PROFILE OF PATIENTS WHO WERE VICTIMS OF MULTIPLE TRAUMA TREATED AT A PUBLIC HOSPITAL IN THE WESTERN REGION OF PARÁ – BRAZIL

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ABSTRACT

In Brazil, polytrauma is considered a serious health problem, which causes personal, social, and economic consequences, generating an increase in spending on traumatic emergency services, rehabilitation, and care. The objective of this study was to characterize the admission profile of patients with multiple trauma treated at a public hospital in the western region of the state of Pará. This is an epidemiological, descriptive study with a quantitative approach using secondary data from December 2017 to December 2021. Given this, this research presents 1056 patients diagnosed as multiple trauma, where the ICD "Fractures involving multiple regions of a lower limb" was recorded in 55.02% of the sample, with an age group over 60 years, with a prevalence of males with 62.1% coming from the

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municipality of Santarém-PA, with secondary causes as "Falls without specification" with 58.3% of the occurrences, and about the seasonal period, in this study the highest numbers were identified in September 2021, with a total of 57 records. Regarding the profile of the patients in the primary ICD T06.0, the male gender was predominant, followed by an age group over 60 years, coming from the municipality of Santarém-PA. As for the most common cause of polytrauma, we found "unspecified falls", contrasting with data that point to traffic accidents as the main cause of polytrauma. It was also found that the victims of multiple traumas had a very small sample for the primary ICD T06.0, with the majority coming from Santarém-PA. Thus, greater epidemiological control of this ICD is necessary to reduce possible underreporting.

Keywords: Polytrauma. Traumatic Brain Injury. Admission Profile. Epidemiology.

INTRODUCTION

Nowadays, there is a great demand for hospital admissions of victims that trigger some presentation of a traumatic condition, and trauma is then considered as the presence of an injury that causes several sudden changes, arising from a physical agent that has several etiological causes, nature and extension, in different segments of the injured body (Schossler; Lohmann, 2017).

In this sense, trauma is a serious public health problem that affects society and brings a deficit to the public coffers, with a high rate of hospital admissions, with an equivalent estimate of 5.8 million deaths witnessed in the world, according to data from the Pan American Health Organization (PAHO), this prevails the other pathologies with the highest incidence worldwide, which are the diseases known as malaria, tuberculosis and Acquired Immunodeficiency Syndrome (AIDS), which elevates trauma to a level of epidemic in the twenty-first century (Lôbo et al., 2021).

In the world, about 5 million deaths occur due to traumatic events, which mostly come from traffic accidents, with a highlight of 90% of deaths present in countries in the phase of economic development (Farias, Souza; Fields, 2018, Schossler; Lohmann, 2017). Among these traumatological conditions, polytraumas stand out, characterized by more than one injury, where there is the presence of multiple injuries (Cobralt, 2022; Silva et al., 2017).

In Brazil, polytrauma is considered a serious health problem, as it causes personal, as well as social and economic consequences, where there is an increase in spending on traumatic emergency services, rehabilitation and assistance in the Health Care Network (RAS) when measured with other expenses for medical procedures, in addition, it has irreversible consequences, such as cases of deaths and permanent sequelae that make it impossible or reduce work activities (Lôbo et al., 2021).

According to studies carried out by Schossler and Lohmann (2017) on the epidemiological profile of polytrauma patients, there is a strong incidence of occurrence of Traumatic Brain Injury (TBI) linked to other polytrauma fractures, as well as the presence of striking characteristics of prevalence in a general context of elderly male patients who suffered falls, but it should also be listed, a trend towards a profile of young people who have multiple traumas in male patients and who perform some work activity.

In this context, the study sought to identify the admission profile of victims of multiple traumas in the population of Santarém-PA, as it is considered that multiple traumas in their

different forms of presentation affect a considerable portion of the population, which triggers some factors that cause damage to health.

METHODOLOGY

This is an epidemiological, descriptive, cross-sectional study with a quantitative approach using secondary data on accidents with victims of multiple traumas hospitalized at the Municipal Hospital of Santarém – Pará.

Data were collected from February to April 2023 through the Medical Archive and Statistics Service – SAME or billing from the Municipal Hospital of Santarém-PA. Information on the patients' profile (age, gender, race, municipality of origin) was collected, as well as an analysis of the classification of the patients treated (Appendix IV), according to their primary ICDs of hospitalization, arranged in their AIHs. In addition, secondary ICDs were collected for possible identification of the causes of polytrauma diagnoses in the research participants.

Regarding the inclusion criteria, all patients diagnosed with multiple traumas who had an ICD (International Classification of Diseases) that was described in the corresponding group between T00 and T07 were included. Also, only secondary ICDs were included to identify possible causes of multiple trauma, which were available in the AIH (Hospital Admission Authorization). In addition, participants who presented a Hospital Admission Authorization (AIH) registered in the period from December 2017 to December 2021, and patients who belonged to all age groups and were from the municipality of Santarém, were also included. Patients who did not have all the complete data recorded in the AIH and participants who did not fit into the hospitalization period defined by this study, were excluded.

The variables that were studied in the primary ICDs were those related to orthopedic accidents in which a case of polytrauma was present, classified by ICDs T00 to T07.

For the analysis of the results, the descriptive analysis of frequencies (absolute and percentages) was used and for the tabulation of the data, the Microsoft Office Excel program for the characterization of the admission profile of polytrauma patients 2023.

Regarding the ethical aspects of the research, the study followed the recommendations of Resolution 466/12 of the National Health Council (CNS), respecting the norms and guidelines for conducting research involving human beings, according to opinion 5,773,900.

