The nurse in the admission of patients to the emergency room: reception, evaluation, signs and symptoms

O enfermeiro na admissão de pacientes em pronto-socorro: acolhimento, avaliação, sinais e sintomas

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RESUMO

Objetivou-se selecionar e analisar os sinais e sintomas, apresentados por pacientes do pronto-socorro do hospital privado de grande porte do município de São Paulo. Trata-se de um estudo retrospectivo, transversal, observacional não intervencionista, com a avaliação e extração de dados dos prontuários de pacientes atendidos nos serviços de Pronto Atendimento, internados após caracterização de urgência ou emergência, em um hospital particular de grande porte localizado em São Paulo. Os pacientes classificados em classe vermelha devem ser atendidos imediatamente, por: obstrução de vias aéreas, Respiração de Kussmaul, dor torácica com dispneia e dispneia acentuada, n. 43. Na categoria laranja os pacientes devem ser atendidos com tempo máximo de 10 minutos, com: dor abdominal grave, temperatura abaixo de 36°C ou acima de 37.8°C, pressão arterial abaixo de 100X60 ou acima de 140X90 mmHg, agitação, n. 13. A classificação amarela destina-se a pacientes críticos e semicríticos que já foram estabilizados no atendimento inicial. Devem ser atendidos em tempo inferior a 60 minutos, com: edemas nos membros superiores ou inferiores e fraturas de ossos curtos, n. 30, se incluíram nessa categoria. As categorias verde e azul são destinadas a pacientes de menor complexidade podendo esperar por tempo de atendimento de 120 a 240 minutos. O enfermeiro é o profissional que realiza a classificação de risco, porém, mesmo embasado em protocolos específicos, sua avaliação é intuitiva. Enfatiza-se a relevância da tecnologia no meio hospitalar, prinicpalmente o registro do paciente sendo aberto em seu primeiro contato com o profissional de enfermagem no acolhimento/avaliação de risco, tal qual possibilita a melhoria da comunicação entre todos os integrantes da equipe multidisciplinar em saúde a partir do fácil e rápido acesso.

Palavras-chave: Sinais e Sintomas; Pronto-Socorro; Emergência; Medição de Risco.

ABSTRACT

The aim of this study was to select and analyze the signs and symptoms presented by patients in the emergency room of a large private hospital in the city of São Paulo. This is a retrospective, cross-sectional, non-interventional observational study, with the evaluation and extraction of data from the medical records of patients attending emergency services, hospitalized after an emergency or emergency characterization, in a large private hospital located in São Paulo. Red class patients should be treated immediately for: airway obstruction, Kussmaul respiration, thoracic pain with dyspnea, and severe dyspnea, n. 43. In the orange category, patients should be treated within a maximum time of 10 minutes, with: severe abdominal pain, temperature below 36 ° C or above 37.8° C, blood pressure below 100X60 or above 140X90 mmHg, shaking, n. 13. The yellow classification is intended for critical and semi-critical patients who have already been stabilized in initial care. They should be treated in less than 60 minutes, with: upper or lower limb edema and short-bone fractures, n. 30, were included in this category. The green and blue categories are intended for patients of lesser complexity and can wait for a service time of 120 to 240 minutes. Nurses are the professionals who carry out the risk classification, but even based on specific protocols, its evaluation is intuitive. Emphasis is given to the relevance of technology in the hospital environment, mainly the registration of the patient being opened in his first contact with the nursing professional in the host/risk assessment, as this enables the improvement of communication among all the members of the multidisciplinary health team from easy and quick access.

Keywords: Signals and Symptoms; Emergency Room; Emergency; Risk Measurement

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INTRODUCTION

The emergency room (PS) is a service organized to operate without interruption, with the main objective of serving anyone who seeks it. Most of the visits occur in emergency and / or emergency situations, without any prior scheduling or limit of consultations, regardless of severity or clinical condition. The maximum period of patient stay should be 24 hours, with consequent resolution of the case [1].

Urgency and emergency services are important components of healthcare in Brazil. In recent years, there has been a significant increase in demand, a fact related to the increase in the number of accidents and violence, with external factors being the third leading cause of death in Brazil, being behind cerebrovascular diseases [1].

The ERs are increasingly full, with long waiting lines, often caused by organizational problems, by great pressure for new calls and expansion of service. The patients attended report lack of information during and after care and there are other difficulties that include management, and sometimes a lack of prioritization of the cases attended, due to the inexperience or lack of objective criteria of the professionals for this purpose, generating unnecessary complications to service users [2-6].

In this context, the Ministry of Health (MS) launched in 2004 the booklet of the National Humanization Policy (PNH), which aims to foster humanization and improve the quality of care of health services [1,6].

In Brazil, screening systems were first recommended in 2002 through Ordinance 2048 / GM on the organization of emergency systems, in which the international term screening was replaced by risk classification, since it did not involve diagnosis, but rather prioritization in care, which was later reinforced in the PNH [7].

In order to provide practitioners with greater confidentiality in the clinical evaluation of the patient, scales and / or protocols at five levels are indicated at the gate to help organize the risks to which patients are susceptible [1].

The classification of risk (CR), made solely by the nurse, is an activity of extreme importance that requires an expanded perception of this professional about the signs and symptoms of the patients, because these parameters will offer to the classification and not the diagnosis, as this activity is private the doctor. In Brazil, the CR is based on Resolution No. 2,077 of the Federal Council of Medicine (CFM), dated July 24, 2014, which makes it compulsory in all health services that have urgent or emergency care.

