Harm Estimation from psychoactive drug use under MCDA principles and community perceptions in Colombia, 2021.

GUILLERMO CASTAÑO (gacastano@ces.edu.co)
CES University
ELLS NATALIA GALEANO GASCA
Escuela contra la drogadicción
JUAN DE JESUS SANDOVAL
Escuela Superior de Administración Pública

Research Article

Keywords: Harm Reduction, Drugs, MCDA Scale, Social perceptions, Bayesian Analysis, Mental Health

Posted Date: November 3rd, 2022

DOI: https://doi.org/10.21203/rs.3.rs-2206693/v1

Abstract

Background

Public policies related to drug use have been formulated based on the guidelines given by international organizations that have classified them based on more socio-legal motivations, lacking a scientific basis.

Methods

To achieve the hierarchy of harm associated with the consumption of psychoactive drugs through a consensus of experts, complemented with the social representations that communities have in this regard. Principles of Multcriteria Decision Analysis (MCDA) were used and through the Delphi method, 15 expert scientists in psychoactive drugs were consulted, who weighted on a scale the construction of consensus on damages related to 15 psychoactive drugs at the individual level and third parties. In addition, focus groups and individual interviews were conducted with social actors to inquire about their perceptions regarding the harm associated with drug use, both in consumers and in others. Finally, Bayesian elicitation was applied to the qualitative information of the substances, where medians and 95% credibility intervals were estimated.

Results

The consensus showed that smokeable cocaine (basuco), heroin, alcohol and cocaine were, in order, the most harmful substances for individual users, with medians of 40.3; CRI95% (39.3–41.3); 40; CRI95% (38.9–40.9), 39.7; CRI95% (38.9–40.5) and 39; CRI95% (38.4–39.7), respectively, while cocaine, alcohol and basuco were the most harmful to another 43.4; CRI95% (42.8–44), 42.7; CRI95% (42.2–43.3) and 42.7; CRI95% (42.3–43.1), respectively. For their part, the community actors considered alcohol to be the most harmful substance both for the individual who consumes it and for third parties, followed by cocaine and marijuana.

Conclusion

The disagreement in the management given to drugs by public policies regarding the problem of both legal and illegal drug use is corroborated, in relation to the international discussion the variables that had more weight in the context Colombia were those related to violence, displacement and crime associated with the production and trafficking of substances.

Background

In recent years, the analysis of trends in hallucinogenic substances use in Colombia has allowed the following patterns to be identified: alcohol consumption has decreased, as has tobacco and cigarettes. The consumption of illicit drugs has also decreased, with marijuana being the most consumed substance within this category. In some cities, the use of heroin by injection is reported and new substances are gaining strength on the market [1]

Harm associated with consumption has been reported not only for the user, but also for third parties [2]. In Colombia, public policies to face this problem, as in many other countries, have been framed in the recommendations of International Agencies [3–5], proposing actions to reduce supply and demand, taking into account the classification they have made on the risks and dangers of drugs and especially focused on aspects of illegality, with results that have not been the best [6].

For 15 years, some studies have focused on determining the relative potential for health and social harm of various addictive substances. These have been performed in England [7], the Netherlands [8], Scotland [9], France [10] and, more recently, in Australia[11]. The average overall harm of substances has been established, based on multi-criteria decision analyzes [12] or based on “ *ad-hoc* ” assessments [8] using validated health and social dimensions [7, 13]. These rankings do not necessarily show congruence with legislative and law enforcement priorities in terms of relative regulation and substance control, with alcohol being an excellent example of dissonance between overall harm and control efforts [7, 14].

Nutt et al., [7] mention that in 2009, they were the first to demonstrate this inconsistency, arguing that the process in which the damages are determined is not revealed and, when it is made public, it is not taken in the best way. way, because the factors that must be taken into account in estimating the damage are complex and the fact that scientific evidence is not only limited to certain dimensions, but also evolves according to historical and sociopolitical contexts [7].

To the studies by Nutt et al; Van Amsterdam et al. [8]; Taylor et al. [9]; Bourgain et al. [15] and Bonomo et al. [11], all suggesting a new system to assess the harm caused by drugs referring to facts and scientific knowledge, and including among the analysis variables, three factors that determine the harm caused by any drug when abusing its consumption: physical damage; the tendency to induce dependency and the effect of their consumption on families and society, adjusted to each context.

Consistent with the above, and in order to provide inputs to implement public harm reduction policies for the intervention of problems generated by drug use in the region of Antioquia - Colombia -, this research was proposed, where the question arose What are the perceptions that experts in addictions and community actors have on the subject about the problems associated with the complex phenomenon "drugs"? Answers that should provide tools to facilitate decision-making by health authorities, with the aim of spirit of guaranteeing successful results in the implementation of strategies.

Methods

This paper aims to account for the results of the research, which included questions related to the harm caused by drug use in the individual, family, social, labor and economic spheres, including environmental damage, the impact on coexistence and citizen security, based on the hypothesis that the latter would be highly relevant in a country like Colombia, where all the links of the drug phenomenon converge: cultivation, production, trafficking and consumption.

Two strategies were applied: a multi-criteria decision analysis (MCDA), where through the Delphi method, expert consensus was sought, adding a qualitative strategy on the perceptions of community actors, regarding the damages that occur due to drug use. These approaches were complemented using Bayesian elicitation from quantitative information from a second subgroup of experts. The study took into consideration the ethical principles of human beings. The research project protocol was approved by the Ethics Committee of the CES University and each of the participants signed the informed consent.

Mcda Strategy

To analyze the damage, the 16 criteria of Nutt et al. [13]grouped into three subgroups that represented physical harm (mortality and attributable and related physical harm), psychological (attributable and related impairment of mental function, dependency) and social harm (harm to the community, crime, economic cost, impact on family relationships, international harm, physical harm to others).