RESULTS

Of the 1056 individuals with multiple traumas, the ICD 'Fractures involving multiple regions of a lower limb' was recorded in 55.02% of the sample, with a total of 581 affected people. Fractures involving multiple regions of the upper limb(s) with lower limbs was recorded in only 02 individuals with 0.19%, as shown in Table 1

Table 1 – Classification of multiple traumas due to primary ICD in patients treated at the Municipal Hospital of Santarém-PA.

Primary ICD	*n*	%
Fractures involving head to neck	60	5,68%
Fractures involving other combinations of body regions	16	1,52%
Fractures involving multiple regions of a lower limb	581	55,02%
Fractures involving multiple regions of an upper limb	143	13,54%
Fractures involving multiple regions of the upper limb(s) with lower limb(s)	2	0,19%
Fractures involving the chest with the lower back and pelvis	161	15,25%
Fractures involving the thorax with the lower part of the back and pelvis with the limb(s)	4	0,38%
Unspecified multiple fractures	49	4,64%
Other specified traumas involving multiple regions of the body	17	1,61%
Brain and cranial nerve injuries with nerve and spinal cord injuries at the neck level	17	1,61%
Unspecified multiple injuries	6	0,57%
Grand Total	**1056**	**100%**

Source: Elaborated by the Authors (2023).

Table 2 shows the characterization of the admission profile of polytrauma patients, when the primary ICDs and age group distribution are verified. The ICD with the highest evidence, "Fractures involving multiple regions of a lower limb", had a higher frequency for the age group over 60 years with a value of 30.1% (N=175), and this value was more than double the occurrences recorded in any of the other age groups.

Table 2 – Characterization of the admission profile of polytrauma patients treated at the Municipal Hospital of Santarém-PA, according to primary ICDs and age group.

Primary ICD	Age group							
	0 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	60 more	*n*
Fractures involving head to neck	3 (5.0%)	14 (23.3%)	17 (28.3%)	10 (16.7%)	9 (15.0%)	5 (8.3%)	2 (3.3%)	60
Fractures involving other combinations of body regions	1 (6.2%)	5 (31.2%)	3 (18.8%)	3 (18.8%)	1 (6.2%)	1 (6.2%)	2 (12.5%)	16
Fractures involving multiple regions of a lower limb	31 (5.3%)	60 (10.3%)	**96 (16.5%)**	80 (13.8%)	65 (11.2%)	74 (12.7%)	**175 (30.1%)**	581
Fractures involving multiple regions of an upper limb	25 (17.5%)	21 (14.7%)	24 (16.8%)	28 (19.6%)	12 (8.4%)	14 (9.8%)	19 (13.3%)	143
Fractures involving multiple regions of the upper limb(s) with lower limb(s)	0 (0.0%)	1 (50.0%)	0 (0.0%)	1 (50.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2

Fractures involving the chest with the lower back and pelvis	21 (13.0%)	19 (11.8%)	29 (18.0%)	32 (19.9%)	20 (12.4%)	16 (9.9%)	24 (14.9%)	161
Fractures involving the thorax with the lower part of the back and pelvis with the limb(s)	0 (0.0%)	0 (0.0%)	2 (50.0%)	1 (25.0%)	0 (0.0%)	0 (0.0%)	1 (25.0%)	4
Unspecified multiple fractures	2 (4.1%)	5 (10.2%)	19 (38.8%)	11 (22.4%)	4 (8.2%)	5 (10.2%)	3 (6.1%)	49
Other specified traumas involving multiple regions of the body	0 (0,0.%)	0 (0,0.%)	7 (41.2%)	2 (11.8%)	6 (35.3%)	0 (0.0%)	2 (11.8%)	17
Brain and cranial nerve injuries with nerve and spinal cord injuries at the neck level	3 (17.6%)	3 (17.6%)	2 (11.8%)	4 (23.5%)	0 (0.0%)	2 (11.8%)	3 (17.6%)	17
Unspecified multiple injuries	0 (0.%)	1 (16.7%)	0 (0.%)	3 (50.0%)	0 (0.0%)	1 (16.7%)	1 (16.7%)	6
Total	86 (8.1%)	129 (12.2%)	199 (18.8%)	175 (16.6%)	117 (11.1%)	118 (11.2%)	232 (22.0%)	(1056)

Source: Prepared by the Authors (2023).

Table 3 shows the characterization of the admission profile of polytrauma patients, when the primary ICDs and gender are verified. Males prevailed in practically all ICDs, being more evident in the ICD "Fractures involving multiple regions of a lower limb" with 62.1% (N=361). When the ICD "Fractures involving the thorax with the lower part of the back and pelvis with limb(s)" was verified, males were equal to females with 50% of the occurrences (N=2).

Table 3 – Characterization of the admission profile of polytrauma patients treated at the Municipal Hospital of Santarém-PA, according to primary ICDs and gender.

Primary ICD	Sex		
	F	M	*n*
Fractures involving head to neck	10 (16.7%)	50 (83.3%)	60
Fractures involving other combinations of body regions	7 (43.8%)	9 (56.2%)	16
Fractures involving multiple regions of a lower limb	220 (37.9%)	361 (62.1%)	581
Fractures involving multiple regions of an upper limb	47 (32.9%)	96 (67.1%)	143
Fractures involving multiple regions of the upper limb(s) with lower limb(s)	0 (0.0%)	2 (100.0%)	2
Fractures involving the chest with the lower back and pelvis	61 (37.9%)	100 (62.1%)	161
Fractures involving the thorax with the lower part of the back and pelvis with the limb(s)	2 (50.0%)	2 (50.0%)	4
Unspecified multiple fractures	7 (14.3%)	42 (85.7%)	49
Other specified traumas involving multiple regions of the body	4 (23.5%)	13 (76.5%)	17
Brain and cranial nerve injuries with nerve and spinal cord injuries at the neck level	2 (11.8%)	15 (88.2%)	17

Unspecified multiple injuries	1 (16.7%)	5 (83.3%)	6
Total	361 (34.2%)	695 (65.8%)	1056

Source: Prepared by the authors (2023).