In most countries, nurses are the professionals responsible for classifying patients' symptoms, hearing the main complaint, identifying risks and vulnerability, and responding to demand. In Brazil, the nurse has this activity as mandatory and exclusive, which follows the Resolution of the Federal Nursing Council (COFEN) No. 423 of 2012, which regulates at the national level nurses as the only professionals responsible for the classification of risk, associated to this function and supported by the COFEN resolution no. 358/2009, which regulates and obliges the nurses to apply the Systematization of Nursing Assistance (SAE) in all health services [8-10].

In the Risk Classification process, nurses have the fundamental role of welcoming and aggregating, since besides being the professional defined by the MS to perform the classification, among its attributes must possess the capacity to elaborate the educational process of the user and family during and after the AACR, guiding them regarding the service to be used. The action is justified by the fact that there are many people who are accustomed to the order-of-arrival service, and who end up not understanding the purpose of the classification. Nurses should also be trained to train the AACR teams and manage the emergency / emergency service [11].

For the nurses who act in the classification of risk, some characteristics are essential, such as: skill of qualified listening, with due attention the complaints of the patients; ability to evaluate correctly after analyzing complaints; know how to refer the individual according to their categorization, recording and detailing of the main complaint, since this information recorded in their patient record is a guide for subsequent decision making; ability to work in a team, knowing how to direct the employees who are part of the nursing team, as well as the continuous training of the same; clinical reasoning ability with mental agility for decision making as many patients are at risk for their lives for many times fractions of minutes and with mental agility optimizes life; knowledge of support systems in the care network to make responsible referral of the patients when appropriate. These assignments require the nurses to have clinical knowledge of the signs and symptoms, semiology and semi-technical abilities to evaluate the main complaint, and speed to associate the clinical conditions presented with the recommendations of the institutional protocol [12].

The present study aims to select and analyze the signs and symptoms presented by patients in the emergency room of the large private hospital Hospital Nove de Julho (H9J) in the city of São Paulo, through field research, with a retrospective analysis in medical records.

METHOD

Retrospective, cross-sectional, non-interventional observational study, with the evaluation and extraction of data from the medical records of patients attending emergency services, hospitalized after an urgency or emergency characterization, in a large private hospital located in São Paulo, the Hospital Nove de Julho (H9J),

through ethical approval of the hospital and elaboration of consent term for use of electronic database.

The study was based on an analysis of the urgency and emergency medical records of the Hospital Nove de Julho (H9J), located in the state of São Paulo, capital. The H9J is considered a large hospital according to the number of beds (from 199 to 499); and of excellence, accredited by the National Accreditation Organization (ONA).

The information was collected through the analysis of medical records of the clients served in the urgency and emergency services of the institution in the period of one year, considering the year of 2014. This year, 4230 urgency and emergency services were performed. Because it was a large enough number to calculate the sample size, an infinite population was considered, and the minimum sample representative of the population of patients seen in the emergency room was calculated. The method used to calculate the sample was a simple random sample for infinite population, considering a 95% confidence interval.

After verifying that the collected data were below what would be acceptable for the sample, another standard error calculation was performed, which refers to the average or standard error of the mean. The value of the standard deviation obtained in samples of a given population was used. It was located in the field of the confidence interval and / or hypothesis test. This calculation represented repeatability and reproducibility, that is, it encompassed the measurement quality (accuracy and precision). The result obtained was of 5.2%, that is, the accuracy error had little variation in terms of reproducibility, being this number of records collected acceptable from the statistical point of view.

The collection began in January 2015, more precisely on the first day of January 2015, with a retrospective analysis. Considering that the collection was done by lot of medical records, the documents could date from January to almost the last day of December; therefore, the collection was started after the end of 2014.

The research project was elaborated respecting the ethical precepts contained in Resolution 466/2012 of the National Health Council and was approved by the Research Ethics Committee (CEP) of Bandeirantes-Anhanguera University under number 509.173 and CAAE: 23526413.8.0000.5493.

The main information extracted from the charts was the dependent variables (color classification determined as the individual was evaluated by the nurses in the ER), separating the characteristics by color (red, orange, yellow, green and blue), adding a n.3, due to the characterization of the sample, which should contain only urgency and / or emergency patients, and the patients were more severe.

After determining the dependent variables, we collected the independent variables (signs and symptoms presented on admission to PS), described in the history of the current illness, together with the vital signs results (SSVV). These variables added up to n.63.

Considerations for the selection of medical records with sample considering a sample error of 5%. The following criteria were determined: Ordered all medical records in numerical order, with variations from 1 to 352; A first number between 1 and 12 (draw = 10) was drawn; The tenth (10th) medical record was selected; We disregarded 11 medical records and selected the next; The previous steps were repeated until we completed 352 medical records; however, the collection was finalized in the medical record number 87. Thus, the collection was performed, and 87 medical records were selected. Of these 86 were extracted, since one was not classified in emergencies and / or emergencies and was excluded from the sample. This number became sufficient with a d = 10.50%.

Correspondence Analysis is a descriptive technique to identify the relationship between the classes of variables (study characteristics). Here the researcher was interested in the simultaneous analysis of the relations between several characteristics, through the response categories. In the case of the study, the interest was to evaluate the association of the presented symptoms and the severity of the patient [13].

Initially, comparisons of the symptoms found and the risk categories in which the patient was allocated were made. Therefore, the purpose of this analysis was to verify if there is association of the symptoms compared between the risk groups by color (yellow, orange and red). For the comparisons, the Chi-Square test was used.

