

Recreational use of benzydamine as a hallucinogen among street youth in Brazil

Uso recreacional de benzydamina como alucinógeno entre adolescentes em situação de rua no Brasil

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Abstract

Objective: To describe the recreational use of benzydamine, an anti-inflammatory drug, among street youth in Brazil. **Method:** Design: a descriptive, cross sectional survey. Setting: 93 welfare services for the street youth in 27 Brazilian capitals. Participants: 2807 street youth, 10 to 18 years old. Main outcome measures: demographic characteristics, drug use pattern (lifetime use, use in the past 30 days, frequency, and characteristics of use in the past month) and effects of benzydamine through the use of a questionnaire. **Results:** 78 reported lifetime recreational benzydamine use (67 cases identified only in three capitals). Among the 30 respondents reporting drug use in the last month (the month preceding the survey), 66.7% (n = 20) used the drug on 4 or more days (in the month preceding the survey). The most frequently (50%) pleasure effects reported were hallucination and nonspecific sensory changes described as "trips". Unwanted effects were reported by 75% of respondents, they were especially nausea and vomiting (21.4%). In the majority of the cases, drug was obtained from drugstores without a medical prescription. **Conclusion:** This study identifies the recreational use of benzydamine among street youth, mainly in the Northeast of Brazil, and also indicates the need for special controls on the dispensation of this substance.

Descriptors: Benzydamine; Drug abuse; Pharmacoepidemiology; Homeless youth; Drugs with prescription

Resumo

Objetivo: Descrever o uso recreacional de benzydamina, um medicamento antiinflamatório, entre adolescentes em situação de rua no Brasil. **Método:** Desenho: descritivo, transversal. Local: 93 instituições assistenciais para crianças e adolescentes em situação de rua nas 27 capitais do Brasil. Participantes: 2.807 crianças e adolescentes em situação de rua, com idade entre 10 e 18 anos. Principais medidas de interesse: características demográficas, padrão de uso (uso na vida, uso nos últimos 30 dias, frequência e características de uso no mês anterior à pesquisa) e efeitos da benzydamina usando um questionário. **Resultados:** 78 relataram uso recreacional na vida de benzydamina (67 casos identificados somente em três capitais). Entre os 30 entrevistados que relataram uso recente da substância (no mês que precedia a investigação), 66,7% (n = 20) tomaram o medicamento em quatro dias ou mais no mês. Os efeitos desejados mais frequentemente reportados foram alucinações e alterações sensoriais inespecíficas como "viagem" (50%). Efeitos indesejados foram citados por 75% dos entrevistados, principalmente náuseas e vômitos (21,4%). Na maioria dos casos, o medicamento foi obtido de drogarias sem apresentação de prescrição médica. **Conclusão:** Os resultados observados neste estudo identificam o uso recreacional de benzydamina entre crianças e adolescentes em situação de rua, especialmente no Nordeste do Brasil, e indicam a necessidade de controle especial sobre a dispensação desta substância.

Descritores: Benzydamina; Abuso de drogas; Farmacoepidemiologia; Menores de rua; Medicamentos com prescrição

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Introduction

Benzydamine hydrochloride is a non-steroidal anti-inflammatory drug (NSAID) with analgesic, antipyretic and antimicrobial properties.¹ It is derived from an indole acid and has been commonly used to relieve inflammatory processes in the oral and vaginal cavities.² In Brazil, this substance is mainly dispensed as tablets (50mg) and a solution for oral use (30mg/ml), sold under the name "Benflogin"[®] at a low-cost (a 20ml bottle costs US\$3 and 20 tablets cost US\$4). There is also a powder formulation (500mg) and a liquid solution (500mg/10ml), both for use as a vaginal douche (Flogo-rosa[®]).³ These drugs can be bought in Brazilian drugstores without the need for a medical prescription, although prescription is legally required.

