Open Access Library Journal
2022, Volume 9, e8859
ISSN Online: 2333-9721
ISSN Print: 2333-9705

Epidemiological Aspects of Road Traffic Accidents by Motorcycle in Mbuji-Mayi, DRC

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How to cite this paper: Jeannoh, K.K., Jérémie, K.B., Pauline, K.M., Guy, S.I.M., Georges, K.K., Francklin, K.M., Sonny, N.T., Nancy, C.C., Dédé, K.K., Joseph, L.K. and Odette, K.M. (2022) Epidemiological Aspects of Road Traffic Accidents by Motorcycle in Mbuji-Mayi, DRC. *Open Access Library Journal*, **9**: e8859.
https://doi.org/10.4236/oalib.1108859

Received: May 6, 2022
Accepted: June 25, 2022
Published: June 28, 2022

Abstract

Road traffic accidents concern the countries of the planet. They are responsible for a lot of damage. Motorcycle in the city of Mbuji-Mayi is a means of public transport as well as private, in the majority of cases. We conducted a cross-sectional, retrospective descriptive study, from January 2020 to June 2020, on-road traffic accidents by motorcycle in the city of Mbuji-Mayi. The data were collected at the office of the Congolese National Police, Road Traffic Police Battalion/Kasaï Oriental. The study sample, after non-probability sampling, was 91 motorcycle accident cases out of 134 all-cause accident cases. The data collected was encoded on an Excel software database and processed with SPSS version 20 software. Our results show that the rate of road traffic accidents per motorcycle is 67.9 per 100,000 inhabitants. The average age of drivers is 29 and the main contributing factor is non-compliance with the Highway Code (36%). Road traffic accidents remain a major problem in the city of Mbuji-Mayi. Drivers require guidance on the Highway Code before driving. The construction of roads respects the standards, and the road signs are one of the means of fighting against road accidents.

Subject Areas

Public Health

Keywords

Accidents, Road Traffic, Motorcycle, Mbuji-Mayi

1. Introduction

Road traffic accidents are becoming a serious public health problem worldwide in developed and low-income countries alike.

The WHO estimates that nearly 3500 people die every day on the roads. Tens of millions of people are injured and disabled around the world.

In developed countries, road traffic accidents remain among the leading causes of population mortality. However, the main causes of these accidents in developing countries remain the poor state of road infrastructure, lack of knowledge of the Highway Code, the development observed in the construction of roads in certain countries, and the exponential increase in the transport of furniture [1].

In Algeria, the main causes of road traffic accidents are excessive speed, dangerous overtaking, non-use of pedestrian crossings, failure to respect the safety distance, the lack of vigilance in the neighborhoods, dangerous manoeuvres, loss of control, the refusal to grant priority, the lack of vigilance of pedestrians, non-compliance with road signs, change of direction without signaling, driving while intoxicated and taking drugs, and phone use [1].

In Ivory Coast, a study carried out by the Road Safety Office (OSER) identified 158,104 traffic accidents over 32 years (from 1970 to 2001), *i.e.*, an average of 4940 accidents per year, with 10,111 wounded and 593 killed [2]. This shows the great magnitude of the problem.

The development noted lately on the means of prevention of road traffic accidents—traffic regulations by road signs, rolling robots, and road traffic police—is much less effective than the magnitude of the problem [3].

In the Democratic Republic of the Congo (DRC), in Lubumbashi, a study carried out on the factors associated with road accidents revealed that out of 1915 cases of accidents, the main cause was the obstruction of the Highway Code, with 46.0% [4].

In Kisangani (DRC), motorcycle taxi drivers and bicycle taxi drivers are more affected by road traffic accidents due to the increase in the city of two-wheeled vehicles and the advanced deterioration of road infrastructure [5].

In the city of Mbuji-Mayi, it has been noted for about ten years an increase in motorcycles used as the means of public transport, replacing taxis and buses which are the usual means of public transport. This situation is due to the low level of road infrastructure and the socio-economic crisis that the province of Kasai Oriental is going through. The motorcycle has become a quick and easy means of transport, in town as well as within the province.

This increase in motorcycles as a means of public or private transport has the consequence of increasing the rate of road traffic accidents. It is reported everyday cases of accidents, causing the death of men; physical disabilities and other socio-economic consequences.

This state of affairs led us to ask ourselves the question, which guides our research, to know: what are the epidemiological aspects of road traffic accidents by

motorcycles in the city of Mbuji-Mayi?

The objective of this study is to fight against the increase in road traffic accidents and their consequences. Specifically, this study will describe the profile and the contributing factors of road traffic accidents by motorcycles in the city of Mbuji-Mayi in order to contribute to the improvement of the health of our populations. This study will provide data on road traffic accidents by motorcycles in the said city.

2. Material and Methods

This study is descriptive cross-sectional, retrospective, carried out from January 2020 to June 2020.

The data for the realization of this study are collected at the office of the Congolese National Police, Road Traffic Police Battalion/Kasai Oriental. The study sample, after non-probability sampling, was 91 motorcycle accident cases out of 134 all-cause accident cases.

