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Association of demographic, clinical and therapeutic management factors with the outcome of septic patients treated in a hospital emergency

Associação dos fatores demográficos, clínicos e do manejo terapêutico no desfecho de pacientes sépticos atendidos em uma emergência hospitalar

Associacóin de factores demográficos, clínicos y do manejo terapéutico en el resultado de pacientes sépticos tratados en una emergencia hospitalar

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Abstract: Aim: To identify the association of demographic, clinical and therapeutic management aspects with the outcome of patients diagnosed with sepsis in a hospital emergency. **Method:** retrospective documentary, 312 records of septic patients, descriptive analysis, comparisons of categorical data were used using Chi-square or Fisher's exact tests, with Monte Carlo correction. **Results:** mean age 65 (± 17.66) years, 51.3% were women, 52.6% hypertensive, 28.5% diabetic, 27.2% heart disease, 74% diagnosed with sepsis 52.3% infectious pulmonary focus. There is an association between demographic variables and outcomes (p <0.05). History of stroke, cirrhosis, heart disease, and septic shock are associated with death (p <0.05). Warning signs and organ dysfunction evaluated are associated with the outcome. Infectious focus (p = 1) and tachycardia (p = 0.823) has no association with outcome or severity of sepsis (p = 0.120). **Conclusion:** there is an association between patient demographic profile, comorbidities, organ dysfunction and therapeutic management, with sepsis severity and outcome.
Descriptors: Sepsis;Emergency Service, Hospital; Health Profile; Nursing

Resumo: Objetivo: identificar a associação dos aspectos demográficos, clínicos e do manejo terapêutico no desfecho dos pacientes diagnosticados com sepse em uma emergência hospitalar. **Método:** documental retrospectivo, 312 prontuários de pacientes sépticos, realizado análise descritiva, comparações de dados categóricos utilizaram-se os Testes de Qui quadrado ou Exato de Fisher, com correção de Monte Carlo. **Resultados:** idade média 65 (±17,66) anos, 51,3% eram mulheres, 52,6% hipertensos, 28,5% diabéticos, 27,2% cardiopatas, 74%

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diagnosticados com sepse 52,3% foco infeccioso pulmonar. Existe associação entre as variáveis demográficas e os desfechos (p<0,05). Histórico de acidente vascular encefálico, cirrose, cardiopatia e choque séptico associam-se ao óbito (p<0,05). Sinais de alerta e disfunções orgânicas avaliadas associam-se ao desfecho. Foco infeccioso (p=1) e taquicardia (p=0,823) não tem associação com desfecho nem com gravidade da sepse (p=0,120). **Conclusão:** há associação entre o perfil demográfico do paciente, comorbidades, disfunções orgânicas e manejo terapêutico, com a gravidade da sepse e o desfecho.
Descritores: Sepse; Serviço hospitalar de emergência; Perfil de saúde; Enfermagem.

Resumen: Objetivo: identificar la asociación de los aspectos demográficos, clínicos y terapeuticos en el resultado de pacientes diagnosticados con sepsis en una emergencia hospitalar. **Método:** documental retrospectivo, se utilizaron 312 registros de pacientes sépticos, análisis descriptivo, comparaciones de datos categóricos utilizando Chi-cuadrado o pruebas exactas de Fisher, con corrección de Monte Carlo. **Resultados:** edad media 65 (± 17.66) años, 51.3% eran mujeres, 52.6% hipertensos, 28.5% diabéticos, 27.2% enfermedades del corazón, 74% diagnosticados con sepsis 52.3% foco pulmonar infeccioso. Existe una asociación entre las variables demográficas y los resultados (p <0.05). Los antecedentes de accidente cerebrovascular, cirrosis, enfermedad cardíaca y shock séptico están asociados con la muerte (p <0.05). Las señales de advertencia y la disfunción orgánica evaluada están asociadas con el resultado. El foco infeccioso (p = 1) y la taquicardia (p = 0.823) no tienen asociación con el resultado o la gravedad de la sepsis (p = 0.120). **Conclusión**: existe una asociación entre el perfil demográfico del paciente, las comorbilidades, la disfunción orgánica y el tratamiento terapéutico, con la severidad y el resultado de la sepsis.
Descriptores: Sepsis; Servicio de Urgencia em Hospital; Perfil de salud; Enfermería.

