Inpatient Pediatric Trauma Epidemiology at the Puerto Rico Trauma Hospital From 2015 Through 2019

Pedro E. Ruiz-Medina, MD, MPH*†; Ediel O. Ramos-Meléndez, MPH, DrPH*†;
Mariely Nieves-Plaza, MS, PhDc*; Laura Ramírez-Martínez, MPH*;
Adrianna Rivera-Delgado, RN, MPH†; Lourdes Guerrios-Rivera, MD, MSc*†;
Pablo Rodríguez-Ortiz, MD*†

Objective: Despite the high volume of admissions to the Puerto Rico Trauma Hospital (PRTH), there is no evidence of any recent trends related to pediatric trauma. Therefore, we aimed to update, describe, and compare the epidemiology of the pediatric (≤21 years) trauma population in PR according to age group (≤15 years and 16-21 years).

Methods: This was a retrospective cohort study of 853 PRTH pediatric admissions from January 2015 through June 2019. A comparison between age groups was done using Pearson's chi-square test. The association between age and study outcomes was evaluated with multivariate analyses.

Results: Of the admissions, 220 (25.8%) were patients aged 15 years and younger and 633 (74.2%) were patients aged 16 to 21 years; the percentage of males was higher in the latter group (65.5% vs. 79.0%; $P < .01$). Motor vehicle accidents were the primary injury mechanism. Major trauma (Injury Severity Score >15) incidence was higher in the under 15 group (40.8% vs. 24.5%; $P < .01$). After adjusting for confounders, 16- to 21-year-old trauma patients were less likely to be admitted to the intensive care unit (ICU) than were their younger counterparts but were more prone to having longer ICU and hospital stays. However, age was not associated with the need for mechanical ventilation (MV), days of MV, or in-hospital mortality.

Conclusion: Understanding the specific characteristics of our pediatric patient population can help us guide treatment and elucidate these patients' needs to improve their outcomes.

[P R Health Sci J 2025;44(1):25-31]

Key words: Trauma, Pediatric, Adolescent, Unintentional injury, Epidemiology

Trauma is often considered "the neglected disease of modern society," as first described in a landmark report by the National Academy of Sciences back in 1966 (1). Despite no longer being neglected due to an increase in national awareness, to date, trauma remains the leading cause of mortality in children over the age of 1 year in the United States (2–5). On a larger scale, the sequalae of unintentional injuries, including medical costs and emotional trauma, represent an additional burden that extends beyond the financial. When it occurs, trauma can result in significant disability and loss of life, as well as having a profound impact on society as a whole; therefore, it represents a public health problem (6,7).

Recent data show that, each year, 1 in 4 American children suffers an injury requiring urgent clinical care (8). This in turn leads to over 8.7 million hospital visits, with an estimated annual treatment cost of $350 billion (3,4). Due to the inherent differences between children and adults, these populations should be evaluated and treated separately. The few studies aimed specifically at the pediatric trauma population have found that the age of a child is predictive of both his or her risk of injury and the type of injury sustained (9,10), accentuating the importance of identifying the demographic distribution in Puerto Rico (PR).

According to the United States Census Bureau, the pediatric population, defined as persons under 18 years of age, represents roughly 20% of the total population of PR (11). Nevertheless, on the island, a person must be at least 21 years old to be considered an adult. Considering this age cutoff, the impact of pediatric trauma is probably even higher since at least one-fifth of the island's population is included in this group. Despite the high volume of admissions, there are no comprehensive data documenting recent trends related to pediatric trauma. Primarily in this study, we aimed to describe and compare pediatric trauma epidemiology in and among 2 different age groups (≤15 years and 16-21 years) in PR. Secondarily, we evaluated seasonal trends in the proportion of admissions of the members of the 2 study groups. The information gathered in this study can help improve the quality of services that are provided to this vulnerable population, considering trauma-induced disabilities, premature death, and mental health issues, as well as the associated medical costs.