Our study takes place in the city of Mbuji-Mayi, province of Kasai Oriental, in the Democratic Republic of the Congo. The town with a mining vocation (diamond production), has an area of about 135.2 square kilometers, with an estimated population of 5,000,000, the majority of whom are unemployed. The city comprises five administrative entities (municipalities).

Included in the study are all the cases of motorcycle accidents listed by the road traffic police service during the study period and which took place in the town of Mbuji-Mayi. All cases not meeting the inclusion criteria are excluded.

The study variables are as follows: The age of the driver; the gender of the driver; marital status; the level of study; possession of a driving license; the use of a motorbike (private motorbike or motorbike for public transport); the time of the accident; the place of the accident; the contributing factor; wearing a helmet; the victim(s).

The data collected is encoded on an Excel software database and processed with SPSS version 20 software.

Since we worked on the accident records of the PCR register, we had no particular ethical implications apart from the fact that the data collected had to be kept confidential and used only for study purposes.

3. Results

We used the usual statistics (proportion, mean, standard deviation) to describe our sample. The results were presented in the form of texts, Tables 1-4 and Figure 1.

The number of accident cases per motorcycle is 91 out of 134 all-cause accident cases. The prevalence of road traffic accidents by motorcycle is 67.9 per 100,000 inhabitants, in our study. In relation to the age of the drivers, the age most concerned by the accidents in this study is between 17 and 48 years old with an average of 29 years old (SD 8).

Table 1. Breakdown of road traffic accidents by motorcycle according to characteristics socio-demographics of drivers.

Features	Effective (n = 91)	percent	mean ± standard deviation
Age			
≤18	4	4.4	29.16 ± 8.58
19 - 28	43	47.2	
29 - 38	26	28.6	
39 - 48	18	19.8	
Sex			
Feminine	2	2.2	
Male	89	97.8	
Marital status			
Single	35	38.5	
Divorce	2	2.2	
Married	54	59.3	
Study level			
Illiterate	5	5.5	
Primary	25	27.5	
Secondary	59	64.8	
University	2	2.2	
Driving license possession			
Nope	57	62.6	
Yes	34	37.4	
Headset port			
Nope	75	82.4	
Yes	16	17.6	

Table 2. Distribution of road traffic accidents by motorcycle according to the place of the accident.

Accident site	Effective (n = 91)	Percent
Bipemba	6	6.6
Dibindi	33	36.3
Diulu	18	19.8
Kanshi	11	12.1
Muya	23	25.2

Table 3. Breakdown of road traffic accidents by motorcycle according to victims.

Victims	Effective (n = 91)	Percent
Drivers	32	35.1
Passengers	24	26.4
Pedestrians	35	38.5

Table 4. Distribution of road traffic accidents by motorcycle according to hours.

Time	Effective (n = 91)	Percent
Morning 7a.m. to 12p.m.	49	53.8
Afternoon 1p.m. to 6p.m.	19	20.9
At night 7p.m. to 6a.m.	23	25.3

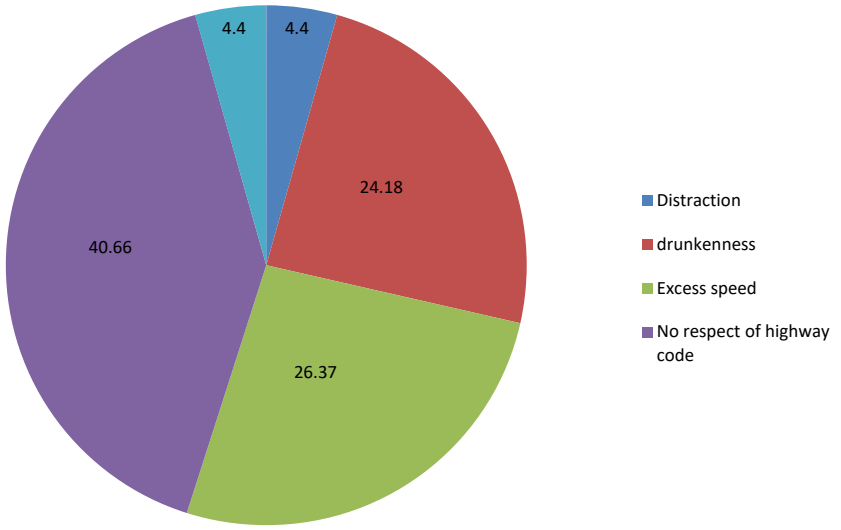

Figure 1. Distribution of road traffic accident cases by motorcycle according to contributing factors.

The male sex is the most dominant (97.8%) compared to the female sex and several drivers had a high school education (64.8%). According to marital status, the married were the most represented with 59.3% more than the single, the divorced.

In connection with the possession of the driving license, 62.6% of drivers who had known the accident during the period of the study, did not have their driving license.

The main victims of road traffic accidents by motorcycle in the city of Mbuji-Mayi are pedestrians (35%).

The predisposing factors most cited in the case of road traffic accidents by motorcycle are non-compliance with the Highway Code (36%).

According to the use of the motorcycle, motorcycles used as a means of public

transport are the most likely to have experienced accidents (92.3%) more than private transport motorcycles (7.7%).