Introduction

Several pathologies and comorbidities are known to trigger organic dysfunctions that lead to an acute decline in patients' health conditions, causing them to seek urgency and emergency care. Cases of multiple-trauma patients, cardiopathy with acute myocardial infarction (AMI) or stroke are the main situations responsible for emergency care. However, incidence of these diseases has been equated with cases of sepsis patients affecting millions of people, killing one in four patients.[1] Cases of sepsis have gained notoriety, even with underreporting in diagnosis or when the cause of death is wrongly attributed to underlying diseases rather than sepsis. [2]

According to the last *Guidelines for the Management of Severe Sepsis and Septic Shock*, published in 2017, the concept of sepsis is understood as an organ suffering from a vital threat caused by a disordered response to infections[1] while septic shock is defined as an aggravation of

sepsis, affecting the circulatory, cellular and metabolic systems, requiring the infusion of vasopressor drugs and with a higher risk of mortality.[1]

Recently new definitions of sepsis have been published, changing the definition to "presence of life-threatening organ dysfunction secondary to the bodies' unregulated responses to infections" and diagnosis is now associated with two or more score points from the *Sequential Organ Failure Assessment* (SOFA).[3] This study has maintained the use of the previous definition criteria as the Associação de Medicina Intensiva Brasileira (AMIB; Brazilian Intensive Care Association) and the Instituto Latino Americano de Sepse (ILAS; Latin American Sepsis Institute) have considered that the use of the SOFA criteria in underdeveloped countries, taking into account their health profiles, could make diagnosis oversensitive by delaying appropriate treatment for diagnosable cases.[4]

Measures to recognize organ dysfunction and treatment of this condition are also recognized and described by guidelines such as *Surviving Sepsis Campaign*, who has undergone an update by organizing their actions in the early hours of service in *bundles*.[1] Actions that make up patients' management include: serum lactate collection, blood culture collection before the beginning of an antibiotic therapy, antibiotic treatment initiation as early as possible, volemic replacement, use of vasopressors (in cases that do not respond to volemic replacement and maintain mean arterial pressure (MAP) < 65 mmHg), central venous pressure (CVP) measurement, venous oxygen saturation measurement, lactate levels reevaluation in patients with early hyperlactatemia.[2-3] Excessive sensitivity and non-specificity related to sepsis-related diagnostic criteria, patients' comorbidities and noncompliance with treatment guidelines make early care difficult and negatively influence patients' prognosis.[4]

It is known that some patients' particular conditions may influence their bodies' response to combat sepsis. Among such factors, the relationship of gender and comorbidities with the outcome related to mortality evidenced by epidemiological studies is highlighted. The

importance of identifying these patients' profile is evident for the development of more effective protocols and public policies.[5]

The importance of sepsis and septic shock studies is important for early identification, proactivity and adherence to actions related to management of sepsis patients in emergency services. Thus, this study research question was: What factors are associated with worsening sepsis and outcome of patients with sepsis? The objective established was to identify the association of demographic, clinical and therapeutic management aspects with the outcome of patients diagnosed with sepsis in a hospital emergency room.

Method

A retrospective cohort documentary research developed at Emergency Health Services of a university hospital in the Brazilian city of Porto Alegre. The population consisted of 587 medical records of adult patients diagnosed with sepsis or septic shock treated at the hospital from January 1 to December 31, 2014. The sample consisted of 312 patients diagnosed with sepsis or septic shock at an emergency room. 275 patients diagnosed in another hospital sector were excluded.

