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RESEARCH ARTICLE

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## EVOLUTION OF HOSPITALIZATIONS ARISING FROM ALCOHOL AND ANOTHER DRUG ABUSE

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### ABSTRACT

**Objective:** to analyze the evolution of hospitalizations arising from alcohol and another drug abuse from 2008 to 2015. **Method:** analytical, observational, ecological study based on the information contained in the national databases of the Hospital Admission System of the Unified Health System. **Results:** among the first ten causes of hospitalizations due to mental disorders, the use of some type of drug is the second largest responsible (15,10). As for hospitalizations specifically due to drug abuse, the disorders generated by abuse of alcohol and multiple drugs were responsible for 99.17% of the hospitalizations. There was a strong growing trend in these hospitalizations ( $R^2 = 0.8419$ ), with an increase of 90.56% when compared to the extremes of the evaluated period, regardless of the gender considered. **Conclusion:** the amount of hospitalizations for alcohol and drug abuse is increasing. Is necessary to create and implement multisectoral preventive strategies, since this situation is directly related to Social Determinants of Health.

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## INTRODUCTION

The abuse of alcohol and other drugs is considered a serious public health problem worldwide. Data from the World Drug Report estimate that 230 million people, or one in every 20 adults –corresponding to 5% of the population - used an illicit drug at least once and that the number of people with problems arising from drug use is around 27 million people aged between 15 and 64 years, corresponding to 0.6% of the adult population worldwide (UNODC, 2015). According to the World Health Organization (WHO), the alcohol abuse led to the death of about 3 million people in 2016. Furthermore, it was identified that alcohol plays a significant causal role over around 60 different types of diseases. WHO also draws attention to the damage to the well-being and health of people living with alcohol users (WHO, 2014). The Brazilian Psychiatric Reform was a watershed in health care for individuals affected by this condition, because before this reform, these individuals were excluded from social life and lived imprisoned in psychiatric hospitals. With the advent of the Psychiatric Reform, strategies such as dehospitalization and insertion of these users in social and family life brought

more dignity and humanization to the therapeutic approach aimed at this population (BRASIL, 2014). In this scenario, the misuse of alcohol and other drugs has caused an increase in undesirable social occurrences, such as family crises, violence and preventable hospitalizations in the Unified Health System (SUS). This study is relevant for it contributes to monitor this condition, in order to make it an instrument to assist in the establishment of actions to promote, prevent and control risk factors. These actions are necessary to know the impact of this problem on the population, as well as to the construction and implementation of new proposals to back the agents responsible for public policies to combat abuse of alcohol and other drugs, in order to expand the possibilities of care for this vulnerable population. Thus, the present study aims to analyze the evolution of hospitalizations resulting from the abuse of alcohol and other drugs that took place from 2008 to 2015 in the state of Alagoas.

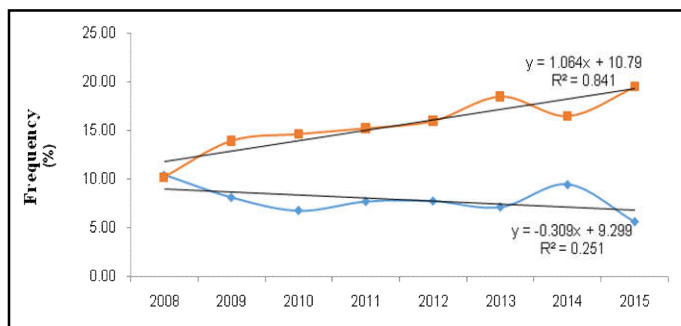
## METHODS

This is an analytical, observational, population study of the ecological type. The historical series included hospitalizations that occurred in the state of Alagoas, among its residents, from

