

Ecstasy (MDMA): Effects and patterns of use reported by users in São Paulo

Ecstasy (MDMA): efeitos e padrões de uso relatados por usuários de São Paulo

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Abstract Objective: As there are no studies about the use of ecstasy in Brazil, our aim was to identify the effects and patterns of use of this substance among users in the city of São Paulo.

Methods: Subjects were recruited through the snowball technique. Fifty-two subjects of both genders who had been using ecstasy frequently and recently were interviewed. The instrument was a self-reported and anonymous questionnaire.

Results: The sample's mean age was 24 years, mostly composed by single, college graduated middle-class subjects. Among the interviewed users, 61.6% used ecstasy at least once per week and 50% of them took one pill per episode of use and 46% more than one. Drug taking was usually performed in company of several people (63%) in contexts related to night leisure, such as rave parties (78.8%), dancing clubs (69.2%) and parties (53.8%). Ecstasy pills were mainly purchased from friends or acquaintances in order to favor a dancing mood in those places. Most subjects used ecstasy associated to other psychoactive drugs (93.3%), mainly *Cannabis*, followed by tobacco and LSD. The effects attributed to ecstasy were mainly positive.

Discussion: The use of ecstasy in São Paulo has had a recreational pattern quite similar to those described in previous studies. The assessment of the use of ecstasy as positive also agrees with the findings of the literature.

Keywords Ecstasy. N-methyl-3,4-methylenedioxymethamphetamine. Central nervous system stimulants. Hallucinogens. Psychotropic drugs. Snowball. Drug abuse.

Resumo Objetivo: Não havendo estudos sobre o uso de êxtase no Brasil, o objetivo foi identificar efeitos e padrões de consumo dessa substância entre usuários da cidade de São Paulo.

Métodos: A amostra foi recrutada através da técnica de *snowball*. Foram pesquisados 52 indivíduos de ambos os sexos que vinham utilizando êxtase freqüente e recentemente. Foi utilizado questionário anônimo auto-aplicável.

Resultados: A idade média dos participantes foi de 24 anos, sendo a amostra composta majoritariamente por indivíduos solteiros, com escolaridade superior e de classe média. Dos usuários entrevistados 61,6% usava êxtase pelo menos uma vez por semana, sendo que 50% consumia um comprimido a cada episódio de uso e 46% mais de um comprimido. O uso se dá mais freqüentemente na companhia de várias pessoas (63%), em ambientes ligados ao lazer noturno, como *raves* (78,8%), lugares para dançar (69,2%) e festas (53,8%). O êxtase é geralmente adquirido de amigos ou conhecidos para dançar nesses locais. A grande maioria dos usuários utiliza êxtase associado a outras drogas psicoativas (93,3%), em primeiro lugar a maconha, seguida por tabaco e LSD. Os efeitos atribuídos ao êxtase foram principalmente positivos.

Discussão: Os padrões de uso de êxtase dos usuários de São Paulo descrevem um consumo recreativo grupal, e foram semelhantes a padrões descritos em estudos anteriores. A avaliação dos efeitos do êxtase como positivos também está de acordo com os resultados da literatura.

Descritores Êxtase. N-metil-3,4-metilenodioximetanfetamina. Estimulantes do sistema nervoso central. Alucinógenos. Psicotrôpicos. *Snowball*. Abuso de drogas.

Introduction

MDMA (n-methyl-3,4-methylenedioxymethamphetamine), also known as ecstasy, is a psychoactive drug used for leisure described as having stimulating and hallucinatory effects. These effects stem from its action in the central nervous system, raising extracellular serotonin and dopamine levels. Although there are indications that the chronic use of MDMA damages serotonergic neurons, methodological limitations in the studies already performed do not allow a definite conclusion about its central toxicity in humans.¹

Research carried out in the US and Europe indicate that the consumption of ecstasy is widespread and increasing. Surveys in Europe in 1995 found a life-time prevalence from 0.2% in Finland² to 13.0% in the UK.³ In the US the prevalence of use of ecstasy among College students in 1999 was 4.7%, representing an increase of 69% when compared to a survey of two years before.⁴ In Brazil, ecstasy consumption seems to be restricted, up to now, to certain groups, remaining unfamiliar to most part of its population. However, some data point out that the consumption of ecstasy is rising: a higher visibility in the Brazilian press, an increasing number of apprehensions of pills⁵ and the discovery of the first clandestine manufacturing laboratory in São Paulo.⁶ The drug is being sold as tablets that currently cost between R\$ 30,00 and 50,00 (approximately US\$ 12,00 to 20,00) in São Paulo. There is a total lack of Brazilian epidemiological data about the consumption of ecstasy and there are no known publications about its use pattern in any city of Brazil up to now.