Data were extracted from a database of the hospital's Infection Control Service, built from an active search, notification of inclusion in the sepsis protocol or patient records. This database includes demographic variables (age and gender), variables related to comorbidities (medical diagnoses), warning signs (hyperthermia , hypothermia, tachypnea, tachycardia, hypotension, sensory alteration, neck stiffness, leukocytosis/leukopenia and presence of rod cells) and sepsis-related organ dysfunctions (oxygen saturation change (SpO2), MAP < 65 mm Hg, blood pressure drop, lactate > 2, international normalized ratio (INR) < 1.5, thrombocytopenia, bilirubin > 2, creatinine alteration, carbon dioxide partial pressure (PCO2) alteration and adherence to the sepsis recognition protocol and therapeutic interventions

(antibiotic therapy administration, blood culture collection, arterial and venous sepsis examination package, arterial and venous blood gasometry, blood count, creatinine, platelets, lactate, bilirubins and prothrombin time (PT), volemic replacement, installation and CVP, central venous catheter (CVC) puncture, delayed bladder catheterization (DBC) and orotracheal tube (OTT).

Study outcomes were discharge/death/hospitalization within 14 days (D14) and discharge/death between 15 and 30 days (D15 to 30). Severity described was related to sepsis and septic shock. For each patient included in the study, data were collected from the first day of hospitalization until patients' discharge or death.

For statistical analysis, software *Statistical Package for the Social Sciences* (SPSS), version 20.0 (SPSS Inc., Chicago, IL, USA has been used. 2010). Continuous variables have been described by mean and standard deviation and categorical variables by simple frequency and percentage. For comparisons of categorical data chi-squared test or Fisher's exact tests with Monte Carlo correction have been used. The significance level adopted was of 5%.

This article is linked to the research project entitled "Serious Sepsis in Hospital Contexts and Knowledge of Professionals and Academics in the Health and Lay Public" approved by the Research Ethics Committee (REC) of the institution on May 9, 2015, under Presentation Certificate for Ethical Appreciation no. 44458215900005336, complying with all ethical and scientific requirements, based on provisions from Resolution No. 466/2012 of the Brazilian Ministry of Health regarding guidelines and standards for research involving human beings.

Results

Patients' profiles comprised individuals with a mean age of 65 ± 17.66 years and greater female distribution in 160 (51.3%). Regarding comorbidities presented, 164 (52.6%) were hypertensive, 89 (28.5%) diabetic, 85 (27.2%) had cardiovascular disease, 56 (17.9%) had Chronic

Obstructive Pulmonary Disease (COPD), 52 (16.7%) had neoplasias, 47 (15.1%) had a history of stroke, 42 (13.5%) had Chronic Kidney Disease (CKD), 23 (7.4%) were immunosuppressed, 14 (4.5%)) lived with human immunodeficiency virus (HIV), 11 (3.5%) had been previously transplanted and 6 (1.9%) had liver disease. Regarding sepsis severity, there were 231 (74%) patients diagnosed with sepsis with organ dysfunction and 81 (26%) with septic shock. Regarding infectious focus, 162 (51.9%) were from respiratory focus, 68 (21.8%) from urinary focus, 41 (13.1%) from abdominal focus, 24 (7.69%) from other infections, 11 (3.5%) from soft tissues and 6 (1.9%) had no defined focus.

Associations found among variables related to patients' age, gender and comorbidities with the outcome of patients with sepsis and septic shock treated at the emergency unit are described in Table 1.

Table 1: Association among age group, gender, comorbidities of patients with sepsis or septic shock and the outcome presented in 2014 (n = 312). Porto Alegre, RS, Brazil, 2015.

Variables	Outcome within 14 days				Outcome between 15 and 30 days		
	Death	Admission	High	P	Death	High	P
	n (%)	n (%)	n (%)		n (%)	n (%)	
Age Group							
18 to 56	21(20.8)	2(2.0)	78(77.2)		2(2.5)	78(97.5)	
57 to 71	28(26.9)	5(4.8)	71(68.3)	0.047	05(6.6)	71(93.4)	0.015
72 to 95	25(23.4)	12(11.2)	70(65.4)		12(14.6)	70(85.4)	
Sex							
Female	33(20.6)	06(3.8)	121(75.6)	0.059	06(4.7)	121(95.3)	0.047
Male	41(27.0)	13(8.6)	98(64.5)		03(11.7)	98(88.3)	
Comorbidities							
Previous CVA	10(21.3)	07(14.9)	30(63.8)	0.040	07(18.9)	30(81.1)	0.015

