

## Exposure to mortality risk situations in users of alcohol and other drugs

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### ABSTRACT

The objective of this study was to estimate the prevalence of exposure to mortality risk situations in users of alcohol and other drugs, and analyze its associated factors. A cross-sectional observational study was carried out with individuals with disorders caused by the use and abuse of alcohol and other drugs according to medical diagnosis, who were receiving treatment in private rehabilitation centers and reported having already experienced death risk. A prevalence of 45.9% of exposure to mortality risk was found, which confirms the seriousness and complexity of this health and social situation. The results were associated with severe mental disorders and infectious diseases. Therefore, the mental health of this population requires special care.

**Descriptors:** Public Health; Substance-Related Disorders; Death; Mental Health.

### INTRODUCTION

In 2012, 40% of the deaths in the global population aged between 15 and 64 years were associated with drug use<sup>(1)</sup>. Intentional and accidental overdoses and violent deaths are among the main causes<sup>(2)</sup>. Some factors, such as polydrug use, non-fatal overdose history, and absence of proper treatment increase death risks in drug users<sup>(3)</sup>.

In Australia, the incidence of non-fatal overdoses is 23% among ex-prisoners users of drugs<sup>(4)</sup>. In the Brazilian population, fatal overdoses account for approximately 10% of deaths among crack users. Non-fatal overdose (intentional/unintentional) is even more evident among injection drug users, and the risk factors were unemployment

for more than six months before imprisonment, separation from family still in childhood, and not having a diagnosis of mental disorder, even having experienced strong mental suffering<sup>(5)</sup>.

Violent deaths are more closely associated with social exclusion, trafficking, and crime<sup>(3)</sup>. In Brazilian cities, the rate of violent deaths, such as due to homicides associated with the use and abuse of alcohol, cannabis, and cocaine ranges between 29.7% and 69.6%. This group presents characteristics such as male gender, young age (under the age of 30), black skin color, low education level, and absence of partners<sup>(6-7)</sup>.

Several factors, either alone or combined, increase death risk induced by drugs, such as male gender, higher age, unemployment, unfavorable socioeconomic conditions (low income and education level), exposure to situations of violence, and use of intravenous drugs<sup>(8-9)</sup>.

Therefore, the hypothesis investigated in this study is that abusers of alcohol and other drugs are exposed to death risk or health harm, thus increasing values of causes of morbidity and mortality in the mental healthcare area. The event of recurrence of exposure to mortality risk situations (ERM) is common and make individuals susceptible to new events and other comorbidities<sup>(7)</sup>.

Amid this discussion and after a search for national studies in scientific databases, the authors observed a lack of scientific evidence of real death risks and predictor variables in this population, which makes it difficult to point out the real situation and confirms the relevance of this study. Therefore, the objective of the present study was to estimate the prevalence of exposure to mortality risk situations (ERM) due to drug abuse and analyze its associated factors.

## METHOD

This was a cross-sectional study carried out with individuals undergoing rehabilitation of disorders due to the abuse of alcohol and other drugs, with a medical diagnosis according to the International Classification of Diseases (ICD-10), from six private rehabilitation centers and one psychosocial care center (CAPS, as per its acronym in Portuguese) in Goiás, a state in the central region of Brazil. These institutions were chosen for being close to the university campus where the research team works, with the purpose of identifying local and regional health issues.

The inclusion criteria were: individuals aged 18 years or older, individuals undergoing treatment for chemical dependency with at least one of the diagnosis of F10 to F19 according to the ICD-10 regarding mental or behavioral disorders due to the use of psychoactive substances, and individuals who used licit (alcohol, tobacco, or medications) or illicit drugs (depressants, stimulants, or hallucinogens) one month before hospitalization. Individuals sedated or in an apparent state of mental confusion at the time of the interview were excluded.

