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RESEARCH ARTICLE

A contribution to the study of the effects of medication and psychoactive substances on the incidence of road accidents in Morocco

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Abstract

Introduction and objectives: The majority of factors behind the lack of road safety are the result of human behavior: excessive speed, driving in a state of tiredness and using medication and psychoactive substances. In Morocco, little data exists on road accidents associated with the use of these substances. This study was conducted to assess the role of medication and psychoactive substances in the incidence of road accidents in the city of Rabat.

Material and method: Through a cross-sectional and descriptive study conducted in the emergency room of the Rabat Ibn Sina Hospital, data on driver behavior whilst driving were collected using an anonymous questionnaire. Risk factors associated with the use of medication and psychoactive substances were assessed using bivariate analysis. Data were analyzed using the SPSS software, version 17.

Findings: A total of one hundred drivers agreed to participate in the survey. The average age was 36.5 years, with 18% being young men and 25%women. The majority of these drivers (60%) confessed to having taken at least one form of medication or a psychoactive substance before the accident. 70% of the drivers had taken medication, 18.33% had used drugs, 10% were under the influence of alcohol and 1. 67% had ingested herbal substances.

Conclusion: Most of the medicines and psychoactive substances consumed by drivers affect the CNS by impairing driving abilities, and thus become a risk factor in the occurrence of accidents. The inclusion of this factor in the Integrated Emergency Road Safety Strategic Plan is crucial to reducing the number of accidents associated with the use of medication and psychoactive substances.

INTRODUCTION

In addition to being a major public health issue, road accidents are a truly global problem in view of the high number of victims. In Morocco where roads are among the deadliest, traffic accidents resulting in bodily injury cause about 10 deaths and 226 injuries per day [1]. The direct or indirect financial cost is estimated at 11 billion dirhams per year, or 2% of the GDP[2].According to a study carried out by the National Road Accidents Committee, roads in Morocco kill 14 times more people than in France and 11.7 times more people than in the US [3].

Looking at the catalysts of road accident in Morocco, the human factor remains one of the main causes: negligence, fatigue or behavioral disorders. In fact, almost 80% of all accidents are the result of human error [4]: excessive speed, recklessness, etc...

Drowsiness and impaired vigilance are also considered major risk factors in this type of accident. They may be the result of sleep deprivation, illness or the use of medication and psychoactive substances [5]. Available statistics reveal that 30% of road accidents in Morocco are associated with the consumption of psychoactive substances

(alcohol and drugs) [6].However, data on the role played by these two elements in road accidents in Morocco are lacking due the absence of scientific studies in this regard.
It is in this context that the present study was undertaken with the aim assessing the impact of medication and psychoactive substances on the prevalence of accidents on Morocco's roads.

METHODOLOGY:

This study was conducted at the emergency room of the University Hospital of Ibn Sina in Rabat. The study was conducted on evenings and weekends over a period of 6 months (April to September 2013).
The study was based on an anonymous questionnaire, developed to collect all the information necessary for the survey.
Inclusion criteria: All drivers admitted to the emergency room after a traffic accident and who agreed to take part in the survey.
Exclusion criteria: Deceased drivers, those in a state of unconsciousness and those who refused to answer the questionnaire.
The questionnaire data were captured and analyzed using the SPSS VERSION 17 software for Windows.
The description was made by averages and percentages. The bivariate analysis was carried out to highlight the existence or absence of a statistically significant association between the effect of the substance taken and certain variables presumed to be associated with this use, using the ANOVA test of comparison of means for quantitative variables and the chi-2 test for qualitative variables. Statistical significance is determined by the variable (p) considered as significant when it falls below 0.005
Findings:
During the study period, the emergency ward of the Ibn Sina Hospital in Rabat recorded 148 cases of traffic accidents. 20 drivers arrived in a state of death and were transferred directly to the hospital morgue. Out of the 128 cases fit to answer the questionnaire, only 100 agreed to participate in the survey.
The average age of the drivers who participated in the survey is 36.5 years (18-65 years). The younger ones (less than 25 years) account for 18%. Women represent 25% of the total number. 60% of the drivers confessed to having taken at least one form of medication or a psychoactive substance before the accident. The distribution of the reported use was as follows (Figure 1):
We observe that the majority of the uses were medical in nature, which use was observed in predominantly older drivers. On the other hand, drug and alcohol uses were observed as prevalent among younger drivers of both sexes.
Analysis of the nature of medication taken reveals a predominance of H1 antihistamines at18.3%, psychotropic drugs (benzodiazepines, neuroleptics and antidepressants) at 11.6%, followed by hypertension and diabetes medication at 8.3%, and anti- inflammatory medication at 6.6%. In the case of drugs, there is a predominance of cannabis at 6.6%, taken in the form of a resin (haschish) or as a herb (marijuana). The maajoune, which is a local drug made up of haschish mixed with benzodiazepines, represents 5% of all consumption. Klonazepam (locally known as karkoubi) is consumed at 3.3%, and cocaine at 1.7%. For the categories of alcohol consumed, they are beer, red wine or spirits [Figure 2].
One plant disclosed by one of the drivers refers to these seeds of *Datura stramonium* (chdeq jmel) known to be a toxic plant. Its ingestion induces a hallucinatory delirium that lasts for several hours [7].
The analysis of the pharmacodynamic or adverse effects of medication or psychoactive substances used by drivers shows that 78% [Figure 3] of these substances affect the central nervous system, impairing alertness, sleep and cognitive abilities [8, 9]. The study also showed that only 13% of the drivers were aware of the risks associated with this practice while driving.

