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THORACIC TRAUMA: ANALYSIS OF PEOPLE ATTENDED IN A PUBLIC HOSPITAL SPECIALIZED IN TRAUMA

TRAUMA TORÁCICO: ANÁLISE DA POPULAÇÃO ATENDIDA EM UM HOSPITAL PÚBLICO DE REFERÊNCIA NO TRAUMA

TRAUMATISMO TORÁCICO: ANÁLISIS DE PERSONAS ASISTIDAS EN UN HOSPITAL PÚBLICO DE REFERENCIA EN TRAUMA

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ABSTRACT

Objective: to characterize the thoracic trauma in a public hospital specialized in multiple trauma. **Method:** quantitative, descriptive, documentary and prospective study, held in a regional respected Public Hospital in Chapecó/SC/Brazil, with a population of 49 patients diagnosed with thoracic trauma. As an instrument for data collection, we used Revised Trauma Score/RTS making it possible the tabulation and analysis of data. The study was approved by the Brazil Platform Ministry of Health system, Protocol No. 75805/2012. **Results:** young, male, unmarried, and with low education adults are the most affected by thoracic trauma, and injuries from falls, followed by other external causes and traffic accidents were the most prevalent. There was prevalence of blunt chest trauma, hemothorax and characterized by a high probability of survival. **Conclusion:** it was found that thoracic trauma was most prevalent in married, aged 18-28 years, white, with low education men. **Descriptors:** Trauma; Nursing; Population.

RESUMO

Objetivo: caracterizar os traumatismos torácicos em um hospital público de referência à politraumatizados. **Método:** estudo quantitativo, descritivo, documental e prospectivo, realizado num Hospital Público de referência regional no município de Chapecó/SC/Brasil, com a população de 49 pacientes, com diagnóstico de trauma torácico. Como instrumento para coleta de dados foi utilizado o Escore Revisado de Trauma/RTS tornando possível a tabulação e análise dos dados. A pesquisa foi aprovada pelo sistema Plataforma Brasil do Ministério da Saúde, Protocolo nº 75805/2012. **Resultados:** adultos jovens, sexo masculino, solteiros, e com baixa escolaridade são os mais acometidos por traumas torácicos, sendo acidentes por queda, seguida por outras causas externas e acidentes de transporte os mais prevalentes. Houve prevalência de trauma torácico fechado, caracterizado por hemotórax e com alta probabilidade de sobrevivência. **Conclusão:** identificou-se que os traumas torácicos acometeram mais homens, casados, na faixa etária de 18 a 28 anos, pertencentes à raça branca, com baixa escolaridade. **Descritores:** traumatismo; enfermagem; população.

RESUMEN

Objetivo: caracterizar el trauma torácico en un hospital público especializado en traumas múltiples. **Método:** estudio cuantitativo, descriptivo, documental y prospectivo, que se celebró en un hospital público de referencia regional en Chapecó/SC/Brasil, con una población de 49 pacientes con diagnóstico de traumatismo torácico. Como un instrumento de recolección de datos, se utilizó el Revised Trauma Score/RTS haciendo posible la tabulación y análisis de datos. El estudio fue aprobado por el sistema Plataforma Brasil Ministerio de Salud, el Protocolo N ° 75805/2012. **Resultados:** adultos jóvenes, hombres, solteros y con bajo nivel educativo son los más afectados por traumatismo torácico y lesiones por caídas, seguidas por otras causas externas y accidentes de tránsito son los más frecuentes. La prevalencia de traumatismo torácico cerrado, hemotórax y caracterizado por una alta probabilidad de supervivencia. **Conclusión:** se encontró que el trauma torácico es más prevalente en hombres casados, con edades entre 18 a 28 años, de la raza blanca, bajo nivel de educación. **Descritores:** Trauma; Enfermería; Población.

