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Epidemiological and Clinical Characteristics of Post-Motorcycle Deaths in the Forensic Medicine Unit of Gabriel Touré University Hospital, Bamako, Mali

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Abstract **Original Research Article**

Introduction: Road traffic accidents (RTAs) are nowadays a real worldwide scourge because of the high number of victims. In Mali, we have little data related to the characteristics of deaths related to MVAs, hence the interest of this study which aimed to determine the sociodemographic, clinical and paraclinical characteristics of deaths involving a motorcycle received in our forensic medicine unit. Materials and method: This was a prospective, monocentric, cross-sectional study conducted from January 1, 2016 to December 31, 2016 in the forensic medicine unit of the CHU GT. Were included, all deaths involving a motorcycle received in our unit and accompanied by a requisition. ***Results:*** Of 458 MVA deaths, we identified 147 motorcycle deaths, a prevalence of 32.1%. The mean age was 36.5 years with extremes of 1 to 72 years and a sex ratio of 7.65. Students were the most represented, 90 cases (25.18%). The motorcycle mechanism was more frequent 90 cases (61.9%). The month of May and the hours from 19:00 to 05:00 were the most frequent times of occurrence of accidents respectively 37 cases (25.2%) and 76 cases (51.7%). Polytraumatic lesions were found on 83 bodies, i.e. 56.46%. Death was noted on arrival in 80% of cases and none of our bodies had undergone autopsy. ***Conclusion:*** Motorcycle accidents on public roads remain a major public health problem in our country.

Keywords: Characteristics, death, public road accident.

1. INTRODUCTION

Long considered, as a public health problem in developed countries, public road accidents (PVA), constitute nowadays a real global scourge because of the high number of victims and this because of the mechanization of all sectors of the economy, but also and especially because of the increasing modernization of road traffic (road and vehicle conditions) [1].

A study conducted by the World Health Organization (WHO) in 2015 showed that more than half of all road fatalities worldwide affect users who are the least protected: motorcyclists (23%), pedestrians (22%) and cyclists (4%) [2]. However, the likelihood of these same targets losing their lives on the road varies from one region to another. The African region has the highest rate of motorcyclist, pedestrian and cyclist fatalities [2, 3].

Road traffic accidents rank third on the list of the ten causes of morbidity and trauma in the world, whereas they were ninth in 1990 [4, 5].

In Mali, road accidents are increasingly frequent, and those involving 2-wheeled vehicles are the most numerous and the most fatal [2].

In 2014, the National Directorate of Transport recorded for the District of Bamako 3485 cases of public road accidents of which 2431 involved motorized 2-wheelers with 161 people killed [6]. The ANASER (national road safety agency) in its annual reports in 2013, 2014 and 2015 found respectively 529,

676 and 569 people killed by road accidents [7]. The INPS (National Institute of Social Welfare) in its annual report of 2009, notified that it received 471 reported accidents of which 227 commuting accidents, that is to say 48.19% of cases [8].

Of all the road users exposed to MVAs, some are at greater risk and are referred to as "vulnerable users". These are in particular pedestrians and users of two-wheeled vehicles [9]. We initiate this work with the aim of studying the sociodemographic, clinical and paraclinical characteristics of deaths involving a motorcycle in our forensic medicine unit.

2. MATERIALS AND METHOD

This was a prospective, descriptive study conducted from January 1, 2016 to December 31, 2016 in the forensic medicine unit of the Gabriel Touré University Hospital of Bamako. Were included, all cases of death due to MVA received at the CHU GT, all cases of death by MVA caused by a motorcycle and registered in the CHU GT provided with a requisition.

Not included were cases of death from causes other than motorcycle; cases of death from unknown causes; and bodies without a requisition. The data were collected from pre-established survey forms; death registry. Data entry and the various control programs were performed using Word 2010 software. Statistical analysis of the data was performed using SPSS version 20.0 software. Differences were considered significant for $p < 0.05$.

Informed consent was obtained from the victims' parents as part of their inclusion in the study. Confidentiality was guaranteed for all because they were given a code instead of a name. The information collected will not be used for any other purpose.