On the subject of the sensations experienced by the drivers before the accident as a result of the medication or psychoactive substance taken, the following symptoms were mentioned: visual disturbances (16.7%), drowsiness (23.3%), ringing in the ears (10%), and dizziness (16.7%). A third of the drivers (33.3%) reported a sensation of fatigue. This fatigue may also be due to lack of rest when driving, especially since two-thirds of all drivers admitted that they failed to respect the recommended resting standards when at the wheel [Figure 4].
With regard to the major causes of traffic accidents, 60% of the surveyed drivers reported that the human factor was the element (bad driver behavior, disrespect of traffic regulations, ingestion of psychoactive substances, etc...). The conditions of roads and vehicles are responsible for 19% and 15% of accidents, respectively.
Finally, it was noted that the medication used by drivers was taken on the advice of doctors in 38% of cases, of pharmacists and pharmacist aids up to 38%, and through self-medication in 24% of the surveyed cases.

Discussion:

During the six months of this cross-sectional descriptive study of activities at the emergency room of the University Hospital of Ibn Sina in Rabat, 20 road accident victims were killed. This incidence is relatively low compared to the statistics announced by the Ministry of Equipment and Transport which reported that 100 people were killed in 2013 in the region of Rabat [10]. This difference could be explained by the fact that our study was conducted on evenings and weekends only. In our study, the driving victims of traffic accidents were predominantly young adults. The average age was 36 years with a predominance of males at 75%. These results corroborate those of Diakaria Dagnoko in Mali [11]. Our study's findings revealed a prevalent consumption of medicines from the therapeutic classes of antihistamines and psychotropic drugs known for their effects on the central nervous system, inducing sleepiness and impairing alertness, thus contributing to the occurrence of accidents. The established high percentage of H1 antihistamine use may be attributed to the fact that the study was conducted the spring, in which season people are most vulnerable to allergy problems (colds, hives, skin reactions ....). There is also an increasing tendency for drivers to consume psychotropic substances as stress levels are now as high as in countries such as France [12]. The findings confirm those of the Moroccan Ministry of Transport and Logistics which stated that more than 30% of road accidents are linked to the consumption of drugs and alcohol [13]. In France, the National Inter-ministerial Road Safety Observatory revealed that road accident causes are, in ascending order, medication (3%), drugs (21%), and alcohol (30%) [14-15].

The study's limitations lie in the weakness of the sample. Indeed, a number of difficulties hinder such investigations, the most important one being to convince drivers to answer the questions honestly.

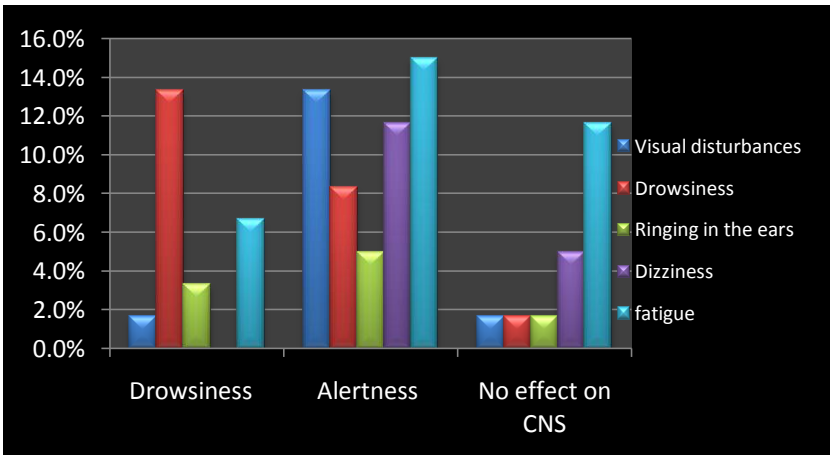

Figure 4: Correlation between the effects of medication and psychoactive substances and the sensations experienced by drivers.

