


## Characterization of patients intoxicated by drug use in intensive care


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**Objective:** to characterize the epidemiological profile of intensive care hospitalizations due to secondary effects of alcohol and other drugs. **Method:** a cross-sectional study of 138 hospital admission records in adult intensive care unit of a teaching hospital, with secondary effects due to drug intoxication. **Descriptive and univariate statistics** were used. **Results:** the mean annual hospitalizations were 27.6/month, with most males (89.1%), mean age of 47.9 years, chronic alcohol users (92.75%) and secondary organic disease to the drug use (66.64%). The mean length of hospital stay was 16.6 days, and 38.4% died. **Conclusion:** in this study, males hospitalized patients in a critical state, at economically active age, by chronic alcohol use and long hospitalization period prevailed. Deaths were statistically associated with age greater than 40 years, diseases of the digestive system and hospitalizations lasting up to 17 days.

**Descriptors:** Nursing; Hospitalization; Intensive Care Units; Alcoholism; Epidemiology.

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## **Caracterização de pacientes intoxicados por drogas de abuso em terapia intensiva**

Objetivo: caracterizar perfil epidemiológico de internações em terapia intensiva decorrentes de efeitos secundários do uso de álcool e outras drogas de abuso. Método: estudo transversal de 138 fichas de internados em terapia intensiva adulto de hospital escola, com efeitos secundários à intoxicação por drogas de abuso. Utilizaram-se estatísticas descritiva e univariada. Resultados: a média anual de internações foi 27,6/mês, com maioria do sexo masculino (89,1%), idade média de 47,9 anos, usuários crônicos de álcool (92,75%) e com doença orgânica secundária ao uso de drogas (66,64%). O tempo médio de internação foi de 16,6 dias, e 38,4% evoluíram a óbito. Conclusão: neste estudo, prevaleceram internados em estado crítico do sexo masculino, em idade economicamente ativa, por uso crônico de álcool e longo período de internação. Os óbitos foram estatisticamente associados a idade maior que 40 anos, a doenças do sistema digestivo e em internações com duração até 17 dias.

Descritores: Enfermagem; Hospitalização; Unidades de Cuidados Intensivos; Alcoolismo; Epidemiologia.

## **Caracterización de pacientes intoxicados por drogas de abuso en terapia intensiva**

Objetivo: caracterizar el perfil epidemiológico de hospitalizaciones por cuidados intensivos debido a los efectos secundarios del consumo de alcohol y otras drogas. Método: estudio transversal de 138 registros hospitalarios en una unidad de cuidados intensivos para adultos de un hospital docente, en consecuencia de efectos del abuso de drogas. Se utilizó estadística descriptiva y univariada. Resultados: el promedio anual de hospitalizaciones fue de 27.6/mes y la mayoría era de hombres (89.1%), edad promedio de 47.9 años, consumidores crónicos de alcohol (92.75%) y con enfermedad orgánica secundaria al uso de drogas (66.64%). La duración media de la estancia hospitalaria fue de 16,6 días y el 38,4% falleció. Conclusión: en este estudio, prevalecieron internados en estado crítico del sexo masculino, en edad económicamente activa, por uso crónico de alcohol y largo período de internación. Las muertes fueron estadísticamente asociadas a edad mayor que 40 años, enfermedades del sistema digestivo y en internaciones con duración hasta 17 días.

Descriptorios: Enfermería; Hospitalización; Unidades de Cuidados Intensivos; Alcoholismo; Epidemiología.

## Introduction

The abusive drug use is a millenarian and universal human practice, and there is no society that has not resorted to its use for the most diverse purposes. Knowledge about the use and effects of drugs helps in coping with the complexity of this phenomenon, contributing to prevention, treatment, rehabilitation programs and reinsertion of users in various segments of society. Thus, drug use and its effects are considered serious social and public health problems in the world, as they are risk factors for the accident/trauma and/or violence<sup>(1-2)</sup>.

It causes undesirable interurrences such as family crises, violent acts and hospitalizations, leading to high social and financial costs, causing public authorities and health professionals attention, with cases that can lead to temporary and permanent deaths and losses<sup>(3-4)</sup>.

Worldwide, abusive alcohol use accounts for 5.9% of deaths, and there is no tendency to decrease or stabilize cases. The World Health Organization (WHO) has identified that alcohol is among the 20 largest risk factors for noncommunicable chronic diseases and, when added to illicit drugs, annual prevalence exceeds 200 million cases of illness<sup>(5)</sup>.

