EPIDEMIOLOGICAL AND CLINICAL PROFILE OF YOUNG ADULT PATIENTS ADMITTED TO THE YELLOW ROOM OF HOSPITAL DE BASE DO DISTRITO FEDERAL'S TRAUMA CENTER

PERFIL EPIDEMIOLÓGICO E CLÍNICO DE PACIENTES ADULTOS JOVENS ADMITIDOS NA SALA AMARELA DO CENTRO DE TRAUMA DO HOSPITAL DE BASE DO DISTRITO FEDERAL

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RESUMO

O objetivo deste estudo foi conhecer o perfil epidemiológico e clínico do adulto jovem admitido na Sala Amarela do Centro de Trauma do Hospital de Base do Distrito Federal (SA-CT-HBDF). Trata-se de um estudo descritivo, transversal, prospectivo com abordagem quantitativa, cobrindo o período de março a agosto de 2016. Os resultados foram apresentados por meio de frequências simples e porcentagem realizadas com tabelas. Constatou-se a prevalência de traumas em pacientes do sexo masculino, com 69,59%, predominância de atendimentos à faixa etária de 20 a 24 anos, maior demanda no período vespertino, com 35,33%, e predominância de acidentes em via pública, com 74,50% dos casos. O estudo possibilita aos profissionais da enfermagem conhecer melhor o perfil dos pacientes atendidos constantemente nas unidades de atendimento a urgências.
Descritores: Adulto jovem; Centros de traumatologia; Ferimentos e lesões; Causas externas; Traumatismo múltiplo.

ABSTRACT

The aim of this study was to learn about the epidemiological and clinical profile of young adults admitted to the Yellow Room of Hospital de Base do Distrito Federal's Trauma Center (SA-CT-HBDF) in Brazil. This is a descriptive, cross-sectional and prospective study with a quantitative approach covering the period of March-August 2016. Its results appear via simple frequency and percentage tables. This research found a prevalence of trauma among male patients (69.59%), predominantly in the age group of 20-24 years of age, with higher admittance levels during the afternoon shift (35.33%) and a predominance of traffic accidents (74.50% of all cases). This study allows nursing professionals to improve knowledge about the profile of the patients continuously assisted at emergency care units.
Descriptors: Young adults; Traumatology centers; Wounds and injuries; External causes; Multiple trauma.

ORIGINAL

INTRODUCTION

A significant current reality is the large number of trauma crashes and accidents involving adolescents and young adults, with an increasing public health impact in relation to these age groups. The target group of this study comprises young adult trauma patients aged 15 to 29 years old admitted to the Yellow Room of Hospital de Base do Distrito Federal's Trauma Center (SA-CT-HBDF) in Brasilia, Brazil. This group includes, thus, part of the adolescent trauma patients in addition to the age groups of persons in transition to adult life.[1]

Adolescents are individuals in the age group of 12-18 years old.[1] Young adults, in turn, can be identified as belonging to the age group of 15 to 29 years old[2]. Therefore, by relating these groups to trauma figures, the age group most widely covered by our observations in this context is the group of young adults (15-29 years old).[2]

The economically active section of the population is the most affected by trauma situations, which lead to high economic and social costs. The outcomes of trauma events can include permanent and irreversible sequels with extremely high economic impacts for families and the society.[3]

The World Health Organization (WHO) reported an increase in mortality rates in this age group, with a predominance of death as a result of external causes such as car crashes, homicide and suicide, among others, and a larger number of male victims.[2]

The Brazilian Ministry of Health has carried out a study to analyze and classify mortality trends nationwide, which found a prevalence-trend in the age group of 20 to 39 years in 2000-2011 in the Midwest region. The study found that surface transport accidents and physical aggressions were the leading causes of death for both genders in the period.[4]

A significant impact can thus be seen in the number of emergency and urgent care services for this group. These services demand multidisciplinary teams, materials, inputs and adequate infrastructure, so they may be efficient and minimize the effects of injuries caused by accidents. In this regard, we now point at the distinct categories of health care services in relation to the severity of each case. In the classification of potential risks linked to injuries and to the life of trauma victims, priority is set on emergency patients facing a health state of intense suffering or death risk, who need, therefore, immediate medical care.[5]

On their turn, urgent patients are characterized by the fact that despite the absence of immediate death risk, they still face tissue and organ damage risks and must be properly assisted and treated in a timely way, thus avoiding that their status should deteriorate to become an emergency.[5]

Regarding prevention against fatal trauma situations, some important factors must be mentioned: traffic education, well-trained pre-hospital and in-hospital teams, integrated trauma systems and feasible and effective health care services at specialized trauma centers. From this perspective, the establishment of specialized trauma centers aims at providing hospital care with quality teams in order to assist trauma patients in their specific needs.