In order to identify the risk factors, that is, the symptoms that indicate that the patient was allocated to a certain level of risk, the Logistic Regression Analysis was performed. For this analysis, the 63 symptoms evaluated in the study were inserted into the initial model. The Logistic Regression method used was Stepwise Forward, which did not include in the final model the variables (symptoms) that were analyzed together without statistical significance. Thus, of the variables initially inserted in the model, only those that presented statistical significance ($p < 0.05$) entered the final model. The other variables did not enter the model because they did not present statistical significance - $p > 0.05$ (14).

RESULTS AND DISCUSSION

The obtained data indicate which symptoms are most associated with the different levels of severity within a five-level color scale, being respectively by maximum severity at minimum the colors: red, orange, yellow, green and blue, based on the Manchester risk classification, pre-

viously described, and after, performed statistical analysis of correspondence, to present which are the characteristics (independent variables) that are grouped together and the isolated ones that fit into one or more scales of risk classifications.

The results of the analysis are presented in the graph below. By means of which we can observe that categories with greater proximity are those that have similar behaviors of answers. Therefore, the symptoms with the lowest distances to a certain gravity are those that are closest to it.

As an example, airway obstruction and dyspnoea with chest pain are closer to the red (emergency) risk, as soon as the absence of vital signs (SSVV) is also directly related to only the red risk, not being this symptom a characteristic that can be grouped in another class, but only in this one. The severe abdominal pain symptom is closer to the orange risk.

The "large bleeding" symptom is close to both red and orange risk, so its classification into one category will depend on the association with other, stronger symptom (s). The other symptoms were evaluated in an analogous way.

We have a map of correspondence that illustrates the symptoms and shows how they are grouped in relation to the color categories, which presents the data obtained from the charts and the possible proximity relations between the independent variables (symptoms), totaling 64, with the dependent variables (classifications). These symptoms are presented in a five-dimensional space and indicates how close the symptoms are to their classifications.

The numbers represented on the x and y axes are not considered statistical numerical matrices but coefficients of variation. Considering the whole figure, the axes of most interest are the circulated ones, in which the independent variables approach more than a certain category of color. These data represent axes of an infinite universe in which the independent variables closest to a given category are more relevant, $p < 0.05$, and we can evaluate that these variables close to a category are relevant to place them in a given category class, since there are similarities between the variables. Those that are far from any of the categories can be inferred that they have low correspondence in relation to the classes.

Considering the universe with five dimensions, it is noted that patients with airway obstruction, Kussmaul's respiration, chest pain with dyspnea, and severe dyspnoea are closer to the red class and are considered emergency patients. Other symptoms such as cardiorespiratory arrest, deep shock, absence of vital signs and pink secretion through the mouth are clinics that isolate the patient in this category because they are strong symptoms that arise without association with other symptoms already insert the patient at risk red, that is, immediate care.

In the classification of risk, nurses should firstly identify all patients at risk of death, who would be individuals with clinics closer to the red class, and depending on the classification, as described above, to optimize care by gravity and not by order of arrival [15-17].

with greater complexity should be included, because the environment is equipped with the objective of evaluating and stabilizing patients in emergency and clinical and traumatic emergencies. These patients should be referred directly to the red room (emergency room) because of the need for immediate care, such as the symptoms described above, which converge with those presented by the Ministry of Health [16], but include others not presented in this investigation. Even if they were not seen in the analyzes of the medical records by the smaller size of the sample, or even related directly or indirectly to the seasons of the year of the samples, considering that in times more festive the emergencies end up increasing due to human behavior, as for example the commitment of the spine, which was not included in our sample because it was not reported in any medical records investigated.

The symptoms severe abdominal pain, temperature below 36 ° C or above 37.8 ° C, BP below 100X60 mmHg or above 140X90 mmHg and restlessness are closer to the orange category, being symptoms of utmost relevance, but that together or not together they allocate the individual in the red category.

The symptom of visual disturbances, in isolation, is as close to the orange category as to the yellow category. Patients who bleed from any orifice, have upper limb edema (MMSS) or lower limbs (MMII), short bone fractures, falls without fractures, suffered aggressions or have lower back pain are closer to the yellow category.

The yellow classification is intended for critical and semi-critical patients who have already been stabilized in the initial care. These patients need medical and nursing care as quickly as possible, but they are not in immediate risk. They should be referred to the nursing consultation room for risk classification - priority one, care in a maximum of 15 minutes, and among other symptoms mentioned in the research [16].

The symptoms of oedemas in the MMSS or MMII and fractures of short bones are both close to the yellow and green categories and can be classified in both classes, which will be determined with the association with other symptoms. In this category we must allocate non-critical patients, who are under observation, or waiting for vacancies in hospitalization units or even removals to other hospitals. Patients under acute conditions (relative urgency) or not acute, attended with priority over simple consultations, and the care should be in a maximum of 30 minutes [16].