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INTRODUCTION

In Brazil, accidents and violence are a public health problem of great depth and importance. They cause strong impact on the morbidity / mortality of the population, generating high social and emotional costs, since they cause damage by labor absenteeism, emotional damage to victims and family, in addition to the damage of lost productivity. In Brazil, the number of deaths from traffic accidents in 2009 was of 37,635, representing the main subcause among the group of external causes for the age groups 10-14 years and 40-59 years and the second leading cause of death in the other age groups.¹

The consequences of land accidents have led institutions to recognize the impact that these accidents produce in society, straining health systems. By 2020, the World Health Organization predicts that the number of deaths from land transport accidents will have reached 2.3 million being the sixth leading cause of death worldwide.¹

Some tools are necessary for the creation and expansion of public policies, which are surveillance, monitoring and analysis of the situation of traffic accidents. With these tools, it is possible to know the magnitude of the problem, outlining the profile of the victims, the means of transport involved, the behavior and the trend in the country as a whole. It also points where there is a need for greater intervention by factors associated with accidents; it shows where most of the critical points and inequalities between regions and population groups are.²

Violence and accidents are the third leading cause of death in Brazil, occupying the first position when analyzing the group of people of 1-39 years. External causes of morbidity and mortality represent a serious public health problem causing deaths, physical injuries, psychological damage and sequelae arising from violence and accidents. In 2006, there were 106,651 deaths from external causes, of these, about 47,500 homicides involving mostly teenagers and youngsters of 20-29 years and about 36,000 deaths caused by traffic accidents, killing pedestrians, especially children and the elderly.³

The chest contains important organs essential to the proper functioning of the body, so a chest trauma can seriously compromise functions such as breathing and circulation, putting patients' lives at risk.⁴ If not diagnosed and treated quickly, one chest trauma can be fatal.⁴

Chest injuries involve a considerable degree of severity and of a total of four trauma victims who die, at least one has an injury to the chest as cause of death.⁴ Thoracic trauma is classified as blunt or penetrating and may occur alone or in combination with other injuries. The blunt trauma occurs by a sudden compression or positive pressure on the chest wall. Penetrating trauma is caused when a foreign object penetrates the chest wall.⁵

The Revised Trauma Score (RTS) is a physiologic severity index that numerically evaluates circulatory, respiratory and central nervous system functions. To calculate it, we use three parameters; Glasgow Coma Scale (GCS), Respiratory Rate (RR), and systolic blood pressure (SBP), and for each of them is assigned the value of zero to four.⁵

The results of the RTS emphasize their usefulness in clinical practice, the physiological conditions of patients are used by professional pre-hospital care to the choice of decisions, interventions and level of complexity of the destination hospital.⁶ The nurse works with the multidisciplinary team in both the prehospital and in-hospital, providing quality care to guarantee the life of the traumatized with no damage.⁷ The trauma care requires nursing leadership, technical and scientific skills to perform activities and safety to the team and the patient. Another challenge for the nurse is to develop prevention activities in health, since it requires the professional to remain active and committed to society.⁷

The health emergency aims to provide quick and provisional service to cases of unforeseen accidents or illnesses that other levels of care could not solve.⁸ Nurses, as they are health educators, have an important role in critical consciousness of people, guiding these people to make them active in their care. Therefore, it is imperative that this professional is aware of the problems that surround them, confronting reality and creating alternatives that best suit them and seeking to transform them.⁷

So, we became interested in characterizing thoracic trauma in a public hospital specialized in multiple trauma treatment.

OBJECTIVE

- To characterize thoracic trauma in a reference public hospital for multiple trauma.
- To identify the socio-demographic profile of thoracic trauma and lesion type victims.
- To assess the severity of injury based on the Revised Trauma Score.

METHOD

A Qualitative, descriptive, documentary and prospective study seeking to characterize patients with a possible diagnosis of thoracic trauma at a Public Reference Hospital specialized in multiple traumas in the city of Chapecó / SC / Brazil, in the period of January to March 2012.

For inclusion in the sample, we used the following criteria: being institutionalized, have chest trauma and those who are quoted by the institution as having thoracic trauma. We excluded from the sample all patients without chest trauma or those not informed by the institution at the time of the composition of the sample.

The hospital institution, through its Inpatient Sector, signaled what unit the patient with thoracic trauma was institutionalized. For data collection, we used the patient's medical record, which did not include all the variables of the study. It was necessary to conduct an interview with closed questions to those interviewed.

Researchers conducted the depersonalization of the data by coding the sample in order to participate in the research. As an instrument for data collection, we used Revised Trauma Score (RTS), widely used in prehospital and in-hospital screening, to

assess the severity of injury in these patients and to calculate the survival rate of physiological parameters from the pressure systolic blood, respiratory rate and Glasgow Coma Scale⁹, making the tabulation and analysis of data possible for obtaining the frequencies of the types of injuries and their presentations.