A group of 15 experts in substance use was convened virtually (6 for biological damage: psychiatrists, forensic and toxicologists; 5 for psychological damage: psychiatrists and psychologists and 4 for socio-environmental damage: lawyers, social psychologist and a professional of economic sciences), with the aim of developing a multi-criteria decision analysis (MCDA) model. The group of experts was formed from a selection of their curricula and experience in the field of drugs (10 years or more). They, through the Delphi method, provided their independent opinion and all declared that they had no conflicts of interest. The research coordinating group was made up of a multidisciplinary team: a medical expert in psychoactive drugs, an epidemiologist, an anthropologist, and a sociologist. The experts rated 15 substances (alcohol; tobacco; marijuana, including a type of local cannabis with high THC content called - *cripa*; cocaine; cocaine base paste (basuco); benzodiazepines; methadone; glues; Popper; ketamine; LSD; mushrooms; ecstasy (MDMA) and heroin). The experts additionally rated the severity of the damage through a structured survey, with weights from zero (0), which meant no damage, to one hundred (100), which refers to the maximum damage. It should have been taken into account that the highest score should be given to the substance with the greatest damage, then from this score the next substance should be scored and so on to obtain the score for the last substance. The survey was rotated through three rounds, in the middle of which the weighted results were sent (calculating statistics, standard deviation, mean and coefficient of variation), asking the experts in each round if they agreed or disagreed with said score for each substance. The instrument that was applied electronically included a space for observations and justifications, so that the experts could evaluate the importance of the relative weight they gave to the damage produced by each drug. At the end, through a virtual meeting, with the presence of all the participating experts,

the consensus, disagreements or discrepancies and the definitions developed in the process were reviewed. This method resulted in a final consensus on the harm caused to the consumer and to third parties for each of the drugs.

Once the consensus was determined for each of the 15 substances, a database of columns (variables) and rows (individuals) was structured. Using the Bootstrap technique [16], the standard error of the means was estimated for each of the 15 substances. Once adjusted means and standard deviations were obtained, a Bayesian elicitation process was carried out to capture qualitative information from a second subgroup of experts to add to the estimates of the experts who participated in the MCDA survey. For this, prior probability distributions were constructed [17]. The final estimator was modified, the result of a composition of probability distributions obtained through the deliberations of the panel of experts and the qualitative information obtained from the elicitation. For the final mixture and obtaining of this a posteriori estimator, they used Bayesian models, using 10,000 interactions with a burning of 3,000. Statistical analyzes were performed with the R software, using the Rjags packages [18], and for Bayesian elicitation, the SHELF [19] and MACH[20] packages were used. In the end, a posteriori estimates of the weight medians with their respective 95% credibility intervals were obtained [21, 22].

Strategy With Social Actors

Through a qualitative - descriptive study, a complementary approach to the multcriteria analysis was carried out, where the social representations that the communities had in relation to the damage caused by the consumption of psychoactive drugs were explored, starting from the understanding that the selected key informants (health personnel, public officials, community leaders, parents, drug users, police authorities, rehabilitated ex-addicts and people in treatment), have about the problem of drug use and its related problems. This view allowed us to transcend the hierarchy and delve into what they understood as damage, considering their local socio-cultural contexts. The research team was the same as the one that participated in the quantitative strategy (an expert doctor in addictions, an epidemiologist, a sociologist and an anthropologist) as well as a research assistant.

The study sample was designed taking into account the following criteria: key interlocutors were chosen to represent the community. Nine focus groups and 45 in-depth interviews were conducted, including informants from the subregions of the Department of Antioquia, Colombia.

After conducting the interviews, they are transcribed and organized in the Atlas Ti 9 Software. The statements were first read in full by the researchers, then the coding was carried out, in which themes were extracted that represented the meaning of each statement. Then, based on these themes, the convergent themes were recoded, from which the thematic categories were formed [23].

Subsequently, an analysis was carried out on the rankings in relevance of the damage associated with drug use, considering the level of importance given to them, which translated into a quantification in relation to the frequency of mentions and reiteration of these in the interview content. Regarding the quantification of qualitative variables, Berelson [24] argues that information analysis is a technique in which the content is described, where objectivity is associated with the procedures that should be used by researchers, taking into account that the results obtained are capable of verification. Likewise, a critical analysis was made of what the actors referred to in relation to the importance and centrality of substances in their social life.

Triangulation Of Results

The group of researchers met to discuss the findings of the two strategies, analyzing the results and discussing the similarities and disagreements. The combination and triangulation of both methodologies allowed us to analyze whether the qualitative and quantitative results pointed to the same conclusions; if the quantitative and qualitative results are different and if the results focused on different topics, but are complementary to each other and lead to a more complete approach [25].

Results

Figure 1 shows the average weights and intervals to standard deviations of the types of damages (Individual and third parties) of the total global general damage by the expert consensus result. It is highlighted that the substances that have higher averages, from

basuco to marijuana, in that order, also produce greater harm to third parties. Then it is shown that the glues cause more individual damage and again ecstasy and methadone also cause more damage to third parties. As for Ketamine, the damage is greater individually. As for Popper, LSD and Tobacco, no differences are shown at two standard deviations and finally for Mushrooms the individual damage is greater (more details in Table 1).

Table 1 also shows the discrimination of the damage within the individual damage and third parties for physical, psychological and social damage and at the end the weightings of the general damage are shown, it is important to express that, between heroin, cocaine, alcohol and basuco, the differences are very few.

Table 1
Substance damage, according to expert consensus for individual damage or damage to third parties within physical or psychological damage.

Substance	Subject Harms		Harms to others		Subject Harms				Harms to others				Total Harms	
					physical		psychological		physical		Social			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Basuco	40.3	0.5	42.7	0.2	21.2	0.1	19.1	0.4	21.2	0.0	21.5	0.1	83.1	0.7
Alcohol	39.7	0.4	42.7	0.3	20.7	0.1	19.1	0.3	21.5	0.1	21.2	0.2	82.5	0.7
Cocaine	39.0	0.4	43.4	0.3	20.6	0.1	18.4	0.3	20.2	0.1	23.2	0.2	82.4	0.7
Heroin	40.0	0.5	42.2	0.2	22.3	0.1	17.6	0.4	20.3	0.1	21.9	0.1	82.1	0.7
Marijuana Cripa	32.0	0.2	37.2	0.6	15.2	0.1	16.8	0.1	14.8	0.4	22.4	0.2	69.1	0.9
Benzodiazepines	33.5	0.3	34.5	0.3	16.4	0.1	17.1	0.2	15.7	0.1	18.8	0.2	68.0	0.6
Marijuana	28.7	0.6	36.7	0.7	14.5	0.3	14.2	0.3	15.2	0.1	21.6	0.6	65.4	1.3
Glue Sniffing	31.5	0.4	28.6	0.2	14.5	0.1	16.9	0.3	13.7	0.1	14.8	0.1	60.0	0.6
Ecstasy-MDMA	28.7	0.4	31.1	0.4	17.1	0.1	11.6	0.3	14.7	0.1	16.4	0.3	59.8	0.8
Methadone	26.5	0.2	29.4	0.7	13.2	0.1	13.3	0.1	10.9	0.3	18.4	0.4	55.9	0.9
Ketamine	29.7	0.4	24.0	0.6	17.2	0.1	12.5	0.3	14.5	0.3	9.5	0.2	53.7	0.9
LSD	26.0	0.3	27.6	0.4	14.2	0.1	11.9	0.2	13.1	0.1	14.5	0.3	53.6	0.7
Tobacco	26.8	0.6	26.5	0.5	15.3	0.4	11.5	0.2	16.0	0.1	10.4	0.4	53.3	1.1
Poppers	26.5	0.3	26.5	0.2	13.6	0.1	13.0	0.2	12.8	0.1	13.7	0.1	53.0	0.4
Mushrooms	22.0	0.4	19.2	0.6	12.0	0.1	9.9	0.3	10.8	0.1	8.4	0.5	41.2	1.0

Note: SD: standard deviation. Weighted average overall harm of the 15 substances (mean values and standard deviations) assessed by experts on a scale of 0 ("not harmful") to 100 ("extremely harmful"), for user and others **Source**: own elaboration.