Drugs users are hospitalized for the clinical effects caused by acute or binge use (sporadic and excessive drug use in a short period of time)<sup>(6)</sup>, due to secondary pathophysiological changes to long term or chronic use of these substances, or by association with violence and traumas, also considered side effects<sup>(7)</sup>.

The harmful effects on the body due to the long-term harmful use of drugs require specialized care due to the seriousness of the cases, increasing the number of hospitalizations of these patients in the intensive care unit, resulting in a greater number of deaths and/or sequelae to the person<sup>(8)</sup>.

Intensive care units are environments where patients are in a serious clinical state, with impairment of vital functions and risk of death. In these units, patients who use drugs are hospitalized mainly for medical or traumatic complications, acute or chronic acute complications, usually related to the severity of drug dependence<sup>(9)</sup>.

Although it is considered important to characterize this population subgroup for the construction of strategies to prevent and control the diseases associated with the use and abuse of psychoactive substances, there are few studies in the national literature on hospitalizations of drug user patients into intensive care units.

The objective of this study was to characterize the epidemiological profile of intensive care hospitalizations due to the secondary effects due to use of alcohol and other drugs.

## Method

A cross-sectional and quantitative study of hospitalizations in an adult intensive care unit of a teaching hospital, located in the Northwest region of the State of Paraná, from January 2011 to December 2015, notified to the Poison Control Center and with medical diagnoses or complications related to drug abuse. Data were obtained from the Toxicological Occurrence and Alcoholic Poisoning and/or other Drugs epidemiological records.

Inclusion criteria were male or female patients with medical diagnoses associated with harmful effects of drug abuse, hospitalized in the adult intensive care unit of a school hospital and notified to the Poison Control Center of the Regional University Hospital of Maringá, a service of support to the toxicological urgencies, attending on a 24-hour shift.

The hospital under study is accredited to the Unified Health System (SUS), characterizing itself as a public institution, and prioritizes assistance, teaching and research activities. The clientele comprises the population of the municipalities of the Northwest region of the State, with 686,471 inhabitants. The adult intensive care unit consists of eight beds, being a reference of public beds for the care of seriously injured patients in the region. It also serves clinical and surgical patients of both gender and with a least age of 13 years.

Using the category of alcohol intoxication or other drugs, 2,166 cases were reported to the Poison Control Center in the study period. Of these records, 584 (26.9%) were from hospital admissions and, of these, 138 (23.6%) required hospitalization in an intensive care unit. In this sense, the study population was composed of 138 patients in severe condition.

As data sources, the records of Toxicological Occurrence and Alcoholic Poisoning and/or other Drugs filed at the Poison Control Center were used. The studied variables comprised characteristics of the events, and the data related to the date of hospitalization were compiled: year in which the notification of the case was generated, organized and presented in the period from 2011 to 2015; sociodemographic data; intoxication data; poisoning circumstance; hospitalization data and type of treatment; comorbidities; hospitalization time in an adult intensive care unit; and clinical outcome of the case.

The collected data were compiled in a Microsoft Excel® 2013 worksheet and analyzed with the help of Statistical Software for Social Science (SPSS)®, version 24. In order to evaluate significant associations between sociodemographic and clinical variables, descriptive statistics, using central tendency measures and univariate statistics using chi-square, Fischer's exact test were used, and those with  $p < 0.05$  in a 95% confidence interval were considered significant.

## Results

In the study period, 138 records of Toxicological Occurrence and Alcoholic Poisoning and/or other Drugs of hospitalized patients in the adult intensive care unit were analyzed, who met the inclusion criteria. The mean annual hospitalizations were 27.6 per year, ranging from 12 to 36 cases per year.

The sociodemographic characteristics are presented in Table 1, the age of intensive care unit patients ranged from 13 to 86 years, mean age of 47.9 years ( $SD \pm 16.4$ ). It is noteworthy the number of retirees due to the age found in the research sample.

Regarding to age, most cases (66.7%) occurred with people over 40 years old, and this proportion was associated with the type of drug with higher prevalence in the study, which was the use of alcohol and/or alcohol combined with other drugs. There was a statistically significant association between the persons' age and death occurrences.