A trauma center is a multidisciplinary unit with a coordinated team of professionals. Trauma events taking place in a specific geographic area must comply with a number of referral criteria based on the types of injuries, on the need for certain medical specialties and on their availability. This organization and referral model is known as the 'primary centralization' model, following on the principle of immediate transport to the center with the highest likelihood of a definitive cure.[3]

Inaugurated in February 2011, the Trauma Center located at Hospital de Base do Distrito Federal (HBDF) is a product of the intention to provide a

central referral institution for multiple trauma patients. It currently counts with a multidisciplinary team that includes nurses, nursing technicians, physicians and expert physiotherapists working in partnership with the Urgent Mobile Care Service of the Federal District (SAMU-DF). Hospital de Base is a tertiary referral hospital with the mission of assisting severe trauma cases by providing care at its Neurosurgery (UNC), Trauma and Orthopedics (UTO), General Surgery (UCG), Vascular Surgery (UCIVASA), Oral and Maxillofacial (UBMF), and Otorhinolaryngology (ORL) units. Hospital de Base also provides psycho-social and nutritional services.[3-4]

The Trauma Center consists of the following components: a Red Room for emergency services, a Yellow Room for urgent services, and the Advanced Trauma Care Unit (USAT) to assist intensive care patients. The Trauma Center is therefore a referral unit for multiple trauma patients in the Federal District and its neighboring communities. Its Yellow Room' services are aimed at stable patients in need of special assistance.[6] The Trauma Center must provide the necessary materials and services for diagnoses and prognoses in connection with these patients. Its facilities must be properly equipped with resources that enable its multidisciplinary teams to carry out satisfactory assessments and treatments, while minimizing injuries and hemodynamic effects, and preventing patients' conditions from deteriorating into emergency conditions.

This study examines the profile of urgent trauma cases assisted at the public health care network, to show their public health outcomes by assessing trauma facts linked to patients admitted to HBDF's Yellow Room – which, as was mentioned above, is the sector aimed at less complex cases.[6]

In so doing, its specific aim is to learn about the epidemiological and clinical profile of young adults admitted to the Yellow Room.

METHOD

This is a descriptive, cross-sectional and prospective quantitative study. A cross-sectional research combines measurements at a specific point in time without subsequent measurements, and makes some associations. It demands less expenses and less time to be carried out, since it does not need to wait for the outcomes of events.[7]

This study is also part of a larger research project entitled "Clinical and epidemiological profile of patients admitted to the HBDF's Trauma Center", funded by its research foundation. It was conducted at the Yellow Room of HBDF's Trauma Center from March to August 2016 with young adult trauma patients admitted to the yellow room. Inclusion criteria were: trauma victims aged 15-29 years old of both genders upon primary admission. The study covers a total of 3051 admissions and a sample of 651 eligible patients.

We collected stratified data covering alternate weeks, that is, day-shift and night-shift weeks from Mondays to Fridays with their 12-hour regime, and two weekends per month. The data collection effort encompassed a period of six months from March to August 2016.

A data-collection tool was developed for this specific research covering 30 qualitative variables on trauma patients that include gender, age group, work shift, day of the week, professionals and procedures, admission point, primary care institution, administrative region where the incident occurred, type of incident and types of injuries, signs and symptoms.

The data was collated into an Excel databank and subsequently treated using the SPSS v.20.0 software for Windows. Research results were presented as simple frequencies and percentages on tables, which were then analyzed. A number of scientific articles were also used as a basis for relevant information in connection with the research results.

The data was collected from the admission records of HBDF's Trauma

Center, authorized by the Research Ethics Committee of the Federal District Teaching and Research Foundation for Health Sciences via Informed Opinion 994,833 of March 9, 2015.