Table 4 below shows the relationship between the primary and secondary ICDs that motivated the occurrence of multiple traumas. These results show higher occurrence rates for ICD T02.3 "Fractures involving multiple regions of a lower limb", representing 55% (N=581) of the occurrences of primary ICDs. Based on the occurrences of ICD T02.3, it was found that the highest occurrences were of the secondary ICD "Unspecified fall - unspecified location" with a value of 66.6% (N=387), followed by "Unspecified traffic accident" with 30.5% (N=177) of occurrence.

Table 4 – Characterization of the admission profile of polytrauma patients treated at the Municipal Hospital of Santarém-PA, according to primary ICDs and secondary ICDs.

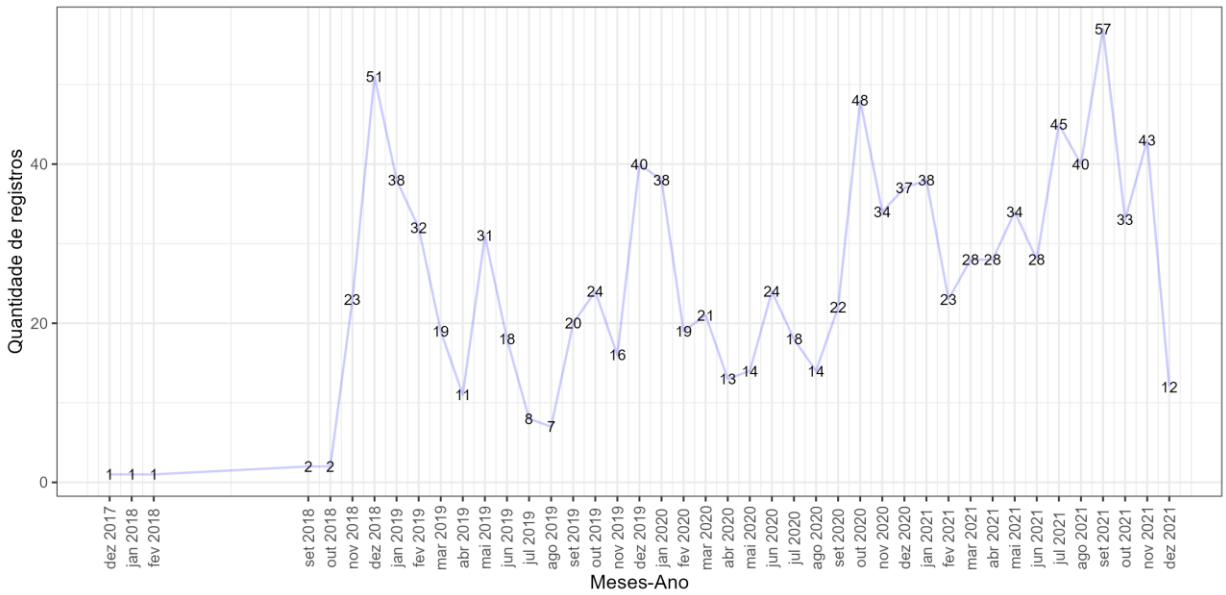
	Primary ICD											
Secondary ICD	**T02.0**	**T02.1**	**T02.2**	**T02.3**	**S02.6**	**S02.7**	**S02.8**	**S02.9**	**T06.0**	**T06.8**	**T07**	***n***
Unspecified Transport Accident	36 (60 %)	33 (20,5%)	36 (25,2 %)	**177 (30,5 %)**	0 (0,0 %)	0 (0,0 %)	8 (50,0 %)	25 (51,0 %)	3 (17,6 %)	7 (41,2 %)	4 (66,7 %)	329
Unspecified accident during the provision of medical and surgical care	0 (0,0 %)	0 (0,0%)	0 (0,0%)	1 (0,2%)	0 (0,0 %)	0 (0,0 %)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0%)	1
Assault by firing a hand-held firearm - location unspecified	0 (0,0 %)	0 (0,0%)	1 (0,7%)	5 (0,9%)	0 (0,0 %)	1 (25, 0%)	0 (0,0%)	0 (0,0%)	1 (5,9%)	0 (0,0%)	0 (0,0%)	8
Assault using bodily force - location unspecified	5 (8,3 %)	1 (0,6%)	7 (4,9%)	3 (0,5%)	0 (0,0 %)	0 (0,0 %)	3 (18,8 %)	2 (4,1%)	1 (5,9%)	0 (0,0%)	0 (0,0%)	22
Assault using a sharp or penetrating object - location not specified	0 (0,0 %)	0 0,0%)	1 (0,7%)	0 (0,0%)	0 (0,0 %)	0 (0,0 %)	0 (0,0%)	1 (2,0%)	0 (0,0%)	1 (5,9%)	0 (0,0%)	3
Assault by other specified means - location not specified	0 (0,0 %)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0 %)	0 (0,0 %)	0 (0,0%)	0 (0,0%)	0 (0,0%)	1 (5,9%)	0 (0,0%)	1
Contact with sharp or penetrating object, intent not determined - location not specified	0 (0,0 %)	3 (1,9%)	2 (1,4%)	1 (0,2%)	0 (0,0 %)	0 (0,0 %)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0%)	6