Table 1 - Sociodemographic characteristics of 138 patients admitted to intensive care unit due to secondary effects of alcohol and other drugs in the period from 2011 to 2015. Maringá, PR, Brazil, 2018

Variables	Results n(%)
Gender	
Male	123 (89.13)
Female	15 (10.87)
Age	
Less than 18 years	3.62
19 to 34 years	16.66
35 to 50 years	34.78
51 to 64 years	30.43
Over 65 years	14.49
Schooling (n=88)	
Illiterate	2 (2.27)
Incomplete Elementary School	54 (61.38)
Elementary School	10 (11.36)
Incomplete High School	10 (11.36)
High School	10 (11.36)
Higher Education	2 (2.27)
Occupation (n=94)	
Employed	48 (51.07)
Unemployed	25 (26.59)
Retired	21 (22.34)

As for gender, 89.1% were male. It was verified a ratio of 8.4 men for each woman affected. Although most of the sample was male and most deaths occurred in these individuals, no significant statistical association was verified in the chi-square test.

It was observed that 43.5% had up to 8 years of schooling, 20.3% had more than 8 years of schooling, and in many cases this information was neglected or not informed (36.2%). It was not possible to statistically associate the occurrence of death and schooling of hospitalized patients.

The patients admitted to the adult intensive care unit came mainly from the hospital's emergency room (85.5%); 8.7% patients came from the surgical unit and 5.8% from the medical unit. There was no statistically significant association between the previous unit and deaths.

Regarding the occupational conditions of the patients hospitalized in the adult intensive care unit, we observed a diverse range of professions, which did not allow significant statistical associations, but 14.5% of the hospitalized patients were construction workers. Another characteristic of the sample was that 13.7% were retired and, in 31.9%, the profession was disregard.

The data related to the drugs that caused the injuries that resulted in ICU admission are described in Table 2. It was observed that the drug most related to hospitalization was alcohol, present in 92.7% of the registered medical diagnoses. Alcohol was responsible for the hospitalization of 116 (84.0%) patients and combined with other illicit drugs (crack, cocaine and marijuana) for 12 (8.6%). Crack was responsible for six (4.3%) cases, marijuana for two (1.4%) and cocaine for two (1.4%) of the cases. The diagnosis of drug intoxication was based on data recorded by the medical and nursing staff on the hospital medical chart.

Regarding the drugs used by men hospitalized in the adult intensive care unit, 98.5% were users of alcoholic beverages, with 16% of alcohol users being combined with other drugs. Only 1.5% were exclusive users of other drugs.

Table 2 - Distribution of frequencies of patients hospitalized in ICU, reported to CCI/HUM due to drug abuse, Maringá, PR, Brazil 2018

Type of Drug	n (%)
Alcohol	116 (84)
Alcohol and other drugs	12 (8.6)
Crack	6 (4.3)
Marijuana	2 (1.4)
Cocaine	2 (1.4)

The chronic drug use was the predominant circumstance in 97.1% of cases, even those combined with trauma. Regarding the etiology of comorbidities in patients hospitalized in the adult intensive care unit, 97.1% were related to acute chronic conditions.

The cross-correlation between sociodemographic variables and deaths among hospitalized patients is summarized in Table 3.

Regarding to hospitalization diagnoses codified by the International Statistical Classification of Diseases and Related Health Problems - 10th edition (ICD10), 2.2% were diagnosed with endocrine, nutritional and metabolic diseases; 21% were diagnosed with mental and behavioral disorders; 12.3% of hospitalized patients were diagnosed with nervous system diseases; 5.1% were diagnosed with circulatory system diseases; 12.3% with respiratory system diseases; 32,6 with digestive system diseases, being this last one with greater number of deaths. Three patients

(2.2%) received special-purpose codes (severe acute respiratory syndrome), and 12.3% had diagnoses of external causes of morbidity and mortality. There was a significant statistical association between the medical diagnoses and deaths.

Hospital stay ranged from 1 to 256 days. The mean was 16.6 days (standard deviation  $\pm$  24.5 days), the median was 10 days and mode, three days. There was a statistically significant association between hospitalization and deaths, indicating a higher risk for those hospitalizations that were below the mean of 16.6 days. The rate of bed occupancy of the adult intensive care unit by users of alcohol combine with other drugs during the study period was 15.6% per year.

The clinical approach to the patients was evaluated, and in 66.7% the patients received clinical treatment, and in 33.3% they received trauma and/or surgical treatments. There was no significant association between type of treatment and death in the sample.