Overall Damage Determined By Experts And Social Actors

Regarding the general damage, for the experts, alcohol, basuco, heroin, cocaine were classified as the most harmful with a global average in percentages above 80%. They are followed by benzodiazepines, marijuana, glue and ecstasy, which are above 60%. Substances such as poppers, LSD and tobacco have a global average percentage of 53%. For their part, the community actors considered that alcohol, cocaine, basuco and marijuana, in their order, are the drugs that produce the most damage, with a global average in percentages above 50%, highlighting alcohol that reaches 88.2% even above what was considered by the experts.

Unlike the experts, the social actors do not consider heroin to be problematic, probably due to the still low prevalence of use in the regions of the department, although its use has been evidenced above all in Medellín and its Metropolitan Area. They are followed in

weighting of harm, according to lay social actors, by glue sniffing, benzodiazepines and tobacco with an average global average of 30%. Ecstasy, LSD and Popper occupied subordinate positions in relation to the harm associated with their use, probably also due to the low prevalence of use in the regions and the lack of knowledge about the effects of these substances.

It is noteworthy that the weighting made by the experts on ecstasy (MDMA), Ketamine, LSD and Popper was of medium damage, while for the social actors these drugs occupied low positions in relation to the damage associated with their use. consumption. The ratings of experts and community actors in relation to the global harm caused by drugs are shown in Fig. 2.

Regarding the specific mortality that measures how dangerous a substance is, and its relationship with cases of overdose, acute poisoning or adverse and allergic reactions produced by contaminants and, on the other hand, the related mortality that comes from dangerous behaviors associated with consumption, both community actors and experts assign greater risk to alcohol, followed by cocaine, heroin, benzodiazepines and tobacco. For the first substance, they relate mortality to death due to fights, traffic accidents, domestic violence; heroin and cocaine overdose, HIV/AIDS, Hepatitis B and C associated with poor injection practices and coronary events and suicides. Mortality from benzodiazepines is associated with suicide and with respect to tobacco with chronic cardiovascular and respiratory events and cancer. In these associations, there is a greater refinement on the part of the experts, but an important coincidence in generality with the social actors.

In the other illegal substances for which it was investigated (marijuana, inhalants, glue, Popper, ecstasy, LSD, mushrooms) no risk of mortality was attributed.

Regarding specific and substance-related damages, which, in this case, are non-fatal damages associated with consumption, heroin was qualified by the experts as the first responsible, followed by basuco, cocaine, and alcohol, while that the least affected for this dimension were mushrooms, tobacco, marijuana and LSD. Regarding related chronic damage, the experts weighed alcohol first, followed by basuco, heroin and cocaine, and mushrooms, methadone, LSD and Popper were listed among those that cause the least damage. According to the community actors, the specific and related damages attributed to the substances in their order are produced by cocaine, basuco, tobacco, marijuana, alcohol, glues, Benzodiazepines and tusi.

Another of the dimensions analyzed was the degree of addiction produced by drugs. In this regard, social actors tend to consider that all drugs in general produce addiction. However, in terms of the distinction on those that generate the most dependency in their order is marijuana, basuco, alcohol, cocaine, tobacco, and glue. Heroin was also mentioned as highly addictive, but only in the Metropolitan Area, where there is a higher prevalence of heroin, without mention in other regions. Regarding the consumption of Ecstasy, they report that, given its frequency of consumption, most of the time it is sporadic at electronic parties and nightclubs, mainly on weekends, the risk of dependence is low. For the experts, for their part, basuco was considered among the substances that cause the greatest dependence, followed by heroin, cocaine and tobacco. Among those that cause less dependence are mushrooms, LSD, Ecstasy-MDMA and marijuana.

The mind is left without the role of behavioral changes that are generated by the characteristics of each substance, such as: having unprotected sex, decreased risk perception and assumption of risk behaviors and abrupt decision making. Among the community actors, the substances most related to the impairment of mental function are cocaine, benzodiazepines, glues, marijuana, alcohol, basuco and ecstasy. Among the experts, the most affected substance is alcohol, followed by benzodiazepines, basuco and cocaine. According to specialists, the ones that least affect this criterion are tobacco, Popper, and Ecstasy-MDMA.

About tangible losses, related to drug use and there are individual economic costs, for example, the money used to obtain the substance, this study found that, according to community actors, the greatest Loss of tangibles occurs due to alcohol, followed by cocaine, basuco and tobacco. In the case of the experts, they considered heroin first, cocaine second, and then alcohol and ecstasy-MDMA.

In relation to the loss of human relationships, where evaluates the deterioration of the personal relationships of the consumer, the social actors refer that the loss of relationship, exclusion and stigmatization are generally associated with the consumption of any substance, placing alcohol in the first place due to its high normalized consumption in life every day; followed by marijuana for being the most popular illegal drug; then there is the basuco, on which the greatest stigma falls because it is considered the most decadent addiction due to its strong physical, mental and relational deterioration, as well as leading consumers to a situation of

indigence and homelessness. The experts, for their part, weighted basuco, cocaine, heroin and alcohol as the main substances that affect this dimension, and those that produce the least, tobacco, ketamine and Popper.

When analyzing physical damage to third parties and more specifically physical damage, which includes accidents and violence generated by a person under the influence of consumption or in a withdrawal syndrome, for laymen, alcohol, cocaine, benzodiazepines, basuco and marijuana, appear as the most cited substances. The experts, for their part, placed basuco in first place and cause lethal damage, followed by alcohol, cocaine and heroin, while alcohol, heroin, tobacco and basuco were estimated for non-lethal damage. Mushrooms, methadone, LSD and Popper are among those that represent the least damage in terms of lethal damage to third parties, with both experts and community actors agreeing.

