Action of sedative drugs for the development of delirium and functional profile of patients admitted to intensive care units

Ação de fármacos sedativos para o desenvolvimento de delirium e perfil funcional de pacientes internados em unidades de terapia intensiva

Acción de los fármacos sedantes para el desarrollo del delirio y perfil funcional de pacientes ingresados en unidades de cuidados intensivos

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Abstract
Introduction: Sedatives are drugs used as therapeutic aid in patients under intensive care. Among the possible controversial outcomes for its use, cognitive changes are punctuated in the literature, with acute encephalopathy or delirium, being the most described. *Objectives:* To evaluate the association between the use of drugs with sedative action for the development of delirium and to characterize the functional profile of individuals with delirium. *Material and Methods:* Longitudinal study, carried out in a public hospital in the state network, from June 2019 to October (first half) of 2020, with individuals over 18 years old, admitted to intensive care units and infirmaries, for scales for assessing sedation, delirium and functionality (Richmond Agitation Sedation Scale - RASS, Confusion Assessment Method for the Intensive Care Unit - CAM-ICU and Status Score for the Intensive Care Unit - FSS, respectively), with verbalization and without admission via external transfer. *Results:* 104 patients with a mean age of 59.7 ± 15.3 years were included, 53.2% being male, with 49% being hypertensive and 79.8% denying smoking. There was not any statistical significance between sedative drugs for the onset of delirium. Most patients with delirium were in the FSS range between 0-15 in the intensive care unit setting and 16-25 in the infirmaries. *Final Considerations:* There is no association between the use of drugs with sedative action and delirium. There was a change in the functional profile, with patients becoming moderate to maximum dependents in the intensive care units and minimize or independent dependents in the wards.
Keywords: Delirium; Sedatives; Cognitive Dysfunction; Mobility Limitation.

Resumo
Introdução: Os sedativos são fármacos utilizados como auxiliares terapêuticos em pacientes sob cuidados intensivos. Dentre os possíveis desfechos controversos ao seu uso, as alterações cognitivas são pontuadas na literatura, com a encefalopatia aguda ou delirium, sendo a mais descrita. **Objetivos:** Avaliar a associação entre o uso de fármacos com

ação sedativa para o desenvolvimento de delirium e caracterizar o perfil funcional dos indivíduos com delirium. *Material e Métodos:* Estudo longitudinal, realizado em um hospital público da rede estadual, durante os meses de junho de 2019 a outubro (primeira quinzena) de 2020, com indivíduos acima de 18 anos, internados em unidades de terapia intensiva e enfermarias, por meio de escalas para avaliação de sedação, delirium e funcionalidade (*Richmond Agitation Sedation Scale* - RASS, *Confusion Assessment Method for the Intensive Care Unit* - CAM-ICU e *Status Score for the Intensive Care Unit* - FSS, respectivamente), com capacidade de verbalização e sem admissão via transferência externa. *Resultados:* Inclusos 104 pacientes com idade média de 59,7 ± 15,3 anos, sendo 53,2% do sexo masculino, com 49% sendo hipertensos e 79,8% negando tabagismo. Não houve significância estatística entre os fármacos sedativos para o desencadeamento de delirium. A maioria dos pacientes com delirium estavam no intervalo da FSS entre 0-15 no ambiente intensivo e 16-25 nas enfermarias. *Considerações Finais:* Não há associação entre o uso de fármacos com ação sedativa e delirium. Houve alteração do perfil funcional, com os pacientes tornando-se dependentes moderados a máximos nas unidades intensivas e dependentes mínimos ou independentes nas enfermarias.

Palavras-chave: Delirium; Sedativos; Disfunção Cognitiva; Limitação da Mobilidade.