Table 3 - Cross-reference between sociodemographic variables and death in 138 patients hospitalized in an adult intensive care unit for effects associated with drugs. Maringá, PR, Brazil, 2018

ICU* Inpatient	n (%)	Discharge (n)	Death (n)	p Value	
Age, years					
Up to 40	46 (33.3)	35	11	0.013 <sup>†</sup>	
> 40	92 (66.7)	50	42		
Gender					
Male	123 (89.1)	77	46	0.486	
Female	15 (10.9)	8	7		
Schooling, years					
Up to 8	60 (43.5)	40	20	0.098	
>8	28 (20.3)	20	08		
Not informed	50 (36.2)	25	25		
Unit of origin					
Surgery unit	12 (8.7)	7	5	0.475	
Medical unit	8 (5.8)	7	1		
Emergency room	118 (85.5)	71	47		
Type of use					
Chronic	134 (97.1)	82	52	0.502	
Acute	4 (2.9)	3	1		
ICD <sup>‡</sup> 10					
E00-E99	3 (2.2)	0	3	<0.001 <sup>§</sup>	
F00-F99	29 (21)	23	6		
G00-G99	17 (12.3)	14	3		
I00-I99	7 (5.1)	6	1		
J00-J99	17 (12.3)	12	5		
K00-K93	45 (32.6)	16	29		
U00-U99	3 (2.2)	3	0		
V01-Y98	17 (12.3)	11	6		
Time of hospitalization					
Up to 17 days	64 (46.4)	32	32		0.009 <sup>†</sup>
> 17 days	74 (53.6)	53	21		
Therapeutic approach					
Medical	92 (66.7)	53	39	0.119	
Surgery/trauma	46 (33.3)	32	14		

\*ICU - Intensive Care Unit; <sup>†</sup>Significant association in the level of significance of the Chi-square test; <sup>‡</sup>ICD - International Classification of Diseases; <sup>§</sup>Significant association in the level of significance of the Fisher Exact test

For adult intensive care unit outcomes, 61.6% of the patients were discharged from the hospital (between 2 and 89 days of intensive care unit hospitalization, with a mean of 15.78 days for hospital discharge) and 38, 4% died during hospitalization (between 1 and 230 days of intensive care unit hospitalization, with an average of 19 days for death).

## Discussion

The limitation for the results of this study are related to the use of data collected from indirect sources, that is, toxicological occurrences records, which may result in underreporting or incompleteness, as was verified in some variables. On the other hand, this presents advantages, since, within the possibilities of obtaining the data, it allows to know comorbidities and aspects of the patients that can subsidize clinical protocols (medical and nursing), as well as to reveal to the public authorities data that can result in public policies of prevention and harm reduction.

The age profile of the patients shows that the majority were young adults at economically active age. The large number of retirees stands out due to the age profile of the sample. These findings allow us to assume that the health problems and disabilities generated by the problematic use of drugs are important, as identified in previous studies, in which it was found that alcohol use increases the vulnerability of the elderly and young adults to falls, lesions and also on alcohol-drug interactions<sup>(8-9)</sup>.

The greatest number of hospitalization cases occurred at ages above 35 years. This proportion is associated with the type of drug most prevalent in the study: alcohol and alcohol combined with other drugs. This pattern is also observed in other countries, such as Russia, where alcohol misuse accounts for more than half of the deaths among economically active men. It is pointed out that the main reasons for this pattern of consumption are poverty and lack of "spiritual and cultural" satisfaction; as secondary reasons, due to price, accessibility and popularity of alcoholic beverages<sup>(10)</sup>.

The study confirms the higher prevalence of hospitalizations and deaths due to alcoholism in males, which present greater exposure and, consequently, serious effects of drug use to the body. This trend of consumption is not different from other regions of the country, in which the prevalence of deaths drug users, especially alcohol, occurs among the male population<sup>(8,10-11)</sup>.

The low schooling found among the patients corroborates other studies, which verified that

socioeconomic status is one of the many factors that influence a person's consumption of alcohol and the results due to this consumption. Alcohol and drug use is a complex combination of multiple factors, such as race, ethnicity, sociodemographic status, educational status, and gender. Among individuals with low socio-demographic status, that is, in a scenario of vulnerability, greater consequences are related to alcohol consumption<sup>(12-13)</sup>.

In a study about the risk related to drug use in construction workers in a city in the South of Brazil, it was found that alcohol, tobacco, marijuana and cocaine are the main substances used by these workers. Unemployment was also highlighted in the research, being associated to dependence on drug use and low acceptance and adherence to treatment, as well as the social reintegration of these users<sup>(14)</sup>.