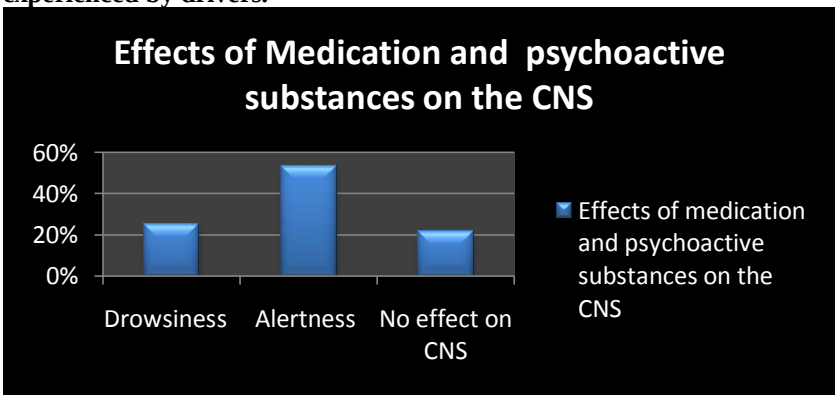

Figure 3: Effects of medication and psychoactive substances taken by drivers on the CNS.

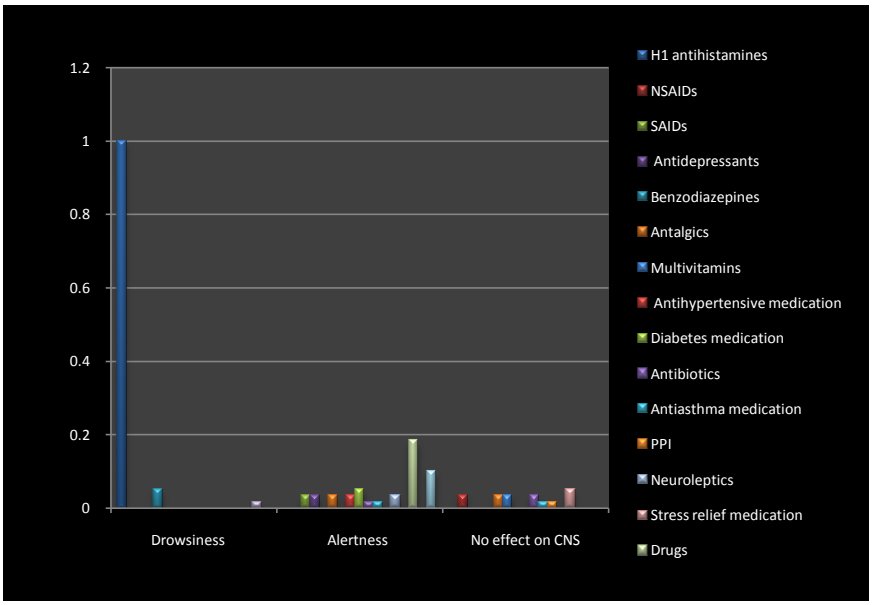

Figure 2: Distribution of CNS-affecting medication and psycho-active substances taken by drivers.

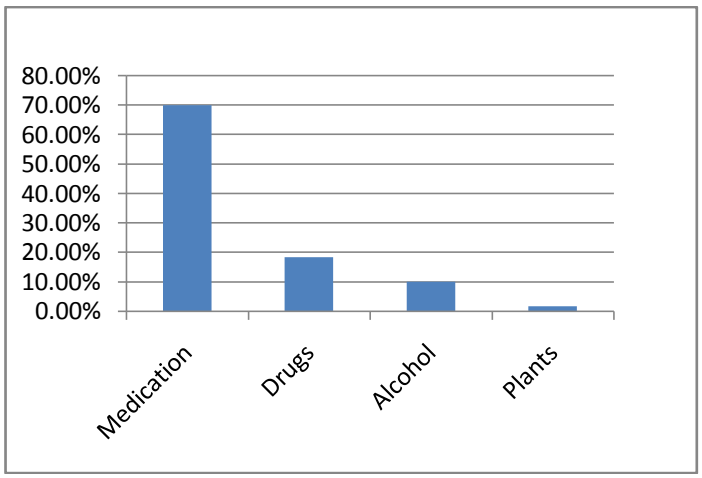

Figure 1: Distribution of the medication and psychoactive substances ingested.

Conclusion:

The study showed that the consumption by drivers of medication and psychoactive substances that affect the central nervous system by inducing sleep and/or impairing vigilance remains high. Most drivers ignore the dangers associated with taking these substances. In addition, the act of medicating often occurs outside the context of a doctor's consultation. There is a pressing need to raise the awareness of drivers about the risks inherent to ingesting medication and psychoactive substances whilst driving. Such sensitizing approach should also be incorporated into the Integrated Emergency Road Safety Strategic Plan for Morocco. It is also essential to compile a guide of the medicines sold in Morocco and that have an impact on safe driving. Another equally important measure is to affix pictogram to medicine boxes portraying the degree of danger associated with taking these medicines while driving, following the example of European countries. The generalization of the alcohol test and promoting drug and alcohol blood screening will allow for a significant reduction in traffic accidents.

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