Exposure to other man-made and unspecified environmental factors	0 (0,0 %)	0 (0,0%)	0 (0,0%)	1 (0,2%)	0 (0,0 %)	0 (0,0 %)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0%)	1
Bite or blow caused by dog - residence	1 (1,7 %)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0 %)	0 (0,0 %)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0%)	1
Fall onto or from ladders - location not specified	0 (0,0 %)	0 (0,0%)	0 (0,0%)	1 (0,2%))	0 (0,0 %)	0 (0,0 %)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0%)	1
Drop not specified - location not specified	17 (28, 3%)	123 (76,4%)	90 (62,9 %)	**387 (66,6 %)**	2 (100 %)	3 (75, 0%)	5 (31,3 %)	17 (34,7 %)	11 (64,7 %)	8 (47,1 %)	1 (16,7 %)	664
Unspecified Drop - Other Specified Locations	0 (0,0 %)	0 (0,0%)	0 (0,0%)	1 (0,2%)	0 (0,0 %)	0 (0,0 %)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0%)	1
Sequelae of unspecified external cause	1 (1,7 %)	1 (0,6%)	6 (4,2%)	3 (0,5%)	0 (0,0 %)	0 (0,0 %)	0 (0,0%)	4 (8,2%)	1 (5,9%)	0 (0,0%)	1 (16,7 %)	17
Sequelae of other accidents	0 (0,0 %)	0 (0,0%)	0 (0,0%)	1 (0,2%)	0 (0,0 %)	0 (0,0 %)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0%)	0 (0,0%)	1
Total	60 (5,7 %)	161 (15%)	143 (13,5 %)	**581 (55,0 %)**	2 0,2 %)	4 (0,4 %)	16 (1,5%)	49 (4,6%)	17 (1,6%)	17 (1,6%)	6 (0,6%)	105 6

Legend: In the primary ICD, the following legend was adopted: T02.0 - Fractures involving head and neck; T02.1 - Fractures involving the thorax with the lower part of the back and pelvis; T02.2 - Fractures involving multiple regions of an upper limb; T02.3 - Fractures involving multiple regions of a lower limb; T02.6 - Fractures involving multiple regions of the upper limb(s) with lower limbs; T02.7 - Fractures involving thorax with lower back and pelvis with limb(s); T02.8 - Fractures involving other combinations of body regions; T02.9 - Unspecified multiple fractures; T06.0 - Brain and cranial nerve injuries with nerve and spinal cord injuries at the neck level; T06.8 - Other specified traumas involving multiple regions of the body; T07 - Unspecified multiple traumas. **Source:** Prepared by the authors (2023).

Figure 2 shows the total number of monthly records of primary ICDs per patient entry, from December 2017 to December 2021. Thus, in this seasonal period, the highest quantities were identified in September 2021, with a total of 57 records, and in December 2018, with a total of 51 records.

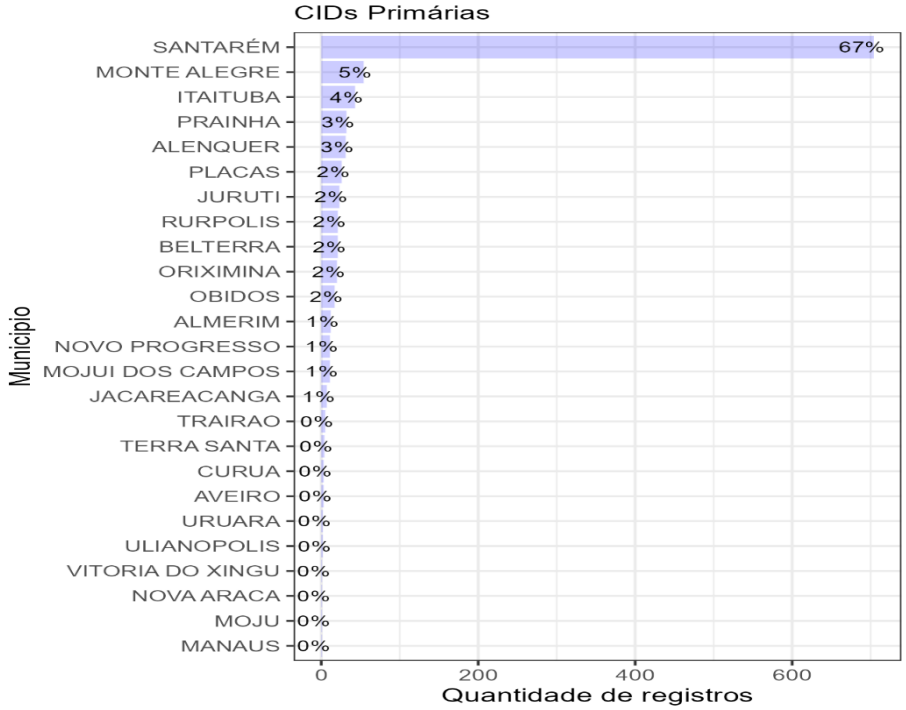
Figure 2 – Admission period of polytrauma patients hospitalized at the Municipal Hospital of Santarém-PA.



Source: Prepared by the Authors (2023).

Figure 3 shows the total number of records of multiple traumas in the municipalities served by the municipal hospital of Santarém, with emphasis on the municipality of Santarém, which presented a percentage of 67% of the records among these municipalities.

Figure 3 – Municipality of origin of patients characterized as having multiple traumas admitted to the Municipal Hospital of Santarém-PA



Source: Prepared by the authors (2023).