Alcohol, a licit drug, was responsible for most hospitalizations, isolated or combined with other illicit drugs, related to the chronic use of the drug and the period of long hospitalization. Acute alcohol intoxications are responsible for the higher incidence in young people with increased severity of cases, with the highest degree of altered consciousness caused by excessive consumption, coma, temporary and permanent sequelae - including death. These data corroborate another study that discusses the fact that alcohol is the main protagonist of current traumatic diseases<sup>(15)</sup>.

Alcohol is a potentiator of the effects of other drugs, when used concomitantly, as it generates greater toxicity and prolongs the effects. Usually, hospitalizations for drugs are related to the complications of compulsive consumption with clinical impairment due to chronic use or situations of violence and trauma. Damage caused, directly or indirectly, by alcohol consumption results in comorbidities<sup>(2,16)</sup>.

In the case of acute intoxications by drugs, there is a direct relationship with external causes: accidents, falls and violence. Mental illnesses are also associated with psychoactive substance dependence and have increased significantly in recent years. Mental disorders, such as schizophrenia, bipolar affective disorder and depression, are the most associated with drug use, with the suicide attempt being aggravated<sup>(17)</sup>.

Comparing hospital admissions for drugs at the Poison Control Center in the years under study, there were 23.6% of hospitalizations in the intensive care unit. This demonstrates the reflexes of the increase in the consumption of psychoactive substances in the population and generates damages to the physical and mental health of the population, and, consequently,

clinical severity, associated to drug abuse, which, in turn, generates pathophysiological changes, demanding intensive care.

The World Health Organization points out that the risk of harm is associated with several individual characteristics, such as age, gender, predisposition, consumption pattern (acute and chronic), and sociodemographic factors. The problems related to alcohol abuse are not restricted exclusively to the dependent individuals, being associated with patterns of use. Complications as a result of chronic abuse often lead to severe complications, irreversible damage, and death<sup>(18)</sup>.

Chronic exposure to alcohol can lead to a level of toxicity that affects, directly or indirectly, important organs or body systems and, consequently, causes diseases such as liver cirrhosis, a common disease found in this population. Studies point to alcohol as the drug most consumed in Brazil, with alcoholism reaching 5 to 10% of the Brazilian adult population<sup>(18-19)</sup>.

The Brazilian population is among the largest consumers of alcoholic beverages, and these rates continue to grow. The prevalence of alcohol abuse in the Brazilian population was 13.7%, and the proportion among men was 3.3 times higher than among women. Alcohol has remained a relatively low priority in public policies, including Health, despite high social, health and economic burdens associated with its harmful use<sup>(19)</sup>.

In the population under study, the patient's conditions were of extreme gravity, showing that the deleterious effects of the drug use, whether an acute or chronic consumption, can really interrupt the person's life. It may also cause temporary and permanent physical and/or emotional sequelae that extend to the family and society. The length of hospitalization was directly related to the clinical severity of the cases, and the outcome in 38.4% of the cases was death, which confirms the indication of hospitalization in intensive care<sup>(8)</sup>.

It must be emphasized that there is underreporting by health teams, regarding the treatment and hospitalizations of cases in which the patient has used drugs. Such surveillance is generally deficient in hospitals, especially in those where there are no toxicological assistance centers, with a greater scarcity of data that can be confronted with the patients' clinical situation. Another factor to consider is the severity of the patients, which makes it difficult to obtain these data<sup>(8)</sup>.

Research related to drugs, clinical severity and hospitalization in intensive care contributes to the construction of nursing knowledge relevant to drug user care in death risk situations. The nurse, as a care provider, must work with the team, the patient

and the family, implementing actions and interventions for the care of the critically ill patient, and developing prevention strategies with family members for the rehabilitation and social reintegration of the patient after discharge from hospital.

## Conclusion

The prevalence of the profile presented is important because it revealed vulnerable groups among users of alcohol and other drugs, showing that young adults, economically active, with chronic alcohol use and with comorbidities, evolve to death, even with treatment in an intensive care unit.