*Trauma Research Program, Department of Surgery, University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Puerto Rico Trauma Hospital, San Juan, Puerto Rico

The authors have no conflict of interest to disclose.

Address correspondence to: Pedro E. Ruiz-Medina, MD, MPH, PO Box 190879, San Juan, PR 00919. Email: pedro.ruiz7@upr.edu

Methods

Study design

We conducted a retrospective cohort study of pediatric patients admitted to the PR Trauma Hospital (PRTH), the only state-designated level 1 trauma center covering PR and the rest of the Caribbean. The center takes part in the National Trauma Data Bank (NTDB), which is a dataset collected by the American College of Surgeons (ACS) that defines standardized data elements pertaining to trauma. The NTDB allows patient data to be collected in a standardized manner and facilitates comparisons with the data of patients in other hospitals, nationwide. The trauma registry contains information abstracted from medical records and is subject to a quarterly quality-control review, conducted under the guidance developed by the ACS, providing accurate data for our study.

Study population

The trauma registry of our center was queried to identify all the hospitalizations meeting the following inclusion criteria: a) being admitted to an inpatient bed from January 2015 through June 2019 and b) being 21 years of age or younger. We excluded patients who had no age, admission date, discharge date, or discharge status recorded. Pediatric trauma admissions were defined as incident (new) cases, as our center is the only one equipped and staffed to provide definitive trauma care for patients suffering from major injuries. Patients initially admitted to another care facility receive only stabilization treatment before being transferred to our institution. All the patients who took part in our study were followed from admission to discharge.

Variables

Data were extracted from the trauma registry by our biostatistician. Once the database was created, the data were de-identified to protect patient confidentiality. The exposure of interest was patient age. Therefore, we split our sample into 2 groups: 1) *the 15 years and younger group*, which is the cutoff used by the ACS Committee on Trauma to identify pediatric populations; and 2) *the 16 to 21 years group*, as in PR, patients are treated in a pediatric institution until they reach the age of 21 years. The outcomes measured were hospital length of stay (LOS), intensive care unit (ICU) stay (yes/no) and number of days, ventilator use (yes/no) and number of days, and in-hospital mortality.

Other covariates regarding the sociodemographic and injury-related domains were analyzed, as well. The sociodemographic data included sex, health insurance, health region (using the 8 regions of PR described by the government health plan), and year of admission. Injury-related data included the season of the year of the trauma, the mode of transport, the mechanism of injury (based on the International Classification of Diseases, Tenth Revision, Clinical Modification codes), the injury type, the Injury Severity Score (ISS, "an anatomical scoring system that provides an overall score for patients with multiple injuries" (12)), the Glasgow Coma Scale (GCS, the measure of a patient's response to specific stimuli to assess that individual's level of consciousness (13)) score, the diagnosis, and whether or not the patient had a blood transfusion. We also assessed the Abbreviated Injury Scale (AIS), "an anatomically-based injury severity scoring system. It classifies each injury by body region on a 6-point scale" (14). An AIS score of 1 or more indicates that the patient has sustained an injury to a body region. We also classified the AIS score using 3 main categories: An AIS of 0 meant there was no injury; an AIS of 1 or 2 indicated that the injury was mild or moderate; and an AIS of 3 to 6 signified that there was severe or serious trauma. The AIS score was, in turn, used to determine the ISS.

Statistical analysis

To describe the study population, we employed univariate statistics: medians with 25th and 75th percentiles for continuous variables and frequencies and proportions for categorical variables. In the bivariate analysis, comparisons between the study groups (≤15 years and 16-21 years) were evaluated with the Wilcoxon rank-sum test (as our data did not meet the assumptions of parametric statistics) for continuous data and with Pearson's chi-square test for categorical data. We also performed a test of proportions to compare the proportions of the admissions between the study groups, and the Cochran–Armitage test was conducted to assess the linear trend of semi-annual admissions.