Table 5 presents the results of the admission profile of the polytrauma patients who reported the primary ICD T06.0. Among the patients who were victims of multiple trauma analyzed in this study, only 1.6% (N=17) cases had the primary ICD T06.0, which is associated with the presence of TBI. It can be observed that the highest occurrence of ICD T06.0 is in the age group of 31 to 40 years, with 23.5% (N=4) of these occurrences. There was a predominance of males with a value of 88.2% (N=15) of the cases, and as for the reason that led to the hospitalization of these patients, the results show the predominance of cases for the secondary ICD "Fall without unspecified local specification" with a value of 64.7% (N=11), followed by "Unspecified traffic accident" with a total of 17.6% (N=3).

Table 5 – Admission profile of polytrauma patients classified with primary ICD T06.0 at the Municipal Hospital of Santarém-PA, according to age groups, gender, and secondary ICDs.

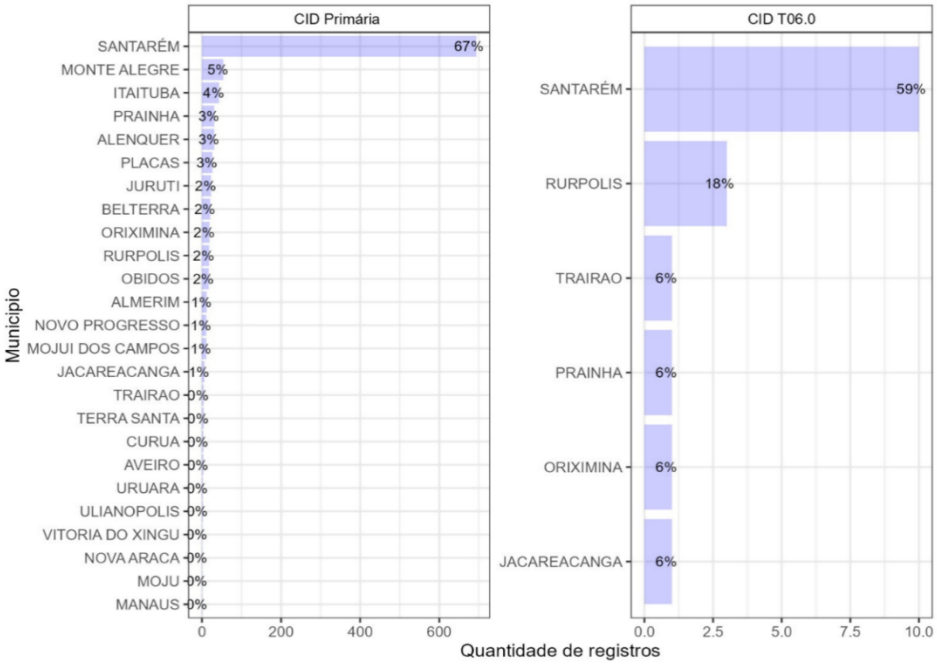
Variable		Occurrence of primary ICD T06.0 *n* %
Age	0 to 10	3 (17,6%)
	11 to 20	3 (17,6%)
	21 to 30	2 (11,8%)
	31 to 40	**4 (23,5%)**
	41 to 50	0 (0,0%)
	51 to 60	2 (11,8%)
	60 more	3 (17,6%)
	Total	17 (100%)
Sex	Female	2 (11,8%)
	Male	**15(88,2%)**
	Total	17 (100%)
Secondary ICD	Unspecified Transport Accident	3 (17,6%)
	Unspecified accident during the provision of medical and surgical care	0 (0,0%)
	Assault by firing a handgun from an unspecified location	1 (5,9%)
	Assault using unspecified local bodily force	1 (5,9%)
	Assault using a sharp or penetrating object unspecified location	0 (0,0%)
	Assault by other specified means location not specified	0 (0,0%)
	Contact with sharp or penetrating object, intent not determined location not specified	0 (0,0%)
	Exposure to other man-made and unspecified environmental factors	0 (0,0%)
	Bite or blow caused by residence dog	0 (0,0%)
	Fall onto or from ladders of hand place not specified	0 (0,0%)
	Drop not specified local specification	**11(64,7%)**
	Drop not specified other specified locations	0 (0,0%)

	Sequelae of unspecified external cause	1 (5,9%)
	Sequelae of other accidents	0 (0,0%)
	Total	17 (100%)

Caption: The caption for S06.0 "Brain and cranial nerve injuries with nerve and spinal cord injuries at the neck level" has been adopted. **Source:** Prepared by the authors (2023).

Figure 4 shows the patients admitted to the Municipal Hospital of Santarém-PA, according to their municipality of origin, who presented the primary ICDs and within these the specific ICD T06.0. As expected, the municipality of Santarém-PA, as the city where the hospital under study is located and the largest municipality in western Pará, presented the highest rates both for occurrences for primary ICDs of 67% (N=708) and for occurrences of ICD T06.0 with 59% (N=10). It is possible to observe the demand of polytrauma patients from the regions around Santarém and, more specifically, of patients who were victims of TBI (ICD T060) from the municipalities of Rurópolis, with 18% (N=3) and Trairão, Prainha, Oriximiná and Jacareacanga, each with 6% (N=1).

