

# Facial Trauma Prevalence from Traffic Accidents in the City of Cuenca - Ecuador, 2017

Prevalencia de Trauma Facial por Accidentes de Tránsito  
en el Año 2017 en la Ciudad de Cuenca-Ecuador

Chérrez Rodas María Verónica<sup>1</sup> & Reinoso-Quezada Santiago<sup>2</sup>

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**ABSTRACT:** Trauma is defined as physical damage by the use of external force towards the human body. (Salazar *et al.*, 2019). The etiology of facial trauma is multifactorial. Contusions caused by traffic accidents constitute the eighth cause of death worldwide. The aim of this study is to determine the prevalence of facial trauma due to vehicular accidents in 2017, and its relationship with age, gender and frequency in the level of emergency care at Vicente Corral Moscoso (VCMH) and José Carrasco Arteaga (JCAH) hospitals. In this way, real statistical information will be registered related to the degree of trauma, main causes and initial management, providing elements for the planning and execution of new studies, thus establishing prevention measures in the city of Cuenca. This is a retrospective descriptive study, carried out with data collection and authorized analysis of cases of patients diagnosed with facial trauma due to vehicular accidents who attended VCMH and JCAH emergency units in Cuenca Ecuador, in 2017. Variables were analyzed: hospital operating units, gender, age, type of facial trauma distribution, type of vehicle and ethylic status. The total prevalence of facial trauma due to vehicular accidents in the city of Cuenca in 2017 was 3.34 % from which, the male gender exceeded the female group, representing a 69.76 %, being the 20 to 44-year-old-group more prevalent with a 57.56 %. Panfacial trauma predominated representing a 28.48 %. The kind of vehicle which was commonly used up to a 65.69 % was an automobile. Ethyl breath was detected in 38 % of the patients. A predominance of Panfacial trauma was evidenced in the male sex and in the age group of 20-44. The kind of vehicle which was commonly used was the automobile. Ethyl status was verified in 4 of 10 patients.

**KEY WORDS:** Facial trauma, vehicular accident, epidemiology.

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## INTRODUCTION

World Health Organization (WHO) defines trauma as "an intentional or unintentional damage to the human body caused by sudden exposure to energy sources that exceed its tolerance margin" (Campolo *et al.*, 2017).

Craniofacial trauma is an injury that encompasses bone and soft tissues. As well as the dentoalveolar complex, which may or may not occur together with other serious trauma to the body, mainly in the cervical and intracranial area (Campolo *et al.*). Craniofacial injuries can include pure facial fractures, soft tissue contusions, nerve and visceral injuries (Hernández, 2010).

The etiology of facial trauma is multifactorial; among its main causes are vehicle accidents, sports accidents, interpersonal attacks and falls. Certain causes of trauma, such as interpersonal attacks, may be related to the socio-cultural level of population, the prevalence of alcohol and drug consumption that sometimes can cause these kinds of accidents (Mardones *et al.*, 2011). In the polytraumatized group, facial trauma occupies a 30 % and its male-female ratio is 3 vs 1 respectively (Hernández).

Bruises caused by traffic accidents are the eighth cause of death worldwide; approximately 1.3 million people die each year and 50 million are injured. The

<sup>1</sup> Graduate of Dentistry. Catholic University of Cuenca, Ecuador.

<sup>2</sup> Maxillofacial Surgeon Catholic University of Cuenca, Dentistry Faculty Catholic University of Cuenca, Ecuador.

incidence particularly lies in young people between 15 and 29 years old, that is why it is established as a public health problem (Agudelo *et al.*, 2015).

Ecuador ranks second in Latin America with the highest numbers of deaths from traffic accidents, acquiring a mortality rate of 27 per 100,000 inhabitants, data reported in 2015, which is exceeding the global average (Román, 2015). The National Institute of Statistics and Censuses (INEC) has reported that in 2017 there were 28,967 traffic accidents, leaving 2,153 deaths (Calle, 2018). It has been reported that Azuay province is the third one with the highest frequency of traffic accidents in 2017, and Guayas occupies the first place, followed by the province of Pichincha (Román).

Therefore, the objective of this research was to determine the prevalence of facial trauma due to a vehicular accident in 2017 in the city of Cuenca.

## MATERIAL AND METHOD

A retrospective study was carried out on cases of facial trauma caused by a traffic accident, which were treated in the emergency units of Vicente Corral Moscoso and José Carrasco Arteaga hospitals in the city of Cuenca, in 2017. The information was obtained through the authorized review of clinical records.