We conducted univariate and multivariate regression analyses to explore the magnitude of the association between age and study outcomes. Zero-truncated negative binomial regressions were used to model ICU days, mechanical ventilation (MV) days, and hospital LOSs, as a function of age and covariates. Moreover, the association of age with ICU stay, the need for MV, and in-hospital mortality was evaluated with unconditional logistic regression. All the models were adjusted for those demographic and injury-related variables that were statistically significant in the bivariate analysis. For each outcome variable, the odds ratio (OR) or rate ratio (RR) and the 95% CI were reported.

Statistical significance was set at P being lower than .05. The statistical software Stata, version 13 (Stata Corp., College Station, TX, USA), was employed to perform the analysis. The Institutional Review Board from the Medical Sciences Campus of the University of PR approved the present study (B0030514).

Results

During the study period, there were, at the PRTH, 853 inpatient traumatic injury admissions consisting of pediatric patients aged 0 to 21 years, distributed as follows: 220 (25.8%) were 15 years old or younger and 633 (74.2%) were 16 to 21 ($P < .01$). Figure 1 shows the admission trends from January 2015 through June 2019; no significant differences were observed for the groups (≤15 years: $P = .10$; 16-21 years: $P = .08$). The overall ratio of male to female patients was 3:1, with the prevalence of males being higher in the 16 to 21 group (79.0% vs. 65.5%; $P < .01$). The percentage of patients admitted with private health insurance was significantly greater in the 15 years and under group (59.1% vs. 49.1%; $P = .02$).

The occurrence of injury in those aged 15 years and under was higher during spring and summer (29.6% each), while in those aged 16 to 21, injuries occurred more often during winter (27.0%) and spring (26.4%) ($P = .05$). Motor vehicle accidents were the primary mechanism of injury in both pediatric groups. However, pedestrian

injuries and falls were predominant in the 15 years and under group, while the 16 to 21 group experienced injuries more in the nature of gunshot wounds (GSWs) and stab wounds ($P < .01$). The latter fact highlights the predominance of penetrating injuries among those aged 16 to 21 compared to their younger counterparts ($P < .01$).

The proportion of patients with an ISS greater than 15 was significantly higher in the 16 to 21 years group than it was the younger group (40.8% vs. 24.5%; $P < .01$). In general, these patients had baseline GCSs greater than or equal to 13 (76.9%); fractures were the most common diagnosis in both pediatric groups (79.7%) ($P > .05$). A demographic and injury-related profile is presented in Table 1.

Figure 1. Pediatric Admissions Trends: 2015 – 2019 (N = 853)

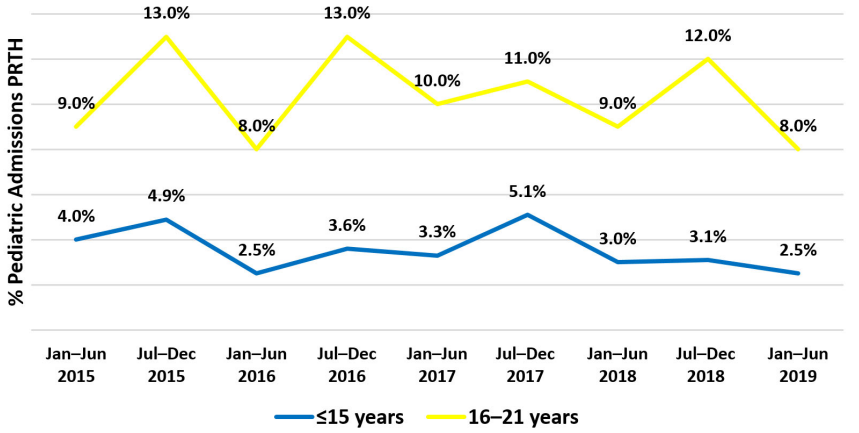


Figure 2 shows the percentage of patients with injuries that were scored (using the AIS) as 1 or greater per body region in the pediatric population. The most common sites of injury in both pediatric groups were the extremities, chest, and abdomen, with all 3 being more frequently found to be injured in the 16 to 21 group than in the 15 years old or younger one ($P < .05$). Those patients aged 16 to 21 suffered more severe (≥3) trauma to the chest (31.8% vs. 18.2%; $P < .01$) and extremities (25.4% vs. 14.6%; $P < .01$) compared to their younger counterparts (data not shown). There were no statistically significant differences in the head/neck, face, or external body regions (integument) ($P > .05$) (data not shown).