3. RESULTS

Our study focused on 147 cases in one (01) year out of the 458 cases of death by road traffic accident recorded at the forensic medicine unit of the Gabriel Toure University Hospital, i.e. a prevalence of 32.1%.

The age range of 20 to 29 years was the most represented (see figure 1) with extremes of 1 year and 72 years. The series included 130 men (88.4%) and 17 women (11.6%), for a sex ratio of 7.65. Pupils and students were the most affected, with 37 cases (25.18%) (see Table 1). Commune 6 of the Bamako district was the most represented with 53 (35.6%) cases (see Table 2). The mechanism of occurrence of the accident was motorcycle (61.9%), no motorcycle driver was wearing a helmet (100%). Accidents in the month of May were the most frequent, 37 cases (25.2%) (see Table 3). The accidents occurred between 19:00 and 05:00 in the morning in 41 victims (51.7%) (see Table 4).

On examination of the bodies, we found polytraumatic lesions on 83 bodies (56.46%), (see Table 5). Deaths were noted on arrival in 80% and none of our bodies had benefited from autopsy.

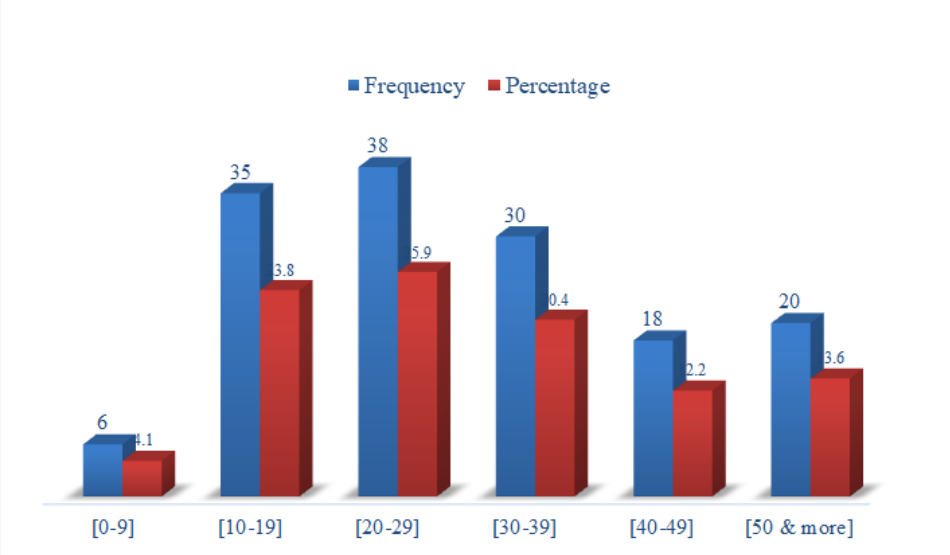

Figure 1: Distribution of bodies by age

Table 1: Distribution of bodies by occupation

Profession	Number	Percentage
Pupil and Student	37	25,18
Electrician	5	3,40
Mechanic	18	12,24
Driver	5	3,40
Salesman	14	9,52
Guardian	7	4,78
Mason	5	3,40
Military	9	6,12
Teacher	7	4,76
Accountant	3	2,04
Secretary	3	2,04
Merchant	21	14,29
Children	4	2,72
Others	9	6,11
Total	147	100

Table 2: Distribution of bodies by origin

Provenance	Number	Percentage
municipality 6	53	36,1
municipality 5	13	8,8
municipality 4	5	3,4
municipality 3	5	3,4
municipality 2	5	3 ,4
municipality 1	15	10,2
Out of Bamako	51	34,7
Total	147	100,0

