) foram utilizados para avaliar a profundidade da sedação. A dor foi avaliada utilizando-se a BPS-Br por dois observadores independentes, simultaneamente e sem comunicação entre si. O estudo foi aprovado pelo Comitê de Ética em Pesquisa da Universidade Federal de Sergipe (CAAE: 38567714.1.0000.5546). As variáveis categóricas foram expressas em frequências absolutas e relativas. As variáveis quantitativas foram representadas sob a forma de média ± desvio padrão ou erro padrão da média. A análise inferencial foi executada através de testes não paramétricos (validade discriminante), de concordância (coeficientes de correlação intraclasse e Kappa de Cohen) e de Correlação de Pearson. A consistência interna da escala foi estimada pelo coeficiente α-Cronbach. Valores de $p < 0,05$ foram considerados significativos. **Resultados:** os participantes eram predominantemente do sexo masculino (91,0%), adultos em idade produtiva (37,7±13,1), não brancos (67,6%), com baixa escolaridade (4,6±3,9), residentes do interior do estado (73,0%) e sem registro de doenças prévias (97,3%). Prevaleceu o trauma cranioencefálico grave (91,9%), causado por colisões automobilísticas (89,1%) e mais de dois terços não utilizou o dispositivo de segurança. Fentanil e Midazolam foram os fármacos mais utilizados para sedoanalgesia. A sedação profunda (Ramsay = 5,5±0,8; RASS = -3,7±1,7) apresentou correlação significativa com os escores BPS ($p \leq 0,005$). Durante a aspiração traqueal, os parâmetros fisiológicos e escores BPS elevaram-se substancialmente ($p < 0,001$), porém, sem associação estatística. Foram encontrados resultados satisfatórios de porcentagens de concordância (59,4%-100%), de tamanho de efeito (0,8 – 1,3) e de consistência interna ($0,7 \leq \alpha \leq 0,9$). **Conclusão:** a dor esteve presente durante a aspiração traqueal e a versão brasileira da BPS mostrou-se uma ferramenta válida, confiável e consistente para avaliar a dor em vítimas de traumatismo cranioencefálico.

Descritores: Dor. Dor nociceptiva. Manejo da dor. Medição da dor. Traumatismos craniocerebrais. Unidade de terapia intensiva.

SUMÁRIO

1. REVISÃO DA LITERATURA

1.1. CONSIDERAÇÕES SOBRE DOR

Diante de todas as evidências, a dor não pode mais ser vista apenas sob a ótica sensorial, dado que se trata de uma experiência complexa, subjetiva e influenciada pelos mais distintos fatores. Deve ser valorizada pela equipe multidisciplinar quando da sua existência e compreendida segundo sua multidimensionalidade (MARQUEZ, 2011).

A Sociedade Americana de Dor e a Agência Americana de Pesquisa e Qualidade em Saúde Pública descreveram a dor enquanto quinto sinal vital e advogam que seu registro deve ocorrer no mesmo ambiente clínico e com o mesmo rigor sistemático dos demais sinais vitais. Em razão de seu caráter subjetivo, a avaliação não é realizada por meio de instrumentos físicos. Todavia, estão disponíveis diversos instrumentos com validade e confiabilidade confirmadas por pesquisas (SOUSA, 2002).

Por ser um fenômeno multifacetado, a dor se faz complexa em seus mais variados aspectos. Quanto aos aspectos anátomo-fisio-patológicos, diversas vias sensoriais, hormônios e citocinas estão envolvidos na transdução, transmissão, modulação e percepção do impulso doloroso (OLIVEIRA, C. et al., 2011). No que diz respeito à multidimensionalidade, pode-se considerar que aspectos sensoriais, cognitivos, motivacionais, afetivos, culturais, comportamentais, avaliativos, emocionais, sociais e espirituais estão associados na experiência dolorosa. Por esta razão que os significados atribuídos à dor são genuinamente íntimos e complexos (BUDÓ et al., 2007; SILVA; RIBEIRO-FILHO, 2011).

A dor pode ser classificada de acordo com diferentes critérios. Em relação à duração pode ser classificada em aguda e crônica. Descreve-se dor aguda como de início súbito e serve de sinal de alerta para o organismo proveniente de uma injúria real ou potencial, durando menos de três meses. É um evento comum entre as vítimas de trauma (CALIL, 2008), pacientes que recebem assistência na unidade de terapia intensiva e no contexto de pós-operatório (PUNTILLO et al., 2001; RIBEIRO, M. et al., 2013, 2014).

As principais repercussões da dor aguda estão associadas às alterações neurovegetativas e podem interferir na recuperação do indivíduo, sejam elas: taquicardia, queda na saturação de oxigênio e consequente redução de seu aporte aos tecidos, arritmias, agitação, incremento do trabalho cardíaco e dos níveis pressóricos, ansiedade, agitação e medo. Dentre as principais complicações encontram-se a redução do sono, anorexia,

dificuldade de mobilizar-se no leito, deambulação prejudicada, desidratação, aumento do tempo de internação, dificuldade para tossir e risco de sangramento, complicações respiratórias (atelectasias) e para processos infecciosos e tromboembólicos (SALLUM et al., 2010; RIBEIRO, M. et al., 2012).

A dor crônica caracteriza-se por sua persistência além do tempo de cura e raramente pode ser atribuída a uma causa específica. Seu período de duração varia entre três a seis meses. Considera-se uma doença que gera importantes repercussões na qualidade de vida do indivíduo implicando de forma negativa nas atividades da vida diária, práticas laborais, humor, sexualidade, capacidade de concentração, autoestima e bem-estar (MARQUEZ, 2011).

Estudos epidemiológicos têm documentado a relevância da dor enquanto problema de saúde pública no País e principal motivo de procura de assistência à saúde. Em Minas Gerais, inquérito realizado em pronto-socorro detectou que a dor esteve associada a outros problemas ou como queixa principal em 76,7% dos casos (SOUZA, C. et al., 2012). Outras investigações epidemiológicas com pacientes em pós-operatório de craniotomia (63,0%) e cirurgias cardíacas (86,7%) revelaram prevalências semelhantes (RIBEIRO, M. et al., 2012; ANDRADE et al., 2010).

Destarte, o controle da dor eficaz transcende a questão clínica, pois não se trata apenas de um dever profissional a ser cumprido, é também uma questão ética, indicador de qualidade da assistência, direito do paciente e passo fundamental para efetiva humanização nos serviços de saúde (RIBEIRO, N. et al., 2011; SOUZA, L. et al., 2013).

1.2. MEDIÇÃO E MANEJO DA DOR: ASPECTOS ATUAIS E BARREIRAS PARA SUA EFICÁCIA

A medição eficaz da dor é imprescindível para o fornecimento de uma fonte de dados reais e seguros aos profissionais da equipe de saúde, permitindo-lhes estabelecer as condutas mais adequadas frente às necessidades do paciente. A partir de tais informações é possível avaliar a eficácia terapêutica, assim como ponderar os riscos e benefícios proporcionados por determinado tratamento (SOUSA, 2002; OLIVEIRA, R. et al., 2014).