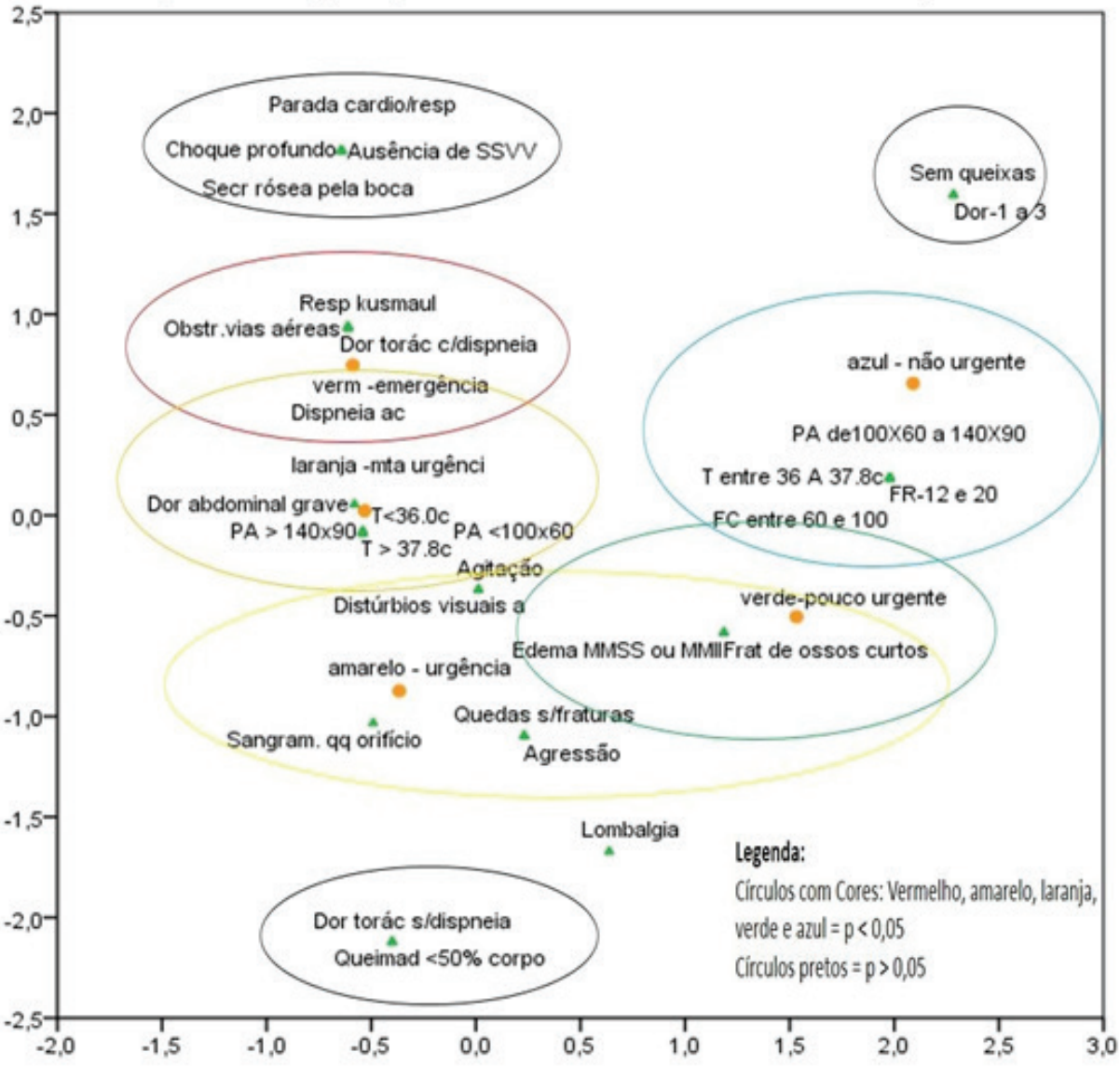

FIGURE 1 – Map of correlations of independent variables in their respective color categories. São Paulo, SP, Brazil, 2014-2015.

Source: research data

Cluster symptoms of vital signs within normal range are included in both the green and blue classes, in which the patient can wait an extended time for care.

The blue classification is intended to receive patients for low and medium complexity queries. The nurse has been the professional of choice worldwide to undertake this kind of protocol-oriented work to direct their actions. This service must have reception area with mandatory flow upon arrival. It encompasses the other conditions not framed in the above situations, in which the attendance will be according to the time of arrival. Waiting time can vary by up to 3 hours, according to the demand for total care [16,18].

The AACR proposes that there be an organization of access to the users to the emergency services, abolishing the usual way of entry by queues and / or order of arrival, thus improving the relationship between health professionals and users regarding how to listen to them about their problems and demands; improves integration with the team and improves group work, offering shared responsibilities of professionals in relation to users and increasing the link between professionals and users of the system, creating trust between the actors of the process; addresses the user beyond the disease and its complaints; performs a bio-psycho-socio -spiritual and cultural approach, respecting the capacity of service and demand [11,19].

The risk classification process begins with the presentation of the complaint, which will direct the patient to the correct color according to their clinic. Successive questions are asked regarding the discriminators, until a positive and reliable answer is obtained. The clinical priority is then reached, defining the level of urgency with the corresponding color and the probable time of care [20].

Each clinical priority level consists of signs and symptoms that discriminate against them. In this sense, we have the general discriminators, which apply independently to all patients and appear again and again throughout the flowcharts. Examples of general discriminators are: life risk, pain, hemorrhage, degree of consciousness, temperature and worsening of the presented condition. Specific discriminators apply to individual cases, that is, they are directly related to characteristics inherent to the main complaint and tend to relate to key characteristics of particular conditions [7].

The following analyses were performed based on medical records of 86 patients (Table 1).

Table 1 indicates that half of the sample 50% (n. 43) are patients that were classified in the red category, responding by patients of extreme urgency, and should be treated with priority and immediately by the health team, because they are at great life risk, followed by 34.9% (n. 30) of patients classified in the yellow class as being at risk of life, but who can expect to be attended due to their health conditions, which require care, but not immediately. In the orange class, 15.1% (n.13) of patients whose care is extremely important, but do not need immediate care, are considered serious cases that can wait.