Resumen

Introducción: Los sedantes son fármacos utilizados como ayudas terapéuticas en pacientes en cuidados intensivos. Entre los posibles desenlaces controvertidos para su uso, los cambios cognitivos se puntúan en la literatura, siendo la encefalopatía aguda o el delirio, los más reportados. *Objetivos:* Evaluar la asociación entre el uso de fármacos con acción sedante para el desarrollo del delirio y caracterizar el perfil funcional de los individuos con delirio. *Material y Métodos*: Estudio longitudinal, realizado en un hospital público de la red estatal, durante los meses de junio de 2019 a octubre (primer semestre) de 2020, con personas mayores de 18 años, ingresadas en unidades y salas de cuidados intensivos, mediante escalas. Por la evaluar sedación, delirio y funcionalidad (*Richmond Agitation Sedation Scale* - RASS, *Confusion Assessment Method for the Intensive Care Unit* - CAM-ICU y *Status Score for the Intensive Care Unit* - FSS, respectivamente), con capacidad de verbalización y sin ingreso por transferencia externo. *Resultados:* Se incluyeron 104 pacientes con una edad média de 59,7 ± 15,3 años, 53,2% varones, 49% hipertensos y 79,8% negaban fumar. No hubo significación estadística entre los fármacos sedantes para la aparición del delirio. La mayoría de los pacientes con delirio estaban en el rango de FSS entre 0-15 en el entorno intensivo y 16-25 en las salas. *Consideraciones finales:* No existe asociación entre el uso de fármacos con acción sedante y el delirio. Hubo un cambio en el perfil funcional, convirtiéndose los pacientes en dependientes moderados a máximos en las unidades de cuidados intensivos y dependientes mínimos o independientes en las salas.

Palabras clave: Delirio; Sedantes; Disfunción Cognitiva; Limitación de la Movilidad.

1. Introduction

Sedatives, defined as drugs capable of causing depression of the Central Nervous System (CNS), by promoting inhibition or reduction of their function (Bruton & Chabrer, 2012), are commonly associated with analgesics and used as therapeutic aids in patients under intensive care (Pitrowsky, Shinotsuka, Soares, Lima, Salluh, 2010 & Wacker, Nunes, Forçenza, 2005 & Guimarães *et al.,* 2014).

Among the possible controversial outcomes with the use of sedoanalgesics, cognitive changes are commonly punctuated in the literature, with acute encephalopathy or delirium, the most described, ranging from 28% to 84% (Bruton, Chabrer, 2012 & Yang *et al*., 2017 & Slooter, Van de Leur, Zaal, 2007) in the intensive care sectors. Understood as an acute cerebral manifestation, delirium has in its symptoms cognitive changes ranging from attention deficit to memory loss and aggression (Pitrowsky, Shinotsuka, Soares, Lima & Salluh, 2010), with its etiology linked to a failure in the attentional matrix, which transiently compromises the brain state, with the disorganization of its neuronal activities (Wacker, Nunes & Forçenza, 2005).

Even with the incidence values described in the literature, acute encephalopathy remains under diagnosed, due to the variability of the investigation instruments and the heterogeneous profile of in patients (Wacker, Nunes, Forçenza, 2005 & Guimarães *et al.,* 2014). Thus, there is a postponement of treatment and reversibility of the cognitive condition (Wacker, Nunes, Forçenza, 2005 & Guimarães *et al.,* 2014), changing the mobility of individuals, increasing the hospital stay and the costs of hospitalization, consequently (Pitrowsky, Shinotsuka, Lima, Salluh, 2010 & Guimarães *et al.,* 2014 & Slooter, Van de

Leur, Zaal, 2007 & Pessoa, Nacul, 2006 & Faria, Moreno, 2013 & Pinheiro, Christofoletti, 2012 & Balas, Weinhouse, Denery, Chanques, Misak, 2018 & Banerjee, Girard, Pandharipande, 2011 & Simone *et al*., 2018).

In the Search for strategies to reduce such outcomes, further studies are needed, this article aimed to assess the association between the use of drugs with sedative action for the development of delirium and altered functionality of patients admitted to intensive care units and to characterize the functional profile of individuals with delirium during hospitalization.

2. Material and Methodos

This is a longitudinal study, performed in adult intensive care units and infirmaries of a médium and high complexity hospital in the state public health system in Bahia. Individuals over 18 years of age, who had verbal capacity for the applicability of the scales and who had used a drug with sedative action for more than 24 hours, with description of intravenous administration in the medical record (prescription) were included. Patients with pathologies and/or skull/face surgeries that compromised verbal communication for the application of the scales were excluded; previous cognitive disorders; uni or bilateral lower limb amputations; neurological, renal and hepatic dysfunctions described in medical records; artificial airway with plastic or metallic tracheostomy (due to the absence of a speech valve) and which had been admitted through external hospital transfer (Lago *et al*., 2020).