Embora o conceito da dor na qualidade de quinto sinal vital esteja bem estabelecido, ainda são encontrados entraves para a sua real aplicação prática. Diversas pesquisas têm confirmado a precariedade da avaliação e manejo da dor nos mais variados setores de saúde. A medição sistemática da dor e seu adequado registro enfrentam diversas barreiras como a subvalorização, cultura organizacional, falha no processo de formação profissional,

conhecimento insatisfatório sobre os instrumentos de avaliação e de aspectos fisiopatológicos e clínicos, ausência de políticas institucionais que reconheçam a importância da dor e ausência de protocolos para avaliação e manejo da dor (RIBEIRO, N. et al., 2011; BARROS et al., 2011; NASCIMENTO; KRELING, 2011).

Mensuração e avaliação são conceitos rotineiramente utilizados e, apesar de serem próximos, possuem significados distintos. A primeira refere-se à quantificação de um dos aspectos do fenômeno doloroso e os instrumentos que melhor se aplicam a tal procedimento são as consagradas escalas unidimensionais. Estas são usadas amplamente no cenário clínico, caracterizam-se por serem de aplicação rápida, prática e simples (SOUSA, 2002). Geralmente são empregadas para mensurar a intensidade da dor ou descrever sua localização, a exemplo das escalas verbal numérica (EVN), visual analógica (EVA), de descritores verbais, de faces do Cebolinha, de Wong-Baker e o diagrama corporal (SALLUM et al., 2010; OLIVEIRA, R. et al., 2014).

A avaliação da dor é uma tarefa mais complexa, pois visa à apreensão do fenômeno em sua multidimensionalidade (SOUSA, 2002; SALLUM et al., 2010). Tem sido utilizada com maior frequência nos casos de dores crônicas e procura compreender de forma abrangente como a dor interfere na vida do indivíduo. Isto posto, as escalas mais indicadas para a avaliação são as multidimensionais como o Questionário de McGill e a Escala Multidimensional da Dor (OLIVEIRA, R. et al., 2014).

Sabe-se que o relato verbal de dor pelo paciente é considerado o “padrão ouro” para o diagnóstico do episódio de dor, porém, em situações de demência em estágio avançado, recém-nascidos, lactentes e pacientes com diminuição de nível de consciência, sedados e/ou intubados, esse parâmetro se torna indisponível (GONÇALVES et al., 2014). Por essa razão, criaram-se ferramentas observacionais que avaliam a dor por meio de indicadores comportamentais (MARQUEZ, 2011).

Apesar de a dor no ambiente de cuidados críticos ser reconhecida, ainda é subestimada. A avaliação da dor em pacientes críticos que não verbalizam é complexa e requer conhecimento dos instrumentos específicos que viabilizam a sua execução de maneira sistemática (BATALHA et al., 2013). Ainda que alterações nos sinais vitais estejam relacionadas à deflagração da cascata das catecolaminas com consequente liberação de hormônios da resposta ao estresse desencadeada pela dor, esses parâmetros não são condição suficiente para afirmar sua existência (PUNTILLO et al, 2009; ARBOUR et al., 2014).

Diferentes ferramentas observacionais para pacientes críticos foram testadas e tiveram sua validade e confiabilidade comprovadas: a *Behavioral Pain Scale* (BPS), *Critical-Care*

Pain Observation Tool (CPOT), *Nonverbal Pain Scale* (NVPS), *Nociception Coma Scale* (NCS), *Pain Assessment and Intervention Notation* (PAIN) (STITES, 2013). Contudo, no Brasil, apenas uma está em processo de adaptação cultural (DESANTANA; AZEVEDO-SANTOS, 2014), a *Behavioral Pain Scale*, demonstrando, dessa forma, que mais pesquisas são necessárias para avaliação das propriedades psicométricas dessa escala e consequente comprovação de sua confiabilidade em diferentes populações de pacientes (GONÇALVES et al., 2014).

1.3. CONSIDERAÇÕES SOBRE TRAUMATISMO CRANIOENCEFÁLICO

O traumatismo cranioencefálico (TCE) refere-se a quaisquer lesões decorrentes de um trauma externo na região da cabeça que possa gerar alterações anatômicas do crânio, a exemplo de fraturas de ossos do crânio e da face, assim como lacerações do couro cabeludo, comprometimento funcional das meninges, encéfalo ou seus vasos (MINISTÉRIO DA SAÚDE, 2013). Consequentemente, são originadas disfunções de naturezas cognitiva e funcionais causando profundos efeitos negativos na vida do indivíduo e sua família (RABINOWITZ; LEVIN, 2014).

Trata-se de um problema comum e configura-se como sério problema de saúde pública mundial (VALENTE; FISHER, 2011). Está incluído no grupo das causas externas de morbidade e mortalidade tendo por etiologia colisões automobilísticas, quedas, agressões e acidentes ocorridos em atividades recreativas e esportes (TARGINO; RODRIGUES, 2013). A maioria das vítimas de TCE se encontra na faixa etária de adultos jovens em idade produtiva (GAUDÊNCIO; LEÃO, 2013). Geralmente, suas vítimas evoluem para o óbito ou desenvolvem sequelas irreversíveis que demandam cuidados de reabilitação contínuos, acarretando à sociedade um elevado ônus direto, sobretudo nas prevalências das incapacidades físicas, bem como o incremento dos gastos hospitalares e previdenciários (OLIVEIRA, I. et al., 2009).

Quanto à fisiopatologia, os mecanismos de lesão estão presentes tão logo o TCE ocorra. As lesões primárias surgem durante o evento traumático e são influenciadas por fatores relacionados à biomecânica do trauma e sua etiologia. Por outro lado, as lesões secundárias iniciam-se após a injúria, interferindo na capacidade de autorregulação cerebral, o que pode gerar morte celular em células anteriormente não afetadas (MINISTÉRIO DA SAÚDE, 2013; OLIVEIRA, I. et al., 2009).

Sua classificação clínica baseia-se nas pontuações obtidas pelo paciente na Escala de Coma de Glasgow (ECGl), a qual avalia os parâmetros de abertura ocular, resposta verbal e resposta motora. Trata-se de uma ferramenta útil para categorização das alterações neurológicas e seus escores variam de 3 a 15. Existem controvérsias na literatura quanto aos escores exatos para classificação do TCE, porém, a mais recente estabelece três níveis: leve (ECGl 13 – 15), moderado (ECGl 9 – 12) e grave (ECGl ≤ 8) (Oliveira, D. et al., 2014; Oliveira, E. et al., 2012).

As consequências do TCE impactam negativamente na qualidade de vida das suas vítimas, visto que podem desenvolver problemas psicossociais como depressão e distúrbios do humor, comportamentos agressivos e antissociais, bem como distúrbios da sexualidade. Há também incremento dos riscos para transtorno bipolar, suicídio, reação de estresse pós-traumático, comportamento agressivo e antissocial. O dano cerebral também pode causar déficits sensoriais, incluindo prejuízos no olfato, visão, audição, paladar e equilíbrio (VALENTE; FISHER, 2011; SANDER; MAESTAS, 2014).

A dor também se caracteriza por ser consequência do TCE, dado que esse tipo de lesão está relacionado a condições de traumatismos múltiplos (MINISTÉRIO DA SAÚDE, 2013). Nos casos moderados a graves, é oportuno utilizar ferramentas observacionais que avaliem indicadores comportamentais relacionados à dor como: expressão facial, movimentação corporal, tensão muscular, sincronia com a ventilação mecânica e vocalizações. Embora indicadores fisiológicos sejam frequentemente empregados na prática clínica (frequência cardíaca, frequência respiratória, pressão arterial, diaforese, pressão intracraniana, saturação de oxigênio), o uso de tais parâmetros isoladamente para identificação da dor permanece controverso (ROULIN; RAMELET, 2012).

