Original Research Article

Epidemiological and Clinical Study of Road Accidents in the CS Réf of Fana

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Abstract

Road traffic accidents are the second cause of mortality between 30 and 40 years worldwide. They are 1,2 million injured or disabled person. It was a prospective and descriptive study of 223 cases of road accidents, occurring from 01 January to 31 December 2020 and consulted at the CSREF of FANA, of which. Objective was to study the trauma caused by the public road accidents at the FANA reference health center. **Results:** During our study period we have completed 13471 Curative consultations, 6130 Emergency Home Consultations, 45.5% of which 223 AVP cases are 3.64%. The frequency of road accidents in the FANA CSREF is 3.64%. The average age observed in our sample was 27.51 ± 15.57 with extremes ranging from 4 to 70 years. A male predominance, 72.6% and a 2.65 ratio sex. The most represented socioprofessional layer is students and students with 34.5% case. The wound lesion is the most observed 63.2%. Cases of type ski-type accident accounted for 36, 8% of the cases. **Conclusion**: traffic accidents nowadays constitute a growing threat of precious losses in human life and disabilities for our populations, which constitutes a potential waste human resources and economic growth.
Keywords: Study, epidemic clinical, accidents, public road, FANA.

INTRODUCTION

For a long time considered as a public health problem in developed countries, road traffic accidents (RTAs) are nowadays a real worldwide scourge due to the high number of victims and this because of the mechanisation of all sectors of the economy, but also and above all because of the increasingly advanced modernisation of road traffic.

According to World Health Organisation (WHO) statistics, every year 1.2 million people are killed on the roads, i.e. more than 3,000 people a day. In addition to these deaths, there are 140,000 injuries, of which 15,000 people will be disabled for life [1]. This burden falls most heavily on low- and middle-income countries, where we now account for 90% of road traffic deaths and disabilities. This trend is expected to rise to 95% soon, which shows how much of a major public health issue road traffic injuries are today on a global scale [1].

Road traffic injuries are the second leading cause of death between the ages of 30 and 40 worldwide. Every year, 1.2 million people are injured or disabled in road traffic accidents [2]. The current statistics are already alarming. In the coming years, the situation could be catastrophic. According to the WHO, by 2020 there will be a 60% increase in road traffic accidents, which would place road traffic accidents in 3rd position on the list of the 10 causes of morbidity and trauma in the world, when it was in 9th position in 1990 [2].

In Europe, every year 1.7 million victims of road accidents, including 46,000 deaths, are recorded on the roads of the European Union [3]. Already some African countries such as Cote d'Ivoire and Nigeria hold sadly famous records. This is all the more worrying when we know the genesis of our populations, our fragile economies and the multiple health problems we face (malnutrition, lack of hygiene and parasitic diseases etc.) [4].

In Mali, the National Transport Directorate recorded 1150 accidents in 2001 alone, with 132 people killed and 685 seriously injured. In 2002, 1194 accidents were recorded with 149 people killed and 642 seriously injured [5]. The health district of Fana recorded 1930 accidents [6]. it appears from the analysis of these accidents that most of them are due to the very bad behaviour of traffic users. The interest of this study is in its frequency, severity, mortality and the serious socio-economic and health consequences.

OBJECTIVES
General objective
To study the traumas caused by public road accidents treated at the Fana Reference Health Centre.

Specific objectives
➢ To determine the frequency of road traffic injuries treated at the Fana referral health centre.
➢ Specify the socio-demographic characteristics of the victims.
➢ To determine the mechanisms of occurrence of these road accidents.
➢ Identify the characteristics of the injuries observed in these accidents.

METHODOLOGY
This study was conducted in the general surgery department of the Fana health centre. This is a prospective descriptive study extended over one year from January 1, 2020 to December 31, 2020 and covering stroke patients admitted to the CS Réf of Fana.

Inclusion criteria
Patients with trauma due to road accidents received by the CS Réf in Fana.

Non-inclusion criteria :
• Patients who have not been victims of road traffic accidents,

• Patients who opted for traditional treatment after admission to the centre.

The data were *collected* using two media:
The register in which the following are recorded: the patient's identity, the entry diagnosis, the exit diagnosis, the date of entry, the complementary examinations, the date of exit, the treatment received and the observations.

The survey form on which the following are recorded: socio-demographic data, circumstances of the trauma, time of admission, site of the trauma, type of trauma, duration of hospitalisation, treatment received and evolution.