RESULTS

Regarding emergency trauma services at SA-CT-HBDF, Table 1 shows a prevalence of male patients (69.59%) and a prevalence of the age group of 20 to 24 years, with 41.63% of all patients. We also found a lower percentage, of 18.89%, of admissions in the age group of 15 to 19 years old.

The highest concentration of services was found in the afternoon shift, with 35.33% of all admissions, though without a significant difference vis-à-vis the morning shift, which accounted for 34.10% of the admissions. In terms of the days of the week, Mondays accounted for 19.97% of admissions, followed by Tuesdays and Wednesdays with 17.05% and 16.13%, respectively. 49.92% of all patients admitted to SA-CT-HBDF were brought by the Federal District Fire Brigade (CBMDF), followed by patients brought by their own means (32.10%) and by the Urgent Mobile Care Service (SAMU) of the Federal District (15.05%).

Regarding access to the Yellow Room, 30.72% of admitted patients were previously screened according to a Risk Assessment Protocol that follows the Manchester screening procedures, and 69.28% were referred by the Trauma Center. Thus, the Trauma Center was the prevalent access point. Such reality is a result of the fact that CBMDF, SAMU and local Police professionals do not refer trauma victims to screening due to the available transport conditions, which often involve the use of stretchers. Patients are taken directly to the Trauma Center, where a regular staff member fills in the patients' Emergency Admission Form.

A large number of patients were assessed by HBDF's General Surgery Unit (UCG), which accounts for 99.69% of all initial assessments, followed by the Neurosurgery Unit (UNC), with 0.31%. Subsequent assessments – when patients are referred to other units according to their aggravating factors – account for 40.33%. Secondary assessments can be held at the Trauma and Orthopedics (UTO), Neurosurgery (UNC) and Oral and Maxillofacial (UBF) units, among others. In these cases, secondary assessments can also become a source of referral for patients admitted to SA-CT-HBDF, since most of them are referred from the UCG to another clinical unit, to remain under its care until hospital discharge.

Most trauma care services in the Federal District assisted patients from the central neighborhoods of Brasilia (40.70%), followed by the neighborhoods of Guará (8.91%), other cities inside and outside the Federal District (5.99%) and São Sebastião (5.07%). As to the places where trauma incidents occurred, a predominant trend of traffic accidents is visible (74.50%), followed by other settings that include work places, fitness centers, training sites, public parks and others (15.05%), and households (8.91%).

The most frequent trauma situations were injured motorcyclist (29.34%) and car occupant (16.90%), followed by falls from standing height (10.91%). These figures show a prevalence of incidents involving motorized vehicles. The signs and symptoms reported for trauma patient assessment (Table 1) were pain (in 95.54% of all cases), visible external bleeding (17.81%) and headache (9.21%). Such signs and symptoms were a result of the conditions that trauma incidents produced in patients' bodies. The research sample of 651 patients mentioned a total of 973 signs and symptoms at the moment of admission.

Table 1: Distribution of signs and symptoms reported upon admission to the Yellow Room of HBDF's Trauma Center in 2016. Brasilia, DF, Brazil

Signs and symptoms	n	%
Pain	622	95.54%
Nausea	46	7.06%
Vertigo	26	3.99%
Respiratory distress	9	1.3%
Bleed	116	17.81%
Headache	60	9.21%
Bradycardia	4	0.61%
Tachycardia	23	3.53%
Vomit	17	2.61%
Tingling	4	0.61%
Myalgia	1	0.15%
Pallor	3	0.46%
Agitation	10	1.53%
Drowsiness	9	1.38%
Mental confusion	13	1.99%
Coma or sedation	1	0.15%
Hypoxemia	2	0.30%
Tachypnea	4	0.61%
Bradypnea	1	0.15%
Others	2	0.30%
Total	**973**	**100.00%**

As Table 2 shows and according to the numerical pain scale, from all participants who stated to feel some type of pain, 76.11% experienced pain at moderate levels, 18.35% experienced severe pain and 5.54% expressed to feel mild pain levels during the evaluation.