Cerebrovascular diseases (CVDS), which include heart disease such as acute coronary syndromes (SCA), AMI, and Stroke are the leading cause of death in Brazil and have a higher incidence in individuals aged 35-64 years old. Even with all DCV risk reduction and mortality programs currently available in the country and in the world, some projections indicate an increase in their relative importance in low- and middle-income countries, corresponding in this group to 80% of the total deaths. Causing about 17.3 million deaths a year, these diseases mentioned above include specific clinics that fall into the red class and were presented in the study, such as Kussmaul Breathing, airway obstruction, chest pain with dyspnoea and severe dyspnoea. In this study, 43 corresponded to 50% of the medical records sample, demonstrating the importance of this type of work in identifying potential patients at risk of death and offering consecutive immediate care, thus preventing these death rates from increasing [21,22].

Barbieri[23] classified the symptoms in three levels of priority, being classified, respectively, from the most severe to the least severe in emergency, urgent and non-urgent. Patients with symptoms such as difficulty breathing or respiratory arrest, cardiac arrest, acute chest pain with dyspnoea or cyanosis, head trauma, deep shock, coma or severe hemorrhage are classified in the emergency category because these conditions are potentially life-threatening or action normal of any organ. Rescue measures and immediate care are required.

Symptoms such as chest pain without association with respiratory symptoms, burns, severe abdominal pain, persistent nausea, vomiting and / or diarrhea and / or bleeding from any orifice, place patients in the emergency room. These are considered individuals in severe conditions, but generally not dangerous if the medical support and the treatment have a small demand. Treatment should begin between 20 minutes and 2 hours [23].

Moderate headache, mild burns, vaginal or penile discharge, upper respiratory or urinary infections, minor fractures, dislocations and sprains, chronic back pain or other chronic complaints are symptoms that lead the individual to the non-emergency class. They will be patients with minimum priority, because the presented conditions allow a greater delay for the medical attention without prejudice to the patient. Care should be taken after all emergent and urgent conditions have been met [23].

In this perspective, when performing risk classification, nurses optimize patient care according to the assigned color, since it facilitates the assistance of yellow class patients while the red class would be a serious failure that could correspond to the death of others.

Comparisons of the variables between the three color risk categories

We initially compared the symptoms found and the risk categories in which the patient was allocated. Therefore, the purpose of this analysis was to verify if there was association of the symptoms compared between the groups of risk by color (yellow, orange and red). The green and blue categories do not appear in the search because of the sample inclusion criteria.

For the comparisons, the Chi-Square test was used. For the tests, a level of significance of 5% was considered, in this way, it was considered a difference between the risk groups when the p value was lower than 0.05 ($p < 0.05$). From the results described in Table 2, it can be

TABLE 1 – Color risk classification (Manchester protocol). São Paulo, SP, Brazil, 2014-2015.

	N	%
Red - emergency	43	50,0
Orange - a lot of urgency	13	15,1
Yellow - urgency	30	34,9
Total	86	100,0

Source: research data

observed that there was no statistically significant difference between the groups in some symptoms (p <0.05).

In the previous table we observed the results described below, according to which it can be inferred that there was no statistically significant difference between the groups in relation to some symptoms (p <0.05), showing that: There is a higher percentage of patients with absence of SSVV in the red group (p 0.003); There is a higher percentage of patients with PA <100x60 in the orange group (p 0.036); There was a higher percentage of patients with PA <100x60 at 140x90 in the orange and yellow groups (p 0.014); There was a higher percentage of patients with T> 37.8° C in the orange group (p 0.014); There is a higher percentage of patients with temperature from 36°C to 37.8°C in the yellow group (p <0.001); There is a greater percentage of patients with FC <60 BPM in the orange group (p <0.011); There is a higher percentage of patients with FC between 60 and 100 in the orange and yellow groups (p 0.003); There is a higher percentage of patients with Kussmaul / Biot or Cheyne-Stokes respiration in the orange group (p 0.003); There is a higher percentage of patients with FR between 12 and 20 in the yellow group (p 0.001); There is a higher percentage of patients with radiating pain in the orange group (p <0.001); There is a higher percentage of patients with pain from 7 to 10 in the orange group (p <0.001); There is a higher percentage of patients with partial total paralysis or loss of sensitivity in the red and orange groups (p 0.003); There is a higher percentage of patients with head fractures in the red group (p <0.001); There is a higher percentage of patients with moderate headache in the yellow group (p 0.004); There is a higher percentage of patients with severe headache in the orange group (p 0.008); There is a higher percentage of patients with chest pain with dyspnea in the red group (p 0.030); There is a higher percentage of patients with RNC / unconsciousness in the orange group (p 0.008); There is a higher percentage of patients with cyanosis

TABLE 2 – Comparison of symptoms among risk classifications. São Paulo, SP, Brazil, 2014-2015

Classificação de risco por cores (protocolo Manchester)								
		Red- Emergency		Orange - a lot of urgency		Yellow – Urgency		Value p
		N	%	N	%	n	%	
	Não	33	76,7%	13	100,0%	30	100,0%	
Absence os SSVV								0,003
	Sim	10	23,3%	0	0,0%	0	0,0%	
	Não	34	79,1%	10	76,9%	26	86,7%	
PA > 140x90								0,645
	Sim	9	20,9%	3	23,1%	4	13,3%	
	Não	38	88,4%	9	69,2%	29	96,7%	
PA <100x60								0,036
	Sim	5	11,6%	4	30,8%	1	3,3%	
PA between 100X60 a 140X90	Não	37	86,0%	7	53,8%	18	60,0%	
								0,014
	Sim	6	14,0%	6	46,2%	12	40,0%	
	Não	35	81,4%	8	61,5%	29	96,7%	
T > 37.8 c								0,014
	Sim	8	18,6%	5	38,5%	1	3,3%	
	Não	42	97,7%	10	76,9%	27	90,0%	
T<36.0 c								0,051
	Sim	1	2,3%	3	23,1%	3	10,0%	
T between 36 A 37.8 c	Não	39	90,7%	11	84,6%	6	20,0%	<0,001