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3. ARTIGO ORIGINAL

Psychometric properties of the Brazilian version of Behavioral Pain Scale in traumatic brain injury

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Abstract

We aim to evaluate the psychometric properties of validity, reliability and responsiveness of the Brazilian version of the Behavioral Pain Scale (BPS-Br) in traumatic brain injury victims. This is an observational, cross-sectional, repeated-measure, and analytical study, performed in two ICUs within a Brazilian high-complexity public hospital. It was completed with 444 independent observations, a pairwise comparison and performed simultaneously before, during and after eye cleaning and endotracheal suctioning of thirty-seven adult patients with moderate to severe traumatic brain injury.

The BPS-Br had good internal consistency ($0.7 \leq \alpha \leq 0.9$), good discriminant validity ($p < 0.001$), moderate to excellent reliability based on inter-rater agreement (ICC = 0.66 – 1.00 e κ = 0.5 – 1.0), and high responsiveness (0.7 – 1.7). The upper limbs subscale had the highest score during the nociceptive procedure (1.8 ± 0.9). Deep sedation affected the increase of grading during painful procedures ($p < 0.001$). Our results suggest the BPS-Br is a useful tool for clinical practice to evaluate the pain experienced by this group of patients. Furthermore, it may also contribute to improvements in handling analgesia and sedation, which contributes to better outcomes for these patients.

Perspective

This article presents the psychometric properties of the Behavioral Pain Scale. This measure could potentially help clinicians assess pain in critically ill patients with traumatic brain injury and may contribute to improvement of pain management.

Keywords: *Behavioral Pain Scale*; nociceptive pain; pain measurement; traumatic brain injuries; intensive care unit.

Introduction

Self-reporting is considered the "gold standard" for assessing pain; however, certain conditions, such as delirium, artificial airway insertion, unconsciousness, sedative therapy, and mechanical ventilation complicate efforts at communication, making the pain assessment of nonverbal patients a challenge (1–3).

Critically ill patients need intensive care arrangements to ensure their basic physiological functions. In addition to the pain related to disease processes and being restrained in bed, intensive care units (ICU) administer large numbers of invasive and painful procedures such as turning, wound care, and endotracheal suctioning (4, 5).

The inability to report one's pain neither denies its existence nor waives the right to proper treatment (6). Therefore, studies on pain in critical care have gained importance in recent years, and several observational tools to assess pain have been created for patients who are unable to self-report (7-9). However, few services adopt protocols to prioritize pain management in the ICU.

The Behavioral Pain Scale (BPS) is the only instrument to be translated and adapted to Brazilian Portuguese (10). Several studies describe successful results on its validity and reliability in other languages (11-14). However, the evidence related to the Brazilian version of BPS (BPS-Br) is still scarce, especially in patients who suffer traumatic brain injury (TBI).

Usually, victims of moderate or severe TBI experience pain along with their hospitalization, but it can be disguised due unconsciousness and deep sedation to avoid neurological complications (15). Thus, this study aimed to analyze the psychometric properties (validity, reliability and responsiveness) of the BPS-Br in victims of TBI.

Materials and Methods

Study Design

The current work is an observational, cross-sectional, repeated-measure and analytical study developed at the Medical and Surgical ICU in a high-complexity public hospital at Aracaju, Sergipe, Brazil. The data collection period occurred from September 2015 through June 2016.

Sample

We required a total of 25 to 30 patients via a nonprobabilistic convenience sampling method based on the calculation of an α-Cronbach coefficient of 0.90 ± 0.05 (13, 16).

Eligible participants were 18 years old or over, had moderate or severe TBI, and subjected to mechanical ventilation for at least 48 hours. The exclusion criteria included conditions that interfere with the observation of pain-related behaviors, such as quadriplegia, neuromuscular blockers, underlying neurological disease, diagnosis of brain death, shock, and/or receiving resuscitation (hemodynamically unstable).

Variables and Measures

Sociodemographic and clinical data, such as gender, age, skin color, civil status, education, comorbid conditions, resident address, initial Glasgow Coma Scale and APACHE II scores (17), place of occurrence and mechanism of injury, clinical classification of TBI, safety device use, and information regarding analgesia and sedation were collected through an analysis of medical records.

The Ramsay and Richmond Agitation-Sedation Scale (RASS) was used for the evaluation of depth of sedation (18). Physiological parameters, including heart rate (HR) and blood pressure (SBP and DBP), were collected through a bedside cardiac monitor.

Pain assessment was performed with the BPS-Br, which is divided into three subscales: facial expression (FE), upper limbs (UL), and compliance with ventilation (CWV). Each subscale has indicators ranging from 1 to 4, and the total score of BPS is the sum of the partial results, ranging from 3 (no pain) to 12 (unacceptable pain).

Training

The assistants received theoretical training, which explained general concepts about pain and its measurement, physiological and behavioral indicators in unconscious and mechanically ventilated patients, on the correct completion of BPS-Br scores. Then, a pilot test was conducted with three patients for practical training and evaluation of the adequacy of the collection form. The data from the pilot patients were discarded and were not included in the final analysis.

Procedure

BPS scores were obtained through simultaneous paired testing by two independent observers, as reported in the methodological procedures of previous studies (11, 16, 19, 20)

Assessments occurred five minutes before, during, and ten minutes after nonpainful and painful procedures. The basal BPS score was the value obtained during the rest period; i.e., for five minutes before non-nociceptive (eye cleaning – EC) or nociceptive stimuli (endotracheal suctioning – ES). EC was always applied before ES to diminish eventual interferences of nociceptive stimuli. It was considered the “worst” result observed over ES.

Statistical analysis

Categorical variables were presented by absolute and relative frequencies, and quantitative variables were expressed as central tendency and dispersion (mean ± SD). The data distributions did not demonstrate symmetry according to the Kolmogorov-Smirnov test. At all stages of analysis, we used a statistical significance level of 5% ($p < 0.05$).

Pearson's correlation coefficient was used to check the existence of associations among clinical, physiological, ventilation, sedative and analgesic drugs and the total score of BPS during ES.

The discriminant validity of physiological parameters and BPS scores were evaluated by non-parametric tests such as Friedman (comparison between measures before, during, and after EC or ES) and Wilcoxon signed-rank tests (comparison between pairs of different measures).

Reliability was verified by measures of inter-observer agreement and internal consistency. An Intra-class Correlation Coefficient (ICC) was calculated, and results ≥ 0.75 were considered good; for Cohen's Kappa (κ), results between 0.61 to 0.80 were considered substantial and ≥ 0.81 excellent; for Percentages Agreement (%) and Cronbach's α, measures ≥ 0.7 were considered good (13, 21).

Responsiveness was estimated by the calculation of effect size obtained by the difference between the average scores of the BPS, during ES and bed rest, divided by the standard deviation of the BPS scores throughout the rest. Coefficient values ≥ 0.8 were considered satisfactory (13, 16).