The study was approved by the Platform Brazil Ministry of Health System, under protocol number 75805/2012, respecting the ethical and legal rights of human research.

RESULTS AND DISCUSSION

The sample consisted of 49 patients with a possible diagnosis of thoracic trauma, institutionalized during the study period.

As for the profile of the patients who took part in the survey, these are presented in Table 1, as follows:

Table 1. Profile of thoracic trauma victims

Characteristics	n	%
Gender		
Male	34	69,4
Female	15	30,6
Age Group (in years)		
18 to 39	20	40,9
40 to 59	11	22,4
60 older	18	36,7
Education		
From 0 to 8 years of study	34	69,3
From 8 to 12 years of study	09	18,3
Over 12 years of study	06	12,2
Marital Status		
Married	22	44,8
Single	13	26,5
Widower	06	12,2
Stable Union	06	12,2
Divorced	02	4,0

The patients' demographic data showed similarities to other literatures, being mostly male, unmarried, and less educated young adults.

35,084 deaths were recorded by Land Transport Accidents in Brazil in 2004. Of this total, 28,576 (81.5%) were males and 6,495 (18.5%) were female.² The gender could not be identified in 13 cases. This shows how men are more vulnerable to traffic accidents than women, agreeing with this research. In 2009, the highest rates of land transport accident in the country occurred in the Midwest and South, predominantly for males.¹

In 2005, the number of men who died from external causes was 5.1 times the value observed in females. For men, deaths due to assault was 11.2 times the number of deaths among women, deaths from traffic accidents among males was 4.4 times the number in females,⁵ corroborating the survey with prevalence of males of almost 70% in cases of violence and car accidents.

In the survey, motorcycle accidents accounted for 30.6% of cases (n=15) and 33.3% were up to 28 years (n=5). In a study on motorcycle accidents, with a sample of 387 patients, the highest concentration of

affected individuals were youngsters under the age of 28 years.¹⁰

Regarding marital status, 12.2% (n=6) were stable, 44.8% (n=22) were married, 26.5% (n = 13) were single, 12.2% (n=6) were widowed, and n = 02 (4.0%) said they were separated. In a study with 430 respondents, 40% of victims were married and 54.6% reported being unmarried,¹¹ showing disagreement with the literature, or perhaps change in the profile of the victims of accidents.

It was found that 83.6% (n=41) claimed to be white, which contrasts studies in which young, black, with little or no education and low social status men are the main victims of urban violence homicides and deaths caused by traffic.¹² Importantly, in the study area there is a predominance of persons of German and Italian origin.

Regarding school education, 69.3% (n=34) had 0-8 years of schooling. In a research conducted in Goiás, lasting one year with 301 patients, all young victims of traffic accidents, regarding the matter of education, 25,0% (n=75) had not even finished high school.¹³

Regarding the types of accidents, where it was found that 30.6% (n=15) were due to falls, 30.6% (n=15) for motorcycles; 16.3% (n = 8) cases of violence (stab wound (FAB), injury by firearms (FAF) and physical aggression); 16.3% (n=8) car accidents and 6.1% (n=3) by trampling. Among the cases of violence, 75% (n=6) patients were male and only 25% (n=2) were female, demonstrating the superiority of exposure of men in cases of physical violence.

Violence was responsible for major trauma in the age group of 18-28 years where there was 12.2% (n=06) victims. Then, there are the motorcycle accidents with 10.2% (n=05) victims, 04% (n=02) car accidents and 02% (n=1) drop height. In cases of accidents involving motorcycles, we note that 26.5% (n=13) patients were male and only 04% (n=02) were female.