		Classification		color risk		Manchester protocol		
		Red - urgency		Orange - a lot urrgency		Yellow – Urgency		p value
		N	%	N	%	n	%	
	Sim	4	9,3%	2	15,4%	24	80,0%	
	Não	29	67,4%	9	69,2%	19	63,3%	
FC >100 BPM								0,908
	Sim	14	32,6%	4	30,8%	11	36,7%	
	Não	41	95,3%	10	76,9%	30	100,0%	
FC<60 BPM								0,011
	Sim	2	4,7%	3	23,1%	0	0,0%	
	Não	36	83,7%	7	53,8%	14	46,7%	
FC between 60 and 100								0,003
	Sim	7	16,3%	6	46,2%	16	53,3%	

Airway obstruction	Não	41	95,3%	11	91,7%	30	100,0%	
								0,355
	Sim	2	4,7%	1	8,3%	0	0,0%	
Respiration Kussmaul / Biot or Cheyne-Stokes	Não	42	97,7%	10	76,9%	30	100,0%	
								0,003
	Sim	1	2,3%	3	23,1%	0	0,0%	
	Não	29	67,4%	10	76,9%	21	70,0%	
Pronounced dyspnoea								0,808
	Sim	14	32,6%	3	23,1%	9	30,0%	
	Não	29	67,4%	5	38,5%	17	56,7%	
FR > 20								0,165
	Sim	14	32,6%	8	61,5%	13	43,3%	
	Não	37	86,0%	11	84,6%	30	100,0%	
FR < 12								0,093
	Sim	6	14,0%	2	15,4%	0	0,0%	
	Não	36	83,7%	11	84,6%	14	46,7%	
FR between 12 and 20								0,001
	Sim	7	16,3%	2	15,4%	16	53,3%	
	Não	43	100,0%	6	46,2%	29	96,7%	
Radiated pain								<0,001
	Sim	0	0,0%	7	53,8%	1	3,3%	
	Não	43	100,0%	13	100,0%	30	100,0%	
Plain from 1 a 3								***
	Sim	0	0,0%	0	0,0%	0	0,0%	
	Não	42	97,7%	13	100,0%	30	100,0%	
Plain from 4 a 6								0,603
	Sim	1	2,3%	0	0,0%	0	0,0%	
	Não	39	90,7%	2	15,4%	17	56,7%	
Plain from 7 a 10								<0,001
	Sim	4	9,3%	11	84,6%	13	43,3%	
Partial total paralysis or loss of sensation	Não	33	76,7%	8	61,5%	30	100,0%	
								0,003
	Sim	10	23,3%	5	38,5%	0	0,0%	
Fractures of long bones	Não	36	83,7%	12	92,3%	29	96,7%	
								0,193
	Sim	7	16,3%	1	7,7%	1	3,3%	
	Não	31	72,1%	13	100,0%	23	76,7%	
Short-bone fractures								0,102
	Sim	12	27,9%	0	0,0%	7	23,3%	
	Não	38	88,4%	11	84,6%	30	100,0%	
Multiple fractures								0,118
	Sim	5	11,6%	2	15,4%	0	0,0%	
	Não	28	65,1%	12	92,3%	30	100,0%	
Head fractures								<0,001
	Sim	15	34,9%	1	7,7%	0	0,0%	
	Não	42	97,7%	13	100,0%	23	76,7%	
Mild headache								0,004
	Sim	1	2,3%	0	0,0%	7	23,3%	
Severe headache	Não	27	62,8%	2	15,4%	18	60,0%	0,008

		Classification		color risk		Manchester protocol		
		Red - urgency		Orange - a lot urrgency		Yellow – Urgency		p value
		N	%	N	%	n	%	
	Yes	16	37,2%	11	84,6%	12	40,0%	
Chest pain without dyspnea	No	42	97,7%	12	92,3%	30	100,0%	
								0,307
	Yes	1	2,3%	1	7,7%	0	0,0%	
Chest pain with dyspnoea	No	34	79,1%	11	84,6%	30	100,0%	
								0,030
	Yes	9	20,9%	2	15,4%	0	0,0%	
	No	28	65,1%	4	30,8%	24	80,0%	
RNC / unconsciousness								0,008
	Yes	15	34,9%	9	69,2%	6	20,0%	
	No	21	48,8%	12	92,3%	18	60,0%	
Cyanosis								0,020
	Yes	22	51,2%	1	7,7%	12	40,0%	