Ethical Aspects

This study followed the recommendations set forth by the Declaration of Helsinki and it was approved by the Research Ethics Committees of Federal University of Sergipe (CAAE:

38567714.1.0000.5546). Informed consent was given by one of the patient's eligible guardians by signing the consent form. ES was performed exclusively by physiotherapists according to the needs presented by each patient. No additional procedures were performed for the benefit of this study.

Results

Clinical and sociodemographic data

The sample consisted of 37 patients, and their sociodemographic and clinical characteristics are described in Table 1. Each patient was evaluated in paired comparisons before, during, and after EC and ES, for a total of 444 observations (37 patients X 2 observers X 2 procedures X 3 measures).

Participants were predominantly male (91.0%), working-age adults (37.7 ± 13.1 years), non-white skin color (67.6%), low educational level (4.6 ± 3.9 years), countryside residents (73.0%), and without any history of previous diseases or preexisting comorbidities (97.3%). They all experienced hospital stay and mechanical ventilation for more than a week and an average stay in the ICU of 4.5 ± 3.4 days.

Severe TBI was predominate (91.9%), and the main mechanism of injury was blunt trauma (89.1%), especially due to automotive collisions that occurred within the countryside (78.4%), mainly involving motorcycles, in which more than two thirds of patients did not use safety devices (helmet or seat belt).

Analgesia and sedation

Participants were sedated with moderate to heavy intensity (Ramsay = 5.5 ± 0.8; RASS = -3.7 ± 1.7). Midazolam and Fentanil were the most frequently used drugs for

sedation and analgesia, with their active infusions used in 67.6% of cases during ES, under medical prescription, whereas simple analgesics such as acetaminophen and dipyrone were the most prescribed in systematic schemes (Table 2). The BPS total score during ES was correlated significantly with sedation scores (Table 6).

Physiological parameters

On average, significant increases were observed ($p < 0.001$) in 14 mmHg in systolic, 13 mmHg in DBP and 26 bpm HR during ES in relation to baseline. Ten minutes after the completion of the procedure, physiological indicators returned approximately to baseline (Table 3). According to the analysis conducted by the Wilcoxon test between physiological parameter pairs during the EC and ES procedures, scores for ES were significantly higher ($p < 0.001$). However, a significant positive correlation was not observed between these parameters and total score BPS during ES.

Validity

BPS scores during ES were superior to the others in different measures of evaluation ($p < 0.001$). The upper limb movements subscale showed the greatest increase during the painful procedure (1.8 ± 0.9). Although there was a rise in BPS scores for EC, post hoc analysis with the Wilcoxon test showed superiority of BPS scores during the ES ($p < 0.001$), as shown in Table 4.

Responsiveness

Overall effect sizes and of all subscales were moderate to high (0.8 to 1.7), especially the upper limbs subscale, demonstrating the ability of the instrument to detect pain, even when the changes were small (Table 4).

Reliability

A reliability analysis is presented in Table 5. The BPS showed high Percentages Agreement (59.4% – 100.0%), Cohen's kappa coefficient values were moderate to excellent (0.50 – 1.00), and ICC was mostly satisfactory. In addition, all subscales had acceptable to excellent internal consistency according to α-Cronbach ($0.7 \leq \alpha \leq 0.9$).

Discussion

Pain management in TBI victims is complex and challenging due to the inability to verbalize pain because of decreased levels of consciousness and a need for continuous sedation to prevent complications in the acute state of trauma (15, 22). Recent guidelines have advocated for the benefits of proper assessment and management of pain based on the use of valid and reliable instruments (23-25).

According to our results, both total scores and BPS-Br scores subscales increased substantially during the ES for victims of TBI and ascertained satisfactory results of inter-observer agreement and responsiveness, suggesting that the scale is a good tool for assessing pain in this population.

Although the scores also rose during the EC, the superior level of the ES scores prevailed, proving the scale's ability to discriminate between painful and nonpainful procedures (Wilcoxon $p < 0.001$). Furthermore, the BPS-Br showed a satisfactory ability to detect slight changes throughout the evaluation. Similar results were found in previous studies featuring English (13, 20), Chinese (11, 26, 27), Swedish (19) and Portuguese (10, 12) versions of the BPS.

The FE subscale yielded the lowest score for ES. FE is one of the best-known behavioral indicators used by health professionals to assess pain, even in conscious patients, and has been used in several observational assessments (28, 29). Darwish et al. (2016) found conflicting results in a study involving 47 ICU surgical and coronary patients. Their FE scores showed higher elevation during nociceptive procedures and was the subscale with the best responsiveness (30).

Recent studies have shown that TBI victims may have unconventional behavioral manifestations during a painful procedure, such as eye-opening and a relaxed face (31). Thus, researchers have been devoted to investigating more accurate descriptors and valid assessments of FE in TBI patients (32-34). Roulin et al. (2014) identified 23 specific behavioral descriptors for these patients (35).

There were significant correlations between total BPS-Br scores and sedation (Ramsay e RASS), revealing a possible reduction in the ability to detect manifestations of pain. Similar results were found in the preliminary study of the adaptation of BPS-Br (10). This may be related to obsolete management practices of excessive painkillers and sedatives without a systematic pain assessment, a typical situation that occurs in some departments of the country. It is not yet clear if intense sedation reduces pain intensity, but it seems to interfere substantially with the manifestation of related behaviors (11).

Recent guidelines about pain, agitation, and delirium in the ICU have suggested that pain management should be a priority (23-25, 36). In addition to providing comfort and dignity to patients, evidence suggest that proper pain management can be associated with reduced needs of sedation and rates of hospital infection, shorter ICU stays, decreased time on mechanical ventilation, and increased patient participation in care, including analgesic therapy goals (36-39). However, excessive sedation is associated with respiratory depression,

microaspirations, delirium, immunosuppression, and high risk of pressure injuries and pneumonia (36, 40).

Evolution towards chronic pain is another important concern related to inadequate pain management. Research has shown that even after ICU discharge, patients may report pain persistence (41). Constant nociceptive stimuli during routine procedures can be a contributing factor for the transition from acute to chronic pain. Therefore, TBI is often associated with chronic pain and impaired quality of life for the patients (42). The preventive and preemptive analgesia protocols are essential for reducing chances of pain chronicity.

The BPS-Br presented satisfactory results for reliability. It can be derived from the rigorous and methodical training of evaluators in the period prior to data collection. Therefore, proper training of health care professionals is an important step to implementing systematic assessment protocols about pain in the ICU. A Norwegian study demonstrated the feasibility of using BPS and BPS-NI on an algorithm to guide management of pain in the ICU (43). For this, professional education and awareness is needed to ensure the best possible reproducibility of the tools (44).

However, as in previous studies, inter-observer agreement during the painful procedure was lower compared to non-painful procedures. Similar results were found in the study that compared the psychometric properties of the BPS and CPOT (45). One possible explanation for this it is that some health professionals do not associate the discomfort caused by ES pain. Thus, observers may have occasionally underestimated patient pain.

Although the investigated physiological parameters (HR, SBP and DBP) have shown substantial increases during painful stimulus vs. nonpainful stimuli, we did not find a significant correlation with BPS scores. For a long period of time, the fluctuation in these parameters was considered indicative of pain (46). However, research has shown that there is no evidence to support this hypothesis (46-50). Only respiratory rate demonstrated

discriminant validity in the study of TBI victims, though it is still lacking further investigation (51).