To assess the behavioral state of sedated individuals, the Richmond Agitation Sedation Scale (RASS) was used, with individuals with +2/-2 interval evaluating the existence of cognitive impairment. Delirium was investigated through the application of the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU), already translated and validated into Portuguese, through 4 blocks to ascertain the fluctuation of mental state, inattention, disorganized thinking and level of awareness, with its diagnosis confirmed when items 1 and 2 are positive and characterizations 3 or 4 are present (Guimarães *et al.,* 2014 & Devlin, Skrobik, Gelinas, Needhan, Slooter, 2018 & Knobel, Capone, Ferraz, Machado, 2003 & Lobo, Silva Filho, Lima, Ferriolli, Moriguti, 2010 & Carvalho, Almeida, Gusmão-Flores, 2013 & Reade, Finfer, 2014 & atel *et al*., 2009 & Lago *et al*., 2020).

The mobility of individuals was assessed using the Functional Status Score for the ICU (FSS-ICU), which classified the functional status, based on the analysis of five postures (rolling, transferring from the lateral decubitus position to sedation, seated with the legs out of the bed, transfer of sit on the bed to orthostatic and ambulation) performed with or without the assistance of the therapist, generating scores between 0 (zero) and 7 (seven) according to the dependency percentile. The final score was made up of the sum of eight possible points attributed to the five tasks, the highest values being related to the state of greatest independence, with a maximum score of 35 points indicating complete independence (Silva *et al.,* 2017), with no point of reference for characterization of "functional decline" reported in the literature (Thrush, Rozek, Dekerlegand, 2012 & Mehrholz, Muckel, Oehmichen, 2015), until the moment of writing; but, with inferences of predictive scores of hospital discharge (Huang et al., 2016 & Tymkew, Norris, Arroyo, Schallom, 2020), it cannot be compared with the analyzed objectives.. In the present study, for the facilitation of data analysis by the software and for a better description of the tables, the values obtained in the FSS scale were described in intervals (0-15, 16-25, 26-35), being characterized total functional dependents to moderate dependents, minimal dependents and functional independents respectively.

Data collection was carried out by two properly trained researchers and occurred in two moments (during hospitalization at the ICU - 24 hours after admission, in permissive cases, and in the infirmary - 48 hours after discharge from the ICU) to ascertain the objectives of the study, in patients on spontaneous ventilation. In individuals under invasive ventilatory support, data collection in the ICU occurred 24 hours after extubation, under clinical conditions. Patients were approached in the ICU, when permissive, despite participation; and, if concordant, the questionnaire and scales were applied.

All included patients had a physiotherapy prescription in their medical records, described as "Respiratory and Motor Physiotherapy" to be performed during the three shifts (morning, afternoon and night) in the ICU, and were not submitted to mobilization protocols officially described in medical records.

The sample calculation was performed by the Open-Source Epidemiologic Statistics for Public Health (OpenEpi) program based on the incidences of delirium in the intensive care environment (66%) and the same in patients using sedatives in this scenario (37%), according to Bruton & Chabrer, 2012 and Yang J, Zhou, Kang, Xu & Wang, 2017, totaling 104 patients, with a power of 80%. Sociodemographic data were collected through medical records, entered the Microsoft Excel® program and analyzed using the Software for Statistics and Date Science (Stata®) software version 15.0; with the qualitative characters described in absolute and relative frequencies, and the quantitative ones as means and standard deviations. The independent variables of the study were sex, age in years, scholarly, presence of comorbidities (yes/no), physical activity (yes/no), inferred locomotion (independent/partial independent) and reason for hospitalization. The dependent variables were the type of airway, type of sedative drug used (infusion pump/intravenous route), dosage and days of use, score on the CAM-ICU scale, scores on the FSS scale and length of stay in the ICU.

The independent variables of the study were sex, age in years, education, presence of comorbidities (yes/no), physical activity (yes/no), inferred locomotion (independent/partial independent) and reason for hospitalization. And the dependent variables were type of airway, type of existing, sedentary lifestyle, cause of hospitalization, airway at admission and type of sedative used), the Chi-square and Fisher's exact test; as well as, for the evaluation of the functional profile, with the data also provided through the Relative Risk (RR) with 95% Confidence Interval (CI). The description of drugs with sedative action more related to the development of delirium, despite the dosage (as a solution - ml/h) and time of use, were promoted by the Mann-Whitney test by comparing groups (delirium and non-delirium), Spearman's correlation coefficient to ascertain the effects of drugs when associated, at a $p<0.05$ considered statistically significant. This study was submitted to the Ethics Committee and approved according to opinion number: 3.340.49400, with the patients agreeing with the Informed Consent Term.