Table 2 shows the trauma outcomes of the pediatric patients in our study. The median hospital LOS was higher in the 16 to 21 group than in the 15 years old or younger group (8 days vs. 5 days; $P < .01$). Even though more patients aged 15 years or younger were admitted to the ICU ($P < .01$), those aged 16 to 21 had longer median ICU stays (10 days vs. 3 days; $P < .01$). No significant differences were observed for ventilator support, MV days, or mortality between the groups ($P > .05$).

The estimates of the association of age with study outcomes, adjusted for sex, insurance, injury type, and ISS, are depicted in Table 3. Those trauma patients aged 16 to 21 years old were 75% (adjusted OR = 0.25; 95% CI: 0.17-0.36) less likely to be admitted to the ICU compared to those aged 15 years or younger. However, age was significantly associated with the ICU and hospital LOSs, with those aged 16 to 21 years old having ICU stays that were 2.35 (95% CI: 1.76-3.13) times longer and hospital LOSs that were 28% (adjusted RR = 1.28; 95% CI: 1.08-1.53) longer than did patients who were 15 years old or younger. The age of the patient was not associated with the need for MV, the number of days of MV (when needed), or in-hospital mortality in the multivariate analyses.

Discussion

Despite advances in technology and an increase in public awareness, trauma and injury continue to be common in children and remain an important cause of morbidity and mortality (15). As should be evident, children are not immune to injury, and our results show that a child's or young person's age is associated with an increased risk of specific types and mechanisms of injury along with differences in trauma-related outcomes. Therefore, our analysis focused on describing and comparing 2 age groups (≤15 years and 16-21 years). We found that, compared to those 15 years and younger, the pediatric trauma population aged 16 to 21 years was more likely to spend more days in the ICU and, overall, have longer hospital stays as a result. However, this group was less likely to be admitted to the ICU compared to the 15 years and younger group. Of note, in terms of admission trends, there were no significant differences between the 2 groups during the study period. Through the years, we have seen declines in deaths from infectious disease and cancer, mainly because of the ability to perform earlier diagnoses and the advent of immunizations, antibiotics, and more advanced medical and surgical treatments. These declines have given way to increases in deaths from injury-related causes, including motor vehicle crashes and firearm injuries, among others (10).

Age, as well as other factors such as sex, behavioral patterns, and environment, influence pediatric injuries (16). In our study, we defined the first group of pediatric patients as those who fell under the age of 16 years, the same cutoff used by the ACS Committee on Trauma to identify the pediatric population. We decided to include a second group of patients, composed of those aged from 16 to 21years, since, in PR, such patients would be treated in a pediatric institution because of their age (≤21 years). Our results showed that, in both groups, male patients were affected by trauma more than their female counterparts were. As has been seen in previous studies, sex itself is a risk factor for the occurrence of trauma (6,10,16–18). In our study, members of the male population presented more often to the hospital due to trauma than did the members of the female population. This could be because boys are generally considered to be more physically active and more prone to aggressive behavior than girls as well as tending to show more interest in competitive and physical activities (6,7,10). In terms of injury variability given the season of the year, no other study considers this aspect in its analysis. In our case, while both groups

Table 1. Sociodemographic and Injury-related Profile of Pediatric Trauma Patients admitted to the Puerto Rico Trauma Hospital according to Age Group (N = 853).