Data on the adverse effects of these drugs are scarce, but they include: erythema, rash, photosensitivity, urticaria, bronchospasm and renal dysfunction.⁴ Gómez-López et al. mentions a case of intoxication in a six-year-old girl who accidentally ingested 500mg of benzydamine, suffering visual and tactile hallucinations.⁵

Available scientific data about the drug's psychoactive properties are limited. One of the few articles about its misuse mentions a 20-year-old man who used between 400 and 1000mg of benzydamine associated with alcohol and described visual alterations and hallucinations after 30 minutes.⁶ Recently, another case was described in Poland of a 22-year-old man who, based on information drawn from the internet, ingested 500mg of benzydamine (a sachet for vaginal use) dissolved in water, he described an episode of visual hallucination, excitation and hyperactivity for approximately ten hours.⁷

The description of the recreational use of benzydamine was mentioned in a survey with street youth carried out in 1993.⁸ A street youth is characterized as a child or adolescent living in a street situation, spending most of his or her time in this environment, living off formal or illicit activity, supporting themselves (even for leisure) with no adult supervision.

For some street youth, streets are their home since they have lost contact with their families. Characteristically, this occurs most commonly in large urban centers.^{9,10}

In this population, drug use is highly prevalent and more commonly observed than in other minors. For some authors, drug use stands out as an important element for social integration and a way of dealing with the adversities of street life.¹¹ The main drugs used are tobacco, alcohol, solvents (glue, toluene, and thinner), marijuana, cocaine, crack and medication.⁸ As for benzydamine, although it was spontaneously mentioned in the 1993 survey, studies offering more information about this pattern of behavior are scarce.

With the evidence of recreational use of benzydamine and the lack of scientific information, this manuscript aims to describe the pattern of use of this drug among street youth in the Brazilian capitals.

Method

1. Study design

A national cross-sectional survey with children and adolescents assisted by specific social welfare services in 27 capitals of Brazil.

2. Sample

The target population consisted of children and adolescents (between 10 and 17 years old) in street situation, looked after by social services, and living in all 27 Brazilian state capitals. The reference services, governmental or not, are characterized by

offering care, food, hygiene, leisure and educational activities. Some institutions work directly in the streets, reaching the street youth population that is not in an institution. Due to the lack of official data, most of these institutions were mapped in each capital using snowball sampling¹² until saturation was reached. Among the 94 mapped institutions, only one refused to take part in this study, so the sample was made of street youth linked to 93 institutions.

At each service, all the children and adolescents living in the streets and receiving care for a week were invited to participate. The period of one week was chosen as the smallest interval of time that guarantees the inclusion of a routine in the institutions. This period was made of seven sequential days covering all hours of care, morning, afternoon and night. Youth with evident behavioral disorders or with cognitive, auditory or verbal impairments were excluded. Interviews were postponed when there were obvious signs of intoxication or aggressive behavior. Thus, of the 3064 children and adolescents who attended the 93 institutions in the 27 capitals, with losses and refusals (8.4%), 2807 street youth were included in the present study.

3. Interviews

Data were collected by means of a structured interview based on a questionnaire proposed by the World Health Organization (WHO) for a non-student youth population,¹³ adjusted to be used in Brazilian studies.^{8,14} This instrument includes closed-ended questions about participants' identification (age, gender and city), school status, family bonding, time spent on the streets and out-of-home history. Data regarding substance use (alcohol, tobacco, cannabis, inhalants, medicines, cocaine and derivatives) was sort in different lifetime frames: use in the last year, and in the past 30 days. Questions regarding the use of benzydamine in the past month included: the amount used, frequency, if it was used in association with other substance, how the drug was obtained and its effects.

Interviews lasted 30 minutes and were conducted in private with guaranteed anonymity for the interviewees. Other ethical safeguards were offered: information about the objective of the study, informed consent, confidentiality, freedom to interrupt the interview whenever they wanted or in the presence of a third party. Study protocol and its procedures were approved by the institutional review board of the Research Ethics Committee – Universidade Federal de São Paulo (Unifesp) (# 003/2003). Subjects' written informed consents were given by the institutions' directors.

Interviewers in 27 capitals received a structured and designed training (meetings, classes and video demonstrations) and were assessed on how they conducted interviews and recorded answers. They were supervised by the research coordinators throughout the data collection process.

4. Data analysis

To assess questionnaires critically, they were all individually examined for internal coherence. Questionnaires with incoherencies were excluded. All interview data were entered into Microsoft Access[®], and reports were generated by crossing variables. In this manuscript, descriptive statistical analyses calculated by the program are presented. Chi-square test was used to compare characteristics between lifetime users of benzydamine and non-lifetime users, with a 5% significance level. Adjusted standardized residual was applied to variables with more than two answers to identify differences.