Several studies have reported that vital signs are not specific to pain detection (8, 47, 51), as they are influenced by other factors such as underlying pathological condition, vasoactive drug use, fear, anxiety and any other stressor that may trigger the cascade activation of catecholamines. Therefore, these physiological indicators should be used only as initial clues for further investigation of the pain phenomenon (52).

Study limitations included the impossibility of the analysis of criterion validity because there is no “gold standard” for this population, and that the evaluators were not blinded as to the nature of the procedure. However, the main researchers were excluded from the stage of data collection to reduce the bias.

We suggest further studies to on the usefulness of the BPS-Br in clinical trials involving analgesic therapies, especially non-pharmacologic therapies, as well as the relation between systematic pain evaluation to the BPS-Br and the impact on patient outcomes.

In conclusion, our results suggest that the BPS-Br is a valid, reliable, and useful tool for pain assessment of TBI victims. We strongly recommend its adoption in the daily routine of intensive care, especially during notoriously painful procedures, to evaluate the adequacy of analgosedation.

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APÊNDICE I

Table 1. Sociodemographic and clinical data.

Categorical variables	n (%)
Gender	
Male	34 (91.9)
Female	3 (8.1)
Skin color	
Non-White	25 (67.6)
White	12 (32.4)
Civil status	
With life partner	19 (51.3)
No life partner	18 (48.7)
Residence	
Countryside	27 (73.0)
Metropolitan area	10 (27.0)
Mechanism of injury	
Automotive collision *	28 (75.6)
Being run over	3 (8.1)
Fall	2 (5.4)
Other	4 (10.8)

TBI clinical classification	
Severe	34 (91.9)
Mild	3 (8.1)
Incident site	
Countryside	29 (78.4)
Metropolitan area	8 (21.6)
Quantitative variables	mean ± SD
Age	37.7 ± 13.1
Education level	4.6 ± 3.9
Length of hospital stay	7.2 ± 3.7
Length of ICU stay	4.5 ± 3.4
Length in mechanical ventilation	7.1 ± 3.8
Initial ECGl	6.7 ± 2.8
APACHE II	15.4 ± 5.4

* Use of a safety device of the patients involved in motor vehicle collisions (n = 28).

APÊNDICE II

Table 2. Analgesia and sedation.

Variables	Specification
Sedation score (mean ± SD)	
Ramsay	5.5 ± 0.8
RASS	-3.7 ± 1.7
Prescribed sedation [n (%)]	
Fentanyl	31 (83.7)
Dipyrone	34 (91.9)
Acetaminophen	14 (37.8)
Methadone	7 (18.9)
Morphine	1 (2.7)
Prescribed sedation [n (%)]	
Midazolam	30 (81.1)
Propofol	1 (2.7)
No prescribed sedation	7 (18.9)
Active sedoanalgesic infusion during evaluation [n (%)]	
Yes	25 (67.6)
No	12 (32.4)
Infusion rates of solutions (mean ± SD)	
Analgesia (ml/h)	12.4 ± 5.9
Sedation (ml/h)	13.8 ± 11.6

Table 3. Fluctuations in physiological parameters over the evaluation.

Physiological parameters	Mean ± SD						p-value*	
	Before		During		After			
	EC	ES	EC	ES	EC	ES	EC	ES
SBP (mmHg)	138.3±19.1	141.1±25.1	144.1±26.0	154.9±35.4	138.5±19.0	140.0±20.4	0.025	<0.001
DBP (mmHg)	80.0±10.7	80.0±11.9	81.7±11.9	92.7±13.7	80.5±11.9	81.1±10.8	0.111	<0.001
HR (bpm)	92.5±17.2	92.9±19.2	94.2±15.3	118.9±24.6	91.2±18.4	95.1±16.5	0.091	<0.001

SD: standard deviation; EC: eye cleaning; ES: endotracheal suctioning; SBP: systolic blood pressure in millimeters of mercury; DBP: diastolic blood pressure in millimeters of mercury; HR: heart rate in beats per minute. *Friedman's Test.

Table 4. Pain assessment with BPS-Br and its discriminant validity.

Items	Mean ± SD						p-value*		Effect size
	Before		During		After				
	EC	ES	EC	ES	EC	ES	EC	ES	
Facial expression.									
Observer 1	1.0±0.2	1.1±0.5	1.1±0.3	1.5±0.8	1.0±0.0	1.1±0.5	0.097	<0.001	0.8
Observer 2	1.0±0.2	1.1±0.5	1.1±0.3	1.5±0.8	1.0±0.0	1.1±0.5	0.039	<0.001	0.8
Upper limbs									
Observer 1	1.1±0.3	1.1±0.4	1.2±0.4	1.8±0.9	1.0±0.2	1.1±0.4	0.030	<0.001	1.7
Observer 2	1.1±0.3	1.1±0.4	1.2±0.4	1.8±0.9	1.0±0.2	1.1±0.4	0.011	<0.001	1.7
Compliance with ventilation									
Observer 1	1.2±0.5	1.2±0.6	1.2±0.5	1.6±0.7	1.1±0.5	1.1±0.5	0.368	<0.001	0.7
Observer 2	1.2±0.5	1.2±0.6	1.2±0.5	1.7±0.8	1.1±0.5	1.1±0.5	0.368	<0.001	0.8
BPS total score									
Observer 1	3.3±0.8	3.3±1.2	3.4±0.8	4.9±1.8	3.1±0.4	3.2±1.2	0.013	<0.001	1.3
Observer 2	3.3±0.8	3.4±1.2	3.4±0.8	5.0±1.7	3.1±0.4	3.2±1.2	0.002	<0.001	1.3

SD: standard deviation; EC: eye cleaning; ES: endotracheal suctioning

*Friedman's Test used in three distinct moments of both procedures.

APÊNDICE V

Table 5. BPS-Br reliability analysis.

BPS	Before					
	EC			ES		
	PA(%)	ICC	κ	PA(%)	ICC	κ
FE	100.0	1.00	1.00	100.0	1.00	1.00
UL	94.6	0.72	0.72	94.6	0.82	0.64
CWV	100.0	1.00	1.00	97.3	0.96	0.88
Total	94.6	0.95	0.81	91.9	0.97	0.73
	During					
	EC			ES		
BPS	PA(%)	ICC	κ	PA(%)	ICC	κ
FE	97.3	0.85	0.84	89.2	0.91	0.80
UL	91.9	0.75	0.75	81.0	0.88	0.70
CWV	100.0	1.00	1.00	81.0	0.77	0.69
Total	89.2	0.92	0.76	59.4	0.90	0.50
	After					
BPS	EC			ES		
	PA(%)	ICC	κ	PA(%)	ICC	κ
FE	100.0	1.00	1.00	100.0	1.00	1.00
UL	97.3	0.66	0.65	100.0	1.00	1.00
CWV	100.0	1.00	1.00	100.0	1.00	1.00
Total	97.3	0.92	0.85	100.0	1.00	1.00

FE: facial expression; UL: upper limbs; CWV: compliance with ventilation; EC: eye cleaning; ES: endotracheal suctioning; PA: percentage agreement; ICC: intraclass correlation coefficient; κ: Cohen's Kappa.