Cardiac and respiratory arrest	No	31	72,1%	13	100,0%	30	100,0%	0,001
	Yes	12	27,9%	0	0,0%	0	0,0%	
Cranial trauma	No	27	62,8%	12	92,3%	27	90,0%	0,009
	Yes	16	37,2%	1	7,7%	3	10,0%	
Deep shock	No	43	100,0%	13	100,0%	30	100,0%	***
	Yes	0	0,0%	0	0,0%	0	0,0%	
Coma	No	34	79,1%	12	92,3%	30	100,0%	0,021
	Yes	9	20,9%	1	7,7%	0	0,0%	
Controllable hemorrhages	No	40	93,0%	13	100,0%	30	100,0%	0,211
	Yes	3	7,0%	0	0,0%	0	0,0%	
Large bleeding	No	43	100,0%	12	92,3%	29	96,7%	0,246
	Yes	0	0,0%	1	7,7%	1	3,3%	
Severe abdominal pain	No	43	100,0%	12	92,3%	30	100,0%	0,058
	Yes	0	0,0%	1	7,7%	0	0,0%	
Nausea Vomiting or diarrhea	No	43	100,0%	12	92,3%	19	63,3%	<0,001
	Yes	0	0,0%	1	7,7%	11	36,7%	
Burns in more than 50% of the body	No	37	86,0%	13	100,0%	30	100,0%	0,040
	Yes	6	14,0%	0	0,0%	0	0,0%	
Burn in less than 50% of the body	No	43	100,0%	13	100,0%	30	100,0%	***
	Yes	0	0,0%	0	0,0%	0	0,0%	
Bleeding from any orifice	No	34	79,1%	11	84,6%	30	100,0%	0,030
	Yes	9	20,9%	2	15,4%	0	0,0%	
Report of use of toxic drugs, medications or illicit drugs	No	38	88,4%	12	92,3%	15	50,0%	<0,001
	Yes	5	11,6%	1	7,7%	15	50,0%	
Symptoms of infection	No	43	100,0%	12	92,3%	30	100,0%	0,058
	Yes	0	0,0%	1	7,7%	0	0,0%	
Edema MMSS or MMII	No	26	60,5%	7	53,8%	12	40,0%	0,225
	Yes	17	39,5%	6	46,2%	18	60,0%	
Excessive sweating	No	33	76,7%	1	7,7%	29	96,7%	<0,001

Color risk classification (Manchester protocol)

	Red - Emergency	Orange – a lot of Urgency	Yellow - Urgency	p value
	Aggression			
Acute visual disturbances	Roseate secretion from the mouth of pulmonary origin			
	Foreign body in other holes			
Convulsions Agitation	Foreign body in VAS			
Self-aggression	Pregnancy with Bleeding			
Aggression	Pregnancy without Bleeding			

Accident with poisonous animal		N	%	N	%	n		
		% Sim	10	23,3%	12	92,3%	1	
		3,3%						
Falls without fractures	No	28	65,1%	6	46,2%	26	86,7%	0,019
Falls with fracture	Yes	15	34,9%	7	53,8%	4	13,3%	
Lower back pain	No	33	76,7%	6	46,2%	15	50,0%	0,027
	Yes	10	23,3%	7	53,8%	15	50,0%	
STD	No	41	95,3%	11	84,6%	26	86,7%	

								0,325
jugular stasis	Yes	2	4,7%	2	15,4%	4	13,3%	
No complaints	No	39	90,7%	13	100,0%	19	63,3%	
								0,002
	Yes	4	9,3%	0	0,0%	11	36,7%	
	No	43	100,0%	12	92,3%	29	96,7%	
								0,246
	Yes	0	0,0%	1	7,7%	1	3,3%	
	No	42	97,7%	13	100,0%	30	100,0%	
								0,603
	Yes	1	2,3%	0	0,0%	0	0,0%	
	No	43	100,0%	13	100,0%	30	100,0%	
								***
	Yes	0	0,0%	0	0,0%	0	0,0%	
	No	42	97,7%	13	100,0%	30	100,0%	
								0,603
	Yes	1	2,3%	0	0,0%	0	0,0%	
	No	43	100,0%	12	92,3%	30	100,0%	
								0,058
	Yes	0	0,0%	1	7,7%	0	0,0%	
	No	43	100,0%	8	61,5%	30	100,0%	
								***
	Yes	0	0,0%	5	38,5%	0	0,0%	
	No	43	100,0%	12	92,3%	30	100,0%	
								0,058
	Yes	0	0,0%	1	7,7%	0	0,0%	
	No	43	100,0%	12	92,3%	16	53,3%	
								<0,001
	Yes	0	0,0%	1	7,7%	14	46,7%	
	No	43	100,0%	12	92,3%	19	63,3%	
								<0,001
	Yes	0	0,0%	1	7,7%	11	36,7%	

in the red group (p 0.020); There is a higher percentage of patients with cardiac and respiratory arrest in the red group (p 0.001); There is a higher percentage of patients with cranial trauma in the red group (p 0.009); There is a higher percentage of patients with coma in the red group (p 0.021); There is a higher percentage of patients with nausea, vomiting or diarrhea in the yellow group (p <0.001); There is a higher percentage of patients with burns in more than 50% body in the red group (p 0.040); There is a higher percentage of patients with bleeding from any orifice in the red group (p 0.030); There is a higher percentage of patients with reports of use of toxicants / medications or illicit drugs in the yellow group (p <0.001); There is a higher percentage of patients with excessive sweating in the orange group (p <0.001); There is a higher percentage of patients with acute visual disturbances in the orange group (p 0.019); There is a higher percentage of patients with seizures in the orange and yellow groups (p 0.027); There is a higher percentage of patients with self-aggression in the yellow group (p 0.002); There is a higher percentage of patients with falls (with or without fractures) in the yellow group (p <0.001); There is a higher percentage of patients with STDs in the yellow group (p <0.001); There is a higher percentage of patients with jugular stasis in the orange group (p 0.010).

All the presented data converge with the literature, since, as the classification of risk is standardized, the possibilities of errors are smaller, and this was not the objective of the work; the data were only investigated to analyze if the patients of the emergency services presented the symptoms described in the literature, which was identified as a positive aspect.

LOGISTIC REGRESSION

The following analysis was performed with the purpose of verifying the joint interference of the variables (different symptoms) in relation to the presence of a

certain risk. We want, then, to identify the factors that influence the occurrence of each of the risks.

In this analysis, two categories were evaluated for each risk, as described below: Risk of the patient to be allocated in red color x not to be allocated in this category; Risk of the patient being allocated in orange x not be allocated in this category; Risk of patient being allocated in yellow color x not be allocated in this category;

In order to identify the risk factors, that is, the symptoms that indicate that the patient was allocated according to a certain level of risk, the Logistic Regression analysis was performed. For this analysis, all 63 symptoms evaluated in the study were inserted into the initial model.