The sample calculation was carried out to guide the minimum number of individuals to be approached for discussion of death risk in the chemical dependency context. Therefore, for the sample size, a statistical power of 80% ( $\beta = 20\%$ ), a significance level of 5% ( $\alpha = 0.05$ ), a design effect of 3.0, and a prevalence of 5.8% in the use of illicit drugs in the Brazilian population were considered<sup>(9)</sup>. Consequently, the required number

of individuals considering potential losses was 302. The sampling method was by convenience, in which participation was spontaneous since recruitment. Initially, the research team carried out a collective explanation of the objectives, risks, and benefits of the study in the courtyards of the clinics, or in groups that received care at the CAPS. In this stage, individuals expressed their availability to participate in the study, and if they met the eligibility criteria, they were asked to sign an informed consent form. Then, they were interviewed in person in a private place, by field researchers and healthcare professionals who were previously trained.

Before final data collection, the questionnaires were adjusted by means of a pilot test with 10 individuals who did not comprise the final sample of the study. Data collection occurred from August 2013 to February 2014, by means of a questionnaire prepared by the researchers, based on variables of other studies<sup>(4-7,10-11)</sup>. A digital instrument specifically developed using Google Docs for the research was used, with adaptations to its electronic format. Information collected referred to the respondents' sociodemographic context, health conditions, criminal behavior (practice of robberies, drug trafficking, and homicides), and drug use pattern.

As outcome variable, ERM (no or yes) was considered in users of alcohol and other drugs, identified as self-reported experience of one or more experiences that put the individuals' lives at risk by non-fatal overdose (intentional/unintentional), violence (caused by trafficking, robbery/assault, attempted homicide), or external causes (accidents under the influence of alcohol and other drugs).

The predictor variables were: age; education level; age when started use of illicit drugs; having contracted sexually transmitted diseases (STD) at least once in life; severe mental disorder (medical diagnosis regarding psychoses or bipolar affective disorder); physical illness (diagnosis of chronic non-communicable diseases); depression, (self-reported experience of depression with treatments); homicide; involvement in robbery/assault; and preference for the use of crack.

The digital instrument generated spreadsheets in Microsoft Office Excel for Windows® (2007). Statistical analysis was carried out by means of the Stata Software Package 12.0. A confidence interval of 95% (CI95%) was considered to estimate the prevalence of ERM experience. Univariate analysis was carried out between the outcome variable and predictor variables. Analysis of prevalence ratio (PR) included variables with  $p \leq 0.10$  in the multivariate analysis model. Chi-square test was used to verify differences among ratios. Values of  $p < 0.05$  were considered statistically significant.

The present study was approved by the research ethics committee of the Federal University of Goiás under protocol no. 162/2012, and met the ethical principles of Resolution 466/2012<sup>(12)</sup>.

## RESULTS

Of the 302 individuals approached, 36 were excluded. The sample was made up of 266 participants. Of these, 84.3% were men, with a mean age of 32.57 years ( $\pm 10$ ); 88.8% were polydrug users. Among these, 76.5% made use of licit and illicit substances, 14.2% made use exclusively of licit substances (alcohol, tobacco,

and prescribed medications), and 9.3% made use of illicit drugs (cannabis, crack, cocaine, LSD, and other drugs). The ERM prevalence in users of alcohol and other drugs in this study was 45.9% (CI95%:39.8%-51.9%), as shown in Table 1.

**Table 1:** Factors associated with exposure to mortality risk due to abuse of alcohol and other drugs. Goiás, Brazil, 2013-2014.