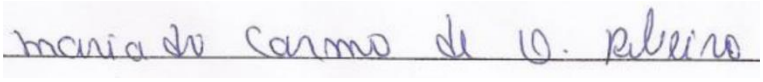
ANEXO I

UNIVERSIDADE FEDERAL DE SERGIPE
CENTRO DE CIÊNCIAS BIOLÓGICAS E DA SAÚDE
DEPARTAMENTO DE MEDICINA
COMISSÃO DE INTERNATO

Carta de Aceite de Orientação

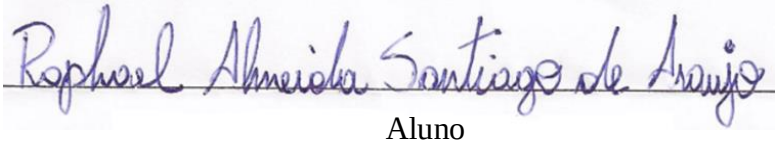
Eu, Maria do Carmo de Oliveira Ribeiro, professora efetiva da Universidade Federal de Sergipe (UFS), afirmo que aceito a partir da data de hoje orientar o aluno Raphael Almeida Santiago de Araujo, do Curso de Medicina durante todas as etapas de desenvolvimento do seu Trabalho de Conclusão de Curso (TCC).

Aracaju, 26 de JULHO de 2016.



Professor Orientador

SIAPE nº 2356666



Aluno

Matrícula nº 201110022732

ANEXO II

UNIVERSIDADE FEDERAL DE SERGIPE
PRÓ-REITORIA DE PÓS-GRADUAÇÃO E PESQUISA
PROGRAMA DE PÓS-GRADUAÇÃO EM CIÊNCIAS DA SAÚDE
Orientadora: Profª Drª Maria do Carmo de Oliveira Ribeiro
Pesquisador: Caíque Jordan Nunes Ribeiro

PESQUISA: ***"Dor durante aspiração traqueal em vítimas de traumatismo cranioencefálico"***

PARTE I - DADOS SOCIODEMOGRÁFICOS

IDENTIFICAÇÃO PESSOAL

Nome: _____ **Cartão SUS:** _____

Nº Prontuário: _____ **Sexo:** ☐ Masculino ☐ Feminino **Idade em anos completos:** _____

Estado civil: ☐ Solteiro(a) ☐ Casado(a) ☐ União estável ☐ Divorciado(a) ☐ Viúvo(a)

Escolaridade em anos de estudo: _____

Residência: ☐ Aracaju ☐ Socorro, São Cristóvão, Barra dos Coqueiros ☐ Outro município _____

PARTE II - HISTÓRICO DE SAÚDE E DADOS DA ADMISSÃO

Comorbidades: ☐ DM ☐ HAS ☐ Hepatopatia ☐ Nefropatia ☐ Cardiopatia ☐ Outra(s): _____

Local do evento: ☐ Aracaju ☐ Socorro, São Cristóvão, Barra dos Coqueiros ☐ Outro município _____

Data do evento: ___/___/___ **Turno do evento:** ☐ M ☐ T ☐ N **Dia da semana:** _____

Data e Horário de chegada ao hospital: ___/___/___ - ____:____ **Dias de internamento:** _____

Classificação do TCE: ☐ Moderado ☐ Grave

Escores de severidade: APACHE II: _____ SOFA: _____ NISS: _____

Mecanismo do trauma: ☐ Queda da própria altura ☐ Colisão automobilística → ☐ Moto ☐ Carro ☐ Bicicleta ☐ Queda de altura ☐ Atropelamento ☐ FAF ☐ FAB

Localização das lesões: ☐ Tórax ☐ Abdome ☐ MSD ☐ MSE ☐ MID ☐ MIE ☐ TRM

Possui registro de dor no prontuário? ☐ Sim ☐ Não → Se sim → ***Qual(is) profissional(is) registrou(aram)?*** ☐ ENF ☐ MED ☐ Fisio ☐ TÉC ENF.

Quais os indicadores referidos?

☐ *Comportamentais*: ☐ Expressão facial ☐ Rigidez muscular ☐ Vocalização ☐ Conforto VM

☐ *Fisiológicos*: ☐ PAS ☐ PAD ☐ PAM ☐ FR ☐ FC ☐ PIC ☐ Sudorese

Analgesia e sedação prescritas: ☐ Analgésicos simples _____

☐ AINES _____

☐ Opioides _____

☐ Sedativos _____

LEGENDA: AINES - anti-inflamatórios não esteroidais; **CVC** - cateter venoso central; **CVP** - cateter venoso periférico; **DM** - diabetes mellitus; **ECGl** - escala de coma de Glasgow; **ENF** - enfermeiro; **FAB** - ferimento por arma branca; **FAF** - ferimento por arma de fogo; **Fisio** - fisioterapeuta; **HAS** - hipertensão arterial sistêmica; **MED** - médico; **MID** - membro inferior direito; **MIE**- membro inferior esquerdo; **MSD** - membro superior direito; **MSE** - membro superior esquerdo; **PAI** - pressão arterial invasiva; **PAni** - pressão arterial não invasiva; **SNE** - sonda nasoenteral; **SOG** - sonda orogástrica; **SVD** - sonda vesical de demora; **TÉC ENF** - técnico de enfermagem; **TOT** - tubo orotraqueal; **TQT** - traqueóstomo; **TRM**- trauma raquimedular.

ANEXO III

<table>
<tr><th colspan="4">Descrição das Lesões e Cálculo da Gravidade do Trauma[1]</th></tr>
<tr><th>Região Corpórea</th><th>Lesão</th><th>Código AIS</th><th>Gravidade da lesão</th></tr>
<tr><td>Cabeça ou pescoço</td><td></td><td></td><td></td></tr>
<tr><td>Face</td><td></td><td></td><td></td></tr>
<tr><td>Tórax</td><td></td><td></td><td></td></tr>
<tr><td>Abdome ou conteúdo pélvico</td><td></td><td></td><td></td></tr>
<tr><td>Extremidades ou cintura pélvica</td><td></td><td></td><td></td></tr>
<tr><td>Superfície externa</td><td></td><td></td><td></td></tr>
<tr><td colspan="4">Escore NISS= [( )² +( )² + ( )²]=</td></tr>
<tr><td colspan="4">Acute Physiology and Chronic Health disease Classification System II (APACHE II)</td></tr>
<tr><td colspan="2">Idade: _____ anos
Escore ECGl: _____</td><td colspan="2">Sódio sérico: _____ mEq/L
Potássio sérico: _____ mEq/L
Creatinina Sérica: _____ mg/dL
Insuficiência renal aguda: ☐ Sim ☐ Não</td></tr>
<tr><td colspan="2">Temperatura: _____ ºC
Pressão arterial média (PAM): _____ mmHg
Frequência cardíaca: _____ bpm
Frequência respiratória: _____ irpm</td><td colspan="2">Hematócrito: _____%
Leucócitos: _____
Insuficiência orgânica severa / imunocomprometido:
☐ Nenhuma ☐ Não-Cirúrgico
☐ Cirurgia de Emergência ☐ Cirurgia Eletiva</td></tr>
<tr><td colspan="2">FiO_2: _____ %
PaO_2: _____ mmHg
pH arterial: _____</td><td colspan="2">Escore APACHE II: _____
Mortalidade estimada: _____</td></tr>
<tr><td colspan="4">Sequential Organ Failure Assessment (SOFA)</td></tr>
<tr><td>FiO_2: _____ %
PaO_2: _____ mmHg
Ventil. mecânica: ☐ Sim ☐ Não</td><td>PAM: _____ mmHg
Vasopressores: ☐ Sim ☐ Não
Dopamina: _____ mcg/kg/min
Dobutamina: _____ mcg/kg/min
Epinefrina: _____ mcg/min
Norepinefrina: _____ mcg/min</td><td colspan="2">Creatinina Sérica: _____ mg/dL
Débito urinário: _____ mL/dia
Escore ECGl: _____</td></tr>
<tr><td>Plaquetas: _____</td><td>Bilirrubina: _____</td><td colspan="2">Escore SOFA: _____</td></tr>
</table>

[1] Association for the Advancement of Automotive Medicine. The Abbreviated Injury Scale; 2005 revision. Des Plaines, IL: Association for the Advancement of Automotive Medicine.