Figure 3 presents the results of the damage classification according to the global results of the weighting of experts for the 15 psychoactive drugs. It stands out from the vertical lines that the substances with the greatest damage are those with a more intense color. tending to red. Likewise, the horizontal lines show the categories of damage. In this sense, it can be highlighted that the substances that cause the greatest global damage are located on the left, starting with Basuco, which is the one with the most intense red boxes in: dependency, personal relationships. Slightly, less intense in impairment of mental function due to specific harm, mortality attributable to the substance, specific mortality and a less intense red also in impairment of mental function due to related harm. Finally, where it had the least impact was in international damage and economic cost, without being very low according to the intensity of the color.

On the other hand, it was observed that, in fungi, it was weighted with low damage shown by the color tending to blue, due to its sporadic use and little diffusion. Also, it was observed that regarding this substance, in what there was almost no impact was family relationships, dependency and damage to the community.

Discussion

Among the most relevant criticisms that have been made regarding the damage caused by drugs, the contribution of Rolles et al. [26], who pose limitations when trying to analyze the problems caused by substances using a model focused on producing single-digit harm indices, when in reality the determinants of risk / harm reflect the pharmacology translated through a complex prism of social, behavioral and environmental variables, in turn influenced by a range of different policy regimes, from prohibition to legal regulation.

Understanding the complexity of the problem, therefore, is not only captured with quantitative variables, but it is also necessary to qualify the data. In this sense, this study, in addition to giving an account of the weighting of the damage from the quantitative point of view, provides a qualitative look, approaching the understanding that lay social actors have about the damage caused by consumption, which gives us a more comprehensive and that transcends the scores and weights that are sought in the multi-criteria analysis. From this perspective, the criteria of experts are analyzed, with the perceptions that lay social actors have, in order to make public policy decisions from this dialogic perspective for the benefit of vulnerable populations due to the use of psychoactive drugs.

In this line, it is necessary to note that we do not consider the representations of the social actors as false or correct, but rather they give us an idea of how the community relates to the phenomenon of damage associated with PAS consumption, while the We consider expert criteria to be more or less sophisticated, depending on the knowledge adduced and justified within the considerations, for which we also consider that it is not infallible, but rather an approximation to the knowledge available by the experts summoned, who are, in turn, those that are located when carrying out public policies on the subject. This results in a distance or congruence between both types of actors, which is necessary to understand for the best design of concrete proposals that try to transform reality in terms of public health.

On the other hand, when attempting to classify the damage, there is no doubt that continuing to use drugs and the contexts in which it occurs are key elements when analyzing the associated damage, as well as the knowledge about drug toxipharmacology. The substances. High rates of consumption make the associated problems more visible and, in this sense, both experts and laymen can account for them, especially in relation to damage to third parties. Although they understand the complexity of the problem and the importance of a comprehensive (biopsychosocial) approach, specialists in addictions, depending on their training - toxicologists, psychiatrists, psychologists, family therapists, social workers, nurses - tend to the damages of the dimension where its expertise is.

The contexts in which drug-related harm is analyzed also differ, in relation to whether it is carried out in regions where there is only consumption and micro-trafficking, with areas where the cultivation, production and drug trafficking of illegal substances also converge.

On the other hand, the inclusion of substances in the different studies, without a doubt, is related to the epidemiology of their consumption, in the region where they are carried out and therefore, they do not always coincide. These aspects are key when interpreting the results and discussing the findings with what has been found in other works, for which we consider that the local context is very relevant and must be taken into consideration with respect to the comparisons of the weights of the damage. For example, in our study we found that both experts and social actors gave great importance to the damages related to production, trafficking, and sale, which has an important value for products derived from coca, marijuana, and poppies.

In our context, drug trafficking has generated violence, which is reflected in homicide rates. In 2011, the death rate related to the drug problem was 38% per 100,000 inhabitants [27]. Internal displacement has also been one of the largest in the region. In 2010, 150,000 people were displaced from areas where coca leaf was grown [27].

Regarding the findings of our research, both in the consensus of experts and in the recurrence of the perceptions of social actors, as well as the work carried out by Nutt et al.[7] and Van Amsterdam & Van den Brink [28], alcohol is one of the most harmful substances in global terms. The relatively high prevalence of alcohol use/abuse (compared to the abuse of less frequent but perhaps more dangerous substances) probably contributes to its dimension-specific ratings, for example, harm to the individual and others, as well as its prominent position among the drugs that cause the most problems.

Similarly, as found by other researchers [29], the decrease in tobacco/cigarette consumption in Colombia, thanks to the policies led by the World Health Organization, may be contributing to a lower weighting of the damage for this substance and in which both experts and lay social actors agree.

On the other hand, and in relation to illegal drugs, the experts in our study considered that basuco, heroin, and cocaine are the most harmful, followed by benzodiazepines for use without medical prescription, marijuana, glues and ecstasy (MDMA), also classifying them as harmful, but with a lower weighting than those previously mentioned. Substances such as Popper, LSD were weighted as having medium toxicity, the latter related to issues related to the impersonation that drug traffickers have done in Colombia, by substituting lysergic acid diethylamide, for substances of the NBOMe family [30], which implies greater risks of intoxication.

Our findings contrast with the work of Bonnet et al. [29] who valued methadone, nicotine, cannabis and alcohol as less harmful and the weighting made by the experts of the European Union in 2014 [31], who considered alcohol as the substance that produces more damage, while psychotropic mushrooms, cathinones, ecstasy, GHB, methamphetamine and crack, in the German study, were considered more harmful.

Finally, of special analysis, due to the context where this work is carried out - Colombia - where not only consumption, but also cultivation, production and trafficking and micro-trafficking converge, are the dimensions of crime, economic cost, international damage and harm to the community. Both for experts and for social actors, cocaine, marijuana and heroin are the substances most related to damage to these dimensions. The sub-regional differences between the social actors are noted when violence and crime are related in the areas where narcotics are grown and produced, in which the phenomenon is pointed out with greater emphasis. They also rate the social damage caused by illegal drugs (marijuana, cocaine and heroin) as high and relate it to the few possibilities of finding a job outside the legality of being forced to cultivate narcotics. Community damage is also related by social actors to the restriction of mobility and the violence exercised by armed groups in the territories. Another element of social damage, in the Colombian context, is related to the involvement of people as human couriers to traffic drugs, where women constitute a very vulnerable group [32].