The Logistic Regression method used was Stepwise Forward, which did not include the variables (the symptoms) in the final model and which were analyzed together without statistical significance. Thus, of the variables initially inserted in the model, only those that presented statistical significance ($p < 0.05$) entered the final model. The other variables did not enter due to the low statistical significance.

The results for each of the evaluated models are presented below. Due to the small sample size, not all symptoms could enter the final model.

It is worth noting that in situations where a particular symptom only appeared for a certain risk it was not possible for this symptom to enter into the model estimate, since for the other risks, the category was zero, that is, no patient with this symptom appeared in the other categories of risk. In these cases, the symptom should be quoted descriptively. For example, the symptom "burns in more than 50% body" only appeared in the group allocated to red category, ie all patients with "burns in more than 50% body" were allocated in the red category. In this way, this symptom is important for this category, but it was not possible to include it in the model.

Analysis for Emergency Assessment (Red)

In addition to the symptoms that appeared exclusively for this group (as an example "burns in more than 50% body"), only three other symptoms stood out as indicators to be allocated in the red group: total paralyzes, partial or loss of sensation, head fractures and coma (Table 1).

Interpretation of Coefficients of Logistic Regression: patients with total paralysis, partial or loss of sensitivity are 5.73 times more likely to be emergency patients than in other categories; patients with head fractures are 44.57 times more likely to be emergency patients than in other categories and patients with coma are 25.47 times more likely to be emergency patients than in other categories.

Analysis for Assessment of Severe Urgency (Orange)

In addition to the symptoms that appeared exclusively for this group, only three other symptoms stood out as indicators to be allocated in this category, being: radiated pain, pain from 7 to 10 and excessive sweating (Table 2).

Interpretation of Coefficients of Logistic Regression: patients with radiated pain are 64.38 times more likely to be patients of great urgency than of other categories; there is a tendency that patients with pain from 7 to 10 are 8 to 10 times more likely to be very urgent patients than in other categories and patients with excessive sweating are 20.07 times more likely to be very urgently than in other categories.

Patients who are in pain in SUE, especially those who radiate to another part of the body, analyze pain at higher scales than patients with local pain without irradiation. Such pains should be valued by the professionals who treat them, once treated as soon as possible, preferably between 60 to 90 minutes, are more likely to improve (24).

Analysis for Urgency Assessment (Yellow)

In addition to the symptoms that appeared exclusively for this group, only four other symptoms stood out as indicators to be allocated in the yellow group: FR be-

TABLE 1 – Variables present in the Red classification model. São Paulo, SP, Brazil, 2014-2015

Variable	Coefficient	Descriptive level (p value)	Odds ratio - OR (Exp(coef))	Inferior limit (OR)	Superior Limit (OR)
Total paralysis, partial or loss of sensation	1,75	0,008	5,73	1,58	20,73
Head fractures	3,80	0,001	44,57	5,25	378,31
Coma	3,24	0,004	25,47	2,86	226,71

Source: research data

TABLE 2 – Variables present in the Orange classification model. São Paulo, SP, Brazil,2014-2015

Variable	Coefficient	Descriptive level (p value)	Odds ratio - OR (Exp(coef))	Inferior Limit (OR)	Superior Limit (OR)
Radiated pain	4,16	0,018	64,38	2,03	2040,49
Pain from 7 to 10	2,09	0,084	8,10	0,76	86,85
Excessive sweating	3,00	0,015	20,07	1,78	226,15

Source: research data

tween 12 and 20, moderate headache, nausea, vomiting or diarrhea and STD (Table 3).

Interpretation of Logistic Regression Coefficients: patients with RR between 12 and 20 are 27.72 times more likely to be emergency patients than in other categories; there is a tendency of patients with mild headache to be 14.70 times more likely to be emergency patients than in other categories; patients with Nausea, Vomiting or Diarrhea are 25.88 times more likely to be an urgency patient than in other categories and STD patients are 24.97 times more likely to be urgently needed than in other categories.

CONCLUSION

Retrospective field research was performed by analyzing medical records to validate data already described in the literature. This gave support to data collected in literature and gathered all the results.

One of the benefits of this data collection was the fact that the information was available electronically, which optimized the search proposed by the investigations of this study.

Emphasis is given to the relevance of technology in the hospital environment, mainly the registration of the patient being opened in his first contact with the nursing professional in the host / risk assessment, as this enables the improvement of communication among all the members of the multidisciplinary health team from easy and quick access.

Nurses are the professionals who carry out the risk classification, but even based on specific protocols, its evaluation is intuitive. As this study is a cut of the thesis entitled "Nurses on risk classification in the emergency room: software development proposal", the author of the primary study, in order to streamline the classification process and minimize the intuitive errors of the evaluation, elaborated a proposal of a software based on the Manchester risk classification protocol to assist nurses in this first stage of care, reception / risk classification.

TABLE 3 – Variables present in the Yellow classification model. São Paulo, SP, Brazil, 2014-2015

Variable	Coefeicient	Descriptive level (p value)	Odds ratio -OR (Exp(coef))	Inferior Limit (OR)	Superior Limit (OR)
FR between 12 and 20	3,32	<0,001	27,72	4,43	173,39
Mild headache	2,69	0,070	14,70	0,80	269,96
Nausea Vomiting or diarrhea	3,25	0,015	25,88	1,86	360,39
STD	3,22	0,002	24,97	3,38	184,29

Source: research data

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