COPD	12(21.4)	03(5.4)	42(73.2)	0.934	03(6.8)	41(93.2)	1.000
Neoplasia	12(23.1)	05 (9.6)	35(67.3)	0.520	05(12.5)	35(87.5)	0.332
Transplant	01(9.1)	-	10(90.9)	0.460	-	10(100.0)	1.000
Immunocompromised	06(26.1)	01(4.3)	16(69.6)	0.929	01(5.9)	16(94.1)	1.000
Diabetes Mellitus	19(21.3)	02(2.2)	68(76.4)	0.135	02(2.9)	68(97.1)	0.060
Cirrhosis	04(66.7)	-	2(33.3)	0.043	-	02(100)	1.000
CKD	12(28.6)	02(4.8)	28(66.7)	0.739	02(6.7)	28(93.3)	1.000
HBP	43(26.2)	13 (7.9)	108(65.9)	0.153	03(10.7)	108(89.3)	0.110
Cardiopathy	28(32.9)	7(8.2)	50(58.8)	0.027	7(12.3)	50(87.7)	0.171
HIV Positive	4(28.6)	1(7.1)	9(65.3)	0.711	1(10.0)	9(90.0)	0.572

Associations among infectious focus, sepsis or septic shock, warning signs and organ dysfunction presented by septic patients and their association with outcomes are presented in Table 2.

Table 2: Association among infectious focus, sepsis severity, warning signs, organ dysfunctions and outcome presented by septic patients in an emergency unit in 2014 (n = 312). Porto Alegre, RS, Brazil, 2015.

Variables	Outcome within 14 days				Outcome between 15 and 30 days		
	Death	Admission	High		Death	High	
	n (%)	n (%)	n (%)	p	n (%)	n (%)	p
Focus							
Pulmonary	38 (23.5)	11 (6.8)	113 (69.8)		11 (8.9)	113 (91.1)	
Abdominal	17 (43.6)	02(5.1)	20 (51.3)		02 (9.1)	20 (90.9)	
Urinary	13 (19.1)	04 (5.9)	05 1(75.0)	0.141	04 (7.3)	51 (92.7)	1.000
Skin/Soft Parts	02 (18.2)	-	09 (81.8)		-	09 (100.0)	
Undefined Focus	02 (33.3)	-	04 (66.7)		-	04 (100.0)	

Other Focuses	02 (7.7)	02 (7.7)	22 (84.6)		02 (8.3)	22 (91.7)	
Severity							
Sepsis	23 (10.0)	09 (3.9)	199(86.1)	< 0.001	09 (4.3)	199 (95.7)	< 0.001
Septic Shock	51 (63.0)	10 (12.3)	20 (24.7)		10 (33.3)	20 (66.7)	
Warning Signs							
Hyperthermia	19(15.7)	2(1.7)	100(82.6)	< 0.001	2(2.0)	100 (98.0)	0.003
Hypothermia	35(35.7)	11(11.2)	52(53.1)	< 0.001	11(17.5)	52(82.5)	0.001
Tachypnea	58(30.5)	12(6.3)	120(63.2)	0.002	12(9.1)	120(90.9)	0.482
Tachycardia	50(22.8)	14(6.4)	155(70.8)	0.823	14(8.3)	155(91.7)	0.789
Hypotension	49(35.3)	10(7.2)	80(57.6)	< 0.001	10(11.1)	80(88.9)	0.165
Sensory Change	36(30.0)	9(7.5)	75(62.5)	0.623	9(10.7)	75(89.3)	0.251
Neck Stiffness	-	-	3(100.0)	0.645	-	3(100.0)	1.000
Leukocytosis/Leukopenia	45 (22.2)	11 (5.4)	147 (72.4)	0.490	11 (7.0)	147 (93.0)	0.414
Band-formed	26 (25.7)	5 (5.0)	70 (69.3)	0.743	5 (6.7)	70 (93.3)	0.611
Organic Disorders							
PCO2	36 (35.0)	11 (10.7)	56 (54.4)	< 0.001	11 (16.4)	56 (83.6)	0.002
Creatinine	41 (35.7)	7 (6.1)	67 (58.3)	0.004	7 (9.5)	67 (90.5)	0.851
Bilirubins > 2mg/dl	21 (47.7)	9 (7.9)	77 (67.5)	< 0.001	6 (26.1)	17 (73.9)	0.001
Thrombocytopenia	17 (42.5)	2 (5.0)	21 (52.5)	0.040	2 (8.7)	21 (91.3)	0.473
INR >1.5	24 (57.1)	2 (4.8)	16 (38.1)	< 0.001	2 (11.1)	16 (88.9)	0.017
Lactate > 2 mmol/L	51 (37.2)	14 (10.2)	72 (52.6)	< 0.001	14 (16.3)	72 (83.7)	0.002
Drop of SBP	26 (33.8)	9 (11.7)	42 (54.5)	0.002	9 (17.6)	42 (82.4)	0.008
MAP<65mmHg	52 (37.4)	11 (7.9)	76 (54.7)	< 0.001	11 (12.6)	76 (87.4)	0.044