Finally, without a doubt, the international damage caused by the drug problem in Colombia is of great dimensions. Both experts and social actors agree in pointing out cocaine, marijuana and heroin as the ones that most affect in terms of this dimension. On the one hand, it affects the image of the country and on the other drug trafficking with its associated problems – money laundering, violence, corruption, arms trafficking contributes to the supply of drugs, which affects various regions of the world and more specifically in the US and Europe.

Conclusions And Limitations

Our data corroborate the discrepancy in the management given to drugs by public policies derived from the consumption of hallucinogenic, legal and illegal substances. This study provides a classification of the damage caused by drugs in the region of Antioquia -Colombia-, according to the opinion of experts and community actors, who point to smokeable cocaine -basuco- alcohol and cocaine, as substances more harmful.

It is noteworthy in the study that the findings related to harm to third parties specifically in the international dimensions (image and stigma) and to the community (violence, displacement, crime), all are associated with the cultivation, production and trafficking of drugs, these links of the drug "phenomenon" chain, present in Colombia, dimensions that had an important weight, in the weighting made by the experts and the perceptions that the lay social actors have.

Among the limitations we can mention the reduced number of addiction experts who participated in the construction of the multcriteria scale and that although an attempt was made to keep a balance by calling professionals with knowledge of the physical, psychological and social damage caused by drugs, we found that the experts knew much more about the first two than about the latter. In general, the experts reached a consensus more quickly on individual physical and psychological harm than on the other harms, with the social harms showing the greatest divergence of responses and where it was most difficult to reach consensus. This heterogeneity of experiences probably necessitates a decision strategy based on the consensus of a more homogeneous group.

One more limitation of this work is trying to compare the data of a quantitative investigation with a qualitative one, since the way in which the data is obtained, analyzed, and interpreted is very different. Although they are not incompatible and are complementary, there is a marked difference in the methods, dealing with the same topic [33], the triangulation of the results and the analyzes are not without a degree of subjectivity on the part of the researchers..

Other limitations similar to previous studies [7, 31] include the fact that the present work does not meet strict representativeness requirements. Like the studies by Nutt et al. [7], VanAmsterdam et al. [31] and Bonono et al. [11] feedback and consensus meetings were held among the experts, which *per se* does not eliminate subjectivity [14] and therefore it is not easy to find a "single method" for the benefit-risk evaluation [34]. However, the importance of these types of studies contributing to effectively resolve decisions to implement public policies on drugs is highlighted.

Abbreviations

MCDA: Multcriteria Decision Analysis; CI: Credible Intervals; LSD: Lysergic Acid Diethylamide; MDMA: 3,4-Methylenedioxymethamphetamine; THC: Tetrahydrocannabinol; SHELF: The Sheffield Elicitation Framework, MACH: Project of the Uncertainty Elicitation Tool, SD: standard deviation; TUSI: Drug of local circulation in Colombia, without a standardized formula, but that in most cases contains a mixture of substances such as ketamine, caffeine, dye, sweetener, among others; IMFSH: Impairment of Mental Function due to Specific Harm; IMFRH: Impairment of Mental Function by Related Harm; PAS: Psychoactive Substances; GHB: Gamma-Hydroxybutyric Acid; BASUCO: Crack, Smoking Cocaine or “dirty trash of cocaine”; CRIPA: “cripy,” or “creepy”. It is its high levels of the psychoactive drug THC. Whereas normal marijuana’s THC concentrations hover in the single digits, creepy contains between 15 and 25 percent more. NBOMe: is a psychedelic drug derived from the 2C-I psychedelic substituted phenylethylamine.

Declarations

Ethics approval and consent to participate: The Ethics Committee of the CES University issued a favorable concept for carrying out the study, taking into account its relevance, the available knowledge, and the ethical, methodological, and legal requirements required for research studies on human beings.

Consent for publication: The informed consent approved by the CES University Ethics Committee included the authorization of the study participants to publish the results.

Availability of data and materials: The data and materials of the study will be available to reviewers and readers of the article and may be requested from the corresponding author.

Availability of data and materials: The datasets generated and/or analyzed during the current study are not publicly available due to study protocols that prioritize preserving the anonymity of some participants.

Competing interests: The authors declare no conflict of interest

Funding: The funds for the study were provided by the School Against Drug Addiction attached to the Health Section of the Government of Antioquia – Colombia

Authors' contributions: G.A. Wrote the main manuscript text, also contributed in the work scheme. N.G. was in charge of the collection of information and contribute conceptual ideas. J. S. carried out the systematization of the quantitative information and made the statistical calculations. G.A.; N.G.; J.S. they did the analyses, participated in the discussion and wrote the article.

Acknowledgements: To all the experts: Catalina Piedrahíta Gutiérrez, Cesar Augusto Arroyave Hoyos, Catalina Duarte Posso, Dedsy Yajaira Berbesi Fernández, Francisco Javier Arias Zapata, Hermes Grajales, Hugo Alberto Gallego Rojas, Johan López Rojas, Luis Fernando Giraldo Ferrer, Luis Eduardo Correa Perdomo, Luisa Eugenia Villa Giraldo, Marie Claire Berrouet, Marta Isabel Dallos Arenales, Nicolas Ignacio Uribe Aramburo, Orlando Scoppetta y Víctor Hugo Cano Bedoya and also to the community actors who participated in the study (their names are protected).