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## References

1. Sudhinaraset M, Wigglesworth C, Takeuchi DT. Social and Cultural Contexts of Alcohol Use. Influences in a Social-Ecological Framework. *Alcohol Res.* 2016; 38(1):35-45.
2. Santana CJ, Oliveira ML. [Effects of drug involvement on long-term users' family members]. *Rev Rene.* 2017; 18(5):671-8. doi: 10.15253/2175-6783.2017000500015. Portuguese.
3. Korcha RA, Cherpitel CJ, Witbrodt J, Borges G, Hejazi-Bazargan S, Bond JC, et al. Violence-related injury and gender: The role of alcohol and alcohol combined with illicit drugs. *Drug Alcohol Rev.* 2014; 33(1):43-50. doi: 10.1111/dar.12087
4. Okumura Y, Shimizu S, Ishikawa KB, Matsuda S, Fushimi K, Ito H. Comparison of emergency hospital admissions for drug poisoning and major diseases: a retrospective observational study using a nationwide administrative discharge database. *BMJ Open.* 2012; 2(6):pii: e001857. doi: 10.1136/bmjopen-2012-001857
5. Pereira GB, Oliveira MM. [Hospitalizations in intensive care units related to the abuse of alcohol, tobacco and illicit drug]. *VITTALLE.* 2016; 28(1):49-64. Portuguese.
6. West RK, Maynard ME, Leasure JL. Binge ethanol effects on prefrontal cortex neurons, spatial working memory and task-induced neuronal activation in male and female rats. *Physiol Behav.* 2018; 188:79-85. doi: 10.1016/j.physbeh.2018.01.027.
7. Rocha GS. Fatores associados, gravidade do trauma e sequelas de acidentes de transporte terrestre: um

estudo a partir de egressos hospitalares. São Paulo: USP; 2015.

8. Antunes F, Oliveira ML. [Characteristics of patients hospitalized at an ICU due to drug abuse]. *Investig y Educ Enferm.* 2013; 31(2):201-9. Portuguese.

9. Zolot J. Age, Racial, and Gender Gaps Are Narrowing in Alcohol Use Disorders. *Am J Nurs.* 2017; 117(11):14. doi: 10.1097/01.NAJ.0000526731.98527.dc

10. Jang HS, Kim JY, Choi SH, Yoon YH, Moon SW, Hong YS, et al. Comparative analysis of acute toxic poisoning in 2003 and 2011: Analysis of 3 academic hospitals. *J Korean Med Sci.* 2013; 28(10):1424-30. doi: 10.3346/jkms.2013.28.10.1424

11. Malta DC, Bernal RT, Mascarenhas MD, Silva MM, Szwarcwald CL, Morais Neto OL, et al. [Alcohol consumption and driving in Brazilian capitals and Federal District according to two national health surveys]. *Rev Bras Epidemiol.* 2015; 18(suppl 2):214-23. doi: <http://dx.doi.org/10.1590/1980-5497201500060019>. Portuguese.

12. Organização Internacional do trabalho (OIT). Perfil do trabalho docente no Brasil: um olhar sobre as unidades da federação [Internet]. Brasília, DF: OIT; 2012 [Acesso 22 ago 2018]. Disponível em: [http://www.ilo.org/wcmsp5/groups/public/---dgreports/---integration/documents/publication/wcms\\_206109.pdf](http://www.ilo.org/wcmsp5/groups/public/---dgreports/---integration/documents/publication/wcms_206109.pdf)

13. Gavioli A, Mathias TA, Rossi RM, Oliveira ML. Risks related to drug use among male construction workers. *Acta Paul Enferm.* 2014; 27(5):471-8. doi: <http://dx.doi.org/10.1590/1982-0194201400077>

14. Silva BD, Santos JD, Santos AM, Madeira MZ, Gouveia MT. Acidentes com motocicletas: características da ocorrência e suspeita do uso de álcool. *Cogitare Enferm.* 2017; 22(3):50715. doi: <http://dx.doi.org/10.5380/ce.v22i3.50715>

15. Manguiera SO, Guimarães FJ, Manguiera JO, Fernandes AF, Lopes MV, Manguiera SO, et al. [Health promotion and public policies of alcohol in Brazil: integrative literature review]. *Psicol Soc.* 2015; 27(1):157-68. doi: <http://dx.doi.org/10.1590/1807-03102015v27n1p157>. Portuguese.

16. Silva ER, Ferreira AC, Borba LO, Kalinke LP, Nimtz MA, Maftum MA. [Drug use impact in drug addicts' physical and mental health]. *Ciênc Cuidado Saúde.* 2016;15(1):101-8. doi: 10.4025/ciencucuidsaude.v15i1.27137. Portuguese.

17. World Health Organization (WHO). Global status report on alcohol and health 2014. Geneva, Switzerland: WHO; 2014.

18. Garcia LP, Freitas LR. Heavy drinking in Brazil: results from the 2013 National Health Survey. *Epidemiol Serviços Saúde.* 2015; 24(2):227-37. doi: <http://dx.doi.org/10.5123/S1679-49742015000200005>.

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