Variable	Total n (%)	≤15 years (n = 220) n (%)	16-21 years (n = 633) n (%)	*P* value
Sociodemographic Data				
Sex				<.01
Male	644 (75.5)	144 (65.5)	500 (79.0)	
Female	209 (24.5)	76 (34.5)	133 (21.0)	
Insurance				.02
Self-pay	45 (5.3)	13 (5.9)	32 (5.1)	
Private	441 (51.7)	130 (59.1)	311 (49.1)	
Public	367 (43.0)	77 (35.0)	290 (45.8)	
Health Region (n = 830)		(md = 4)	(md = 19)	-
West	95 (11.5)	23 (10.6)	72 (11.7)	
North	93 (11.2)	26 (12.0)	67 (10.9)	
Metro North	157 (18.9)	46 (21.3)	111 (18.1)	
San Juan	125 (15.1)	33 (15.3)	92 (15.0)	
Northeast	94 (11.3)	21 (9.7)	73 (11.9)	
Southwest	58 (6.9)	16 (7.4)	42 (6.8)	
Southeast	68 (8.2)	17 (7.9)	51 (8.3)	
East	140 (16.9)	34 (15.8)	106 (17.3)	
Other	13 (1.5)	2 (1.0)	11 (1.7)	
Season				.05
Spring	232 (27.2)	65 (29.6)	167 (26.4)	
Summer	227 (26.6)	65 (29.6)	162 (25.6)	
Fall	184 (21.6)	51 (23.1)	133 (21.0)	
Winter	210 (24.6)	39 (17.7)	171 (27.0)	
Mode of transport to the PRTH (n = 850)		*(md = 1)*	*(md = 2)*	.14
Ground ambulance	735 (86.5)	183 (83.5)	552 (87.5)	
Air ambulance	102 (12.0)	34 (15.5)	68 (10.8)	
Other	13 (1.5)	2 (1.0)	11 (1.7)	
Injury-Related Data				
Mechanism of injury				<.01
Motor vehicle accident	435 (51.0)	83 (37.7)	352 (55.6)	
GSW	177 (20.8)	14 (6.4)	163 (25.7)	
Stab wound	30 (3.5)	4 (1.8)	26 (4.1)	
Pedestrian/cyclist vs. motor vehicle	81 (9.5)	48 (21.8)	33 (5.2)	
Fall	80 (9.3)	46 (20.9)	34 (5.4)	
Other	50 (5.9)	25 (11.4)	25 (4.0)	
Injury type				<.01
Blunt	627 (73.5)	192 (87.3)	435 (68.7)	
Penetrating	214 (25.1)	22 (10.0)	192 (30.3)	
Other	12 (1.4)	6 (2.7)	6 (1.0)	
ISS				<.01
1–15	540 (63.4)	166 (75.5)	374 (59.2)	
16–75	312 (36.6)	54 (24.5)	258 (40.8)	
GCS (n = 850)			(md = 3)	.69
3–8	144 (16.9)	41 (18.6)	103 (16.4)	
9–12	52 (6.2)	12 (5.5)	40 (6.4)	
13–15	654 (76.9)	167 (75.9)	487 (77.3)	
Diagnosis				.14
Fracture	680 (79.7)	168 (76.4)	512 (80.9)	
Open wound	107 (12.5)	36 (16.4)	71 (11.2)	
Other	66 (7.8)	16 (7.2)	50 (7.9)	
Blood transfusion				
Yes	75 (8.8)	18 (8.2)	57 (9.0)	.71