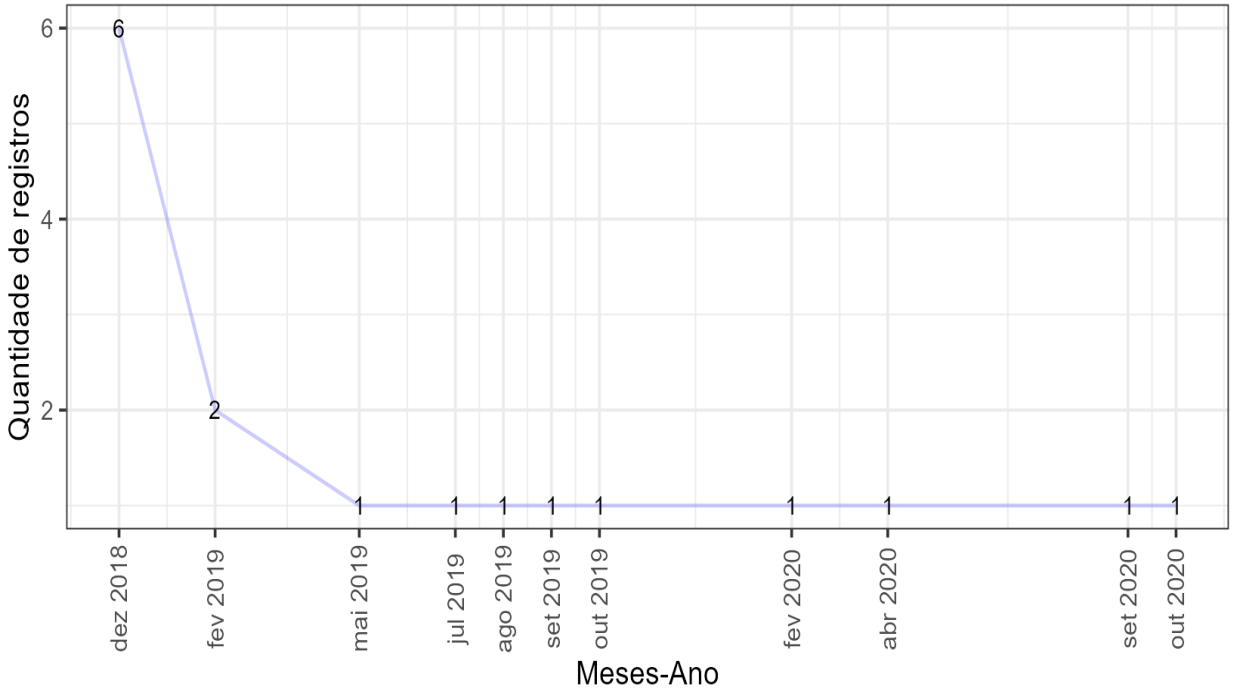
Figure 4 – Municipality of origin of polytrauma patients classified with primary ICD T06.0 admitted to the Municipal Hospital of Santarém-PA.



Caption: The caption for S06.0 "Brain and cranial nerve injuries with nerve and spinal cord injuries at the neck level" has been adopted. **Source:** Prepared by the authors (2023).

Figure 5 shows a seasonal analysis of the admission period of hospitalized patients with the primary ICD T06.0 at the Municipal Hospital of Santarém-PA, where we observed the monthly records of this ICD.

Figure 5 – Admission period of polytrauma patients classified as primary ICD T06.0. Hospitalized at the Municipal Hospital of Santarém-PA.



Caption: The caption for S06.0 "Brain and cranial nerve injuries with nerve and spinal cord injuries at the neck level" has been adopted. **Source:** Prepared by the authors (2023).

The temporal analysis showed that the months with the highest occurrence were December 2018, with a total of 06 records, and February 2019 with the occurrence of 02 cases.

DISCUSSION

According to the findings of this study, the lower limbs are more affected. Studies indicate that in orthopedic experiences, the care of polytrauma patients is always preceded by trauma of either the upper limbs or lower limbs, and it is possible to have trauma in more than one segment. However, some studies disagree on this, and these point to a prevalence of the upper parts in polytrauma patients, representing 57.3% for these cases, among which the head and neck are the parts that most predominated, standing out as the limbs with the highest occurrence of injuries (Gomes, 2021).

In this context, there is a prevalence of polytrauma patients in the metropolitan city of Belém-PA, and studies carried out with patients who are victims of multiple trauma indicate cases with multiple body segments with an estimated 26.9%. These listed the patients were listed according to the body segments, which obtained a prevalence of 22.7% for the lower limbs, thus somatizing with the data that were the most prevalent in this present study carried out in Santarém-PA, although there is a representation of 11.3% for the upper limbs found in patients who suffered multiple traumas attended by the SAMU (Mobile Emergency

Care Service) in Belém-PA, diverging from the data of this research in this aspect (Souza et al., 2022).

It is also noteworthy that corroborative findings were carried out in a Public Hospital in São Paulo with several 2,390 for orthopedic patients, but of these there were only 160 patients diagnosed as polytrauma, among whom several body segments were affected, such as fractures of the radius and clavicle, fracture of the humerus and radius, fracture of the femur and fracture of the radius, fracture of the tibia with femur, among other segments that had a predominance for the lower limbs with 29.2%, followed by upper limbs with 16% in addition to this study (Silva; Araújo, 2009).

Thus, when analyzing the profile of these orthopedic patients who were injured in Santarém, it was observed that people over 60 years of age suffered more accidents related to the lower limbs, differing in most studies that indicate a higher occurrence in people of reproductive age, as witnessed in a study in Terezinha, which mostly represented the age group for young men with 81% and between 18 and 38 years with 61.9% of the sample (Santos et al., 2016).

Therefore, it is emphasized that people over 60 years of age are considered elderly, and they go through changes, whether physiological or pathological, such as the emergence of chronic-degenerative diseases, in addition to diseases such as arthrosis, osteoporosis, which compromise this group, facilitating the occurrence of orthopedic traumas with a special focus on victims of polytrauma, evidenced by the literature, the involvement of lower limbs such as hip and femur, as evidenced by research carried out at the Regional Hospital of Taguatinga, which reported a higher occurrence of these multiple traumas for patients in the age group of 60 years of age, with 55.7% and only 34% for the age group between 25 and 60 years (Sousa et al., 2022).