ANEXO IV

UNIVERSIDADE FEDERAL DE SERGIPE
PRÓ-REITORIA DE PÓS-GRADUAÇÃO E PESQUISA
PROGRAMA DE PÓS-GRADUAÇÃO EM CIÊNCIAS DA SAÚDE

TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO

Prezado(a) Sr.(a), vimos convidá-lo a participar da pesquisa intitulada: "**DOR DURANTE ASPIRAÇÃO TRAQUEAL EM VÍTIMAS DE TRAUMATISMO CRANIOENCEFÁLICO**"

Pesquisador: Caíque Jordan Nunes Ribeiro **Tel:** (79) 9817-6517
E-mail: caiquejordan_enf@yahoo.com.br

Orientadora: Profª Drª Maria do Carmo de Oliveira Ribeiro **Tel:** (79) 9892-9191
Email: enffer2@gmail.com

Eu, _____, fui convidado(a) pelo pesquisador da Universidade Federal de Sergipe, devidamente identificado, para permitir a participação de _____, na pesquisa que tem por objetivo geral: "avaliar o manejo da dor em vítimas de traumatismo cranioencefálico antes e durante a aspiração traqueal".

Fui informado(a) que responderei a perguntas sobre a saúde e alguns dados pessoais (anos de estudo, estado civil, cidade onde mora) do meu representado e que os pesquisadores irão apenas fazer observações durante os procedimentos de limpeza do olho e de aspiração. Estou ciente de que esses dados serão usados exclusivamente para fins de pesquisa e que terei a garantia do anonimato, privacidade e confidencialidade.

Acredita-se que esta pesquisa poderá trazer como benefícios a criação de protocolos de medicação para dor, e, por conseguinte, uma assistência humanizada. No estudo existem riscos mínimos, no entanto a posse exclusiva dos dados pelos responsáveis da pesquisa e garantia do anonimato, sigilo e confidencialidade anularão tais riscos.

Após ter recebido informações claras, eu concordo com a participação no estudo do meu representado.

_____ _____
Assinatura do Representante Legal Caíque Jordan Nunes Ribeiro

Aracaju, ___/___/____

ANEXO V

PESQUISA: *"Dor durante aspiração traqueal em vítimas de traumatismo cranioencefálico"*

Data da avaliação: ____/____/_____ **Observador:** _____

Nome: _____

Nº do prontuário: _____ **Ramsay:** _____ **RASS:** _____

DADOS CLÍNICOS

Dispositivos em uso: ☐ TOT ☐ TQT ☐ CVC ☐ CVP ☐ PAI ☐ PAni ☐ Oxímetro de pulso ☐ SVD ☐ SOG ☐ SNE ☐ Dreno(s) _____ ☐ Contenção física

Analgesia e sedação: ☐ Analgésicos simples _____
☐ AINES _____
☐ Opioides _____
☐ Sedativos _____

Sedação em BI ativa? ☐ Sim ☐ Não → Se sim → **Vel. de infusão:** _____

Parâmetros da VM (antes da aspiração) → MV: _____ **FI:** _____ **FiO_2:** _____ **PEEP:** _____ **FR:** _____

***BEHAVIORAL PAIN SCALE* (BPS/PtBr)** **Procedimento:** ☐ Limpeza do olho ☐ Aspiração

ITENS	**HORA:** ____:____	**Repouso (Antes do procedimento)**	**Valor máximo durante o procedimento**	**Repouso (10 min pós-procedimento)**
Expressão Facial *1 Relaxada* *2 Parcialmente contraída (ex. abaixamento palpebral)* *3 Completamente contraída (ex. olhos fechados)* *4 Contorção facial*				
Movimento dos membros superiores *1 Sem movimento* *2 Movimentação parcial* *3 Movimentação completa com flexão dos dedos* *4 Permanentemente contraídos*				
Conforto com o ventilador mecânico *1 Tolerante* *2 Tosse mas tolerante à ventilação mecânica a maior parte do tempo* *3 "Brigando" com o ventilador* *4 Sem controle da ventilação*				
Parâmetros fisiológicos *Pressão arterial sistólica (PAS)*				
Pressão arterial diastólica (PAD)				
Frequência cardíaca (FC)				

LEGENDA: AINES - anti-inflamatórios não esteroidais; **BI -** bomba de infusão; **CVC -** cateter venoso central; **CVP -** cateter venoso periférico; **ECGI -** escala de coma de Glasgow; **ENF -** enfermeiro; **FI -** fluxo inspiratório; **FiO_2 -** fluxo inspirada de O_2; **Fisio -** fisioterapeuta; **FR -** frequência respiratória; **MED -** médico; **MV -** modo ventilatório; **PAI -** pressão arterial invasiva; **PAni -** pressão arterial não invasiva; **PEEP -** pressão expiratória final positiva; **SNE -** sonda nasoenteral; **SOG -** sonda orogástrica; **SVD -** sonda vesical de demora; **TÉC ENF -** técnico de enfermagem; **TOT -** tubo orotraqueal; **TQT -** traqueóstomo; **Vel. -** velocidade.

ANEXO VI

HOSPITAL UNIVERSITÁRIO DE ARACAJÚ/ UNIVERSIDADE FEDERAL DE SERGIPE/ HU-

PARECER CONSUBSTANCIADO DO CEP

DADOS DO PROJETO DE PESQUISA

Título da Pesquisa: DOR DURANTE ASPIRAÇÃO TRAQUEAL EM VÍTIMAS DE TRAUMATISMO CRANIOENCEFÁLICO

Pesquisador: MARIA DO CARMO DE OLIVEIRA RIBEIRO

Área Temática:

Versão: 1

CAAE: 38567714.1.0000.5546

Instituição Proponente:

Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

Número do Parecer: 903.798

Data da Relatoria: 04/12/2014

Apresentação do Projeto:

Trata-se de uma pesquisa de mestrado, no qual pretende avaliar a dor em pacientes com traumatismo encefálico , durante o procedimento de aspiração traqueal. Para isso utilizarão uma escala de dor validada recentemente no Brasil.

Objetivo da Pesquisa:

Objetivo Primário:

Avaliar o manejo da dor em vítimas de traumatismo cranioencefálico antes e durante a aspiração traqueal.