SPO2	64 (27.8)	16 (7.0)	150 (65.2)	0.020	16 (9.6)	150 (90.4)	0.322

Data presented in Table 3 show associations among variables related to age, gender, comorbidities and infectious focus with the diagnosis of sepsis severity.

Table 3: Association among sepsis severity and variables related to age, gender, comorbidities and infectious focus of patients in an emergency unit in 2014 (n = 312). Porto Alegre, RS, Brazil, 2015

Variable	Sepsis	Septic Shock	p
	n (%)	n (%)	
Age			
18 to 56	82 (81.2)	19 (18.8)	0.052
57 to 71	69 (66.3)	35 (33.7)	
72 to 95	80 (74.8)	27 (25.2)	
Sex			
Female	134 (83.8)	26 (16.3)	< 0.001
Male	97 (63.8)	55 (36.2)	
Comorbidities			
Previous CVA	31 (66.0)	16 (34.0)	0.170
COPD	40 (71.4)	16 (28.6)	0.623
Neoplasia	37 (71.2)	15 (28.8)	0.603
Transplant	9 (81.8)	2 (18.2)	0.734
Immunocompromised	16 (69.6)	7 (30.4)	0.611
Diabetes Mellitus	68 (76.4)	21 (23.6)	0.547
Cirrhosis	2 (33.3)	4 (66.7)	0.041
CKD	32 (76.2)	19 (23.8)	0.732
Systemic Arterial Hypertension	118 (72.0)	46 (28.0)	0.376
Cardiopathy	58 (68.2)	27 (31.8)	0.153

			0.372
HIV Positive	12 (85.7)	2 (14.3)	
Focus			
Pulmonary	121 (74.7)	41 (25.3)	
Abdominal	22 (56.4)	17 (43.6)	
Urinary	52 (76.5)	16 (23.5)	0.120
Skin/Soft Parts	9 (81.8)	2 (18.2)	
Undefined Focus	6 (100.0)	-	
Other Focuses	21 (80.8)	5 (19.2)	

There was no association with the outcome of patients with sepsis in 14 days or between 15 and 30 days, the number of comorbidities (p = 0.207), adherence to previous blood culture to the antibiotic, collection of creatinine and platelets and performance of central venous pressure in patients without mechanical ventilation (p > 0.05). The relationship of possible outcomes within 14 days (death, hospitalization and discharge) and between 15 and 30 days and their associations with adherence to management recommended by the sepsis and septic shock care package are shown in Table 4.

Table 4: Association of adherence to actions related to sepsis and septic shock care package with outcomes presented by patients in an emergency unit in 2014 (n = 312). Porto Alegre, RS, Brazil, 2015.