Table 2: Pain levels according to the numerical pain scale at the Yellow Room of HBDF's Trauma Center in 2016. Brasilia, DF, Brazil

Pain levels	n	%
Mild (1 -2)	35	5.54%
Moderate (3 – 7)	481	76.11%
Severe (8 – 10)	116	18.35%
Total	**632**	**100.00%**

In the provision of primary care services at SA-CT-HBDF, injury figures are led by head injuries (54.69%), followed by the lower (48.8%) and upper limbs (46.7%). Lower levels were recorded for abdomen (4.3%), back (5.53%) and pelvis (6.3%) injuries.

These figures suggest the hypothesis that central and less mobile body areas are less likely to be affected, depending on the trauma mechanism in each case, whereas body extremities are more likely to be affected, due to their increased exposure to trauma events and also on account of their increased mobility.

Regarding the types of lesions (Table 3), suspected fracture was found in 79.72% of the admitted patients, followed by contusion (31.03%) and cutaneous condition (27.5%). After analyzing these figures, we found that lesions are compatible with urgent care, which are also less severe by nature. It is known that depending on the affected body part or area and on its size, a lesion can be a reason for emergency care. But no cases were found in the studied population of lesions that could be characterized as severe cases, such as amputation, impalement or spinal cord injuries (0% in each category).

Table 3: Types of lesions among patients assisted at the Yellow Room of HBDF's Trauma Center in 2016. Brasilia, DF, Brazil

Lesion type	n	%
Suspected sprain	6	0.92%
Amputation	0	0%
Impalement	0	0%
Suspected dislocation	2	0.31%
Spinal cord injury	0	0%
Perforation	23	3.53%
Contusion	202	31.03%
Laceration	138	21.2%
Burn	3	0.46%
Traumatic brain injury	170	26.11%
Crush	4	0.61%
Open fracture	7	1.08%
Deformity	10	1.54%
Hematoma	51	7.83%
Suspected fracture	519	79.72%
Cutaneous condition	179	27.5%
Non-specific	45	6.91%
Corrosion	3	0.46%
Others	2	0.31%
Scalping	3	0.46%
Total	**1,367**	**100.00%**

Medication administered to patients admitted to SA-CT-HBDF was led by dipyrone (for 76.8% of all cases), followed by tenoxicam (42.5%) and sodium diclofenac (24.73%). One and the same patient could simultaneously receive more than one medication. Patients considered pain treatment at the Yellow Room to be satisfactory.

The administration of anti-tetanus serum (ATS) to 4.15% of all patients, and anti-tetanus vaccine (ATV) to 6.3% of patients shows that many patients with tissue lesions, cutaneous condition and laceration were up to date with their vaccines. This explains the low levels of immunobiologicals administered.

Trauma patients need high levels of imaging exams to help determine the necessary medical interventions and nursing procedures. Table 4 shows a significant percentage of X-ray tests (77.11%), and computerized tomography (14.44%). These figures agree with the high level of suspected fractures as the leading lesion type, in addition to a significant percentage of traumatic brain injury (TBI) cases, which frequently require imaging exams to supplement clinical assessment as a means for discarding the possibility of severe cases. Thus, complementary tests are carried out even in traumatic events characterized by less severe care. This explains the low rate of patients not submitted to any type of tests (1.08%).

Table 4: Exams on patients admitted to the Yellow Room at HBDF's Trauma Center in 2016. Brasilia, DF, Brazil

Exam type	n	%
Tomography	94	14.44%
Gasometry	2	0.31%
Urinalysis	1	0.15%
X-ray tests	502	77.11%
Hemogram	10	1.54%
Blood typing	3	0.46%
Biochemical tests	6	0.92%

TTPA tests	1	0.15%
FAST exam	5	0.77%
Capillary glycaemia	3	0.46%
ECG tests	1	0.15%
Pregnancy tests	1	0.15%
None	7	1.08%
Other	1	0.15%
Total	**637**	**100%**

After being assisted, each patient is referred to a destination suited to his or her clinical condition. According to the Yellow Room's protocol, patients can remain at its facilities for a maximum period of six hours, since its space is allotted to the provision of urgent care. Careful and fast assessments must be made at the Yellow Room to optimize its patients' time of permanence and referral to a clinic or unit suited to their individual needs and likely diagnosis.