MDMA was synthesized and patented by the Merck laboratory in Germany in 1912, without a definition of its therapeutic finality. Decades later, in the 70's, its psychotherapeutical potential had been suggested in the US and the drug started being prescribed in order to favor the alliance with the patient, to increase self-esteem and to favor insights. Little by little MDMA started being consumed for leisure and in 1985 it was declared illegal in the US for all kinds of use. In Europe the consumption of ecstasy has been always illegal and its diffusion started after 1989 for leisure purposes, mainly related to rave parties and electronic music. At that time, rave parties were performed in London's port warehouses, in which hundreds of youngsters paid a ticket to dance all night at the sound of electronic music, frequently using drugs, mainly ecstasy. These parties soon conquered more adherents and spread all around the world. In Brazil the first rave parties were organized by Brazilian DJs coming back from London in 1995. They used to occur every two or three months and had fewer and less heterogeneous frequenters than nowadays. Currently, in São Paulo there are rave parties every weekend in wide and open-air settings; one of them was performed in the city's motor speedway in 2002 and gathered 50 thousand people. They last from fourteen to eighteen hours, the electronic music is uninterrupted, fluorescent panels decorate the setting and they are lightened by black, colored, stroboscopic, and laser lights and mirror globes. The several dancing tracks are directed by DJs who have the highest status in these parties. The first significant shipments of ecstasy seem to have arrived in Brazil

through São Paulo in 1994. The pills, mainly originated from the Netherlands, were resold to a selected group of people in night clubs.⁷ Up to now, rave parties and night clubs seem to be privileged settings for the consumption of ecstasy.

Being an illegal drug, ecstasy pills are not subjected to any kind of toxicological control. They can thus contain a great variety of substances, including or not MDMA. This is a factor directly linked to ecstasy's toxic potential, which is potentiated by the fact that subjects often make use of it in combination with other drugs. Although it is not possible to know exactly each pill's content, users have the habit of seeking information about its effects and composition with people who had already used a certain 'type' of ecstasy. People who supply ecstasy usually inform customers about the composition of their product; offering for example a choice between pills "which contain mostly MDMA and those 'mixed with amphetamine'". The popularity and price of the different pills, identified by their color and print drawing, vary according to the produced effects as divulged by their users.

The effects of MDMA begin nearly twenty minutes after the pill intake and last from four to eight hours. Although the uncertainty about the pill's composition hampers the interpretation of the effects reported by users, several studies on the effects provoked by ecstasy present similar results.⁸⁻¹¹ Users describe the immediate effects as mainly psychological and pleasant, such as euphoria, confidence, loquacity, sensuousness, facilitation of contact. Several unpleasant effects are also pointed out, almost always physical, such as dry mouth and tachycardia. The effects 24 hours after the intake are described as having a more negative connotation, both physically (e.g., insomnia, nausea) and psychologically (e.g., depression).^{12,13}

Although MDMA is deemed a safe drug, that is, one that does not represent a physical danger, there have been some reports of adverse reactions and deaths related to its consumption.^{14,15} Among the physical complications, hyperthermia is the most frequent condition associated to MDMA, in which users may reach bodily temperatures of 42°C. External conditions normally associated to the use of ecstasy, such as intense physical exercise in a hot environment and the lack of hydration, remarkably increase the risk of hyperthermia that may lead to death.

The aims of this study were to describe the patterns of acquisition and consumption of this drug and to describe the effects attributed to it by users in the city of São Paulo.