References

1. Ministerio de Justicia y del Derecho. Observatorio de Drogas de Colombia y DANE. Estudio Nacional de Consumo de Sustancias Psicoactivas. Colombia 2019. 2019;164. Available from: https://www.minjusticia.gov.co/programas-co/ODC/Documents/Publicaciones/Consumo/Estudios/estudio Nacional de consumo 2019v2.pdf?csf = 1&e = iV5lh3.
2. Korpi ER, den Hollander B, Farooq U, Vashchinkina E, Rajkumar R, Nutt DJ, et al Mechanisms of Action and Persistent Neuroplasticity by Drugs of Abuse. Koulu M, editor. Pharmacol Rev [Internet]. 2015 Oct 24;67(4):872–1004. Available from: http://pharmrev.aspetjournals.org/lookup/doi/10.1124/pr.115.010967.
3. Minsalud. Plan Nacional para la Promoción de la Salud, y la Prevención y la Atención del Consumo de Sustancias Psicoactivas 2014–2021. https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/VS/PP/plan-nacional-consumo-alcohol-2014-2021.pdf; 2014.
4. UNODC/OMS. El Programa conjunto sobre el tratamiento y la atención de la drogodependencia [Internet]. 2010. Available from: https://www.unodc.org/docs/treatment/Brochures/10-53858_S_ebook.pdf.
5. Insulza JM. EL PROBLEMA DE LAS DROGAS EN LAS. AMÉRICAS. Alvaro Briones; Francisco Cumsille; Adriana Henao; Bryce Pardo. editor. OEA; 2013. 32 p.
6. Acevedo-Gómez D. LA POLÍTICA DE DROGAS EN COLOMBIA 2000–2015 Un análisis desde el Marco de Coaliciones Promotoras. [Internet]. UNIVERSIDAD EXTERNADO DE COLOMBIA; 2018. Available from: https://bdigital.uexternado.edu.co/handle/001/627.
7. Nutt DJ, King LA, Phillips LD. Drug harms in the UK: A multicriteria decision analysis. Lancet [Internet]. 2010;376(9752):1558–65. Available from: https://doi.org/10.1016/S0140-6736(10)61462-6.
8. Van Amsterdam J, Opperhuizen A, Koeter M, Van Den Brink W. Ranking the harm of alcohol, tobacco and illicit drugs for the individual and the population. Eur Addict Res [Internet]. 2010 Sep [cited 2021 May 20];16(4):202–7. Available from: https://doi.org/10.1159/000317249.
9. Taylor M, Mackay K, Murphy J, McIntosh A, McIntosh C, Anderson S, et al. Quantifying the RR of harm to self and others from substance misuse: Results from a survey of clinical experts across Scotland. BMJ Open [Internet]. 2012;2(4). Available from: http://dx.doi.org/10.1136/bmjopen-2011-000774.
10. Bourgain C, Falissard B, Blecha L, Benyamina A, Karila L, Reynaud M, et al. A damage/benefit evaluation of addictive product use. Addiction [Internet]. 2012 Feb;107(2):441–50. Available from: https://onlinelibrary.wiley.com/doi/10.1111/j.1360-0443.2011.03675.x.

11. Bonomo Y, Norman A, Biondo S, Bruno R, Daglish M, Dawe S, et al. The Australian drug harms ranking study. J Psychopharmacol [Internet]. 2019 Jul 13 [cited 2021 May 20];33(7):759–68. Available from: http://journals.sagepub.com/doi/10.1177/0269881119841569.
12. Zarghami M, Szidarovszky F. Introduction to Multicriteria Decision Analysis. Multicriteria Analysis. New York: Springer; 2011. 1–159 p.
13. Nutt D, King LA, Saulsbury W, Blakemore C. Development of a rational scale to assess the harm of drugs of potential misuse. Lancet [Internet]. 2007 Mar [cited 2020 Nov 30];369(9566):1047–53. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0140673607604644.
14. Rolles S, Measham F. Questioning the method and utility of ranking drug harms in drug policy [Internet]. Vol. 22, International Journal of Drug Policy. 2011 [cited 2021 Feb 23]. p. 243–6. Available from: https://www.sciencedirect.com/science/article/pii/S0955395911000582.
15. Bourgain C, Falissard B, Blecha L, Benyamina A, Karila L, Reynaud M. A damage/benefit evaluation of addictive product use. Addiction [Internet]. 2012;107(2):441–50. Available from: https://onlinelibrary.wiley.com/doi/10.1111/j.1360-0443.2011.03675.x.
16. Efron B, Tibshirani RJ. An introduction to the bootstrap. CRC press; 1998.
17. Kadane J, Wolfson LJ. Experiences in elicitation [Read before The Royal Statistical Society at a meeting on “Elicitation” on Wednesday, April 16th, 1997, the President, Professor A. F. M. Smith in the Chair]. J R Stat Soc Ser D (The Stat [Internet]. 1998 Mar [cited 2022 Jan 4];47(1):3–19. Available from: https://onlinelibrary.wiley.com/doi/10.1111/1467-9884.00113.
18. Harvey D, Plummer D, Pighills A, Pain T. Practitioner Research Capacity: A Survey of Social Workers in Northern Queensland. Aust Soc Work. 2013;66(4):540–54.
19. Oakley J, Tony, O’hagan. SHELF: the Sheffield elicitation framework [Internet]. Springer, editor LCD& AM& JQ, editor. Elicitation. 2018 [cited 2020 Feb 1]. p. 61–93. Available from: https://shelf.sites.sheffield.ac.uk/.
20. Morris DE, Oakley JE, Crowe JA. A web-based tool for eliciting probability distributions from experts. Environ Model Softw [Internet]. 2014 Feb 1 [cited 2022 Sep 25];52:1–4. Available from: https://linkinghub.elsevier.com/retrieve/pii/S1364815213002533.
21. Mbakwe AC, Saka AA, Choi K, Lee YJ. Alternative method of highway traffic safety analysis for developing countries using delphi technique and Bayesian network. Accid Anal Prev [Internet]. 2016 Aug 1 [cited 2022 Jan 4];93:135–46. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0001457516301270.
22. Wesson PD, Mirzazadeh A, McFarland W. A Bayesian approach to synthesize estimates of the size of hidden populations: The anchored multiplier. Int J Epidemiol [Internet]. 2018 Oct 1 [cited 2022 Jan 4];47(5):1636–44. Available from: https://academic.oup.com/ije/article/47/5/1636/5042219.
23. Sautu R, Boniolo P, Dalle P. & Elbert R. Manual de metodología. Buenos Aires: CLACSO; 2005.
24. Berelson B. Content Analysis in Comunication Research. Glencoe: Free Press; 1952.
25. Kelle U, Erzberger C. qualitative and quantitative methods: Not in Opposition. In: Uwe Flick E, von Kardoff IS, editors. A Companion to Qualitative Research. London: SAGE Publications;: SAGE; 2004. pp. 172–8.
26. Rolles S, Schlag AK, Measham F, Phillips L, Nutt D, Bergsvik D, et al. A multi criteria decision analysis (MCDA) for evaluating and appraising government policy responses to non medical heroin use. Int J Drug Policy [Internet]. 2021 May 25 [cited 2021 May 20];91:103180. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0955395921000785.
27. Paez C. Cuatro décadas de Guerra contra las drogas ilícitas: un balance costo - beneficio. Análisis Latinoam [Internet]. 2012;4(54):22–54. Available from: http://www.mamacoca.org/docs_de_base/Cifras_cuadro_mamacoca/d.Cuatro Dcadas de Guerra contra las Drogas Ilcitas Un Balance Costo - Beneficio - Agosto 2012 - Cesar PAEZ.pdf.
28. van Amsterdam J, van den Brink W. The high harm score of alcohol. Time for drug policy to be revisited? J Psychopharmacol [Internet]. 2013 Mar 16;27(3):248–55. Available from: http://journals.sagepub.com/doi/10.1177/0269881112472559.
29. Bonnet U, Specka M, Soyka M, Alberti T, Bender S, Grigoleit T, et al. Ranking the Harm of Psychoactive Drugs Including Prescription Analgesics to Users and Others–A Perspective of German Addiction Medicine Experts. Front Psychiatry [Internet]. 2020 [cited 2021 Feb 23];11. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7649209/.