Variable	Outcome within 14 days				Outcome between 15 and 30 days		
	Death	Admission	High	p	Death	High	p
	n (%)	n (%)	n (%)		n (%)	n (%)	
Antibiotic Administration							
In up to 1 hour	25 (25.3)	8 (8.1)	66 (66.7)	0.048	8 (10.8)	66 (89.2)	0.280

After 1 hour	46 (21.9)	11 (5.2)	153 (72.9)		11 (6.7)	153 (93.3)	
Not Administered	3 (100.0)	-	-				
Blood culture predicted to antibiotic							
Adherence	63 (26.0)	15 (6.2)	164 (67.8)	0.777	15 (8.4)	164 (91.6)	1.000
Nonadherence	11 (15.9)	4 (5.8)	54 (78.3)		4 (6.9)	54 (93.1)	
Volemic replacement – adherence	59 (33.3)	11 (6.2)	59 (33.3)	< 0.001	11 (9.3)	107 (90.7)	0.450
Volemic replacement – nonadherence	15 (11.1)	8 (5.9)	15 (11.1)		8 (6.7)	112 (93.3)	

Discussion

Data related to age, gender, clinical factors and sepsis severity presented by patients in this study are similar to those reported by other authors, in which average age was 61.1 years (± 21.6). Among comorbidities presented, hypertension was the most prevalent pathology, followed by diabetes and cardiovascular diseases, differing only as regards prevalence of gender, since in one of the studies prevalence was slightly for males.[6-8]

Data found regarding severity classification are in line with data found in some studies, as 66.6% of patients assisted in emergencies had sepsis and 33.4%, septic shock.[6-8] The hospital in which this research was conducted has a clinical/surgical care profile and this may reflect minor variations in severity index relative to the rest of the country.

Concerning age-related associations, recently in the United States it has been found that elderly patients (≥ 65 years) accounted for 64% of sepsis cases, presenting greater association with pulmonary focus and higher lethality rate. Increased age was associated with longer hospitalization and later death[9] as were the data obtained in this study.

Regarding gender in association with mortality, a borderline association with D14 (p = 0.059) and an association with D15 to 30 have been identified. Higher association between females and high at D14 and D15 to 30 and in males a higher association with death have been identified. In a study published in 2010, different data have been found, in which women were more likely to die in hospitals than men.[10]

Patients aged 18 to 56 and 72 to 95 years had more cases of sepsis, while patients aged 57 to 71 had a higher incidence of septic shock. Gender was also relevant, with men being more diagnosed with septic shock compared to women.[9-11] There is no specific description of these data but it can be inferred that this association is consistent considering that most of the patients who died were also elderly, men and diagnosed with septic shock.

Concerning comorbidities associated with the outcome, it was observed that patients with a history of stroke, cirrhosis and heart disease were associated with death in the period up to D14, unlike the data found in the literature suggesting comorbidities such as diabetic, hypertensive, immunosuppressed and cancer as the main pathologies related to sepsis severity and outcome.[12-13] This finding indicates that other comorbidities also seem to play an important role in the outcome of patients with sepsis or septic shock and deserve further studies related to this topic.

Regarding patients with liver cirrhosis, an association with the death outcome was evidenced and this is described in the literature, associated with the fact that this type of patient is more susceptible to infections due to greater bacterial translocation related to liver dysfunction.[14] Cirrhotic patients are twice as likely to die from sepsis than non-cirrhotic patients, with a 70% mortality rate related to septic shock and 40% to sepsis. [15-16]

Also analyzing the association of the variables with the outcomes, it can be inferred that the pulmonary focus, although being the most prevalent, was not associated with the outcomes, as well as the other infectious foci analyzed in this study.[17] In contrast, sepsis severity was

associated with septic shock and death in D14 and D15 to 30, while patients with sepsis were discharged in both periods.[7]

Warning signs related to temperature change (hypothermia), tachypnea and hypotension were more associated with death-related outcomes in periods up to D14 days and from D15 to 30. In the literature consulted there is no description of a direct association of these data with the outcome but with the set of signs and dysfunctions used for early identification of sepsis reducing the chances of death by 16%. [17]

All organic dysfunctions evaluated were associated with the outcomes and the change in the parameters evaluated is related to the patients' death. According to research conducted in the Brazilian state of Pernambuco, the main organ dysfunctions associated with death were thrombocytopenia, INR > 1.5 and lactate > 4 mmol/L. [18]

Another relevant aspect found was the association of actions related to septic patient care package with the outcomes in both times. The tendency of association with the death outcome in patients who received management indicated by the sepsis package is highlighted. However, this incongruity is explained by the fact that patients receiving care package measures are the in most severe condition by having been diagnosed with septic shock. Now exploring a few more items in the management measures package such as the association among them and the outcomes proposed.