Methods

Sample

Data were collected from June to August 1999. As the participants were considerably heterogeneous regarding the use of ecstasy, we adopted as inclusion criteria for our analysis: 1) having used ecstasy more than 10 times in lifetime, 2) having used ecstasy at least once in the prior month. Subjects who had used a psychoactive drug, except for tobacco, for at least 12 hours prior to the interview were not included. At the end of the procedure 192 subjects had been contacted, out of which

52 met the inclusion criteria and are herein called habitual users, therefore defined as subjects who used ecstasy more than ten times in their lifetime and at least once in the prior month. From the remaining subjects, 56 had used ecstasy but did not meet frequency criterion (a), 76 had never used the drug, three did not meet the criterion of abstinence in the 12 hours prior to the interview and five refused to participate. A comparison between the 76 non-users described above and the users described in our study will be done in other study.

Instrument

We developed a self-reported questionnaire based on two other questionnaires, one of them applied in five European countries and the other one in Australia.^{2,10} The questionnaire had items about the use patterns and effects of ecstasy and about sociodemographic data of subjects. The item about the effects of ecstasy was translated from the questionnaire applied in Australia¹⁰ and listed the 83 possible effects requesting: "From the list below mark the ones that explain how do you feel during the effect of ecstasy" (the instrument is available under request).

Procedure

Participants were recruited through the snowball technique, firstly described and formalized by Goodman in 1961, as it was particularly suited for the study of social phenomena in areas of illegality and for the exploration of scarcely known populations.¹⁶ As the use of ecstasy is an illegal social activity, up to now hardly known in Brazil, the snowball technique for recruiting subjects seemed to be the most adequate to the current research.

Application of questionnaires: the author of this study personally applied the questionnaire to all participants. Subjects were invited to participate in the study and in case they agreed,

they had their secrecy and anonymity assured and received the address and telephone of the institution and of the researcher in charge.

Firstly we contacted the initial subjects, who were six subjects already known or indicated by the researcher's acquaintances, with the following characteristics: 'people who frequently visit an environment in which the use of ecstasy is not unusual or uncommon'. In order to assure the heterogeneity of the sample, initial subjects frequented different places and belonged to different groups, social classes, age ranges and sexual options. These subjects were contacted, informed about the objectives of the study and were invited to participate. Each subject was asked to indicate other people sharing the same features. The initial contact with the next subjects, indicated by initial subjects, was performed either by phone or personally in public settings. The researcher introduced herself to the subjects contacted by phone as a psychologist who was conducting a survey about the use of drugs, making clear who had given the subject's name. If consent to participate was given, the subject was informed that the approximate time to answer the questionnaire was 40 minutes and was asked to choose the more suitable time and place and to avoid any psychoactive substance (except for tobacco) for at least the 12 hours prior to the interview. In the second kind of contact, subjects were contacted in public settings, indicated by already interviewed subjects, who had volunteered to accompany the researcher to places where they introduced persons with the appropriate profile to participate in the survey. Data were collected in those places.

Results

The mean age of interviewed subjects was 24 years, ranging from 15 to 37 years. Most of them were single (86.5%), male

Table 1 - Patterns of ecstasy use in the city of São Paulo.

		N	%
Age at first use	Below 18 years	14	27.5
	Between 18 and 22 years	24	47.1
	23 years or more	13	25.5
Elapsed time since 1 st use	0 to 1 year	9	18.0
	2 to 3 years	22	44.0
	4 to 5 years	9	18.0
	More than 6 years	10	20.0
	Favorite days for using	Weekends or holidays	43
Company when using*	Any day of the week	9	17.3
	Several persons	44	84.6
	More than one person	17	32.7
Place of consumption*	Alone	2	3.8
	Rave parties	41	78.8
	Dancing clubs	36	69.2
	Parties	28	53.8
	At home	18	34.6
	In bars	2	3.8
	In the street	1	1.9
From whom the drug is bought	Friends/Acquaintances	26	53.1
	Friends/Acquaintances or dealer	10	20.4
	Dealer	9	18.4
	Does not buy	3	6.1
Place of acquisition*	Rave parties	29	59.2
	Parties	22	44.9
	Bars or dancing clubs	20	40.8
	Others (at friends'/dealer's)	18	36.7

*Non-exclusive answers.

(61.5%), had graduated from college (59.6%) and rated themselves as middle-class (51%).