The higher occurrence for males contributes to this admission profile, which stands out from reproductive age to the physiological and pathological senescence phase, and it is possible to demonstrate the prevalence of males and reproductive adulthood in 197 of the patients treated from 2018 to 2020 by the Professor Agamenon Magalhães Regional Hospital, with 111 (56.35%) for men, in the age group of 50 years (Pereira; Carvalho, 2022).

This corroborates Nascimento et al., (2020), who presented a higher occurrence directed to adult patients of reproductive age in the age group of 40 years. In addition to this, the greater involvement in people over 60 years of age for males, 55.66%, evidenced the predominance of males in both age groups, which can be explained by several

conditioning factors, among which lack of attention, impulsivity, among other triggering factors, stand out (Sousa et al., 2022).

For some authors, several factors are causes of multiple traumas and, as evidenced in this study in a relationship with primary ICDs, there were victims of multiple fractures in different scenarios, with special attention to those of unspecified falls that can occur on public roads, indoors, among other possible places that characterize falls from one's height or other specifications, as well as the occurrence of these primary ICDs intertwined with the occurrence of traffic accidents defined by traffic accidents, reported by Silva and Araújo (2009), in their 160 patients who were victims of multiple traumas with the ICDs highlighted in this study, where there was an estimate of 76.2% for cases of traffic accidents and only 11.9% for falls, What it was possible to perceive was a difference in the data found by this research, which found the prevalence for falls without specifications.

About the age groups presented, it is observed that the literature pointed out that traffic accidents had the highest rates with 74.0% (355/480) in patients aged 20 to 59 years, followed by falls (130) and aggressions (122) for patients who were victims of multiple traumas distributed in 944 identified cases (Souza et al., 2022). Thus, we have in traffic accidents several situations that arrive at the emergency room of the Municipal Hospital of Santarém, among which we can highlight traffic accidents caused by motorcycles, car accidents and even bicycles, which is in line with the data Santos et al., (2016), that these accidents can be related to lack of attention when driving, the little experience to drive, the motivation and influence of the group of friends, the consumption of alcohol and drugs, driving at excessive speed, risky maneuvers, impulsiveness, among other characteristics.

In this context, it is also noteworthy that this present research took place in the period from December 2017 to December 2021, and it was between this period that there was an event that marked humanity, which may have contributed to the increase in external causes for unspecified falls, and this period is known as a historical milestone marked by the advent of the COVID-19 pandemic that emerged in Brazil between March and April 2020, where there were reductions in non-essential activities, and restriction of travel with the establishment of social isolation.

In Marques' (2022) studies, it was observed that the group studied in the pre-pandemic period had a representation of 67 (37.9%) for hospitalized patients who were victims of traffic accidents, followed by 48 cases (27.1%) for assaults, 60 cases (33.9%) for falls, one case (0.6%) for suicide attempts, and one case (0.6%) for other etiologies. Compared to the group studied during the pandemic, there were results of 47 cases

(36.2%) for patients resulting from falls, 47 (36.2%) due to traffic accidents, 33 (25.4%) due to aggression, two cases (1.5%) due to suicide attempts, and one case (0.8%) due to other causes.

Regarding the admission of the patient in this study, when the months of occurrence of polytrauma were verified about the primary ICDs, in general it was noted that the months with the most occurrences were for the months marked by festivals and vacations, and this is described in some literatures that highlight the higher prevalence for the month of vacation in December, but there is a high occurrence in festive months marked by cultural events, so it was possible to notice in this study the prevalence for September, which had more cases due to this month being marked by the Çairé/Sairé festivities.

This is demonstrated in a seasonal distribution of care for polytrauma patients, with the vast majority being attended in June and December in the months of vacations and parties, contributing to the present research, after all, in September the Festival of Çairé/Sairé de Alter do Chão is celebrated in Santarém-PA, characterized by an event marked by popular manifestations of the Amazonian culture of Western Pará, with a religious and cultural character for , given that it is a time when religious rituals, dances, music, cuisine and staging of the legend of the dolphin are brought together (Costa, 2018; Silva et al., 2016).

Next, in this study, the analyses related to the municipalities demonstrated a prevalence of the city of Santarém for all primary ICDs when verifying the types of polytraumas, both for upper and lower limbs, and this is corroborated in the studies by Sousa et al., (2017) in which patients hospitalized for traumatic accidents registered in the HOSPUB (Integrated System for the Computerization of Hospital Environment) in 2013 in Santarém-PA, It was observed that the upper limbs corresponded to 48.30% (n=284) of the procedures performed, followed by the lower limbs, with 39.46% (n=232), and among various procedures performed in hospitalized patients victims of orthopedic traumas, we highlight the upper and lower regions with varied traumas for cervical, thoracic, radius, wrist, pelvis, femur, tibia, among other segments.

In addition, about the municipality of Santarém, a higher admission of patients was demonstrated among the municipalities of the State of Pará, and this can be considered in this study because it is a larger municipality and has specialized hospitals for orthopedic care, such as the Municipal Hospital of Santarém and the Regional Hospital of Baixo Amazonas, both located in the city of Santarém-PA, which offer health care to the entire population of Santarém and neighboring cities, acting as a reference in orthopedic care for

the Lower Amazon region, with a service consisting of a specialized multiprofessional team (Pessôa et al., 2022).