Results

Among the 2807 children and adolescents interviewed throughout

Brazil, 78 reported having used benzydamine recreationally at least once in their lifetime. All of them mentioned the substance by its trade name "Benflogin"[®].

The majority of these 78 cases (85.9%; $n = 67$) were identified in three Brazilian capitals (São Luís, Maceió and Fortaleza) located in the Northeast of Brazil (Figure 1).

Among the 78 street youth who reported lifetime use of benzydamine, 79.5% ($n = 62$) were male, 69.2% ($n = 54$) aged between 15 and 18 years old, 91% ($n = 71$) had dropped out of school, and 88.5% ($n = 69$) had been in a street situation for over a year. The vast majority of respondents (82%) reported having tried the drug after being in a street situation. When asked to name the first recreational drug that they had ever used, apart for alcohol and tobacco, only one interviewee reported benzydamine.

Table 1 presents the profile of the interviewees with lifetime use of benzydamine compared to individuals who had never used benzydamine.

1. Pattern of recreational benzydamine use

Detailed questions about the use of benzydamine were asked only for the 30 respondents who reported recent use of this drug (in the 30 days preceding the survey). Among these, 66.7% ($n = 20$) took the drug for 4 days or over in the month preceding the survey. The intake in each occasion ranged from 100 to 2000mg of benzydamine. The most used pharmaceutical form was the oral solution (liquid form), between 10 and 60ml of benzydamine (30mg/mL) on each occasion, mentioned by 76.7% ($n = 23$) of interviewees. The use of tablets was mentioned by 10 respondents, but with a wide range of doses (2 to 20 tablets of 50mg per instance).

Although not directly questioned, and therefore without formal registration, some interviewees spontaneously reported intravenous use of pharmaceutical forms designed for oral administration. One interviewee reported as a negative effect of this procedure the feeling that it "clogs the veins".

Among those recently taking benzydamine, 36.7% ($n = 11$) associated this drug with another substance in an attempt to enhance psychotropic effects. Alcoholic beverages (beer, wine, and *cachaça - cachaza*) were the main associations, but there were also cases of benzydamine association with flunitrazepam (Rohypnol[®]), marijuana and coffee.

In most cases (19/30), benzydamine was purchased in a drugstore without a medical prescription. Another way to obtain benzydamine was through illegal trade (smuggling, 10/30) or being given by someone in the group.

The most frequently (50%; 15/30) reported effects were hallucination, mainly in the form of "rays", or nonspecific sensory changes ("I become crazy" and "trip"). Two interviewees reported having animal visions such as a black vulture, bats and sheep. Unwanted effects were reported by 70% (21/30) of respondents, they were mainly nausea and vomiting (20%; $n = 6$). Some interviewees also mentioned hunger ($n = 3$), headache ($n = 3$), slowness ($n = 2$) and sadness ($n = 2$).

Additionally, those 30 respondents who used benzydamine in the month previous to data collection also reported other drugs used in the same month. Among them, the most commonly reported drugs were: tobacco and/or solvents (90%; $n = 27$); marijuana and/or cocaine and derivatives (86.7%, $n = 26$), and alcohol (83.3%; $n = 25$).