2008 to 2015. For the study population, we considered hospitalizations in Alagoas whose primary diagnoses that justified the issuance of Hospital Admission Authorizations (HAAs) were those under codes F10 to F19 of the International Statistical Classification of Diseases and Related Health Problems - 10<sup>th</sup> Review (ICD-10). Data were obtained from the databases of the Hospital Admission System of the SUS (HAS/SUS), available from the SUS Department of Informatics of the Ministry of Health (DATASUS/MS), which are freely accessible. Several tabulations of data were made from February to November 2016, through consultations to the site: <http://datasus.saude.gov.br/sistemas-e-aplicativos/hospitales/sihsus>. The population data came from the Brazilian Institute of Geography and Statistics (IBGE), using the results of the 2010 census and intercensal projections (other years), through consultations to the site: <http://censo2010.ibge.gov.br/>. Data were tabulated and maps constructed using the statistical software Tabwin version 3.6 and analyzed in EpiInfo version 3.5.3. The graphics were produced in the Excel Software (2007 Office Package). Analysis of variance (ANOVA) and chi-square ( $\chi^2$ ) tests were used to compare means and proportions. To estimate risk, the relative risk (RR) and gross hospitalization rates were calculated. In order to evaluate changes along time periods, the coefficient of determination ( $R^2$ ) was calculated. In all analyses, the significance level of  $p < 0.05$  was considered as the cutoff point.

## RESULTS

Between 2008 and 2015, 1,424,241 hospitalizations (considering all causes) occurred among residents of Alagoas, corresponding to an average of 178,030 hospitalizations/year. Of all hospitalizations that occurred in the period, about 113,046 (7.94%) had some type of mental disorder as primary diagnosis, or an average of 14,131 hospitalizations/year. Of this total of hospitalizations for mental or behavioral disorders, about 17,073 (15.10%) were due to drug abuse, with an average of 1,138 hospitalizations/year. Alcohol and multiple drug abuse accounted for 99.18% of all causes of hospitalizations due to drug use during the study period. When hospital admissions arising from mental and behavioral disorders in general were analyzed, there was a slight downward trend. In contrast, hospitalizations due to drug use showed a significant growing trend during the period evaluated, presenting an increase of 90.56% from the beginning to the end of the studied period, i.e., 2008 and 2015 (Figure 1).



Source: HAS/DATASUS. Data subjected to modifications. Prepared by the author.

**Figure 1. Temporal trend of relative frequencies of hospitalizations arising from mental and behavioral disorders in general and as a consequence of alcohol and another drug abuse. Alagoas, from 2008 to 2015.**

Drug abuse ranked second among all causes of hospitalizations due to mental disorders, with a frequency of 15.10% of the hospitalizations, behind only hospitalizations for schizophrenia (57.25%). When hospitalizations for use of all drugs use were evaluated, it was found that there was a greater proportion of hospitalizations due to alcohol and multiple drug abuse, considering the period evaluated (Table 1). As for the temporal trend of the hospitalization rate for the same cause in the same period, a behavior that does not represent significant growth was identified. However, the reduction in the number of all psychiatric hospitalizations observed in 2015 should be considered in this analysis, as it is important to pay attention to the proportional growth of hospitalizations for alcohol and other drugs in the state in relation to other hospitalizations for psychiatric causes. This fact can be clearly seen in Figure 3, where the trends of the hospitalization rates in two different periods is observed, considering the period between the years 2008 and 2015 ( $R^2 = 0.3241$ ) and between 2008 and 2014 ( $R^2 = 0.0017$ ). The impact on risk was not great when considering the trend because of the reduction observed among males in the last year of the analyzed period (2015).