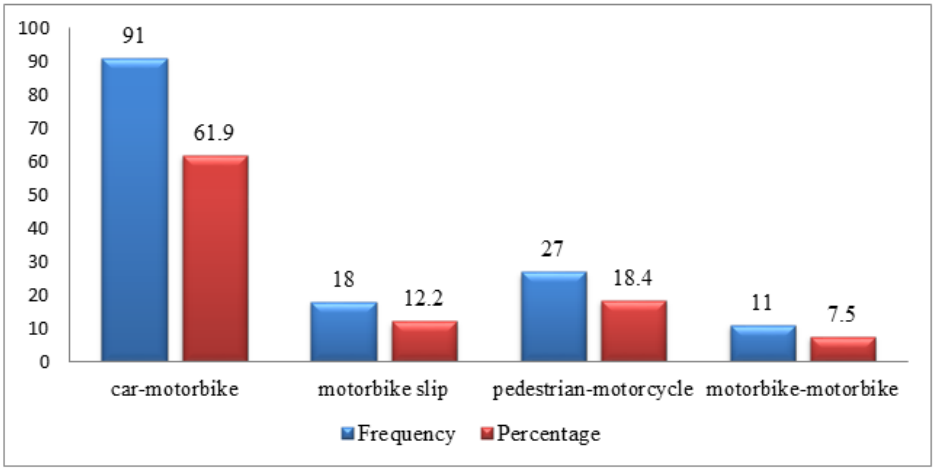

Figure 2: Distribution of victims by accident mechanism

Table 3: Distribution of bodies by time of MVA occurrence

Months of MVA	Number	Percentage
May	37	25,2
June	14	9,5
April	16	10,9
March	17	11,6
July	9	6,00
January	11	7,5
February	27	18,4
Autres mois	16	10,9
Total	147	100,0

Table 4: Distribution of bodies by time of onset of MVA

Time of occurrence of the MVA	Number	Percentage
6-12h	41	27,9
13-18h	30	20,4
19-05h	76	51,7
Total	147	100,0

Table 5: Distribution of bodies by body review

site of the lesions	Effectif absolu	Pourcentage %
Polytrauma	83	56,46
Craniofacial injury	27	18,37
Associated lesion	12	8,16
Lower limb injury	8	5,4
Thoracic injury	6	4,08
Upper limb injury	4	2,72
Abdominal injury	4	2,72
Spinal injury	3	2 ,04

4. DISCUSSION

The prevalence of death by motorcycle in our study was 32.1%, other authors: Diarra. A [10] and BiVroh. J [11] had respectively found 10.71% and 9.9%.

The young population (20 to 29 years) more active, with two-wheeled machines, not wearing a helmet was the most concerned (25.9%). Other authors, Winston FK and Rineer C. [12], and ALMEIMOUNE A *et al*., [13] had also found the same high frequency of death by accident of young people with respectively age groups of 18-24 years and 14- 29 years. The sex ratio was 7.65. This male predominance was noted by SOUMBOUNOU I H. [2] with 83.54%. Students were the most affected (25.17%). This domination of school children was found by KANAKOMO. D [3], Francine. L [14] and Sow. A [15] who found 25.17%, 33.85% and 24.06% respectively. Motor vehicle accidents were the most frequent with 61.9% of cases. This mechanism of accident was also found more by BAPA E.S. (41.03%) [16], TALONA L ET COLL. (36.8%) [17], SOUMBOUNOU I H (51%) [2] and COULIBALY B (32.7%) [18]. During the month of May, corresponding to the winter period, we recorded more deaths (25.2%). This result was observed by D KANAKOMO (12.17%) in the month of May [3]. More than half of the accidents occurred between 19:00 and 05:00 in the morning (51.7%), which correspond to the hours of descent from work and the times of leisure activities. These data corroborate those of the Bureau of Traffic and Urban Transport (76.89%) between 6am and 6pm [2], of TAMBASSI S I (46.9%) between 6pm and 6am [19] and DIARRA A. (61.8%) between 8am and 5pm [10]. Polytrauma followed by craniofacial trauma related to non-compliance with traffic regulations and lack of helmet use were the most frequent respectively 56%, and 18.37%. The high frequency of these injuries was found by DIANGO D AND COLL (58.9%) [20]. According to the CDC (Center for Disease Control), wearing a helmet reduces the risk of fatal injury by 29% and that of cranioencephalic trauma by 67% [18].

Open fracture (49.66%) was the most common type of fracture. DOSSIM and COLL [21], SOPHIE. B [22] reported open fractures in 31.11% and 65.8% of the victims respectively. At the end, 80% of deaths were recorded. This high rate of death on arrival was reported by D KANAKOMO (69.1%) [3].