3. Results

The study sample consisted of 104 patients, collected from June 2019 to October (first fifteen days) of 2020, with an average age of 59.7 ± 15.3 years, 57 (53.2%) being male and 49 (47.1%) referring to complete high school as a school graduation. Of these individuals, 49% reported systemic arterial hypertension, 28.8% diabetes, 16.3% hyperlipidemia, 31.7% previous heart disease and 79.8% denied smoking.

Table 1. Association of delirium and probable risk factors in ICU patients, Salvador, 2020. (n=104).

Variables	Delirium n (%) / x ± DP	No delirium n (%) / x ± DP	p
Sex			
Male	24 (57,1)	33 (53,2)	0,69*
Female	18 (42,9)	29 (46,8)	
Age (years)	62,3 ± 15,7	57,4 ± 14,6	0,05***
Scholarity			
Elementary	23 (54,8)	23 (37,1)	0,07**
Hight	18 (42,8)	31 (50,0)	
Undergraduate degree	1 (2,4)	8 (12,9)	
Smoking			
Yes	8 (19,0)	8 (12,9)	
No	31 (73,8)	52 (83,9)	0,41**
Old Smoker	3 (7,2)	2 (3,2)	
Hypertension			
Yes	26 (61,9)	25 (40,3)	0,03*
No	16 (38,1)	37 (59,7)	
Diabetes			
Yes	15 (35,7)	15 (24,2)	0,20*
No	27 (64,3)	47 (75,8)	
Hyperlipidemia			
Yes	8 (19,1)	8 (12,9)	0,39*
No	34 (80,9)	54 (87,1)	
Lung disease			
Yes	7 (16,7)	5 (8,1)	0,17*
No	35 (83,3)	57 (91,9)	
Heart disease			
Yes	18 (42,9)	15 (24,2)	0,04*
No	24 (57,1)	47 (75,8)	
Joint, Bone and Muscular disease			
Yes	2 (4,8)	4 (6,5)	1,00**
No	40 (95,2)	58 (93,5)	
Physical Activity			
Yes	3 (7,1)	19 (30,6)	0,01**
No	39 (92,9)	43 (69,4)	
Daily Life Activity			
Independent	37 (88,1)	62 (100,0)	0,01**
Partial dependent	5 (11,9)	-	
Total dependent	-	-	
Locomotion			
Total independent	33 (78,6)	56 (90,3)	0,14**
Modified independent	8 (19,0)	6 (9,7)	
Partial dependent	1 (2,4)	-	

*P value with Chi-Square
**P value with Fisher's Exact
***P value with Mann-Whitney
Source: Authorship.

In relation to the possible risk factors described in table 1, having heart disease, systemic arterial hypertension, being sedentary and having some portion of functional dependence were statistically associated with the occurrence of acute encephalopathy; with the incidence of delirium was 40.4%, with affected patients being admitted for clinical reasons (59.5%) and under artificial airways (69.0%), not being predetermined to develop cognitive alterations, according to table 2.

Table 2. Association between reason for hospitalization, sedatives used and development of delirium, Salvador, 2020. (n=104).

Variables	Delirium (42) n (%)	No delirium (62) n (%)	P	RR (IC 95%)
Reason of Admission				
Surgical	17 (40,5)	25 (40,3)	0,98*	1,00
Clinical	25 (59,5)	37 (59,7)		(0,62-1,61)
ICU				
Cinical I	11 (26,2)	21 (33,9)		
Clinical II	14 (33,3)	11 (17,7)	0,24*	-
Cardiac	8 (19,1)	10 (16,1)		
Surgical	9 (21,4)	20 (32,3)		
Airway				
Artificial	29 (69,0)	41 (66,1)	0,75 *	1,04
Physiological	13 (31,0)	21 (33,9)		(0,79-1,36)
Sedatives				
Midazolam				
Yes	30 (71,4)	35 (56,4)	0,12*	1,26
No	12 (28,6)	27 (43,6)		(0,94-1,69)
Propofol				
Yes	10 (23,8)	12 (19,4)	0,58*	1,23
No	32 (76,2)	50 (80,6)		(0,58-2,58)
Fentanyl®				
Yes	27 (64,3)	39 (62,9)	0,88*	1,02
No	15 (35,7)	23 (37,1)		(0,76-1,37)
Dexmedetomidine				
Yes	5 (11,9)	6 (9,7)	0,71*	1,23
No	37 (88,1)	56 (90,3)		(0,40-3,77)
Phenobarbital				0,7
Yes	1 (2,4)	2 (3,2)	0,80**	(0,69-7,8)
No	41 (97,6)	60 (96,8)		

ICU= Intensive Care Unit/ RR= Relative Risk
*P value with Chi-Square
**P value with Fisher's Exact
Source: Authorship.