Regarding the sharp drop in the hospitalization rate observed in 2015, it was clear that the impact observed in the last year referred practically to males, because there was no difference in the hospitalization rate of women. Considering the comparison between sexes, it was noticed that the use of alcohol was more frequently the cause of hospitalizations among males (61.47%), and this finding was statistically significant ( $p = 0.0000$ ). In turn, the use of multiple drugs was more frequently the cause of hospitalization among females (33.42%), also statistically significant ( $p = 0.0000$ ). These statistically significant proportions may be related to greater opportunities for drug use in each sex, and may have the influence of several social factors, as reported in the literature. The analysis of the frequency of hospitalizations arising from the use of alcohol and other drugs according to type of substance and sex indicated that the frequency of hospitalization for alcohol abuse was higher in males. In contrast, the frequency of hospitalization for use of multiple drugs, cocaine, sedatives and hypnotics was higher among females. Regarding the frequency of hospitalizations for alcohol and other drug abuse according to age groups, in the general population and stratified by sex, the frequency of hospitalizations increased from the age group of 10 to 14 years, presenting a peak in the range of 40 to 44 years. From the age group of 45 to 49 years onwards, the frequency of hospitalizations for alcohol and other drug abuse presented a reduction. About 73.18% of the individuals hospitalized for alcohol and other drug abuse were aged 20 to 49 years. The statistical analysis of the proportions of hospitalizations between sexes and age groups revealed that there was a significantly higher risk of hospitalization due to drug use among women aged up to 40 years ( $RR = 1.5$ ) than when considered male individuals in the same age group ( $p = 0.0000$ ;  $\chi^2 = 97.99$ ). Considering the age group with more hospitalizations among men, which was over 45 years, practically the opposite situation was perceived, a significantly higher risk among men ( $RR = 1.2$ ) from 45 years old onwards ( $p = 0.0000$ ;  $\chi^2 = 97.99$ ). As for length of hospital stay, the average in the period studied was of  $17.0 \pm 10.7$  days for each hospitalization, and when separated by sex, the average was slightly higher among men ( $17.2 \pm 10.7$  days) than among women ( $16.0 \pm 10.8$  days), and this difference was significant ( $p = 0.0000$ ).

**Table 1. Proportion of hospitalizations for mental and behavioral disorders due to alcohol and other drug abuse in relation to the total number of causes coded throughout Chapter V (ICD-10). Alagoas, from 2008 to 2015**

SUBSTANCE	2008	2009	2010	2011	2012	2013	2014	2015	MEAN
ALCOHOL	6.72%	6.14%	6.53%	8.65%	9.98%	11.36%	11.63%	13.11%	8.97%
OPIATES	0.03%	0.02%	0.02%	0.00%	0.01%	0.00%	0.01%	0.00%	0.01%
CANNABINOIDS	0.22%	2.48%	2.27%	1.11%	0.11%	0.20%	0.18%	0.27%	0.86%
HYPNOTIC SEDATIVES	0.08%	0.09%	0.16%	0.41%	0.59%	0.60%	0.39%	0.79%	0.35%
COCAINE	0.25%	0.87%	1.08%	0.63%	0.79%	0.30%	0.17%	0.06%	0.51%
OTHER STIMULANTS *	0.03%	0.04%	0.05%	0.01%	0.02%	0.04%	0.04%	0.03%	0.03%
HALLUCINOGENS	0.00%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.01%
SMOKE	0.00%	0.05%	0.05%	0.02%	0.00%	0.02%	0.00%	0.00%	0.02%
VOLATILE SOLVENTS	0.00%	0.03%	0.01%	0.02%	0.00%	0.06%	0.07%	0.09%	0.03%
MULTIPLE DRUGS **	2.93%	4.24%	4.49%	4.39%	4.50%	5.90%	4.20%	5.50%	4.70%
TOTAL	10.28%	13.98%	14.67%	15.25%	16.01%	18.51%	16.51%	19.59%	15.10%

\*Mental and behavioral disorders due to the use of other stimulants including caffeine.

\*\* Mental and behavioral disorders due to multiple drug use and use of other psychoactive substances.

Source: HAS/DATASUS. Data subjected to modifications. Prepared by the author.

In the analysis of length of hospital stay according to the substance involved, it was verified that there were significant differences between the observed averages ( $p = 0.0000$ ), being the largest means found for hospitalizations due to abuse of cannabinoid substances ( $19.9 \pm 10.4$  days) and the lower for hospitalizations due to use of sedatives and hypnotics ( $4.6 \pm 5.3$  days).