The type of vehicular accident was classified as a vehicle or motorcycle accident. On the other hand, the type of facial trauma was classified into fractures of: upper third, middle third, lower third, combined and panfacial. The operating unit where each of these traumas was treated was specified as: VCMH and JCAH emergency centers. Introducing the analysis of gender and age variables, this study was approved by Academic Unit of Health and Wellbeing in the Catholic University of Cuenca and by the Ethics Committee of San Francisco de Quito University.

## RESULTS

The total population was 172 files related to facial trauma due to traffic accidents, representing a 3.34 % of trauma in the city of Cuenca in 2017. According to the hospital operating unit, the database of the emergency department was used. 151 files were

obtained from Vicente Corral Moscoso hospital, and 21 cards correspond to José Carrasco Arteaga hospital.

Regarding sex, the male sex was the most represented, with a total of 120 cards (69.76 %), while the female sex was represented with 52 cards (24 %). Regarding the age group, the most affected age was 20 to 44 years (57.56 %), followed by those patients between 45 and 64 years (15.12 %). There were no cases in the group of 6 to 9 years.

The predominant type of facial injury was panfacial fracture (28.48 %), followed by the fracture of middle and upper third (25 % and 22.09 % respectively). In terms of combined fractures, 10.46 % was reported.

The type of vehicle with the highest percentage of facial trauma accidents was automobiles with a 65.69 %, while motorcycles obtained a 34.3 %.

Ethyl status was detected in 38 % of the patients.

The results obtained in this study are shown in the Tables I to VI.

Table I. Distribution of patients assisted in the emergency units at VCMH and JCAH in 2017.

Hospital	N° of patients assisted in emergency	N° of patients with facial trauma from vehicle accident
VCMH - JCAH	5142	172
%	100	3.34

Source: VCMH Emergency Service Medical Record - JCAH, 2017.

Table II. Distribution according to sex VCMH and JCAH in 2017.

Sex	n°	%
Male	120	69.76
Female	52	30.23
<b>Total</b>	<b>172</b>	<b>100</b>

Source: VCMH Emergency Service Medical Record - JCAH, 2017.

Table III. Distribution according to age VCMH and JCAH in 2017.

AGE	n°	%
Early childhood (0-5)	12	6.97
Childhood (6-9)	0	0
Early adolescence (10- 14)	9	5.23
Late adolescence (15-19)	21	12.2
Young adults (20-44)	99	57.56
Middle-aged adults ( 45-64)	26	15.12
Eldery adults (>64)	5	2.9
<b>Total</b>	<b>172</b>	<b>100</b>

Source: VCMH Emergency Service Medical Record - JCAH, 2017

Table IV. Distribution according to the type of facial fracture - VCMH and JCAH in 2017.

Injury Area	n°	%
Upper third	38	22.09
Middle third	43	25
Lower third	24	13.95
Combined	18	10.46
Panfacial fracture	49	28.48
<b>Total</b>	<b>172</b>	<b>100</b>

Source: VCMH Emergency Service Medical Record - JCAH, 2017.

Table V. Distribution according to the type of accidented vehicle - VCMH and JCAH in 2017.

Vehicle	n°	%
Automobile	113	65.69
Motorcycle	59	34.3
<b>Total</b>	<b>172</b>	<b>100</b>

Source: VCMH Emergency Service Medical Record - JCAH, 2017.

Table VI. Distribution according to the status of patient sobriety VCMH and JCAH in 2017.

ETHYL STATE	n°	%
Yes	65	38
No	107	62
<b>TOTAL</b>	<b>172</b>	<b>100</b>

Source: VCMH Emergency Service Medical Record - JCAH, 2017.

## DISCUSSION

The findings of this study correspond to the analysis of the files obtained from Vicente Corral Moscoso and José Carrasco Arteaga hospitals in the city of Cuenca, with a total of 172 authorized files, related to facial trauma due to traffic accidents in the city of Cuenca in 2017.

It was evidenced that the majority of cases belonged to the emergency admission records of facial trauma at the Vicente Corral Moscoso hospital, where 151 cards were obtained, and 21 cards were obtained at José Carrasco Arteaga hospital, therefore the highest income of trauma in the emergency department belonged to the VCMH.

Cabrera *et al.* (2017) carried out a study in 2017 and its prevalence of facial trauma from a vehicle accident in the city of Azogues which coincides with the percentage of this study, being a 4 % in the city of Cuenca. Another study carried out by Pietzka *et al.*

(2020) during a 21-year study period between 1993 and 2014 in Germany, presents the prevalence of trauma with a percentage of 20.03 %.

