

Prevalence of psychotropic drug use in military police units

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Abstract *The present study aimed to verify the prevalence of psychoactive drug use (amphetamines, methamphetamines, cannabinoids, cocaine, opioids and benzodiazepines) among military police officers in the state of Goiás. Data were obtained from urine samples voluntarily provided by the officers participating in the study, who were informed of the study methods and signed a free and informed consent form. The samples were subject to screening analysis by immunochromatography (Multi-DrugOneStep Test®), with positive tests confirmed by gas chromatography–mass spectrometry (GC-MS) and data analyzed by descriptive statistics. The results indicated the presence of the following drugs: amphetamines (0.33%), cannabinoids (0.67%) and benzodiazepines (1.34%); 97.66% showed negative results. The positive cases were distributed as follows: benzodiazepines (57.1%); cannabinoids (28.6%) and amphetamines (14.3%). In conclusion, the detection of psychoactive substances in voluntary sampling of military police officers indicates the need to implement drug testing among active military officers and preventive public policies aimed at eliminating the abusive consumption of psychotropic drugs.*

Key words *Military police, Drugs, Screening, Urine*

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Introduction

The consumption of psychotropic drugs in Brazil and worldwide has been the subject of a number of studies because of the social and economic impacts and especially because of the implications for health in the target population^{1,2}. The health and public safety consequences are of great importance to society and require different approaches to reduce this serious problem².

In a 2005 study conducted in Brazil that covered 108 cities with more than 200,000 inhabitants, 8.8% of those interviewed admitted to using marijuana (at least once); 2.9% admitted to using cocaine; 3.8% admitted to using amphetamines and 5.6% admitted to using benzodiazepines³. In 2007, the death rate attributed to drug use was 4.3 per 100,000 inhabitants. Compared with the death rate of other countries in South and North America, such as Argentina (1.9/100,000), Chile (2.3/100,000), and the United States (2.4/100,000), the rate in Brazil indicates that public policies must be enacted to minimize the distribution of these substances. In addition, rates of prescription drug use, especially benzodiazepines, in the United States, Argentina, Brazil, Mexico and Chile are higher than the global average⁴.

According to a World Drug Report by the United Nations Office on Drugs and Crime (UNODC, 2011), 3.3 to 6.1% of the world's population between the ages of 15 and 64 have used illicit drugs at least once a year, which corresponds to 149 to 272 million people in this age range⁵. This report notes that the death rate from illicit drugs has reached 1%, with marijuana (annual prevalence between 2.6% and 5.0%) and amphetamines, excluding ecstasy, (annual prevalence between 0.3% and 1.2%), among the most frequently used. These numbers could be even higher because various methods are used to report drug-related.

Drug abuse at the workplace costs American businesses and industries billions of dollars because of workplace mistakes and absenteeism in addition to poor performance and poor interpersonal relations⁶. In Brazil, despite a lack of specific laws, certain companies have participated in workplace drug-testing programs since 1992. In 2004, more than 300 companies throughout the country participated in a drug study (marijuana, cocaine and amphetamines) of urine samples conducted by the University of São Paulo Laboratory (Laboratório da Universidade de São Paulo)⁷.

The law-enforcement profession requires dedication and long hours and produces psychological pressure and daily tension. Studies have shown that the use of psychoactive substances by these professionals is a form of escapism to alleviate difficult working conditions and a low quality of life^{8,9}. Other researchers consider drug use a result of self-esteem issues and a lack of skills in managing adverse situations^{10,11}.

In a study conducted at 12 military police units in the state of Goiás (GO) in the cities of Goiânia and Aparecida de Goiânia, 221 corps members were examined and the following results were observed: a) drug use at any time: tobacco, 39.9%; alcohol, 87.8%; marijuana, 8.1%; cocaine, 1.8%; stimulants, 7.2%; solvents, 10.0%; sedatives, anxiolytics and antidepressants, 6.8%; LSD, 0.5%; b) drug use in the last year: tobacco, 15.4%; alcohol, 72.9%; stimulants, 6.3%; solvent, 0.5%; sedatives, anxiolytics and antidepressants, 3.7%; c) drug use in the last month: tobacco, 14.5%; alcohol, 57.5%; stimulants, 5.0%; solvents, 0.5%; sedatives, anxiolytics and antidepressants, 3.7%¹².

Drug consumption in the military environment creates a need for rigorous and adequate control against these modern "chemical weapons" that cause gradual dependence and human degradation^{13,14}. A study conducted in Finland, a country in which illicit drug use in the military is extremely low, showed that drug-testing efficiency in a military organization is an important method of improving security at work and a successful preventative strategy. Constant awareness campaigns and improved working conditions are also tools that can, in combination, have positive results in reducing the alarming number of users of these harmful substances¹⁴.

As with any civil organization, the military forces are not free from issues related to the use of drugs, including alcohol and illicit drugs. Because the military forces are specialized operations that involve the handling of weapons, the consumption of drugs in a military environment creates a need for rigorous and adequate control aimed at minimizing the development of chemical dependency because their use can affect public safety^{13,14}.