## DISCUSSION

The abuse of alcohol and other drugs is a phenomenon that causes concern and international repercussions. Currently, it is estimated that around 10% of the population of urban areas worldwide abuses drugs. Alcohol alone accounts for 3.2% of deaths worldwide. This worldwide extent of the drug problem demonstrates, by itself, the dimension of the problem in terms of public health (ASSIS; BARREIROS; CONCEIÇÃO, 2013). From 2008 to 2015, according to the HAS/SUS database, 17,073 hospitalizations occurred in the state of Alagoas for mental and behavioral disorders resulting from alcohol and other drug abuse. On the other hand, it was found that there was a slight downward trend in hospitalizations due to mental and behavioral disorders in general. This downward trend can hypothetically be explained by the adoption of the National Mental Health Policy which has as one of its axes the implementation of the Community-Based Mental Health Care Network (SALVATORI; VENTURA, 2013). On the other hand, there was a significant growing trend in the hospitalizations for alcohol and drug abuse in the same period. This trend demonstrates the need for a differentiated approach to prevent alcohol and other drug abuse, as well as the development of resolution health care strategies for the affected population (BARBOSA *et al.*, 2015). Drug use ranked second compared to all causes of hospitalizations for mental disorders in the studied period, behind only hospitalizations for schizophrenia. This finding is important considering that the number of hospitalizations for alcohol and another drug abuse has increased. Abuse of alcohol, among all drugs, ranks first as cause of hospitalizations. This result has also been demonstrated in studies by Winters *et al.*, and the fact that Brazilian law considers alcohol as a licit drug, despite all the consequences of its abuse, may justify the first place of alcohol use as cause of hospitalizations for drug abuse (ARGIMON; CERUTTI, 2015). National epidemiological studies have shown that alcohol, a substance considered licit, is the most consumed drug among Brazilians. In this perspective, the Brazilian State has given specific attention to the issue of alcohol consumption, with the establishment of the National Policy for Alcohol.

This multisectoral policy involves strategies from different government ministries, the development of mechanisms to prevent the misuse of alcohol, and the increase of population's access to different treatment modalities (MOREIRA; VOVIO; MICHELI, 2015). This policy also points to the need for systematic studies about the patterns of alcohol consumption in the country and the damage associated with them, building indicators that may foster the construction of more problem-solving public policies for the sector. In this sense, the increased number of hospitalizations for alcohol use confirms the need for specific research to contribute for new coping strategies (BALBINOT *et al.*, 2016). It is also found that, from 2008 to 2015, the proportion of hospitalizations is higher among users of alcohol and multiple drugs. The use of multiple drugs can be influenced by the easy access to alcohol. Corroborating these findings, other studies have also shown a higher prevalence of alcohol use among users of all drugs. Similar results were obtained in other specific studies that addressed hospital morbidity due to drug use. These studies, which corroborate the findings of the present survey regarding alcohol abuse, lead to the perception of the need for public policies for greater control of alcohol use by the population (BRASIL, 2014). It was also noted that the proportion of hospitalizations due to multiple drug use ranked second among all causes of hospitalizations for drug use in general. Similar results were identified in the analysis of hospitalizations for drug use across the country from 2001 to 2007, where multiple drug use ranked second among all causes of hospitalizations caused by drug use. It is important to highlight the participation of hospitalizations for multiple drug use, which occupied the second place throughout the whole historical series of this study (MOREIRA; VOVIO; MICHELI, 2015).