The natural origin of the population victim of polytrauma treated in the reference hospitals mentioned, aimed at the care of the orthotrauma public in this study, corroborates the data obtained from research carried out with patients hospitalized in these hospitals, being carried out in a different period, which corresponds to June to August 2017, demonstrating in this time interval a greater predominance for patients from the municipality of Santarém with 44% (n=22) of the total sample, followed by the other patients from the municipality of Itaituba 14% (n=7), Mojuí 10% (n=5), Oriximiná and Belterra representing 8% each (n=4 each), Prainha 6% (n=3), Placas, Terra Santa, Óbidos, Almerim and Alenquer with 2% each, with (n=1) for each municipality (Nunes; Tavares, 2018).

Next, given the objectives of this research, this study considers in patients affected by multiple traumas through the primary ICD T06.0 (Brain and cranial nerve injuries with nerve and spinal cord trauma at the neck level), its occurrence associated with TBI, which is comprised from the brain to the spinal cord, being classified according to the type of injury, the primary one that encompasses the destruction of white matter, loss of neurons, proteins, neuroinflammation effect. And secondary, which over time causes damage to the blood-brain barrier, increased intracranial pressure, edema, among other effects (Santos, 2021).

A study was conducted with 45 patients admitted to an intensive care unit at the Hospital de Santo António in Porto, who had TBI, and of these, only 33.3% (n = 15) were admitted with a diagnosis of polytrauma and 66.7% (n = 30) with a diagnosis of TBI alone associated with polytrauma. It should be noted that TBI victims can be affected according to their classifications by subdural hematoma (80%), contusion (42.2%) and subarachnoid hemorrhage (20%) (Barroso, 2016).

When we analyzed the profile of patients who were victims of multiple trauma with the other studies, we observed that the characteristics of these people follow a worldwide pattern regarding the higher occurrence of males, representing 81.8% of the cases, observed in 198 victims of severe multiple trauma treated at the Hospital das Clínicas in São Paulo, between December 2009 and September 2011, with evidence of an age ranging from 15.9 years to 39.9 years (Liz; Aren't; Nazário, 2012).

Regarding the higher occurrence of males, it can be considered that men put themselves in more dangerous situations than women, whether due to cultural factors and lifestyle (Israel et al., 2019). Corroborating this, the data obtained from an analysis carried

out in Rio Grande do Sul, with 451 patients, showing once again the predominance of males admitted to the ICU in 2017, with a rate of 83.9% and the highest age group presented was between 22 and 27 years old, with 19.3% different from that found in this study (Schossler; Lohmann; Pissaia, 2020).

In this sense, the authors Schossler, Lohmann and Pissaia (2020), also contribute to the mechanism of trauma related to polytrauma patients with TBI, demonstrating by them that, as well as the results presented by this study in Santarém-PA, the mechanism of trauma related to falls presented 24.2% of the results, followed by 22.6% for motorcycle accidents, 14.5% for car accidents, It was then evidenced that falls and traffic accidents are predominant trauma mechanisms in other literatures, whether due to factors related to recklessness or other factors.

These analyses are corroborated by the authors Liz; Aren't; Nazário (2012), where they observed that patients with TBI admitted to the ICU who suffered similar trauma mechanisms, and of the 198 cases, traffic accidents were more predominant with 67.7%, followed by falls (24.6%) and cases of violence with 4.6%, and traffic accidents were considered the first cause of death in TBI.

About ICD T06.0, when its distribution in the municipalities was verified, it was noticed that it reached a higher value both for its occurrence or not in Santarém-PA when seen as the other primary ICDs in a global way, this leads us to the initial idea that the city of Santarém is a reference in specialized treatment for polytrauma patients for the other neighboring municipalities, including the presence of TBI, given that specialized care and greater resources are needed to serve this population. However, it is important to emphasize that there is underreporting linked to the occurrence of TBI in orthopedic patients, which may be due to bureaucratic issues in daily life, or due to lack of incentive or lack of more integrated care among multiprofessional teams (Pessoa et al., 2022).

Thus, about the period in which TCEs occur more frequently, several literary sources offer pertinent contributions to the present research. It is observed, in isolation, that multiple traumas, when analyzed separately, have a relationship with the International Classification of Diseases (ICD) T06.0, considered as TBI. There is a similarity in the seasonal pattern, showing a significant increase in the month that coincides with the holidays and end-of-year festivities. Specifically for this ICD, a higher incidence was found in December, a fact that can be associated with the festive period and family gatherings. When conducting an admission analysis with 1,030 patients at the Emergency Hospital of Sergipe, there was a predominance in December, with 42.7% (N=124), and February, with 36.2% (N=74), about

the occurrence of TBI among patients admitted to the urgent and emergency service. This trend can be related to the end-of-year festivities, marked by the Christmas and New Year celebrations, corroborating previous studies carried out in Santarém-PA (Rodrigues et al., 2018).

CONCLUSION

From this study, it is concluded that the profile of patients with the primary ICD T06.0 was predominantly male, followed by an age group over 40 years, coming from the city of Santarém-PA. As for the most common cause of polytrauma, we found "unspecified falls", contrasting with data that point to traffic accidents as the main cause of polytrauma. It was also found that the victims of multiple traumas had a very small sample for the primary ICD T06.0, with the majority coming from Santarém-PA. Thus, greater epidemiological control of this ICD is necessary to reduce possible underreporting.

Thus, the importance of understanding the factors of polytrauma is emphasized so that they can direct actions with more efficient strategies in emergency care units, either with measures to increase access to these victims, or with the early identification of individuals at high risk of developing TBI, providing them with comprehensive care, to mitigate and/or prevent the damage caused by multiple traumas.

Finally, it is suggested the development of new research on the theme addressed, to identify other relevant aspects for the broader knowledge of the phenomenon studied.

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