Table 1 presents data regarding patterns of ecstasy use by participants. Most of them had tried ecstasy between ages 18 and 22, two or three years before the interview. Only 4% of them declared to take less than one pill by episode, whereas 50% took one pill and 46% more than one. Regarding these patterns, most of them stated taking ecstasy usually only on weekends or on holidays (82.7%), and most frequently with several people (88.5%). In decreasing order, users declared to take the drug in rave parties, in dancing clubs, in parties, at home, in bars and at the streets. Most of them (53.1%) claimed buying the drug from friends or acquaintances. In decreasing order, users reported they had bought ecstasy in rave parties, parties, bars or dancing clubs and in other places such as at friends' or dealer's houses.

Table 2 shows data related to the frequency of use of ecstasy. Of note, most users declared keeping their use of ecstasy constant in the last month and in the three months before the interview.

As previously mentioned, users as a rule sought information

Table 2 - Frequency of use of ecstasy in the previous month and in the three months prior to the interview by users in the city of São Paulo.

	N	%
Frequency of use in the previous month		
Maximum of once per month	20	38.5
Maximum of once per week	20	38.5
More than once per week	12	23.1
Frequency of use in the three months prior to the interview		
Maximum of once per month	19	36.5
Maximum of once per week	22	42.3
More than once per week	11	21.2
Difference between the previous month and the three months prior to the interview		
Decreased	9	17.3
Maintained	34	65.4
Increased	9	17.3

Table 3 - Attitudes regarding the consumption of ecstasy and its association with other drugs.

	N	%
Has already thought of not using ecstasy anymore		
Yes	26	50.0
Never thought	25	48.2
Does not use anymore	1	1.8
Reasons for using ecstasy*		
To dance	43	82.7
To relax	28	53.8
To stimulate the senses	23	44.2
To feel happier	20	38.5
To feel better regarding others	13	25.0
To escape from reality or to forget problems	12	23.1
To have sex	10	19.2
To stimulate creativity	9	17.3
To be uninhibited	5	9.6
Drugs associated to ecstasy*		
Cannabis and similar ones	43	82.7
Tobacco	32	61.5
LSD	16	30.8
Alcohol	14	26.9
Cocaine or crack	9	17.3
Amphetamine	3	5.8
Other drugs (opiates, inhalants)	3	5.8
None	4	7.7

*Non-exclusive answers.

about the quality of the pill they would take. Therefore, 78% of them declared taking the pill even when they did not obtain this information, while 14% stated they preferred not taking it when they did not obtain it and 8% mentioned that knowing what they take was not important.

Table 3 shows data about attitudes towards the use of ecstasy and its association with other drugs. From the interviewed users, 50% stated they had already thought of stopping the use of ecstasy, 48.2% claimed the opposite and one subject claimed not taking ecstasy any more, although they had taken it in the month prior to the interview. Regarding the reasons to use it, dancing was by far the main reason stated by users. An important information is that most participants had the habit of taking other drugs while ecstasy was still having its effect. Among these drugs, *Cannabis* and tobacco are the most used ones, followed by LSD, alcohol and cocaine, in this order.

Regarding the question 'For you, the effects of ecstasy are most of times: positive, positive and negative, or negative', 67.3% of the participants stated that the effects were 'positive' and 32.7%, 'positive and negative'. No subject answered the alternative 'negative'. We performed an additional analysis of the answers to this question. Subjects were divided in two groups: those who stated that the effects were mostly 'positive' and those who said they were mostly 'positive and negative'. Frequencies in which the 83 effects were pointed out in the two groups were then compared. Table 4 shows this comparison, indicating those effects which were mentioned with a frequency higher than 70% by subjects of both groups.

In Table 5 we compare subjects from the samples of São Paulo and Sidney, showing the 10 most frequently mentioned effects by subjects of both samples. Of note, half of these effects are identical in both samples. They are: "open mind", "closer to the others", "happy", "at ease", "unconcerned".

Discussion

Firstly it is important to mention that our study did not aim at delineating the profile of the user of ecstasy in São Paulo. It was an exploratory study without epidemiological finalities. We may reasonably suppose that there are other profiles of users of ecstasy besides those of the current sample.

Table 4 - Most frequently mentioned effects by users who considered the effects of ecstasy as "most of times positive" and by those who considered them as "most of times positive and negative".