30. Ministerio de justicia. Sistema de Alerta temprana [Internet]. Bogotá; 2017. Available from: https://www.minjusticia.gov.co/programas-co/ODC/Documents/SAT/Boletines/sat092017_boletin_nuevas_sustancias_septiembre_2017.pdf?csf=1&e=xTLI78.
31. Van Amsterdam J, Nutt D, Phillips L, Van Den Brink W. European rating of drug harms. J Psychopharmacol [Internet]. 2015 Jun 6 [cited 2021 May 20];29(6):655–60. Available from: https://journals.sagepub.com/doi/10.1177/0269881115581980.
32. UNODC/ODC. Caracterización de condiciones socioeconómicas de mujeres relacionadas con problemas de drogas: las mujeres privadas de la libertad por delitos de drogas [Internet]. 2019. Available from: Estudio_Las_mujeres_Privadas_de_la_Libertad_por_Delitos_de_Drogas.pdf (unodc.org).
33. Fernández F. Valuation Methods and Shareholder Value Creation [Internet]. IESE Business School University of Navarra, editor. Madrid, Spain: Elsevier; 2002. Available from: https://linkinghub.elsevier.com/retrieve/pii/B9780122538414X50008.
34. Mt-Isa S, Hallgreen CE, Wang N, Callréus T, Genov G, Hirsch I, et al. Balancing benefit and risk of medicines: a systematic review and classification of available methodologies. Pharmacoepidemiol Drug Saf [Internet]. 2014 Jul;23(7):667–78. Available from: https://onlinelibrary.wiley.com/doi/10.1002/pds.3636.

Figures

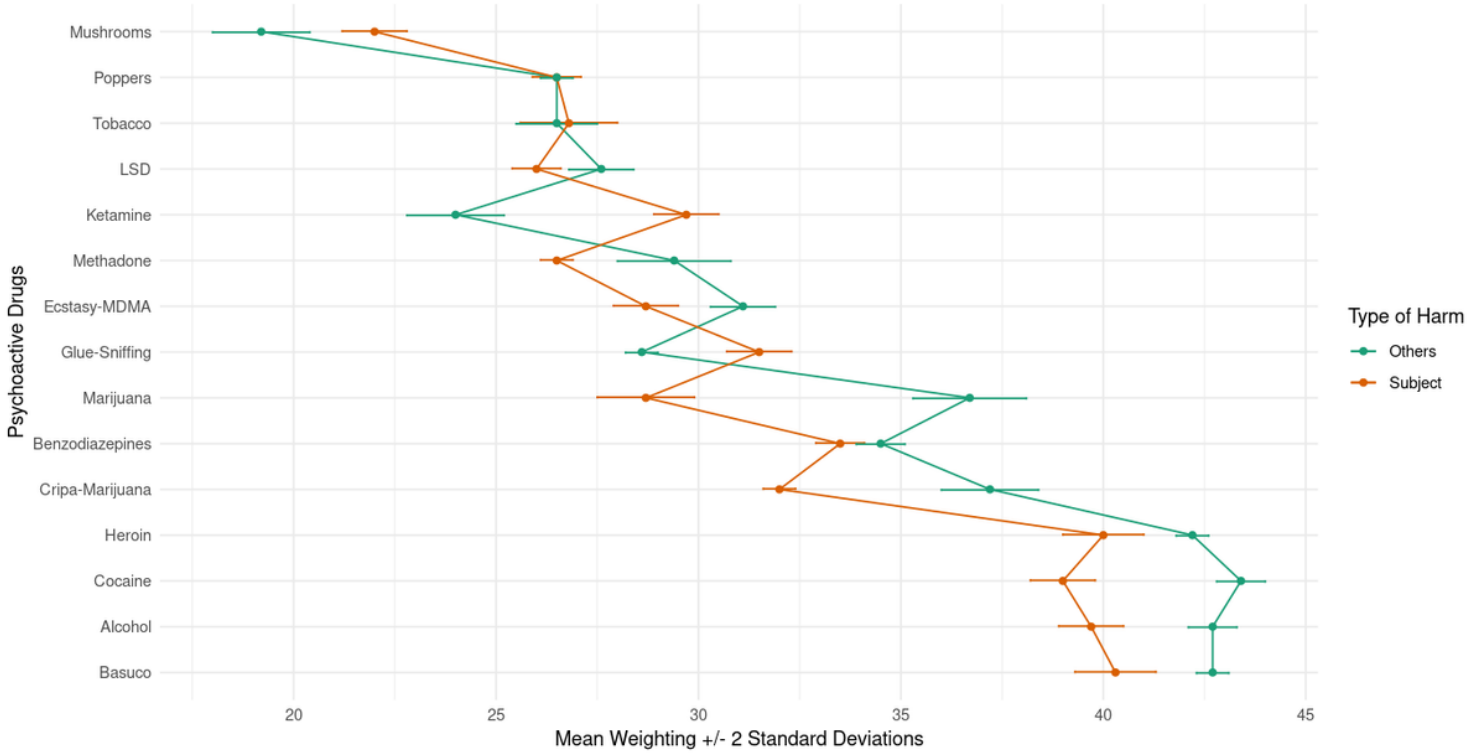

Figure 1

Mean weights and intervals at 2 standard deviations of the types of damages (individual and third parties) of the total global general damage by the result of the consensus of experts.