The use of motorcycle has increased in recent years, especially when used as a working tool, where the driver is often forced to exceed the speed limit to get to their destination faster, thus exposing its occupants to serious accidents on public roads.¹⁴

Among car accidents, we found the same number of victims 50% (n=04) in both genders. In relation to the traumas caused by trampling, we observed that 66.6% (n=02) patients were female and 33.3% (n=01) were male, aged over 60 years. In the case of accidents caused by falls, we identified that 66.6% (n=10) of patients were male and 70% of

these (n=07) were older than 60 years old. In female falling cases, we observed 33.3% (n=05) patients all over 60 years old. More than a third of people aged 65 and older fall each year worldwide, and recurrent falls in half the cases. The falls are associated with mobility restrictions, decline in ability to perform everyday activities and the growing risk of institutionalization. Falls are the cause of approximately 10% of hospital emergencies, and 6% of emergency hospitalizations.¹⁵

Aging decreases the ability of balance which is a natural process to humans. When the nervous system and skeletal muscle begin to deteriorate, fallings can occur as a flag of failure in these systems.¹⁵

Classification of the trauma according to type of external causes shows that in both genders there was a predominance of falls, followed by other external causes and transport accidents.⁵ In males, transport accidents and assaults were primarily responsible for admissions. In women, there are more hospitalizations due to falls.

Regarding the time at which the accident occurred (car, motorcycle, fall, hit-or violence), there was a predominance at night time (6 p.m. to 12 p.m.) with 36.7% (n=18) cases, followed by the afternoon (12:01 p.m. to 6 p.m.) with 32.6% (n=16) cases, other 24.4% (n=12) in the morning (6:01 a.m. to 12:00 a.m.) and only 6.1% (n=3) occurred at dawn (12:00 a.m. to 6:00 a.m.).

Weekdays and at peak times, like going and coming back from work, there was an increase in the number of victims of accidents, especially in returning time (6 p.m. to 7 p.m.), this indicates that in addition to a large number of vehicles circulating, the fatigue of a day's work can increase the chances of an accident.¹⁴

Regarding the location of the lesions, we identified that there was 20.4% (n=10) confirmed cases of thoracic injuries, 8.1% (n=04) cases of thoracoabdominal injuries, 6.1% (n=03) cases abdominal injury only, 4.0% (n=02) patients had concomitant abdominal and chest injuries and 61.2% (n=30) cases of lesions in other parts of the body, and these were initially likely diagnoses of thoracic trauma.

The thoracoabdominal trauma is affecting the part of the trunk located below the fourth intercostal space on each side and an imaginary line that passes through the lower limits of hypochondria. Abdominal trauma occurs below the fourth intercostal space anteriorly and posteriorly sixth intercostal space.¹⁷

Concerning the classification of the type of thoracic injury, we can point to a total of 17 patients, 58.8% (n=10) had thoracic and thoracoabdominal injuries classified as closed, and 41.1% (n=07) patients had open injuries, which were a result of violence, ie, stab wound (FAB) and injury by firearms (FAF).

Chest trauma can cause different injuries depending on the causative agent, which can be classified as closed or penetrating injury. The penetrating injuries are caused by forces distributed over a small area that penetrate inside the chest cavity, for example: FAF, FAB or falling on sharp objects. In blunt trauma, forces are distributed over a larger area and the lesions occur due to compression and shear forces.¹⁷

The classification of chest injuries boils down basically to closed or penetrating trauma, the latter being divided into wounds and firearm stabs. The successful care of these patients is related to identifying the types of injury and proper conduct, which although they are simple, it is crucial for patient survival.¹⁸

Regarding the location of the lesion in the chest, in the population studied, there was 58.8% (n=10) lesions in the right hemithorax and 41.1% (n=07) lesions in the left hemithorax and one patient had lesions in both hemithorax.

In thoracic trauma, the clinical manifestations that most affected the study population were: 47.3% (n=09) patients had exclusively hemothorax, 10.5% (n=02) patients expressed exclusively rib fracture, 5.2% (n = 01) patients presented exclusively pneumothorax, 5.2% (n=01) patients showed subcutaneous emphysema, 10.5% (n=02) patients had hemothorax and rib fracture simultaneously and 5.2% (n=01) patient had pneumothorax and rib fracture concurrently.

After the primary care carried out at the emergency room, patients were referred to different sectors: 34.6% (n=17) patients admitted to the trauma orthopedics sector, 28.5% (n = 14) were in clinical surgery; 14.2% (n=07) patients in the field of intensive care unit (ICU), 10.2% (n=05) patients admitted to the neurology, 6.1% (n=03) patients were referred directly to the surgical center (CC), 4.0% (n=02) patients admitted to the medical clinic and 2.0% (n = 01) in the inpatient sector the emergency Department (ED) waiting for bed in institution.