The effects are "positive"(N=35) (%)	The effects are "positive and negative" (N=17) (%)
Happy (94.3)	Energized (94.1)
I am at ease (85.7)	Happy (88.2)
Tender (80.0)	Closeness to the others (88.2)
Energized (80.0)	With a dry mouth (88.2)
Peaceful (80.0)	Tender (88.2)
Closeness to the others (74.3)	Turned on (82.4)
Calm (71.4)	Open minded (76.5)
	With an accelerated heart (76.5)
	Sleepless (76.5)
	Without appetite (76.5)
	Alert (70.6)
	Unconcerned (70.6)
	With hot and cold waves (70.6)

Table 5 - Ten most frequently mentioned effects by subjects of the sample of São Paulo compared to those of Sidney.⁹ The bolded effects sign the similarities.

São Paulo	Sidney
Happy	Talkative
Tender	Open minded
Energized	Closer to the other people
Closer to the other people	Happy
At ease	At ease
Peaceful	Open to the environment
Turned on	Sensuous
Open minded	Euphoric
Unconcerned	Self confident
Calm	Unconcerned

The age range of the surveyed ecstasy users, such as the age in which they firstly tried it, is consistent with the known fact that the use of ecstasy is associated to the youth culture in several parts of the world.^{15,17,18} In Brazil, these youngsters usually pertain to the higher socioeconomic classes and can spend money on leisure and tourism. It is likely that 20% of subjects, who tried ecstasy more than five years before this study, when the drug was not available yet in the country, had tried it abroad.

Use patterns

The circumstantial use patterns of ecstasy found in our research are similar to those described by researches in Europe² and in Sidney.¹⁰ Therefore, the majority of users of the city of São Paulo take one or two pills at each episode of use, when they do not have any activity in the following day (weekends or holidays), more frequently accompanied by several persons, particularly in surroundings linked to night entertainment, such as dancing clubs, rave parties and other parties. The pills are usually bought from friends, in these same places. These patterns of acquisition and use of ecstasy, closely related to leisure and social activities, suggest that in certain settings its use is accepted, if not stimulated. The acknowledgment that users select the setting and the day of the week to take ecstasy denotes some degree of self-control over the use and is compatible with the fact that dependence of ecstasy has rarely been reported up to now.^{19,20} Comparing its use patterns and those of crack, for example, we can verify that they are almost the opposite. Crack users rapidly develop dependence, link themselves to criminals, cut their social and family relationships and start neglecting their basic needs.²¹ That is, while the use of crack causes isolation and marginalization of the subject, the use of ecstasy seems to favor the insertion of the youngster in a socially accepted group.

A comparison of frequency of use in the month prior to the interview and in the three months before it showed that it remained constant for most users. Among those who did not keep a constant frequency, the number of subjects who reported an increase in their consumption was equivalent to those who reported a decrease of it. This oscillation is foreseeable in a phenomenon, which apparently is so linked to the circumstances of use.

Ecstasy's use patterns, that is, preferred place, company and day of the week, are coherent with the main reasons pointed

out for the use of the drug: dancing, relaxing, stimulating the senses, feeling happier, feeling better with other people. A reason related to psychological discomfort appears only in the sixth place: *'to escape from reality or to forget problems'*. It is also interesting to observe that less than one fifth of the participants pointed out *'to have sex'* as a reason for consumption, in spite of the widespread notion that ecstasy is an aphrodisiac drug, suggested even by its name.

Additionally, still regarding use patterns, the high frequency of use of ecstasy in combination with other drugs should be a matter of concern as the combination of psychoactive drugs obviously increases the risk of toxic reactions. Only a minority of users does not associate ecstasy to other psychoactive drugs. The drug most frequently associated to ecstasy is *Cannabis*, in different modalities, including *charras*, skunk and hashish. Tobacco, LSD, alcohol and cocaine or crack, in that order, are also largely used. Users in Europe also frequently associate ecstasy and other drugs, although in a distinct and variable order according to the city. Of note, the association of ecstasy with alcohol is considerably more common in four out of the five surveyed European cities (from 70 to 97.3%) than in Brazil (26.9%). In our survey, many subjects associated ecstasy to *Cannabis* and/or LSD, indicating they preferred adding the effects of hallucinogens to the effect of ecstasy. Several studies concluded that users of ecstasy were polyusers (18, 22-24), what seems to be also characteristic of the subjects interviewed in this research.