Data collection was done using two (2) techniques:
➢ Exploration of available materials (consultation register, hospitalization record)
➢ Patient interview (Survey form)

The variables to be studied are Sex; origin; occupation; mechanism of injury; site of injury; nature of injury; type of imaging performed; type of treatment; outcome.

Data analysis was done on SPSS 22.0. The chi-square test and Fisher's exact test were used for statistical analysis. A value less than $P: 0.05$ would be considered as a significance level.

RESULTS
Frequency
During our study period we carried out 13471 curative consultations, 6130 consultations in the emergency department, i.e. 45.5%, including 223 cases of MVA, i.e. a frequency of 3.64%.
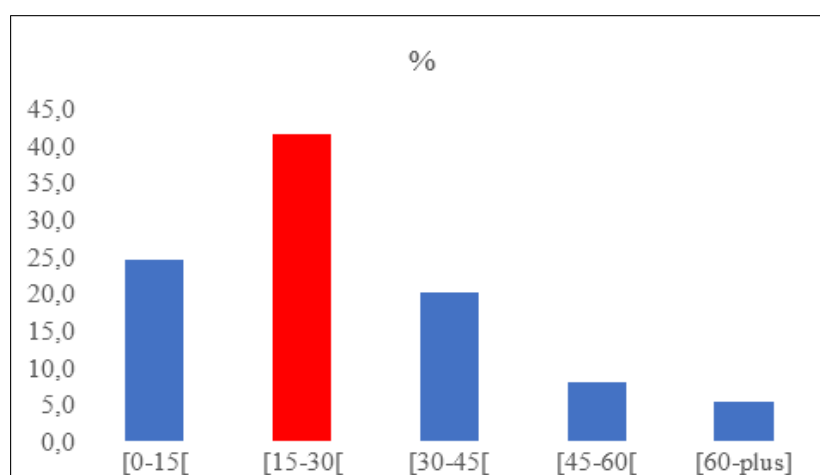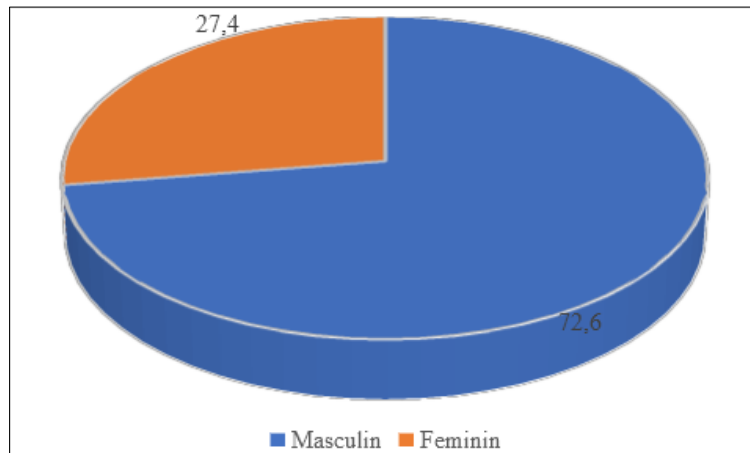
Socio-demographic data
Age

Figure 1: Distribution of injuries by age group
Mean age: 27.51; Standard deviation: 15.57 with extremes ranging from 4 to 70 years.

Sex

Figure 2: Distribution of cases by gender

The majority of cases were male, with 72.6% of cases, giving a sex ratio of 2.65.

Profession

Table 1: Distribution of the injured by occupation

Profession	Workforce	%
farmer	50	22,4
Worker	14	6,3
Breeder	7	3,1
Trader	20	9,0
Pupil/Student	77	34,5
Housekeeper	29	13,0
Driver	11	4,9
Artisan	4	1,8
Teacher	6	2,7
Other	5	2,2
Total	223	100,0

Pupils/students were the most affected stratum with 34.5% of cases.

Level of study

Table 2: Distribution of the injured by level of education

Level of study	Workforce	%
Primary	86	38,6
Secondary	43	19,3
Tertiary	10	4,5
Non-school	84	37,7
Total	223	100,0

38.6% of our patients had primary education.

Epidemioclinical data:
Mechanism of trauma:

Table 3: Distribution of casualties by mechanism of injury

Mechanism of trauma	Workforce	%
Automobile skidding	48	21,5
Car-motorcycle collision	20	9,0
Car-Bicycle Collision	2	0,9
Motorbike skidding	82	36,8

Motorbike Collision	14	6,3
Motorcycle-Bicycle Collision	27	12,1
Motorcycle-pedestrian collision	29	13,0
Car-Pedestrian Collision	1	0,4
Total	223	100,0

Motorbike skidding was the most frequent mechanism with 36.8%.