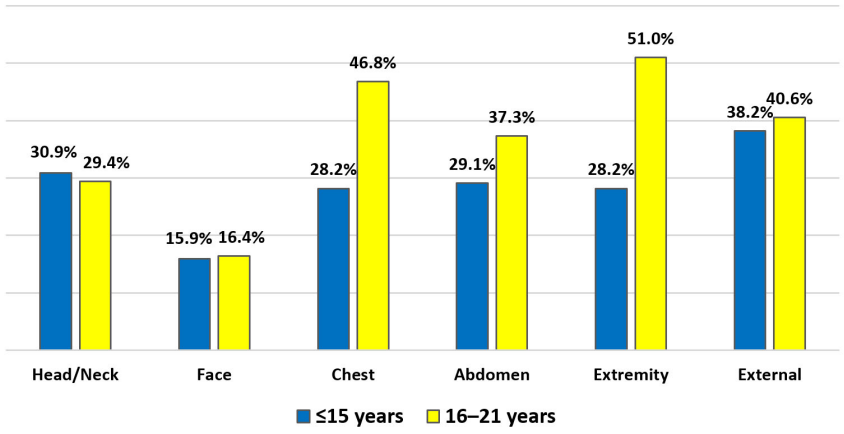
GCS: Glasgow Coma Scale; GSW: gunshot wound; ISS: Injury Severity Score; md: missing data; PRTH: Puerto Rico Trauma Hospital

had a high occurrence of trauma in the spring months, the 15 years and younger cohort had a peak in the summer, while the 16 to 21 years of age cohort had a higher incidence in the winter. We theorized that given that the summer and winter months are associated with school breaks, this allows the members of each group to partake in physical/social activities that put them at a higher-than-normal risk for injury.

Injuries were classified according to the underlying mechanism (e.g., motor vehicle accident, GSW, fall) in order to understand the possible associated risks and protective factors, which would allow for the development of effective prevention strategies in the future. For both groups, motor vehicle accidents were the predominant mechanism of injury, similar to what has been seen in other pediatric studies (3,10,19–21). Despite the interplay between technological improvements in safety, legislative initiatives, and improved injury care, and an apparent decline in the incidence of such trauma, as reported by other studies (10), the fact is that motor vehicle accidents remain the prevalent mechanism of injury in this population, regardless of age (3,10,19).

While motor vehicle accidents remain the most important cause of pediatric trauma, assaults, including GSWs, were the second most common mechanism of severe injury in those aged 16 to 21 years. These results are consistent with those of prior studies (3,22) and highlight an important public health challenge (3). Older children are more likely to engage in more dangerous activities compared to their younger counterparts, as the former are less likely than the latter to be dependent on their parents and are more likely to engage in risk-taking behaviors and be driven by peer pressure, which would explain the difference in the type and commonness of trauma (7,22). Some studies have reported that socioeconomic status is a direct risk factor for GSWs (22); however, socioeconomic factors seem to be a risk factor, no matter the type of injury (7,23,24). In our study, most patients had private health insurance, consonant with findings of the US Census Bureau (25). Nonetheless, traditionally low socioeconomic status has been correlated with a higher rate of injury in children (21,23,26).

Figure 2. Percentage of Patients with Injures Scored 1 or Greater by the Abbreviated Injury Scale, per Body Region (N=853).



For the 15 years and younger group, the second and third most common mechanisms of trauma were pedestrian injuries and falls (3). Pediatric falls are frequently seen in young children and can cause injuries requiring hospitalization (27). As a child ages, mobility naturally increases, from that individual's progressing from being able to roll over, to sitting up, to pulling to a standing position, and to eventually walking, running, and climbing. As expected, those aged 15 years and younger had a higher percentage of fall-related traumas. Regardless of the mechanism of injury, the most common sites of injury for both pediatric groups were the extremities. This was closely followed by the chest and abdominal regions, as seen in Figure 2. Not many studies, specifically in children, take into consideration which body part was the most injured; however, those that do are usually studies that focus on fractures. Of all the regions of the body mentioned in such studies, the extremities are the most common sites of injury, as well (3,8).

For injury severity, the clinical profile, and trauma outcomes, we analyzed different sets of variables, including the ISS, the LOS, the ICU stay, the need for MV, and mortality. In our study, most of the patients presented with a low ISS (≤15), which is comparable to what has been seen in other studies in the literature (28,29). However, when we compared the 2 study groups, we found that a greater percentage of patients aged 16 to 21 years old had a high ISS (>15) than was the case in the patients in the younger (≤15 years) group. If we take a closer look at the patients who were severely injured (ISS>15; such patients are more likely to suffer greater morbidity and mortality as well as endure longer hospitalizations), this group represents roughly 36% of all the patients in our study. In a study in Germany, the severely injured group totaled 32%, which is in the same range that our patient group is in (30).