Regarding the place of accident, the municipality of Dibindi is the place where the majority of accidents took place, *i.e.*, 36.3%. And 82.4% of drivers were not wearing their protective helmets. The majority of accidents are observed and a high frequency of accidents is observed between 7a.m. and 12p.m.

4. Discussion

This study was mainly devoted to the data collected at the office of the PCR/Kasaï Oriental, which made it possible to lead to the results leading to the assessment of the extent of road traffic accidents by motorcycle in Mbuji-Mayi.

4.1. Prevalence

The prevalence in our study is higher compared to other studies. Joseph Bénie Bi Vroh et al, in Côte d'Ivoire, found a prevalence of 29 per 100,000 inhabitants [6]. This difference could be explained by the fact that the samples are different and also by the fact that our study is conducted in a single city of the country while the study of Côte d'Ivoire concerns data from the entire country. This high prevalence in our series would also be justified by the pronounced poverty and the isolation of the environment where the roads are almost non-existent and without road signs, the most used means of transport being the motorcycle for both private use and transport in common.

4.2. Age, Gender and Marital Status

Our results on age are in line with the WHO report and the result of the study conducted on the factors associated with road accidents in the city of Lubumbashi in which the average age of drivers was 29 years old [3] [4]. In our case, the young driver is more exposed to accidents, because of unemployment, he becomes a driver without mastering driving in order to survive.

The male gender remains the most represented in this study, which is in line with the theory and the 2018 WHO report on the road safety situation [3]. Men are more likely to drive from an early age than women [7]. In our case, the reason remains customary, especially when it comes to driving a motorcycle in Mbuji-Mayi, which is considered a taboo subject according to local custom, as in Madagascar [8].

As for marital status, married drivers are the most affected; the lack of possibility to go to university would push several young people to enter into marriage early, which would explain their large number in our study. Another reason would be the geographical location of the city, where artisanal diamond mining would push many young people into marriage.

4.3. The Level of Study

Drivers with secondary school education are the most considered, which would

be explained by the lack of means to pursue higher education, hence their high number.

4.4. Possession of Driving License

The majority of the drivers who experienced the accident did not have their driver's license, documents which must be issued by the competent technical services and this after having judged the person's ability to drive a motorized vehicle normally. The lack of this document certifies that people are driving without permission, which is a reason for the multiplicity of road traffic accidents.

4.5. Helmet Port

There are many drivers who had not worn the helmet. While in its report, the WHO estimates that the correct wearing of the helmet would reduce the risk of death by almost 42% and the risk of serious injury for the motorcyclist by more than 69%. [3]

4.6. Use of the Motorcycle

Our results revealed that public transport motorcycles were the most involved in road traffic accidents with 92.3% (n = 84). We explain it by the multiplicity of the motorcycle taxi phenomenon due to pronounced unemployment, which tends to replace the usual means of public transport because of their rarity or even dilapidated state. Some authors have confirmed in their work that the means of public transport are the most incriminated, *i.e.*, 32% of cases [4].

4.7. Place and Time of the Accident

The majority of accident cases took place in the commune of Dibindi, *i.e.*, 36.3% (n = 33). This can be explained by the high concentration of all commercial activities and a high density of road traffic. These results match those of the Ivory Coast found by Joseph Bénie Bi Vroh *et al.* [6], showing that accidents were in the majority in Abidjan because of the large demography in this economic capital.

In relation to the hour, 49 cases of accidents took place between 7:00am and 12:00pm, or 53.8%. This situation could be explained by an increase in movements and the enthusiasm of populations for the roads located near the city center (shopping centre). The same trend was found by Simon Ilunga Kandolo *et al.* [4] in their study, where 735 cases out of a total of 1915 accidents, or 38.4%, took place between 6 am and 12 noon.

4.8. Victims

In Madagascar, as in this study, pedestrians are the most vulnerable [8]. This state of affairs is different from that of Kisangani, in the DRC, which shows that motorcyclists are the most vulnerable [5]. In France, the main categories of road users in descending order: motorcyclists, cyclists and pedestrians, are affected by

high lethality and a high frequency of serious injuries [9].

4.9. Contributing Factors

Although all factors are at the origin of road traffic accidents, the non-respect of the Highway Code was the important factor favoring road traffic accidents by motorcycle, with 40.7%. This is explained by the great use of machines by people who do not have the authorization of the technical services to drive, who do not master the Highway Code. Another reason is the "*salizer*" *phenomenon*, characterized by the fact that the driver gives up his motorcycle to another person who must work in his place, while the driver of the motorcycle is not available for various reasons. This observation is different from that found in the city of Lubumbashi where speeding was singled out as the major cause of road traffic accidents [4]. In the case of Iran, faulty road signs and narrowing of the road were responsible for several deaths and injuries [10].

5. Conclusion

Road traffic accidents remain a major problem in the town of Mbuji-Mayi. Drivers require guidance on the Highway Code before driving. The construction of roads respects the standards, and the road signs are one of the means of fighting against road accidents.

Conflicts of Interest

The authors declare no conflicts of interest.

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