In the area of emergency care, for diagnosis of chest trauma, the most required exams were: 20.9% (n=45) patients underwent chest X-rays, 12.5% (n=27) underwent X-Ray

basin, 9.3% (n=20) X-ray of the cervical spine, 11.6% (n=25) for X-ray applications of the lower limbs and 5.5% (n=12) for performing X-ray skull.

The realization of the X-ray examination of the chest is especially important in injuries caused by projectiles from a firearm that did not transfix the thorax, lesions of the spine and fractures of the sternum.¹⁶

The surgical procedures performed in patients with thoracic trauma were needed, and 16.3% (n=8) underwent laparotomy and 22.4% (n=11) underwent thoracic drainage.

In a study that identified the surgical procedures performed in patients with chest trauma, chest drainage was the most common, accounting for 50% of surgeries being performed in 71% of patients.¹⁸

For purposes of calculating the Revised Trauma Score (RST) we used the information: Blood Pressure, Glasgow Coma Scale and respiratory rate, recorded at the time of patient admission. However, there was underreporting of information needed to calculate the RST, and this segment of the population served in that institution.⁵ That made it impossible to calculate the score of Trauma in four charts.

Regarding the nursing notes, studies show that it is still necessary to improve the quality of records with complete information about the care that was provided to the patient, thus enabling a satisfactory level in the records made. It is unacceptable considering that a service of excellence can be provided with gaps in medical notes and nursing.¹⁹

In this context, the work of nurses in the emergency involves Watch and Manage, in the first stage, the aim is to support the needs of the patient, the second phase is the organization of work and human resources in nursing, and the nurses' notes and records are part of this competence. Therefore, nurses must improve and update their team through continuing education/continuing to implement appropriate conditions to record the information of nursing care given to the patient, ensuring continuity of care in other sectors of the institution.²⁰

RST was created for sorting at the accident scene, comparison of results between institutions and within them over time (quality control) and to assess the probability of survival.

RTS with values close to zero means that the trauma caused severe physiological changes, values close to 12 when the physiological changes are minimal or nonexistent.⁵

The probability of survival was calculated at 91.8% (n=45) and most patients also scored

0.969 which corresponds to an RTS 7, as shown in Table 1

Table 1. Probability of survival of patients

N of pacients	Score	RTS	Probability of survival varies
0	0	8	0, 988
41	7,84	7	0,969
01	6,90	6	0, 919
01	6,37	6	0, 919
02	5,96	5	0, 807
0	0	4	0, 605
0	0	3	0, 361
0	0	2	0, 172
0	0	1	0, 071
0	0	0	0,027

We can say that 83.6% (n=41) of these patients had a score of 7.84, which is the maximum value in the RTS, and the survival rate ranging from .969 to 0.988, which means excellent prognosis. The best prognosis is higher the sum, thereby indicating the probability of survival.¹⁶⁻⁷

CONCLUSION

It was identified that thoracic trauma was most prevalent in married, aged 18-28 years, white, with low education men. Most of blunt chest trauma, with aggravation of the clinical case and the appearance of hemothorax and a high probability of survival. The time of occurrence of accidents was higher during the night.

Data suggest that the falls and accidents involving motorcycles equaled the number of victims, totaling 61.2% of cases, but the average age of patients in these types of accidents was different. Among violence, there were more injuries of gun fire and predominance in men.

The RTS is a fundamental instrument for the quantification of data, since it allows a physiological assessment of the patient immediately after the injury, providing the basis for the hospital and later as a comparison that evaluates the patient's progress. The survey also showed that despite the thoracic trauma to lesions predisposing to risk of death, the survival probability was high when measured by the RTS.

There is need for training and continuing education for professionals, mainly nurses about the records held since the information permits the calculation of RTS and early identification of critically ill patients, while minimizing negative impacts to health and services.

Nursing activities permeate the entire service for victims of hospitalized chest trauma, which is the reason why the perception of the nurse is important and plays a decisive role in the quality of the service, especially in units where the activities

performed by nursing are dynamic and decisions must be made quickly.

This study showed that even with education campaigns in traffic, there are still many who commit offenses and cause car accidents and traumas, thus creating a public health problem with no solution in sight in the short term.

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