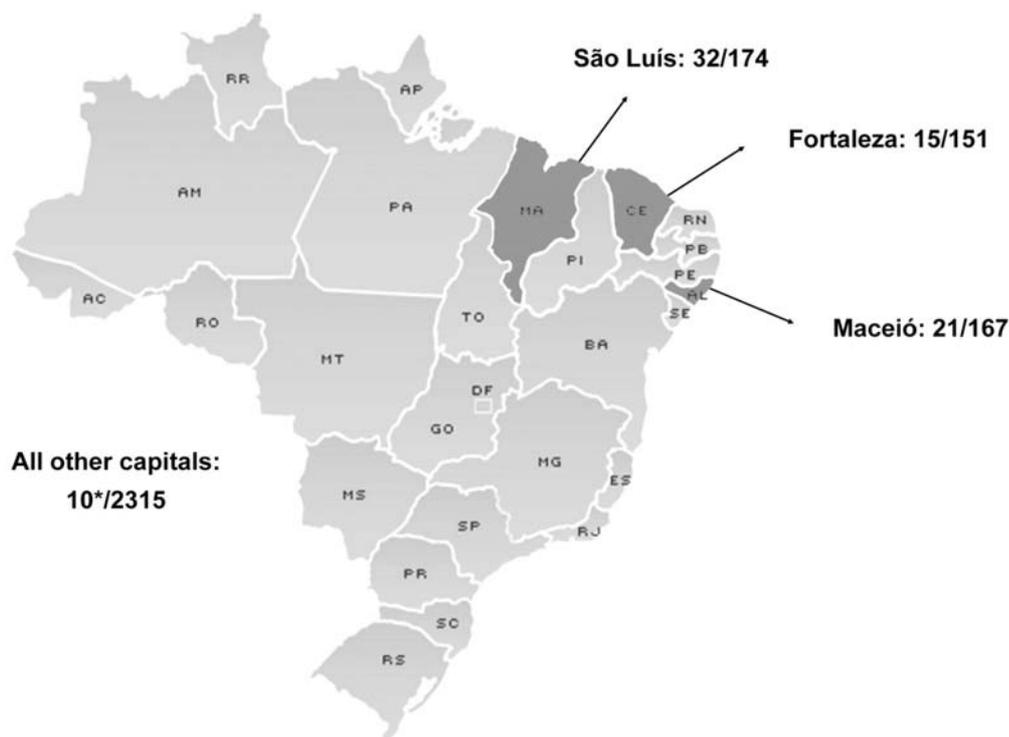


Figure 1 – Geographic distribution of 78 lifetime users of benzydamine among street youth, Brazil, 2003
Goiânia and Teresina ($n = 2$); João Pessoa, Manaus, Porto Alegre, Rio de Janeiro, Salvador, São Paulo ($n = 1$)

Table 1 - A comparison of the profile of lifetime users of benzydamine compared to non-users. Brazil, 2003

	Lifetime use (n = 78)		Non-lifetime use [*] (n = 2729)		p value
	n	%	n	%	
Gender					
Male	62	79	2058	75	p = 0.4091
Female	16	21	671	25	
Age					
From 9 to 14 years	24	31	1441	53	p = 0.0001
From 15 to 18 years	54	69	1283	47	
Attending school					
Yes	7	9	1558	57	p < 0.0001
No	71	91	1171	43	
Family bonding					
Yes	23	29	1909	70	p < 0.0001
No	55	71	820	30	
Out-of-home history					
Less than 1 year **	8	10	845	31	p < 0.0001
From 1 year to 5 years	31	40	1253	46	
More than 5 years ***	38	49	488	18	
Time spent on the streets					
From 1 to 5 hours	2	3	1137	42	p < 0.0001
6 hours or more	76	97	1586	58	

* Some categories present missing data and do not sum up to a 100%

** and *** presented significant differences by 5% after adjusting standardized residuals.

Discussion

In the comparison of the profile of street youth exposed to benzydamine with other youngsters, certain patterns are identified: absence of family bonding, poor school attendance, and prolonged time spent on the streets and out-of-home history. Use of benzydamine in this study was associated with the associated use of several other drugs, suggesting that consumption of this particular drug is the tip of the iceberg of a much larger problem. Thus the pattern identified in these users reflects the situation of street youth using multiple drugs.^{10,15} In this sense, it should not be interpreted as an isolated phenomenon, but as a reflection of the street situation.¹⁴ The context of drug use among adolescents and children in the streets is complex and should absolutely be taken into account, as previously discussed by several authors.^{8-11,14}

The reason for the higher prevalence of benzydamine use in three specific capitals in Northeast Brazil was not clear in our study. These same capitals also showed higher consumption of Artane® (trihexphenidyl) and flunitrazepam among street youth,¹⁵ suggesting an established culture of medication abuse in these cities. However, data to base these reasons were not investigated in this study. Another hypothesis for the more prevalent benzydamine use in the Northeast would be due to lower dispensation control of these regions. More qualitative studies are necessary to gather information about this phenomenon.

The main scope of this study is the hallucinogenic potential of benzydamine and the identified recreational use of this drug by young people.

The characteristics of benzydamine use presented in this study are consistent with the reports of the few published cases.^{6,7} However, the present study provides more scientific evidence due to the use of a national cross sectional survey. Taking doses higher than the therapy recommendation and associating the drug with other substances to enhance its effects reflect the hedonistic intentions behind its use by street youth.