Table 5 shows that 46.39% of all patients were discharged after being assisted at the Yellow Room, while 45.93% were referred to secondary care at other clinical units. Based on primary care findings, each patient is referred to the clinical expertise most suited to his or her likely Yellow Room diagnosis. A total of 1.38% of all patients was referred to the Red Room, indicating that some trauma events and types of lesions at urgent care facilities can require severe-care measures and emergency assistance.

Table 5: Patient referral destinations after admittance to the Yellow Room of HBDF's Trauma Center in 2016. Brasília, DF, Brazil

Referral destination	**n**	**%**
Discharge	302	46.39
Red Room	9	1.38
Evasion	28	4.3
Hospitalization	7	1.08
Surgical center	4	0.61
Hospital of origin	1	0.15
Referral	299	45.93
Discharge at request	1	0.15
Other	0	0
Total	**651**	**100%**

DISCUSSION

The provision of urgent and emergency care is part of Brazil's integrated health network, which encompasses: promotion and prevention, primary care (Basic Health Units, Prompt Service Units and other 24/7 services, the Urgent Mobile Care Service – SAMU 192, urgent care – *SOS Emergências* – and back-end wards, and intensive care units); technological innovations for priority care (strokes, myocardial infarction and trauma, including home care program *Melhor em Casa*).[8]

Brazilian urgent care facilities are faced with an intensive work in order to meet their demands, with a significant impact in terms of health expenses. According to figures of the Brazilian Ministry of Health, in the Federal District alone, a total of R$85,983,739.60 (approximately 21 million USD in September 2018) were spent with urgent care from March to August 2016.[7] Trauma care also accounts for large public health expenses in the Federal District, with a total cost of R$692,646,77 (approximately

168 thousand USD in September 2018) from March to August 2016.[9] Urgent and trauma care services have far-reaching effects for the public purse, since trauma cases require substantial expenses, patients' hospitalization for surgeries and other procedures, which may result in heavy economic, social and personal costs.[10]

The compared figures of Table 1 and of a study carried out in the city of Teresina, state of Piauí, show that men are the most frequent victims both of trauma accidents and violence, with the highest percentages found in the age group of young adults of 20 to 29 years of age.[11]

Another study carried out in the city of Picos, state of Piauí, shows that trauma cases primarily involved motorcyclists in the age group of 18-29, which accounted for 40% of admitted patients.[12] In addition to the provision of care services, most trauma hospitalization cases were in this same age group. In the city of Salvador, state of Bahia, from June to December 2008, 89.6% of all patients admitted to trauma and orthopedics facilities were males, and most of them were young.[13]

As to intervention modalities, the two institutions directly involved in mobile care in the Federal District are the Fire Brigade (CBMDF) units and the Urgent Mobile Care Service (SAMU). The Fire Brigade service is a permanent institution that plays an essential role for public safety and civil defense. One of its fields of activities encompasses search and rescue and pre-hospital care, among other tasks.[14]

SAMU, on its turn, is part of the integrated health network. It includes nursing technicians, nurses, physicians and rescuers, who are resorted to in cases of urgent or emergency needs by dialing 192. It aims at a prompt arrival to emergency settings and quick displacements and pre-hospital services until patients can reach a hospital unit.[15]

Trauma patients need early assistance in order to avoid lesions that can compromise the adequate operations of body organs and even lead to sequels. They also need to count on resolute services aimed at their signs and symptoms, which may significantly interfere in their clinical condition.

A study carried out at a tertiary hospital in the city of São Paulo pointed the following nursing diagnoses as the main ones among trauma patients: risk of infection (in 84.5% of the cases); affected skin integrity (77.9%); and pain (in 71.5% of the cases).[16] The figures show that most trauma patients are afflicted by pain. Furthermore, it is noticeable that active bleeding due to laceration or excoriation, after traumatic accidents, exposes patients to an increased risk of infection, since it makes them more vulnerable to microorganisms on affected areas, which become entry points for pathogens.