   Of the drugs that promote cognitive changes, Midazolam (benzodiazepine), Fentanyl (opioid), Propofol (anesthetic), Dexmedetomidine (sedative) and Phenobarbital (barbiturate) were the agents with sedative action included in this study, as they are the only ones administered and prescribed for that purpose in the hospital environment where data collection was performed; being Midazolam, the most reported type of benzodiazepine (71.4%), followed by Fentanyl (64.3%), developing changes in alertness, but without statistical significance of this association, with average dosages of 6.7 ± 4.9 ml/h and 5.6 ± 4.5 ml/h, respectively; even with the days of use - 3.4 ± 3.6 days, showing statistical significance, as shown in tables 2 and 3.

Table 3. Occurrence of delirium according to dosage and duration of use of sedative drugs in patients in intensive care units, Salvador, 2020. (n=104)

Variables	Delirium (42) Mean ± SD	No delirium (62) Mean ± SD	p*
Sedatives			
Midazolam			
Dosage (ml/h)	6,7 ± 4,6	4,9 ± 4,4	0,03
Days of use	3,4 ± 3,6	1,1 ± 1,4	0,01
Propofol			
Dosage (ml/h)	2,0 ± 3,8	1,2 ± 2,8	0,46
Days of use	0,6 ± 1,6	0,5 ± 1,3	0,62
Fentanyl®			
Dosage (ml/h)	5,6 ± 4,5	4,5 ± 4,1	0,19
Days of use	3,4 ± 3,6	1,3 ± 1,4	0,01
Dexmedetomidine			
Dosage (ml/h)	0,5 ± 1,4	0,4 ±1,6	0,72
Days of use	0,2 ± 0,6	0,2 ± 0,7	0,69
Phenobarbital			
Dosage (ml/h)	0,1 ± 0,4	0,1 ± 0,3	0,81
Days of use	0,0 ± 0,1	0,0 ± 0,2	0,79

SD= Standard Deviation/ ml/h= mililitre per hour
P value with Mann-Whitney
Source: Authorship.

On the FSS-ICU scale, the scores added in the five positioning categories mean 21.0 ± 8.1 points and were higher between the intervals 0-15 (total to moderate dependence) and 16-25 (minimally dependence), representing 85.7% of the functional profile of delusionals, with statistical significance (Table 4).

Table 4. Frequency of delirium according to the application of the FSS in the ICU and the Infirmary, Salvador, 2020 (n=104).

Variable	FSS n (%)			p
	0-15	16-25	26-35	
ICU				
Delirium (42)	23 (54,8)	13 (30,9)	6 (14,3)	0,01*
No delirium (62)	5 (8,1)	30 (48,4)	27 (43,5)	
Infirmary				
Delirium (11)	2 (18,2)	7 (63,6)	2 (18,2)	0,01**
No delirium (93)	2 (2,2)	16 (17,2)	75 (80,6)	

FSS= *Status Score for the Intensive Care Unit* /ICU= Intensive Care Unit
*P value with Chi-Square
**P values with Fisher's Exact
Source: Authorship.

However, when the same scale was applied in the infirmary 48 hours after leaving intensive care units, the mean was 30 ± 5.9 points, with 81.8% of individuals classified as functional independents or minimally dependent. Regarding the length of stay, most patients remained under intensive care for five days (5.4 ± 3.3 days), with a smaller portion hospitalized above that period, due to complications in multiple systems and the need for other therapeutic devices.