Variable	Total	ERM N (%)	Gross PR (CI95%)	P value	Adjusted PR (CI95%)	P value
<b>Age (years)</b>						
>30	139	57 (41.0)	1.0		1.0*	
26-30	55	24 (43.6)	1.1 (0.7-1.5)	0.70	1.0 (0.7-1.5)	0.90
≤25	72	41 (56.9)	1.4 (1.0-1.8)	0.02	1.2 (0.9-1.7)	0.20
<b>Education level (years)</b>						
>7	168	70 (41.7)	1.0		1.0*	
≤7	98	52 (52.1)	1.3 (1.0-1.6)	0.07	1.2 (1.0-1.6)	0.10
<b>Age when started using drugs (years)†</b>						
≥18	50	18 (36.0)	1.0		1.0*	
<18	215	104 (48.5)	1.3 (0.9-2.0)	0.10	1.2 (0.8-1.6)	0.40
<b>STD</b>						
No	232	101 (42.5)	1.0		1.0‡	
Yes	34	21 (61.8)	1.4 (1.0-1.9)	0.02	1.4 (1.1-1.9)	0.02
<b>Severe mental disorder</b>						
No	236	102 (43.2)	1.0		1.0*	
Yes	30	20 (66.7)	1.5 (1.2-2.1)	<0.01	1.5 (1.1-2.0)	0.01
<b>Physical illness</b>						
No	22	6 (22.0)	1.0		1.0*	
Yes	244	116 (47.5)	1.7 (0.9-3.5)	0.10	1.5 (0.8-3.0)	0.20
<b>Depression</b>						
No	174	74 (42.5)	1.0		1.0*	
Yes	92	48 (52.2)	1.2 (0.9-1.6)	0.10	1.2 (0.9-1.5)	0.30
<b>Committed homicide</b>						
No	238	105 (44.1)	1.0		1.0*	
Yes	28	17 (60.7)	1.4 (1.0-1.9)	0.06	1.2 (0.8-1.6)	0.40
<b>Involved in robbery/assault</b>						
No	145	56 (38.6)	1.0		1.0*	
Yes	121	66 (54.5)	1.4 (1.1-1.8)	0.01	1.2 (0.9-1.6)	0.20
<b>Use of crack†</b>						
No	109	43 (39.4)	1.0		1.0*	
Yes	156	79 (50.6)	1.3 (1.0-1.7)	0.08	1.1 (0.8-1.4)	0.70

\* Adjusted by age, education level, age of beginning of the use of drugs, depression, severe mental disorder, physical illness, involvement in homicide, robbery/assault, and use of crack;

† without information for a participant; ‡ adjusted by age, education level, age of beginning of the use of drugs, STD, depression, severe mental disorder, homicide, involvement in robbery/assault, and use of crack. PR: prevalence ratio; CI95%: confidence interval of 95%.

In the univariate analysis, the variables associated with ERM were: age below 25 years ( $p=0.02$ ), severe mental disorder ( $p<0.01$ ), STD ( $p=0.02$ ), and exposure to violence ( $p=0.01$ ). After multiple analysis, severe mental disorder ( $p=0.01$ ; CI95%: 1.1-2.0) and having STD ( $p=0.02$ ; CI95% 1.1-1.9) remained as factors independently associated with ERM.

## DISCUSSION

The results of this study show a high prevalence of ERM among individuals of the sample; exposure had a higher probability in the presence of psychiatric comorbidities and infectious diseases, corroborated

by previous studies<sup>(5-6,13)</sup>. To our best knowledge, this study is pioneering in the Brazilian territory, especially in the central region of the country, and strengthens the need for greater attention to regional aspects of the complexity of chemical dependency, aiming at reducing mortality, especially in the most vulnerable group, young men. Mortality is a challenge. Only in 2013, 282.4 million people died in the world due to diseases associated with psychiatric disorders, being 265.8 million due to the use of psychoactive substances, most (139.2 million) associated with alcohol<sup>(14)</sup>.

Therefore, the method used in this study, which does not allow to estimate the cause-effect of incidences and inferences of drugs and death risk, and the sampling by convenience, due to its non-generalization, are considered limitations of the present study. There were also restrictions for the discussion of the results, due to the lack of studies that tested this variable.

Considering the mean age of the individuals studied, it may be observed that they were young adults, which corroborates statistics that point out greatest incapacity and early death as the most serious consequence of the drug abuse in young age groups<sup>(1)</sup>. The early involvement of young people with drugs is associated with several factors, since those regarding immaturity and higher prevalence of starting using drugs, which happens still in adolescence, up to social, economic, and cultural issues<sup>(1-5,8)</sup>. In addition, by addressing the Brazilian context, it may also be closely associated with the fact that for many young people, it represents an opportunity of ascension in the community environment, through a faster way than those achieved through study and work<sup>(10)</sup>.