According to the Ministry of Health, the policy of dehospitalization and community-based treatment is focused on the care offered through alternative care services that prioritize the insertion of individuals within the social environment, aiming at establishing contact with their families and knowing the difficulties faced during their return to family life and in the process of social reintegration (ARGIMON; CERUTTI, 2015). The Ministry of Health recommends Psychosocial Care Centers as the main strategy in the psychiatric reform process, to prevent hospitalizations in psychiatric hospitals and also to promote social and family reintegration of people with mental disorders, including those caused by alcohol and other drug abuse, aligned with the policy of dehospitalization. Studies state that for patients, hospitalizations mean their removal from the family, prolonged living with strangers in an unfamiliar environment,

also requiring the need to adapt to rules and routines defined by third parties, interruption of work routine and, in many cases, fall of income from formal or informal work. Moreover, psychiatric hospitalization is accompanied by the stigma against individuals with mental disorders. Hence also the difficulties in social reintegration, in addition to those arising from drug problems (BARBOSA *et al*, 2015). Still within this perspective, it was observed that the frequency of hospitalizations for alcohol use was higher among males. In turn, a higher frequency of use of multiple drugs and hypnotic sedatives was found among females.

Corroborating these findings, a study demonstrated that this difference may be related to the use of amphetamines, which is intended for weight loss in women, fomented by the pressure of society in favor of the “so-called” perfect body image. It is noteworthy that in Brazil, the use of amphetamines to promote body weight reduction is more widespread than in other countries. <sup>(8,22)</sup> The dictatorship of the supposedly perfect body, mainly imposed by the fashion world, can cause many women to seek amphetamines as a solution for overweight or obesity (ARGIMON; CERUTTI, 2015). In the general population, scientific studies conclude that the main beginners and the users who use more alcohol and other drugs are older adolescents and young adults. Drug use usually starts before age 18, becoming abusive most often between the ages of 19 and 23. According to the Brazilian Report on Drugs published in 2009, the age group of 18 to 24 years presented the highest rates of alcohol or other drug’s dependence, followed by the age group of 25 to 34 years, in both sexes (BALBINOT *et al*, 2016).

Studies have observed that regarding age, drug use starts early and increases with age. However, prevalence rates of use are not always known. According to WHO (2012), there is a lack of more reliable data in many developing countries. However, available data indicate that levels of use among young people are higher in developing countries than in developed ones (SALVATORI; VENTURA, 2013). In Brazil, it has been observed that this use starts early. According to the “V National Survey on Psychotropic Drug Use among Elementary and High School Students of the Public Education Network conducted in 17 Brazilian Capitals”, about 22.6% of respondents reported to have used some drug at least once as soon as at 10 years old, being alcohol the most often consumed. Corroborating these data, the “I National Survey on Alcohol Consumption Patterns in the Brazilian Population” pointed out that early and regular drinking is indeed taking place among young people, so that the first use has been observed to occur at 13.9 years of age, and regular consumption at 14.6 years. This situation is extremely worrying, given that the data show a frequency of hospitalization for use of alcohol and other drugs at an early age. Often, this initiation in alcohol use occurs in the family environment, under the influence and approval of adults directly responsible for these young people (ARGIMON; CERUTTI, 2015). It is important to highlight that the present study had the following limitations: the possible under-registration of hospitalizations due to the non-emission of HAAs, exclusively in public hospitals because they are “open door” establishments, not limited to Financial Ceiling; the occurrence of individuals who needed hospitalization but did not have access to it; and hospitalizations in the private network.

## CONCLUSION

Hospital admissions for alcohol and other drug abuse showed a significant increase in the state of Alagoas. Alcohol was the drug responsible for most hospitalizations among men and multiple drug abuse (concomitant use of more than one type of drug) was more often responsible for hospitalizations among women. Hospital admissions for alcohol and other drug abuse are more frequent in men aged 30 to 34 and over 45 years of age; whereas women hospitalized for abuse of alcohol and drugs were in the 15-25 and 40-44 age group. The frequencies and rates of hospitalizations for alcohol and other drug abuse were higher among individuals living in the municipalities with the highest rate of human development and its surroundings, in the state of Alagoas. The increase in hospitalizations for multiple drug abuse among women points to the need for specific studies with this population, in order to outline the profile of these women and the risk factors to which they are subjected. The community-based mental health care network needs to be expanded in the state of Alagoas, converging on the need to implement public policies to protect and control the abuse of alcohol and other drugs, in order to prevent that younger individuals, become drug users and evolve into drug addiction.

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