One aspect to consider during trauma admissions is the LOS; we found that the 16 to 21 cohort spent more days hospitalized on average compared to the younger cohort. In previous studies, the LOS might have been as low as 2 days and as high as 7 (3,29). When combined, the median LOS for all our pediatric patients was 7 days. The LOS can have a serious economic impact on both the health care system and the patient's family; we are not able to address this, but it is an area of future research interest. It was interesting to notice that, even though more patients aged 15 years and younger were admitted to the ICU, it was the 16 to 21 years cohort that spent the most days in it (3 vs. 10). This makes sense considering that the members of this latter group presented with higher ISSs than did the 15 years and younger group. However, despite this stark difference, the use of MV, while higher for the 16 to 21 years group, was not statistically different than that use in the 15 years or younger group. Likewise, mortality was similar for both groups, being 7.5%, on average. In recent literature, mortality for the pediatric group was found to be as low as 0.9% and as high as 25%, depending on the setting of the treatment, injury mechanism, and pediatric age cutoff used for the study, among other factors (4,5,16,17). The risk factors associated with mortality can be both direct (e.g., injury mechanism) and indirect (e.g., lack of health insurance) (19). In our multivariate analysis, estimates of the association of age with study outcomes, adjusted for sex, insurance, injury type, and ISS, confirmed that the trauma population aged 16 to 21 years was less likely to be admitted to the ICU and yet, when admitted, more likely to spend more days

Table 2. Trauma Outcomes of Pediatric Injuries in the Puerto Rico Trauma Hospital (N = 853)

Variable	Total n (%)	≤15 years (n = 220) n (%)	16-21 years (n = 633) n (%)	*P* value
Hospital LOS, days				<.01
Median (p25, p75)	7 (4, 13)	5 (3, 11)	8 (4, 15)	
ICU stay				<.01
Yes	245 (28.9)	98 (45.2)	147 (23.3)	
ICU, days *(n = 245)*				<.01
Median (p25, p75)	6 (3, 14)	3 (2, 6)	10 (5, 17)	
MV				.13
Yes	244 (28.7)	54 (24.7)	190 (30.1)	
MV, days *(n = 244)*				.10
Median (p25, p75)	4 (2, 12)	3 (2, 8)	5 (2, 14)	
Mortality				.88
Yes	64 (7.5)	16 (7.3)	48 (7.6)	

*Data are presented in frequencies and percentages unless otherwise stated. ICU: intensive care unit; LOS: length of stay; MV: mechanical ventilation; p25 or p75: 25th or 75th percentile

Table 3. Estimates of the Association of Age with Patient Outcomes at the Puerto Rico Trauma Hospital (N = 853).

Categorical Outcome	OR† (95% CI)	AOR† (95% CI)[a]
Admission to ICU 16-21 years*	0.37 (0.27 – 0.51)	0.25 (0.17 – 0.36)
MV Required 16-21 years*	1.31 (0.92 – 1.87)	0.79 (0.53 – 1.19)
In-Hospital Mortality 16-21 years*	1.05 (0.58 – 1.88)	0.59 (0.30 – 1.15)
Count Outcomes	**RR‡ (95% CI)**	**ARR‡ (95% CI)[a]**
ICU, days 16-21 years*	2.96 (2.21 – 3.96)	2.35 (1.76 – 3.13)
MV, days 16-21 years*	1.60 (1.01 – 2.53)	1.53 (0.98 – 2.37)
Hospital LOS 16-21 years*	1.43 (1.19 – 1.72)	1.28 (1.08 – 1.53)

†Logistic regression. ‡Zero-truncated negative binomial regression. AOR: adjusted odds ratio; ARR: adjusted rate ratio. a: adjusted for sex, insurance, injury type, and Injury Severity Score. *≤15 years group was used as reference category.

in it and have longer overall hospital stays. Surprisingly, age was not associated with the need for MV, days on MV, or in-hospital mortality.