Effects

As the analyzed sample was composed only by habitual users of ecstasy, we expected that most of them would report mostly *'positive'* effects and that the alternative *'negative'* would not be chosen, what actually happened. Further, we verified that there was congruency between the qualitative assignments of all the effects of ecstasy and the effects actually chosen from the given list. Therefore, subjects who declared that the effect of ecstasy was mostly *'positive'* chose, from the 83-effect list, those exclusively pleasant. Subjects who declared that the effect was, as a whole, *'positive and negative'* selected from the list some unpleasant physical effects such as *'dry mouth'*, *'tachycardia'* and *'waves of heat and cold'*, besides the pleasant effects. This congruency gives further credibility to the answers about the effects of ecstasy. Anyway, of note that, as a rule, the effects were described as so agreeable. The results of the survey in five European cities were similar, although in some of them a percentage of the users of ecstasy had considered that the effects were mostly *'negative'* (2). This discrepancy is probably a consequence of the difference in the samples, as in Europe both experimental and former users were included.

As most users associate other drugs with ecstasy, we should say that it is impossible to conclude if the mentioned effects are due to ecstasy itself or to the association of drugs. That was also a limitation of the study performed in Sidney, from which we took a list of effects and against which we made a comparison. There are differences and similarities regarding the most

frequently mentioned effects in both surveys, for which some explanations can be suggested. Firstly, the composition of the pills sold in Australia and in São Paulo may be not the same. There is also the possibility of a cultural distortion causing biases in meaning comprehension, what is inherent to the use of verbal techniques. Anyway, results in both countries seem to indicate that the drug is at least very similar and in both cases inductive of mainly positive effects. Further studies might include investigation of the effects of ecstasy in the days after use, an aspect not dealt with in the current study, as well as of occasional neuropsychological effects caused by its chronic use.

Lastly, if we examine the social conditions, the life style, the main reasons for the use of ecstasy and the most frequently reported effects by interviewed users, it is reasonable to assume that when these subjects take it they do not aim at escaping from an unsatisfactory, punitive or frustrating reality. It seems that the use of ecstasy is, for this population, simply a hedonist search, aiming at intensifying the pleasure of listening to music and dancing with friends, in a desire to enjoy themselves the most possible during the weekend. It is possible that such a search for pleasure would end in displeasure in some cases, generally in chronic users, and could generate physical and/or emotional problems. It could also be speculated about how much would ecstasy interfere in the process of psychosocial development. But for teenagers or youngsters living comfortably the only disadvantage resulting from the use of ecstasy may be the day-after depression reported by several researchers.^{12,13} However, using ecstasy effectively involves some risk, be it for the ignorance about the pill's composition, be it because there are still lacunae about its mechanism of action,

about its interaction with other drugs, about the reasons for individual differences in reactions to the drug and about the consequences of the long-term use.^{1,8,25} For all these reasons a preventive intervention regarding the use of ecstasy is justified and, to be effective, must take into account the characteristics of the population of users, its use patterns and the effects assigned to it. Preventive strategies have also to envisage the training of health professionals for emergency medical interventions in cases of intoxication. Furthermore, it would be valuable a chemical analysis of the most used pills in the cities where the substance is used.

Although MDMA has been a proscribed drug in the US since 1985, epidemiological studies have indicated an increase in its use.^{4,18,26} Therefore, no matter what would be the preventive option, it is obvious that always there will be subjects who choose to try ecstasy, out of which some will start using it as a habit. For them Harm Reduction, a widely used strategy of action in Europe supported by several participants in a recent meeting promoted by NIDA,²⁷ seems to be an interesting and valid alternative to be assessed in Brazil. This program aims at controlling or decreasing the damage caused by the use of drugs, assuming that it the existence of a completely drug-free society is utopic. An example of the action of this program in the case of ecstasy would supplying users and health professionals with information about the effects, long-term consequences, possibility of adulteration of the pill and adequate procedures in case of overdose. Another example would be legally requiring that in places in which the use of ecstasy is common the risks of intoxication be minimized, assuring, for example, enough ventilation and free water supply.

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