Table 4 : Distribution of injured persons by site of injury

Seat of trauma	Workforce	%
Crane	38	17
Otorhinofacial Sphere	4	1,8
Spine	6	2,7
Thorax	6	2,7
Abdomen	3	1,3
Basin	7	3,1
Upper limb	91	40,8
Lower limb	68	30,5
Total	223	100,0

Type of injury

Table 5: Distribution of injured persons according to type of injury

Type of lesions	**Workforce**	**%**
Wound	141	63,2
Dislocation	10	4,5
Fracture	33	14,8
Sprain	6	2,7
Contusion	4	1,8
Other	29	13,0
Total	223	100,0

Treatments

Distribution of the injured according to the type of treatment:

Medical treatment

Figure 1 Distribution of samples according to treatment.

Surgical treatment

Figure 2 Distribution of casualties by treatment. 81.1% of the injured received surgical treatment.Evolution:

Table 6: Distribution of injured persons according to evolution

Evolution	**Workforce**	**%**
Favourable	139	62,3
No favourable	84	37,7
Total	223	100,0

62.3% of those injured had a favourable outcome.

Table 7: Distribution of casualties according to their fate.

Become	**Workforce**	**%**
Referred / Evacuated	57	67,9
Discharge	22	26,2
Deceased	5	5,9
Total	84	100,0

We carried out 57 cases, i.e. 25.56% of evacuations to specialised facilities.

Reasons for evacuation

Table 8: Distribution of casualties by reason for evacuation

Reasons for evacuation	Workforce	%
Head trauma	38	66,7
Fracture	18	31,6
Dislocation	1	1,8
Total	57	100,0

66.7% of these victims were evacuated for head injuries.

COMMENTS and DISCUSSION
Frequency
From 1 January to 31 December 2020, out of 6,130 consultations carried out in the emergency department, 223 patients were consulted because of a road accident, i.e. a frequency of 3.64%.

Table 9: Frequency distribution by author

Author Series	Frequency	Statistical value (p-value)
TRAORE S.D [7]	6,91%	*P=0,15*
SIDIBE S [8]	2,36%	*P=0,36*
AGBOWAODAH I.A [9]	12,65%	*P=8,57.10^{-4}*
BERTHE K [10]	14,5%	*P=3,2.10^{-5}*
Our series	3,64%	

This frequency observed in the different series could be explained by the poor state of the road network in the city, the increasing number of two-wheeled vehicles, the incivism of users, a considerable number of vehicles, the abusive use of narcotics by the young population, the lack of knowledge and the non-respect of the highway code

These different series reported are all in favour of the occurrence of MVAs in young subjects, which could be explained by the fact that they constitute the most active segment of the population and generally have two-wheeled machines. Their boldness in driving their machines and their irresponsible behaviour predispose them to accidents.

Gender
We observed a male predominance of 72.6% and a sex ratio of 2.65. Our result is in line with the literature [7-12]. This could be explained on the one hand by the fact that men occupy a large place in our society because of the extent of these activities compared to women, and on the other hand by the fact that in rural areas women are mainly housewives.

Our observed frequency is comparable to those reported by TRAORE S.D and SIDIBE S [7, 8]. However, it is lower than those reported by AGBOWAODAH I.A and BERTHE K [9, 10].

Socio-demographic data
Average age
The average age in our sample was 27.51±15.57 with extremes ranging from 4 to 70 years. Our average age is statistically higher than that of Agbowaodah I.A [9] and lower than that of TRAORE MB et al [11]. However, it is comparable to that of Diango D et al [12].

Author Series	Average age	Statistical value (p-value)
TRAORE BM and Coll[11].	31.5±12.2 years	*p=0,01*
AGBOWAODAH I.A [9]	24.89±3.11 years	*P=0,006*
DIANGO D et al [12]	29.04±17.34 years	*p=0,2*
Our series	27.51±15.57 years	

Profession
In our series, all socio-professional classes are more or less interested. However, pupils and students were the most interested with 34.5%. This result agrees with that obtained by AGBOWAODAH I.A [9] 36.5% with *p= 0.7*. However, it is higher than that obtained by SIDIBE S [8] 17.0% with *p= 10^{-6}*. This could be explained by the fact that most of the accidents take place during the day, which is when they are on their way to their respective establishments, and their poor handling of two-wheeled machines.