Thus, the present study aimed to survey the prevalence of psychotropic drug use in military police units in GO, Brazil through the detection of marijuana, cocaine, amphetamine, methamphetamine, opiates and benzodiazepines in urine samples to support the implementation of random drug testing in active duty officers.

Methods

The design of this study was initially assessed and approved by the Ethics in Research Committee of the Federal University of Goiás (Universidade Federal de Goiás). The study was conducted in accordance with the Declaration of Helsinki (2008 revision)¹⁵.

A total of 299 urine samples from active duty officers (285 males and 14 females) who are members of the police force of the state of Goiás were collected voluntarily and anonymously from March to October 2008. The urine samples were collected at the beginning of the work shift after signing the free and informed consent form. The samples originated from 12 different military police units in the cities of Goiânia and Aparecida de Goiânia, and they were subject to a immunochromatographic screening test (Multi-DrugOneStep Test, Inlab Diagnostics®) with the following detection cut-off values: methamphetamine 500 ng/mL; amphetamine 1000 ng/mL; opiates/morphine 300 ng/mL; cannabinoids (tetrahydrocannabinol) 50 ng/mL; cocaine (benzoylecgonine) 300 ng/mL and benzodiazepines 300 ng/mL. These tests were validated by Costa et al.¹⁶ and acquired by the Dean's Office for Research and Post-Graduate Studies of the Federal University of Goiás (Pró-Reitoria de Pesquisa e Pós-Graduação da Universidade Federal de Goiás), and they were capable of detecting the presence of two or more of the tested drugs for each individual.

Samples that tested positive for illicit drugs were confirmed by a gas chromatography-mass spectrometry (GC-MS) analysis conducted at the Toxicological Analysis Laboratory of the University of São Paulo (Laboratório de Análises Toxicológicas da Universidade de São Paulo – LAT-USP) (Hewlett Packard 5972 mass spectrometer coupled to a Hewlett Packard 6890 gas chromatograph, which was equipped with 30 m x 0.25 mm x 0.1 µm HP-5MS fused-silica capillary column; Hewlett Packard, Little Falls, USA). The cut-off values used for the technical confirmation were 11-nor-9-COOH- Δ^9 -THC 15 ng/mL; amphetamine/methamphetamine 200 ng/mL; and benzoylecgonine 150 ng/mL. In summary, the samples were subject to liquid-liquid extraction, solid phase extraction or liquid phase microextraction, chemical fractionation and injection into a GC-MS according to published methods that are routinely used in toxicological and anti-doping analyses conducted at LAT-USP¹⁷⁻¹⁹. Samples that tested positive for benzodiazepines were not confirmed by GC-MS because the im-

munochromatographic method is sensitive and specific enough for identification.

Sample size calculations were performed using the *StatCalc* tool of the software EpiInfo™ version 3.5 according to the study population size and drug use data from epidemiological studies conducted by the Brazilian Center of Information on Psychotropic Drugs (Centro Brasileiro de Informações sobre Drogas Psicotrópicas)⁵ as well as other prevalence studies conducted in Brazil^{2,12}. Thus, the sample size estimate of the population studies (N = 1709) was 287 samples. A significance level of 0.05 was set for the tested drugs, with an expected frequency of 1.0%.

Results

The distribution of the study subjects in relation to age and gender is shown in Table 1.

The frequency of psychotropic drug use was obtained from an analysis of the samples provided by the 299 participants in the study and is shown in Figure 1.

There were no cases of multiple drug use. Out of the six positive cases in the immunological screening analysis, three were confirmed positive and three were confirmed negative by GC/MS.

Among the positive cases, 57.1% corresponded to the use of benzodiazepines; 28.6% corresponded to the use of cannabinoids and 14.3% corresponded to the use of amphetamines.

Discussion

The prevalence of drug use in the present study was 2.34%, which is higher than that found by another study conducted in 2004⁷ in which the profile of illicit drug abuse in the work environment in five regions of Brazil was studied

Table 1. Distribution of participants.

Age Group (years)	Gender				Total	
	Male		Female			
	N	%	N	%	N	%
20 – 25	17	6	0	0	17	5.7
26 – 34	89	31.2	4	28.6	93	31
≥ 35	179	62.8	10	71.4	189	63
Total	285	100	14	100	299	100

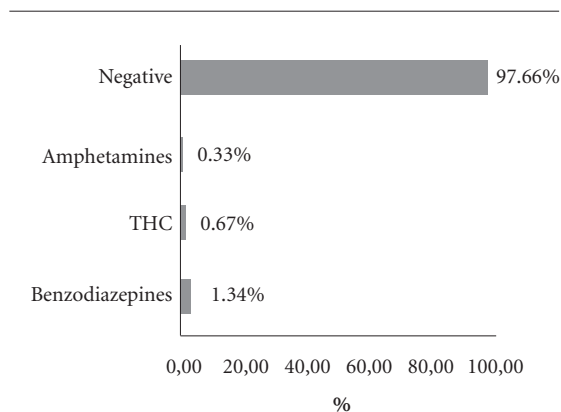


Figure 1. Frequency of psychotropic drug use.

through immunoassay screening and GC/MS confirmation and found at a prevalence of 1.8%. However, this difference could have been caused by the additional inclusion of prescription drugs in the present study; thus, the presence of benzodiazepines was assessed and accounted for 1.34% of the total, whereas cannabinoids and amphetamines accounted for 1.0%.