Objetivo Secundário:

Avaliar a validade, confiabilidade e responsividade da versão brasileira da Behavioral Pain Scale em vítimas de TCE;Identificar a prevalência da dor
por meio das variáveis: expressão facial, movimentação de membros superiores e sincronia com a ventilação durante a aspiração;Verificar o registro
da dor pela equipe multiprofissional.

Avaliação dos Riscos e Benefícios:

Os riscos são mínimos pois os pesquisadores não realizarão nenhum procedimento nos sujeitos participantes. Farão apenas a observação durante o procedimento de aspiração realizado pela

Endereço: Rua Cláudio Batista s/nº
Bairro: Sanatório **CEP:** 49.060-110
UF: SE **Município:** ARACAJU
Telefone: (79)2105-1805 **E-mail:** cephu@ufs.br

ANEXO VII

Your recent submission to JPAIN

The Journal of Pain <eesserver@eesmail.elsevier.com>
seg 02/01/2017 09:19
Para: raphasantiago@hotmail.com

Dear Dr. Raphael Santiago de Araújo,

You have been listed as a Co-Author of the following submission:

Journal: The Journal of Pain
Corresponding Author: Caíque Jordan Nunes Ribeiro
Co-Authors: Alanna Gleice C Fontes Lima, MSc.; Raphael A Santiago de Araújo, BSc; Mariangela da Silva Nunes, PhD.; José A Barreto Alves, PhD.; Daniele Vieira Dantas, PhD.; Maria C de Oliveira Ribeiro, PhD.
Title: Psychometric properties of the Brazilian version of Behavioral Pain Scale in traumatic brain injury

If you did not co-author this submission, please contact the Corresponding Author of this submission at caiquejordan_enf@yahoo.com.br;caiquejordan.enf@gmail.com; do not follow the link below.

An Open Researcher and Contributor ID (ORCID) is a unique digital identifier to which you can link your published articles and other professional activities, providing a single record of all your research.

We would like to invite you to link your ORCID ID to this submission. If the submission is accepted, your ORCID ID will be linked to the final published article and transferred to CrossRef. Your ORCID account will also be updated.

To do this, visit our dedicated page in EES. There you can link to an existing ORCID ID or register for one and link the submission to it:
http://ees.elsevier.com/jpain/l.asp?i=121732&l=2Q5SC947

More information on ORCID can be found on the ORCID website, http://www.ORCID.org, or on our help page: http://help.elsevier.com/app/answers/detail/a_id/2210/p/7923

Like other Publishers, Elsevier supports ORCID - an open, non-profit, community based effort - and has adapted its submission system to enable authors and co-authors to connect their submissions to their unique ORCID IDs.

Thank you,

The Journal of Pain

ANEXO VIII

UNIVERSIDADE FEDERAL DE SERGIPE
CENTRO DE CIÊNCIAS BIOLÓGICAS E DA SAÚDE
DEPARTAMENTO DE MEDICINA
COMISSÃO DE INTERNATO

CORREÇÃO DA MONOGRAFIA

Prezada **Profa. Dra. Amélia Maria Ribeiro de Jesus**

Nota: **_____**

Em nome da Comissão de Internato do Departamento de Medicina, temos a satisfação de convidá-lo a participar da avaliação das Monografias de Conclusão de Curso de Medicina, turma 2016.2.

Aluno (a): Raphael Almeida Santiago de Araujo

Título: Psychometric properties of the Brazilian version of Behavioral Pain Scale in traumatic brain injury

Orientadora: Profa. Dra. Maria do Carmo de Oliveira Ribeiro

A pesquisa foi desenvolvida pelo formando durante sua vida acadêmica, e possui um orientador necessariamente vinculado ao corpo docente da UFS, seja como professor efetivo, substituto ou colaborador-voluntário regular.

Informamos que a avaliação compõe-se de duas fases:

1. *Correção do texto escrito*

Conforme as normas aprovadas pela Comissão de Internato, o texto escrito deve constar de:

a) Revisão da Literatura, que objetiva o embasamento teórico do estudante e a apresentação ao leitor do "estado-da-arte" do tema escolhido. Deve seguir as normas atuais da ABNT.
b) Normas de publicação do periódico, escolhido pelo orientador, onde o manuscrito foi ou virá a ser submetido à apreciação para publicação. Artigos já publicados podem ser apresentados como Monografia de Conclusão de Curso, desde que sejam fruto de

pesquisa desenvolvida pelo aluno e seu orientador. Caso o periódico seja internacional, as Normas podem ser apresentadas em língua inglesa.

c) Artigo original completo, no formato de submissão ao periódico, incluindo número de palavras, referências, tabelas e figuras. Pesquisas envolvendo seres humanos devem mencionar aprovação do projeto inicial pela Comissão de Ética envolvendo Seres Humanos da UFS.

d) Elementos pré e pós textuais, incluindo agradecimentos, dedicatórias e anexos, são opcionais e têm formato livre.

Essa fase é avaliada por um professor, que atribuirá nota entre zero e oito. O avaliador deve considerar:

a) Relevância do tema e da pergunta de pesquisa;
b) Adequação dos métodos aos objetivos propostos;
c) Importância dos resultados obtidos;
d) Fundamentação teórica na discussão dos resultados;
e) Nexo entre objetivos e conclusões;
f) Qualidade do texto escrito: adequação formal, organização, linguagem e estilo;
g) Atualidade e abrangência da revisão da literatura.

É aconselhável que o professor que avalia o texto escrito realize uma "pré-banca" com o aluno para apresentação de suas sugestões, as quais serão discutidas com o respectivo orientador.

A nota do texto escrito deve ser entregue à Comissão de Internato até a data da apresentação, previamente definida e comunicada aos internos.

O texto escrito, depois de corrigido, deve ser convertido pelo aluno para o formato PDF e ser enviado por e-mail para a Comissão de Internato para arquivamento impreterivelmente até o dia da apresentação oral.

2. *Avaliação da apresentação oral da pesquisa*

As apresentações orais ocorrerão nos dias e horários predeterminados, em grupos de 10 alunos por turno. Cada apresentador terá até 15 minutos para apresentar seu trabalho, e a plateia (banca, alunos e professores convidados) terão 5 minutos para tecer comentários e arguir o apresentador.

A avaliação será feita por uma banca composta por no mínimo cinco professores, incluindo o professor avaliador da monografia, que avaliarão os seguintes itens:

a) Conteúdo;
b) Qualidade da apresentação: slides, organização, respeito ao tempo de 15 minutos;
c) Postura do apresentador;
d) Capacidade de resposta às perguntas formuladas pela banca examinadora.

Cada examinador atribuirá uma nota de zero a dois, cuja média será somada à nota do texto escrito.

Ressaltamos que ambas as fases (confecção do texto escrito e apresentação oral) são requisitos obrigatórios para a obtenção do grau de médico na UFS, uma vez que se constitui em importante oportunidade, por vezes única, de contato do estudante de Medicina com atividade de pesquisa.

Parte, há vários anos, do rito de passagem que é a graduação em Medicina, a cerimônia acadêmica de apresentação das Monografias tem sido a cada semestre, uma oportunidade de apreciação da evolução e do amadurecimento experimentado pelos estudantes ao longo de sua formação, além de oportunidade de se vislumbrar um painel das pesquisas desenvolvidas no Departamento de Medicina. Para os graduandos trata-se da última atividade como discente, um momento ímpar de congraçamento e celebração.

Atenciosamente,

Departamento de Medicina