The mechanism of action for the hallucinogenic effects of benzydamine is unknown. The presence of indazol could explain the hallucinations because it is similar to the indole compound present in serotonin. The structural similarity between benzydamine and serotonin may be translated into a serotonergic action such as the agonistic activation of the 5HT_{2A} receptors. Several indole compounds promote hallucination based on this mechanism, such as diethylamine in lysergic acid (LSD) and DMT (dimethyltryptamine).^{6,16,17}

DMT is the active principle in *ayahuasca*, a hallucinogenic tea used in religious rituals in Brazil.¹⁶ The main side effects reported with use of *ayahuasca*, which are nausea and vomiting are similar to those of benzydamine use.

Our study has some limitations. Only street youth who were linked to an institution of social support were considered to form the sample. Additionally, these institutions have been mapped using a snowball method, as there is no official government record on their existence, therefore, some institutions may have been overlooked. Other limitation is the use of a structured questionnaire which reduces flexibility for registering unexpected data. Intravenous use, for example, is an aggravation of the use of drugs that deserves further investigation. It is also important to emphasize that the questionnaire was structured to evaluate the specific use of Benflogin®, one of several brands of benzydamine available on the Brazilian market.

Besides, street youth generally have a poor speech due to low education and excessive use of slang, which ends up compromising their answers. This was especially noticed with the open-ended question on the issue involving the effects of benzydamine whose answers were extremely limited.

Because of that, more studies on specific behavior are necessary, preferably using qualitative methods, to allow an in-depth investigation into the nuances of the benzydamine culture.

Street youth are not the only group involved in the recreational use of benzydamine. In Brazil several websites with informal reports of

the non-therapeutic use of benzydamine were identified, suggesting that higher income groups are also engaged in the same drug behavior. The exchange of information via internet on the use of new drugs may be related to changes in consumption behavior. Wax suggests that the disclosure of information on the internet reaches adolescents more directly, with a greater impact on their drug use behavior.¹⁸ Despite the scarce scientific literature, mentions to the use of this anti-inflammatory medication as a hallucinogen is present in the communication directed primarily at a youth audience. In this context, Benflogin® appears as the name of a weekly youth party in Rio de Janeiro that takes place in a privileged economic area, with the slogan: "Shoo boredom now". Another example is the use of the drug name as title of songs by certain Brazilian bands, which usually suggest the psychotropic effects of this drug.¹⁸⁻²³

In addition, the popularization of benzydamine through the Internet, its low-cost, the ease of obtaining and using this drug are elements that favor its misuse and demand attention of health professionals, paying greater attention to prevention and abuse control. These results also draw attention to the need for more epidemiologic studies and introduction of public policies.

Conclusion

The results observed in the present study stressed the recreational use of benzydamine among Brazilian street youth, concentrated

in three capitals of Northeast Brazil. The profile of street youth who had lifetime use of benzydamine shows an older youth, without schooling or family bonding and more exposure to street environment.

However, evidence of its cultural non-therapeutic use in other social groups supports the idea that the drug is spread into contexts other than just the street situation. Therefore, there is a need for attention to prevention and control of prescriptions and dispensing all over the countries in which benzydamine commercialization has been approved.

Contributors

EO assessed and interpreted the data, wrote the paper and will act as guarantor for the paper. The guarantor accepts full responsibility for the conduct of the study, had access to the data, and controlled the decision to publish. AN designed the study, idealized and led revisions of the paper. ZS and YM helped on data collection and helped to write the paper. JG and EC helped design the study, interpret the data, and sought funding for the project.

Disclosures

Writing group member	Employment	Research grant ¹	Other research grant or medical continuous education ²	Speaker's honoraria	Ownership interest	Consultant/ Advisory board	Other ³
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José Carlos Fernandes Galduróz	UNIFESP	-	-	-	-	-	-
Elisaldo Araújo Carlini	UNIFESP	SENAD	-	-	-	-	-

* Modest

** Significant

*** Significant. Amounts given to the author's institution or to a colleague for research in which the author has participation, not directly to the author.

Note: CEBRID = Centro Brasileiro de Informações sobre Drogas Psicotrópicas; SENAD = Secretaria Nacional de Políticas sobre Drogas.

For more information, see Instructions for authors.

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