There was an association between antibiotic administration within one hour after diagnosis with patient discharge and non-antibiotic administration was associated with death (at D14). These variables are not associated with the outcome in the period D15 to 30. In this study, the mean duration of antibiotic administration was not evaluated. Recent research has shown that recommendations provided by the *Surviving Sepsis Campaign* regarding antibiotic administration within one hour of diagnosis is not supported by the currently available clinical evidence regarding mortality.[19]

Volemic replacement was performed in 41.3% of patients and serum lactate collection in 71.4%. These data demonstrate a deficit in the care provided and disagrees with the recommendations with degree of evidence A, since 44% of the patients who go to emergency rooms and are included in the sepsis protocol present hypotension, temperature change, tachypnea and tachycardia, requiring these actions to achieve proper management. [20]

The data collected in this study demonstrate that patients diagnosed with sepsis and the hospitalization outcome up to D14, as well as the high outcome between D15 and 30, are associated. In contrast, patients diagnosed with septic shock are associated with death outcome at both D14 and D15 to 30. Septic shock patients tend to be managed differently in emergency rooms, with most possible laboratory tests and invasive devices such as DBC, central venous access and CVP being performed. It is not possible to infer with certainty whether the management received by the study patients was incorrect or not since it is known that in clinical practices not every sepsis patient needs to receive certain devices evaluated in management procedures such as central venous access, invasive mechanic ventilation, among others.

Recent studies have shown that treatment through *Early Goal-Directed Therapy* (EGDT) in Brazil[21] conducted as early hemodynamic stabilization is associated with reduced mortality in septic patients. This is unlike what is found in developed countries' literature, where this methodology does not imply a reduction in mortality. However, they directly influence hospital costs reduction.[21-22] Other studies have related the impact of adherence of the *bundle* of the *Surviving Sepsis Campaign*, including packages of 3 and 6 hours, and have found an association between sepsis patient management and septic shock through *bundles* at 25% relative risk of reduced mortality.[23] Early management of septic patients, in addition to impacting mortality, directly influences the reduction of these patients' hospitalization time as well as reduction of care-related costs. [23]

Conclusion

It was possible to infer that there is an association between patients' demographic profile, comorbidities, organ dysfunctions presented and therapeutic management performed with the severity of sepsis and the clinical outcome. Only data referring to the infectious focus were not associated with the outcome.

In addition, it should be identified that even with the *Surviving Sepsis Campaign* in force there are still professionals who do not adhere to the package of measures. Often this happens due to factors that hinder the sepsis clinic and disbelief in diagnosis, which makes that the examination package to identify various organ dysfunctions be not performed, impacting the evolution of sepsis severity, outcome and, as a consequence, length of stay and costs related to these patients' care.

The fact that there is an association with death and some management actions such as collection of all laboratory tests of the package, central venous catheter and CVP does not allow us to conclude that the management received by these patients was deficient or that these actions are associated with worse prognosis but rather that these patients were probably presenting a more severe condition and organic impairment. Due to the great heterogeneity presented by septic patients, it is concluded that studies are still needed to recognize the profile of patients with sepsis in Brazilian emergency rooms and the factors that contribute or not to reduction of morbidity and mortality resulting from this condition. In addition, further studies would provide identification of clinical evidence for recommended management and perhaps thus greater adherence to the package of measures.

ILAS is currently developing a study on septic patients treated in Brazilian emergency rooms called *Sepsis Prevalence Assessment Database* (SPREAD PS). However, results have not yet been released. This research expects to remedy some deficiencies of this study such as the

lack of Brazilian publications on septic patients' profiles as well as the lack of records of care in patients' medical records.

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