The results found of facial trauma due to traffic accidents in the city of Cuenca, have a higher prevalence in males and in the population aged 20 to 44 years, which coincides with the studies carried out by Agudelo *et al.*, in Medellín-Colombia where vehicle accident fractures occurred more frequently in men (82 %) and under 35 years old (80 %).

In the study carried out by Choi *et al.* (2016) in Korea, it is stated that traffic accidents are more common in patients between 21 and 40 years old. Thus, what has been described above, shows that the largest number of drivers are young people, who usually exceed speed limits with less awareness and knowledge of traffic laws, and possible ethyl state when driving. Being also the age group that most frequently uses vehicles as a means of transportation and work.

The forces acting on the human body during a collision from the impact of a vehicle can cause multiple and complex fractures. The most common fracture is panfacial (28.48 %). On the contrary, in the study carried out by Agudelo *et al.* the most prevalent type of fracture was mandibular fracture (56.2 %). While, Pietzka *et al.* carried out a study in Germany in which the highest frequency of trauma, occurred in injuries in the middle of the face (60.3 %).

Our study showed that the type of vehicle with the highest frequency of accidents was the automobile (65.67 %). While Salazar *et al.* obtained that 26.09 % of accidents occurred while using a car and 19.57 % a motorcycle in their study at Carlos Andrade Marin Hospital in the city of Quito-Ecuador, in the study carried out by Pietzka *et al.*, it was stated that 57.9 % of facial trauma was due to the use of a motorcycle.

Choi *et al.* carried out a study in Korea for ten years, showing that 15 % of drivers were drunk. In the same way, this study carried out in the city of Cuenca showed that 38 % of facial trauma was due to drivers in an ethyl state.

This has shown that despite legislative measures such as speed limits, mandatory use of seat belts and penalties for driving in an ethyl state, the incidence of traffic accidents continues to be the most frequent etiology of facial trauma. However, these facial injuries have decreased in developed countries.

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**CHÉRREZ, R. M. V. & REINOSO-QUEZADA, S.** Prevalencia de trauma facial por accidentes de tránsito en el año 2017 en la ciudad de Cuenca-Ecuador. *Int. J. Odontostomat.*, 15(2):499-502, 2021.

**RESUMEN:** El trauma es definido como un daño físico por el empleo de fuerza externa, hacia el cuerpo. (Salazar *et al.*). La etiología del trauma facial es multifactorial. Las contusiones causadas por accidentes de tránsito, constituyen la octava causa de muerte a nivel mundial. El objetivo de este estudio es determinar la prevalencia de trauma facial por accidente vehicular en el año 2017, y su relación con; la edad, género y frecuencia en el nivel de atención de urgencias en los hospitales Vicente Corral Moscoso (HVCM) y José Carrasco Arteaga (HJCA). De esta forma se registrará información estadística real en relación al grado de trauma, sus causas principales y manejo inicial proporcionando elementos para la planificación y ejecución de nuevos estudios, estableciendo así, medidas de prevención en la ciudad de Cuenca. Este es un estudio descriptivo retrospectivo, realizado con la recopilación de datos y el análisis autorizado de los casos de pacientes diagnosticados con trauma facial por accidente vehicular que acudieron a la unidad de urgencias del HVCM y HJCA, Cuenca Ecuador, en el año 2017. Fueron analizadas las variables: unidad operativa hospitalaria, distribución de género, edad, tipo de trauma facial, tipo de vehículo y estado etílico. La prevalencia total de trauma facial por accidente vehicular en la ciudad de Cuenca en el año 2017 fue de 3.34 % de los cuales, el sexo masculino supera al grupo femenino representando el 69.76 %, siendo el grupo etario de 20 a 44 años el más prevalente con 57.56 %. Predominó el trauma panfacial, representando un 28.48 %. El vehículo de uso común fue el automóvil en un 65.69 %. En el 38 % de los pacientes se detectó aliento etílico. Se evidenció predominio del sexo masculino y del grupo de edad entre 20-44; predominó el trauma panfacial. El vehículo de uso frecuente fue el automóvil. En 4 de 10 pacientes se comprobó estado etílico.

**PALABRAS CLAVE:** trauma facial, accidente vehicular, epidemiología.

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Corresponding author:  
Dra. Verónica Chérrez  
Universidad Católica de Cuenca  
ECUADOR

E-mail: verytocherrez07@gmail.com