Epidemiological data
Mechanism of trauma
In our study, motorbike skidding accidents were the most common type of accident with 36.8%. This frequency observed in our study is statistically

higher than those reported by its various authors [7; 9; 13; 14].

Author Series	Frequency	Statistical value (p-value)
TRAORE S.D [7]	19,20%	*p=310⁻⁴*
AGBOWAODAH I.H [9]	2,28%	*p=10⁻⁶*
MAIGA OH [13]	4,7%	*p=10⁻⁶*
OUMAROU S [14]	19,38%	*p=10⁻⁶*
Our series	36,8%	

This statistically significant difference observed could be explained on the one hand by the young age of the population with access to two-wheeled vehicles, and on the other hand by the narrowness and especially the deterioration of the roads which do not allow users to move freely, and also by the failure to respect the highway code.

Seat of trauma

In our series, upper and lower limb injuries were the most frequent with 40.8% and 30.5% respectively.

- Upper limb: 40.8%.

This result is comparable to that of OUMAROU S [14]. However, it is superior to those reported by these different authors [7; 8; 10].

- Lower limb: 30.5%.

This observed frequency is comparable to those obtained by these authors [7; 10; 14] and lower than that found by SIDIBE S [8].

Author Series	Frequency (MS)	Frequency (MI)	Statistical value (p-value) (MS)	Statistical value (p-value) (MI)
TRAORE S.D [7]	19,9%	25,3%	p=2,5.10⁻⁵	p=0,28
SIDIBE S [8]	24,7%	43,4%	p=7.10⁻⁶	p=8,05.10⁻³
BERTHE K [10]	16,38%	37,28%	p=10⁻⁶	p=0,11
OUMAROU S [14]	34,67%	35,82%	p=0,12	p=0,17
Our series	40,8%	30,5%		

This statistically significant difference could be explained by the fact that, on the one hand, the limbs are areas that are highly exposed and subject to the slightest direct or indirect impact and, on the other hand, by the high number of accidents among motorcyclists who do not generally wear protective equipment.

Type of lesions

Our study shows that the most common injury was a wound (63.2%). These injuries were mainly located on the limbs and the skull (71.3% and 17% respectively).

- Wound 63.2%.

This rate is lower than those of SIDIBE S and OUMAROU S [8, 14].

Author Series	Wound frequency	Statistical wound value
SIDIBE S [8]	57,8%	*p=1,8⁻³*
OUMAROU S [14]	75,72%	*p=10⁻⁶*
Our series	63,2%	

From these different studies we can say that these types of injuries observed could be explained by the fact that a road accident victim most often has a wound, whether it is minimal or severe, because of the effect of contact with the ground or the vehicle or both effects combined.

Treatments

97.8% of our patients received medical treatment. 81.1% of our patients received surgical treatment in addition to medical treatment.

Medical treatment: 97.8%.

Our rate of medical treatment, 97.8%, is comparable to the rates reported by TRAORE S.D and AGBOWAODAH I.A which are respectively: 94.5% (*p= 0.09*) and 98.5%(*p= 0.9).*

Surgical treatment: 81.1%.

Our surgical treatment rate is higher than that of AGBOWAODAH I.A [9] 28.36 *p= 10⁻⁶*. However, it is comparable to that of TRAORE S.D [7] 75.35% *p= 0.2.*

Evolution

The evolution of the trauma was favourable for the majority of patients (62.3%). Patients evacuated or

referred to the hospitals of Bamako and Kati represented 25.56% and 2.2% died. Multiple trauma and head trauma were the biggest contributors to the number of deaths, with 9% and 10.8% respectively. This could be due to the seriousness of the accident and the violence of the impacts associated with the non-use of protective materials in road traffic (wearing of seat belts for motorists and helmets for motorcyclists), the lack of vehicles equipped and adapted for transporting victims to the health centre, the delay in transporting victims and also the absence of qualified personnel for the management of these emergencies. The majority of the deceased, i.e. 2.2%, were under 30 years of age and women represented 60% of the deceased.

CONCLUSION

We can conclude that traffic accidents are nowadays a growing threat to the loss of precious human life and disability of our populations, which is a potential waste of human resources and economic growth. Almost all of these accidents are due to the poor state of the roads and also to the failure of road users to observe the traffic regulations.

Conflict of interest: None

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