Font: own elaboration

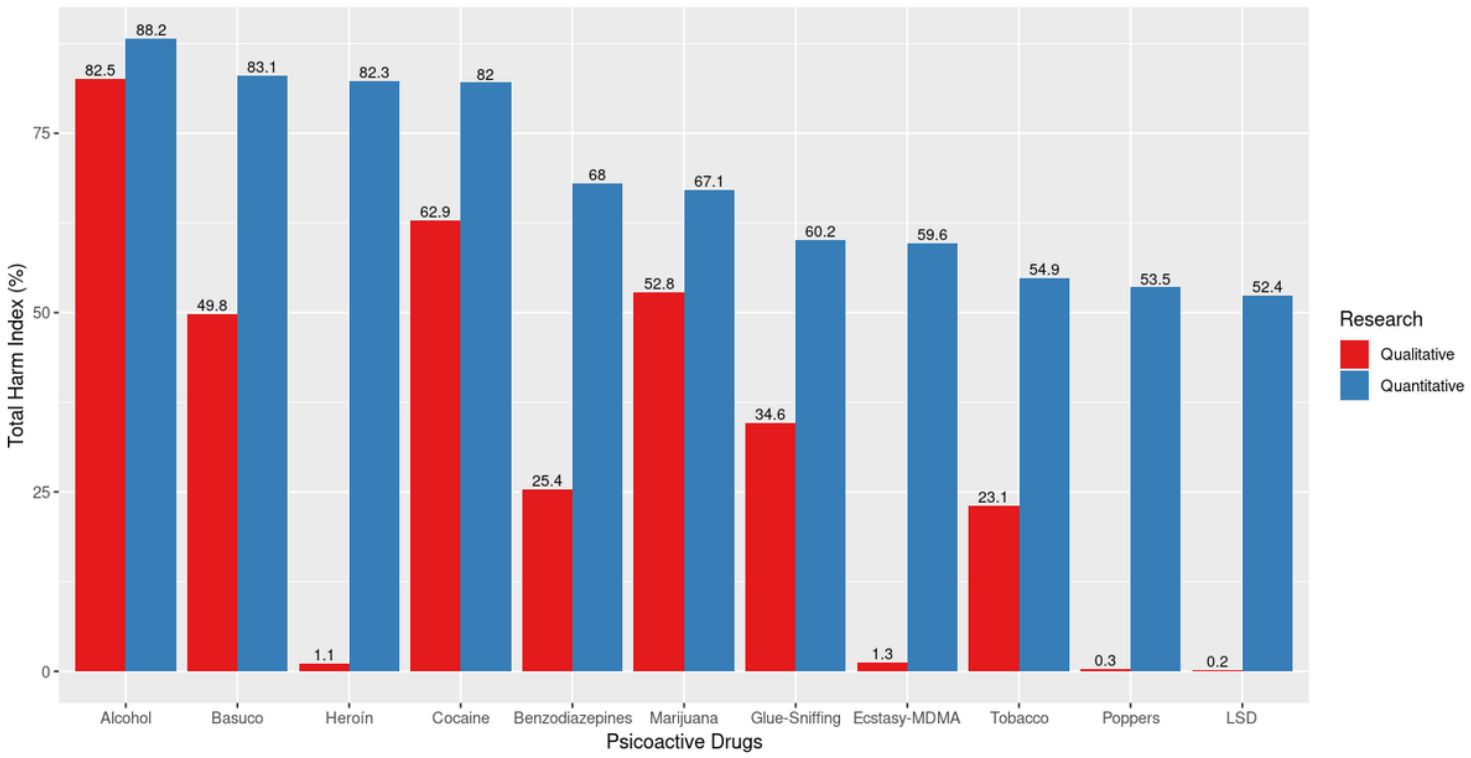

Figure 2

Global overall damage from expert consensus and stakeholder-weighted results

Font: own elaboration

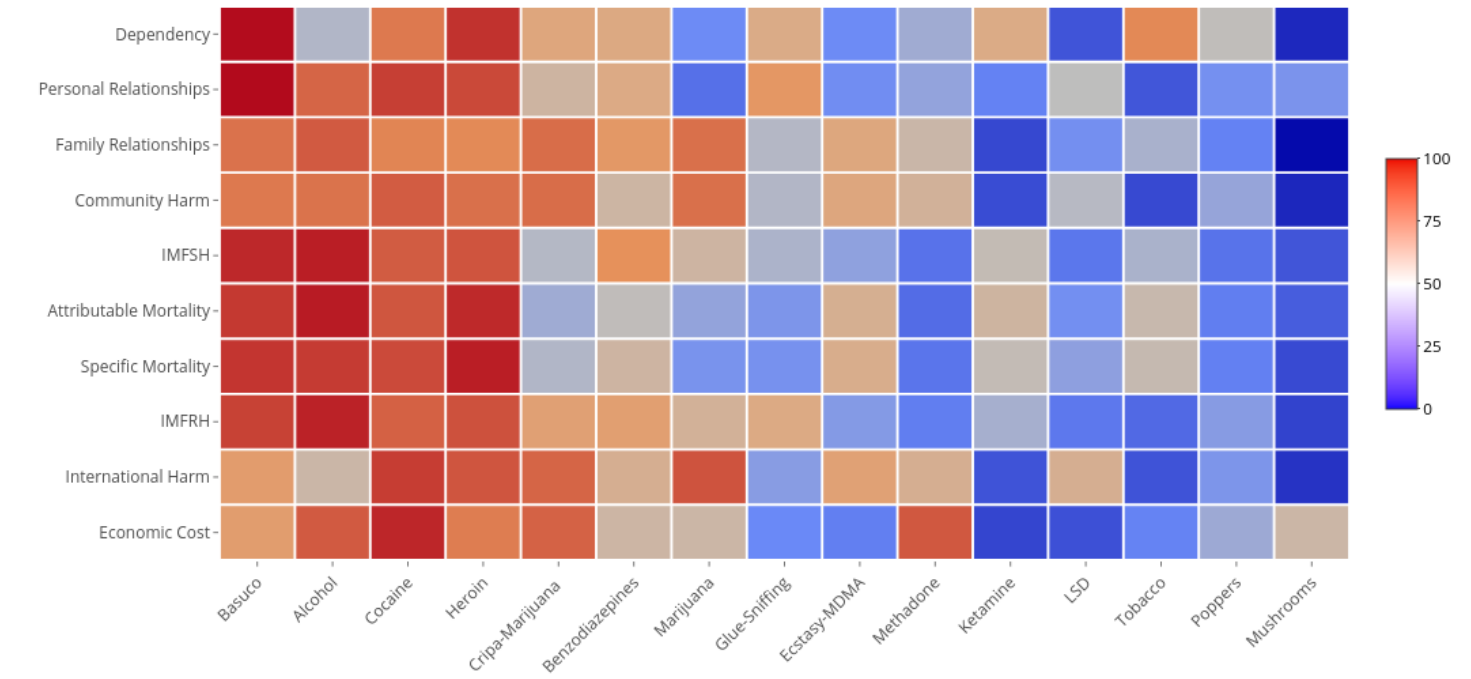

Figure 3

Harm classification according to the global results of the weighting of experts for the 15 psychoactive drugs.

Source: Own elaboration based on the results. Note: More intense colors (tending to red), indicate a greater presence of harm, while cooler colors (tending to blue), indicate less presence of this. IMFSH: Impairment of Mental Function due to Specific Harm, IMFRH: Impairment of Mental Function by Related Harm