Pain must adequately be addressed in accordance with its classification as mild, moderate or severe. Specific pharmacological groups are available for each intensity level, so that their suitable treatment forms can be sought.[17]

Therapeutic options for mild pain have favored non-opioid analgesics such as dipyrone, followed by nonsteroidal anti-inflammatory drugs. Cases of moderate pain can be dealt with by associating non-opioid drugs with weak opioid drugs such as codeine or tramadol. And severe pain levels can be dealt with by

resorting to strong opioids such as morphine.[17]

At the Yellow Room at HBDF's Trauma Center, pain treatment is carried out in a gradual way and according to the pain intensity of each patient, with priority attention to initial treatment using non-opioid drugs such as dipyrone, and fast – endovenous or intramuscular – routes of administration, depending on the availability of each drug. Subsequent reassessments enable a decision about the need for adjuvant drugs after observing patients' response to their initial medication.

Traffic accidents are the most frequent cause of trauma with various levels of intensity and impact, since they occur in settings with fast vehicles such as cars, motorcycles and buses, with an increased likelihood of severe injuries as a result of their trauma mechanisms.

This study found a prevalence of trauma conditions linked to motorized vehicles, particularly accidents involving motorcyclists. It is certainly valid and necessary to emphasize the importance of traffic education activities in order to reduce accident levels, considering that their impacts for hospitals can be extremely high. Motorcyclists have a higher likelihood of experiencing traumatic injuries as a result of their traffic exposure, and of their propensity to intensely absorb the impact of collisions.

On their turn, households are settings in which electronic equipment, appliances and sharp objects might become potential sources of injuries when used inadequately or inattentively.

A research carried out in the city of Londrina, state of Paraná, found that 92.2% of all accidents involving motorized vehicles took place at public streets and roads. Accidents involving pedal vehicles amounted to 6.5% of the total number of accidents.[18]

On its turn, a study at the emergency room of a university hospital in the state of Rio Grande do Sul found that 39.10% of its recorded accidents took place at public spaces, followed by 32.47% at households and 5.34% at workplaces.[19] Therefore, no significant differences were observed vis-à-vis the present study at SA-CT-HBDF.

A study on pre-hospital mobile services in the city of Maceió, state of Alagoas, found divergent results: according to its results, trauma situations were primarily caused by firearms (31% of all cases), followed by automobile crashes (16%) and melee weapons (13%).[20] These differences can be explained by the fact that Maceió is considered one of the most violent Brazilian capitals, a situation that favors trauma conditions as a consequence of violence.[20-23]

During the data-collection stage, our research group faced difficulties in terms of collecting reliable and detailed data, as a result of the fast patient throughput at the trauma center, as well as of the inexistence of a databank for queries. The absence of additional information on traumatic accidents involving young adults of 15-29 years old was another reality, which evinced that additional studies on this topic are necessary, considering that mortality due to external causes is high in this age group. For this reason, the proposal of developing a software – the Hospital de Base do Distrito Federal's Trauma Care System (SISAT-HBDF) – has emerged with the purpose of qualifying and reorganizing

hospital services from a perspective of continuous care, while reaffirming the need to share information and, thus, contribute to knowledge dissemination among health professionals and to the provision of quality care. This new technology is a product of this group of researchers. It is already operational and its use is expected for upcoming researches.

FINAL REMARKS

This research allowed learning more about the epidemiological and clinical profile of young adults admitted to SA-CT-HBDF. Its data were organized according to the categories of gender, age group, service shift, day of the week, responsible professionals, entry points, primary care unit, origin, place of accident, type of trauma, lesion area, lesion type, signs and symptoms, pain score, exams and referral destination.

This study also evinced the need to count on health policies capable of optimizing the timing of responses to trauma situations, especially in cases of traffic accidents. Despite a predominant trend of traffic accidents in the age group under study, results can vary according to the region, as was observed by comparing the results of this study and those of another research carried out in a capital of the northeast of Brazil, which found a predominance of trauma situations as a result of violence.

It is also necessary to count on additional studies with detailed data on the trauma conditions that lead young adults to become trauma patients, especially considering that falls from standing height are one of the leading identified causes.

This study also shows that variables such as work shift and day of the week affect the services provided at urgent care units, thus enabling the effort of dimensioning work teams according to the current prevalence of services. Moreover, learning about the profile of patients admitted to urgent care units allows the development of training activities and courses in accordance with the most frequent types of services, thus favoring the increase of the available knowledge in this area and improvements in the quality of services. Finally, this study can be useful for the establishment of nursing protocols to optimize services for patients in ways that are suited to individual conditions, signs and symptoms.

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