There are several limitations to our study. First, the study relies on registry-based data that uses medical records as the source of information. This inherently restricted our data to the information available on each record. Second, this is a single-center study, which may impact its applicability to other centers and populations. However, the PRTH is the only state-designated level 1 trauma center covering PR and the rest of the Caribbean. This guarantees that all the patients with a high ISS or those included in the severely injured category will be treated at our hospital, which translates to adequate representation in our study. However, those patients that fall below the ISS designation of severely injured may arrive at the PRTH or, possibly, another pediatric institution, which may affect the number of cases and the overall incidence of this group of patients, in our study. Future research should evaluate multiple pediatric centers, specifically, focusing on ER visits or admissions. Such a study should also include, if available, the reason for a given injury's occurrence, which is an important consideration in this population as many different types of abuse are disguised as "accidents." Notwithstanding these constraints, every effort has been made to faithfully represent the scope of the pediatric admissions to the PRTH.

Despite these limitations, the study has some strengths. First, its design allowed the study of multiple parameters associated with age, providing a general knowledge of the specific outcomes related to trauma within the pediatric population. In addition, since we made use of regression models, the control of confounding was possible, thus providing better estimates of the factors studied.

Conclusions

Our study is the first to characterize the epidemiology of pediatric trauma in the principal trauma-serving institution of PR. Evidenced in this study is the fact that age and sex are important factors in pediatric trauma. In particular, if we take a closer look at the pediatric population in our study aged 16 to 21 years, we see that although these patients were less likely to be admitted to the ICU, once admitted, they were more likely to have longer ICU stays and prolonged hospitalizations. But why does it matter what we expect to happen with this population? The significance of our study lies in the understanding that identifying the mechanisms of pediatric injury and their associated factors is critical to planning response protocols, especially because our trauma center is not a dedicated pediatric center. We must equip ourselves with the knowledge needed to better serve this population. We are committed to using this information to become advocates and create better prevention strategies to improve child safety; such strategies have proven to be effective in the past. It is by learning what to expect that we can prevent, treat, and, hopefully, have a lasting impact on the future of our society, the children.

Resumen

Objetivo: A pesar del alto volumen de admisiones al Hospital de Trauma de Puerto Rico (HTPR), no hay evidencia de tendencias recientes relacionadas con el trauma pediátrico. Entonces, nos propusimos actualizar, describir y comparar la epidemiología de la población traumatológica pediátrica (≤21 años) en PR, según grupo de edad (≤15 años y 16-21 años). Métodos: Se realizó un estudio de cohorte retrospectivo de 853 admisiones pediátricas al HTPR desde enero 2015 hasta junio 2019. La comparación entre grupos se realizó mediante la prueba de chi-cuadrado de Pearson. La asociación entre la edad y las variables de resultado se evaluó mediante análisis multivariados. Resultados: De las admisiones, 220 (25.8%) fueron pacientes de ≤15 años y 633 (74.2%) fueron pacientes de 16-21 años; El porcentaje de varones fue mayor en el último grupo (65.5% vs. 79.0%; P < 0.01). Los accidentes automovilísticos fueron el principal mecanismo de lesión. El trauma severo, *Injury Severity Score* >15, fue mayor en el grupo de ≤15 años (40.8% vs. 24.5%; P < 0.01). En el análisis multivariado, los pacientes de 16-21 años tenían menos probabilidades de ser admitidos en la unidad de cuidados intensivos (UCI) que sus contrapartes más jóvenes, pero fueron más propensos a tener estancias más prolongadas en la UCI y el hospital. La edad no se asoció con la necesidad de ventilación mecánica (VM), días de VM o mortalidad. Conclusión: Comprender las características específicas de la población pediátrica puede ayudar a guiar el tratamiento y a dilucidar sus necesidades para mejorar sus resultados.

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