5. CONCLUSION

Motorcycle accidents on public roads remain a major public health problem in our country. Young people are the most affected, especially pupils and students. The management of this scourge must be urgent. Information, communication and education for a change of behavior of the population are necessary.

Conflict of interest: none.

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REFERENCES

1. Traoré, M. B. (2008). Les déterminants des accidents de la voie publique dans le district de Bamako Thèse med 2008; N°10M435.
2. Ibrahim, S. (2016). Etude épidémio-clinique des décès suite aux accidents de la voie publique au CHU GT, thèse Bamako 2016 p13-17.
3. Djénèba, K. (2012). Etude épidémiologique des décès par traumatisme en neurochirurgie du CHUGT; thèse médecine Bamako 2012 ; N°12M327.
4. L'Aumon, B. (1988). Recherche épidémiologique et accidentologie routière en Europe en 1988.
5. M'Bodjé, A. (1998). Les accidents du trafic routier au Sénégal, circonstance et indemnisation. 1980. thèse méd. Bamako 1998 N°30.

6. Direction Nationale des Transports terrestres, maritimes et fluviaux. Annuaire statistique des transports du district de Bamako, Mali Bamako, 2014.
7. ANASER: bilan des accidents corporels de la circulation routière dans le district de Bamako, Mali Bamako, 2014.
8. INPS: Rapport de l'année 2009.Statistiques des accidents de travail de 2009
9. Organisation Mondiale de la Santé et Banque Mondiale. (2004). Rapport mondial sur la prévention des traumatismes dus aux accidents de la circulation. Genève 2004.
10. Diarra, A. (2002). Approche épidémiologique des accidents de la route au service des urgences chirurgicales à propos de 322 cas. thès. med. Bamako 2002 N°1.
11. BiVroh, J. (2016). Déterminants des accidents mortels de la circulation routière en Côte d'Ivoire de 2002 à 2011- Dans Santé Publique 2016/5 (Vol. 28), pages 647 à 653.
12. Winston, F. K., & Rineer, C. (1999). The carnage wronght by major économic change: EcologicalStudy of trafic related mortality and the reunification of GERMANY in 1999.
13. Almeimoune, A. (2017). Aspects épidémiologiques, cliniques des traumatismes liés aux accidents de la circulation routière (ACR) impliquant les motos à Bamako. Rev. Afr. Anesthésiol. Med. Urgence. Tome 22 N°1-2017; 64.
14. Francine, L. (2008). Aspect épidémiologique et bilan lésionnel lors d'accident de la voie publique liée aux deux roues. Thèse de médecine, Bamako Mali; 2008 N° 8M601.
15. Sow, A. (2005). Etude épidémiologique des accidents de la route à l'hôpital Gabriel Touré à propos de 773 cas. Thèse de médecine 2005 (05M68). Bamako Mali.
16. Bapa, S. E. (2003). Etude épidémio-clinique des accidents de la voie publique liés aux engins à deux roues au service de chirurgie orthopédique et traumatologie de l'hôpital Gabriel TOURE de Janvier à Juin 2003 à propos de 310 cas. Thèse de médecine N° 18 Bamako MALI.
17. Talona, l. (2014). Profil épidémiologique des traumatismes par accidents de trafic routier aux cliniques universitaires de Kisangani. KisMed Août 2014, Vol5(1) :51-57.
18. Coulibaly, B. (2013). Etude épidemio-pronostique des traumatismes crânio-encéphalique chez les motocyclistes au service de neurochirurgie du CHU GT. Thèse mèd Mali 2013 N°15M51.
19. Tambassi, S. I. *Etude médico-légale des traumatismes du CHU GT de janvier à décembre 2010* (Doctoral dissertation, Thèse méd. Mali).
20. Diango, D. (2011). Aspects épidémio-cliniques des accidents de la voie publique au service d'accueil des urgences CHU Gabriel Touré Bamako Mali-méd. TOME XXVI(3), 13-16.
21. Dossim, A. (2004). Epidémiologie des accidents de la route au CHU de Tokoin – Lomé– TOGO ,1998 – Premier Congrès Ordinaire de la SOMACOT – Avril 2004.
22. Sophie, B. (2004). Les accidents de la circulation routière avec les engins à deux roues. thès. med.