4. Discussion

Of the pharmacological agents susceptible to delirium, patients who used Midazolam, during their stay in intensive care units, developed changes in alertness, as predicted in the literature (Girard, Thompson, Pandharipande, Brummel, Jackson, 2018 & Lago, Faustino, Merces, Silva, Pessoa, Oliveira, 2020 & Haenggi *et al.,* 2013 & Cerveira, Pupo, Santos, 2017 & Shinotsuka, Salluh, 2013 & Nunes, Bastos, 2016 & Patel, Grambell, Speroff, Scott, Pun, 2009 & Burry *et al.*, 2017 & Gusmão-Flores, Carvalho, Quarantini, 2013 & Riker *et al.,* 2009 & Shehabi *et al.,* 2018), a baixas dosagens e poucos dias de uso, assim como previsto em estudos anteriores (Cerveira, Pupo, Santos, 2017 & Patel, Grambell, Speroff, Scott, Pun, 2009 & Riker *et al.,* 2009 & Shehabi *et al.,* 2018), highlighting the influence of benzodiazepines in the process of capturing neurotransmitters via the Central Nervous System and its potential for sedation.

In the intensive care environment, the incidence of delirium was within the range of values reported in studies on this topic (Pitrowsky, Shinotsuka, Soares, Lima, Salluh, 2010 & Haenggi et al., 2013), with the percentage variability being justified due to the different admission profiles combined and, in the present study, due to the low availability of some drugs with sedative action (scarce benzodiazepines) and their possible replacement by analgesics (Fentanyl), thus promoting an occurrence of delirium possibly underestimated by the action of these drugs.

The development of delirium is linked to individual issues, such as gender and age, according to reports in the literature (Girard, Thompson, Pandharipande, Brummel, Jackson, 2018 & Lago, Faustino, Merces, Silva, Pessoa, Oliveira, 2020) being male and being 60 years of age or older are reaffirmed, in the present study, when analyzing the sociodemographic description of the participants, with such variables predisposing to such cognitive alteration, being considered as probable non-modifiable risk factors and of greater representativeness when associated.

Hypertensive individuals with confirmation of previous cardiac diseases - Heart failure, Atrial Fibrillation and Acute Myocardial Infarction, for example, mostly had a relationship with positive cases of delirium. This fact, not discussed in isolation in the literature, was cited as a risk factor (Pessoa, Nacul, 2006 & Lago, Faustino, Merces, Silva, Pessoa, Oliveira, 2020) in two studies when it is reliably linked to other possible triggers of delirium without its pathophysiology described.

In this research, the support airway at admission was not statistically significant when related to acute encephalopathy, with the majority of delusionals characterized under artificial airways, with such data being consistent with publications in this regard, where most of patients are nodded before invasive ventilatory support (Yang et al., 2017 & Cerveira, Pupo, Santos, 2017 & Shinotsuka, Salluh, 2013) and needing sedatives to maintain the artificial airway.

Understanding that the use of sedative agents linked, or not, to the onset of delirium leads to reduced mobility, assessing the functionality of these patients is extremely important for a more effective therapeutic planning. Analyzing functionality, in the present study, patients with delirium had an FSS-ICU interval score consistent with total to moderate dependence for transfers and/or locomotion, as in other studies, with evidence of improved functionality when evaluated in the ward. (Thrush, Rozek, Dekerlegand, 2012 & Mehrholz, Muckel, Oehmichen, Pohi, 2015).

In the literature, the data presented can also be indirectly justified, according to a cohort of 703 patients (Shehabi et al., 2018), where early mobilization in the first 48 hours occurred in 7.3% of the sedated sample, with no direct relationship with mortality (Riker et al., 2009 & Shehabi et al., 2018); but, possibly, being linked to greater dependence for transfers and locomotion.

The lack of complete completion of clinical items in the medical records and the description of drug dosages in mcg/Kg on prescription papers, in addition to the applicability of scales in a single period in the units were considered as limitations of the study, compromising the agility and possibility inclusion of more individuals in this study.

5. Final Considerations

Through the data presented in this study, there is no association between the use of drugs with sedative action and the development of delirium statistically significant, even with the incidence of cognitive impairment within the frequency reported in the literature.

The individuals functional status changed, changing from previous independents to total to moderate dependents in intensive care settings, with an improvement in classification to independent or minimal dependents in the wards, highlighting the decline in mobility and greater need for assistance in reaching of postures such as sit on the bed and orthostatic.

These data highlight the importance of early mobilization in intensive care units, and can contribute, together to future productions, with the idealization of sedation and mobilization protocols individually, helping to reduce hospital costs through the choice of specific sedatives, awakening early, early physical activity, with shorter hospital stay and possibly safer hospital discharge.

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