In relation to the 2nd Assessment on the Use of Psychotropic Drugs (II Levantamento Sobre o Uso de Drogas Psicotrópicas) conducted in 2005 through a validated questionnaire, the central-west region showed a percentage of marijuana dependence of 0.6%; benzodiazepine dependence of 0.2% and stimulant dependence of 0.2%. In that assessment, which covered all regions of Brazil, the overall percentage of marijuana dependence was 1.2%; benzodiazepine dependence was 0.5% and stimulant dependence was 0.2%.⁵ In the present study, marijuana, amphetamine and benzodiazepine use was detected in 0.67%, 0.33% and 1.34% of the study group, respectively, and similar values for amphetamines and marijuana and higher values for benzodiazepines were observed in the central-west region. However, the overall percentage of marijuana dependence in Brazil (1.2%) is higher than the percentage found in the present study⁵.

The results of the present study corroborate those found by Souza *et al.*²⁰, who evaluated the use of licit and illicit drugs among civilian and military police in Rio de Janeiro (RJ), Brazil through a pre-tested questionnaire and showed that the consumption of psychoactive substances is up to 10 times higher in military police officers.

Considering the nature of military activity, especially operational activities, the development of emotional instability that requires treatment with psychiatric drugs is frequently observed²¹⁻²³, and this situation can be observed by the higher prevalence of benzodiazepine use in the present study. Another relevant aspect is that the majority (63.2%) of the study participants are middle aged (≥ 35 years old), which corroborates the observations of a study conducted in 2005²² in which benzodiazepine users described through interviews the therapeutic benefits of the drug for treating sleep and anxiety disorders.

Studies performed in military institutions in other countries have shown that psychoactive drug use (primarily marijuana and amphetamines) is responsible for serious issues in the workplace as well as in the home environment and indicated that such use deserves special attention through the implementation of prevention programs and/or policies to deter drug use²⁴⁻²⁷. These data corroborate those of Souza *et al.*²⁰, who showed that among military officers, the use of illicit substances increased work-related problems (4.9%) and work absence (4.4%).

The prevalence of abusive drug use found in the present study indicates the potential for implementing random testing to detect psychoactive substance use by military police officers on active duty as an alternative for referring users to a multidisciplinary health team and, if successful, reintegrating the users into the workforce. Thus, it is possible to collaborate to decrease health problems, tardiness, absenteeism, poor performance (alternation between high and low productivity, impaired judgment, insubordination and memory lapses) and poor interpersonal relations.

The positive results show that immunological tests (screening) for drug abuse studies should be confirmed by the more sensitive GC-MS method because of the possibility of false-positive results²⁸⁻³⁰. Such false positives were observed in three samples, two for methamphetamine (500 ng/mL) and one for opiates (300 ng/mL), which was most likely because of the detection limits of the tests used in the present study^{30,31}.

The results obtained in the present study were generated from urine samples donated voluntarily by the subjects, and positive results were still obtained. If the toxicological analysis is to be included in the work environment, it should be implemented at different times during employment, such as upon hiring and after accidents or incidents at work, through voluntary and ran-

dom testing when there is reasonable suspicion of a troop member, and during rehabilitation of the individual³².

The use of psychoactive substances is classified according to the frequency and quantity of consumption, characteristics of the individual, and socio-cultural context, which varies from simple experimentation to occasional use, abuse or even dependence. Thus, a possible limitation of the present study is that only a single sample collection was performed; therefore, it was not possible to classify the individuals as dependent. Authors have suggested that not all individuals who experiment with certain types of psychoactive substance become habitual users or dependent, with the majority only trying these substances once, which is inconsistent with proponents of the theory of escalation, in which the use of one drug is succeeded by the use of a stronger drug at a heavier frequency³³⁻³⁵.

The delicate question of drug use in the military environment requires a more engaged presence of the state in attending to what is expected by public security agents. Such attention

will directly benefit society, which is affected by the quality of the safety and services provided by officers^{36,37}. As suggested by Minayo³⁸, the success of important organizations, such as police departments, depend on maintaining the motivation of their agents and offering proper working conditions and psychologically favorable environments.

Conclusion

The results of the present study showed the prevalence of psychoactive substance use among public safety professionals stationed in military police units in the state of Goiás. This prevalence can be considered significant compared with the average in the general population. Therefore, the present study indicates that specific laws are required for the implementation of biological sample testing to verify the use of psychoactive substances in active duty officers as an additional method of minimizing the abuse of these substances in this field.

Collaborators

SHN Costa, M Yonamine, FGF Oliveira, ALM Ramos, CR Rodrigues and LC Cunha participated in all stages of the preparation of this article.

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