The incapacitating outcomes adjusted for years of life increased significantly between the ages of 15 and 24, reaching a peak in the relatively young group of 20 to 30 years, in a consistent way in all types of drugs. In the United States, between 1999 and 2010, 40,393 deaths were recorded due to the use of drugs. Accidental deaths had the highest record (74.3%), followed by deaths due to poisoning (13.1%), poisoning by indeterminate drugs (7.3%), and drug users and behavioral and mental disorders (5.2%). Mortality due to drugs was higher in people aged between 40 and 49 years<sup>(13)</sup>.

For this discussion, an interlocution with studies analogous to the phenomenon was sought, which especially approached events considered as ERM. In this context, it comes closer to fatal overdose events, for being the main responsible for the increase in deaths associated with the use of drugs in a global level, associating with medically prescribed drugs, those derived from opioids for pain relief and benzodiazepines<sup>(1,15-16)</sup>. In Florida, from 2003 to 2009, an increase of 61% in deaths due to overdose was recorded. However, from 2010 to 2012, there was a 16.7% reduction in this same event<sup>(17)</sup>.

Death is the most extreme harm that may be caused by drug use. In 2010, it was estimated that the global abuse and dependency of drugs were responsible for 0.8% of all incapacitating causes that reduce quality of life, such as mental disorders, situations of violence, and infectious diseases, especially STDs and viral hepatitis<sup>(18)</sup>.

In the present study, an association of ERM with self-reported STD was found. Studies point out that the prevalence of STD among drug users is 26.2%, whereas mortality associated with STDs exceeds 30%<sup>(5-6)</sup>.

In the Southwest of Asia and Europe, the prevalence of injection drug users who live with HIV was 28.8% and 23% respectively, exposing this group to a higher vulnerability to early death due to HIV<sup>(18)</sup>. Regarding viral hepatitis, in the United States, injection drug users have almost three times more chances of contracting hepatitis C. The estimate is that 13.1% of injection drug users are HIV positive, and more than half have hepatitis C<sup>(19)</sup>.

In a capital city in the central region of Brazil, the self-report of sexually transmissible diseases in crack users was associated with being a young adult, using alcohol, being a sex worker, and having sexual intercourse with individuals who are HIV positive. In this segment, the experience of living with an STD increases the chance of being exposed to mortality risk situations<sup>(5)</sup>.

Another positive association pointed out in the study was comorbidity with severe mental disorders, suggesting that chemical dependency and mental disorders increase mortality risk in this population<sup>(13,20)</sup>. A meta-analysis showed that the risk for anxiety disorders increased from 1.6 to 2.5 with the use of alcohol; and for depressive disorders, it increased from 2.3 to 4.1 with the use of illicit drugs. The highest risks were associated with the dependency level in relation to the abuse level<sup>(21)</sup>.

Statistical data show that the coexistence of severe mental disorders (bipolar disorders, schizophrenia, severe depressions, and other psychoses) with the abuse of psychoactive substances contributes to the increase in risks to quality of life, thus hindering therapeutic approach<sup>(22)</sup>. A Brazilian study showed that the number of symptoms associated with the use of alcohol and other drugs is statistically associated with anxiety symptoms, depression, traumatic stress, and that this phenomenon increases the risk of violent behaviors, leading to a greater involvement with crime and violence, which highlights the importance of comprehensive care in order to reduce the vulnerability of this group<sup>(23)</sup>.

## CONCLUSION

The prevalence of ERM reached almost half of the sample and was associated with the factors having a severe mental disorder and STD history. Individuals with disorders associated with alcohol and drug abuse are vulnerable to morbid events, since the prevalence of death risk is high. Findings confirm the emergency of this problem in societies, taking the lives of young Brazilians by means of the interface of drug abuse with violent events, especially in the presence of psychiatric and infectious comorbidities. The reality of this group is complex and constitutes a serious health and social problem, which strengthens the need for further studies, with strong quantitative and qualitative approach methods, in addition to protective measures and reduction of harm to life.

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