Prescription drugs misuse in “clubbers” and disco goers in Ibiza

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Author Contribution

Massimo di Giannantonio and Attilio Negri wrote the manuscript. Chiara Vannini, Juan Iglesias Lopez, Mariangela Corbo, Cristina Merino Del Villar, Attilio Negri and Giovanni Martinotti recruited patients inside the Can Misses Hospital of Ibiza. Stefania Schiavone and Luigia Tarabace performed the statistical analysis. Mauro Pettorruso, Valeria Verrastro, Fabrizio Schifano, and Giovanni Martinotti elaborated the study protocol and performed the translation for scales and questionnaire. Fabio De Giorgio, Rossella Gottardo, Cristian Camuto, and Monica Mazzarino executed the urine analysis in the different centres. Andrea Barra and Domenico De Berardis performed literature search about the topic and elaborated all the ethical procedures required for the study approval in both countries. Giovanni Martinotti coordinated all the study processes.

Abstract

Background: Prescription drugs misuse and its related risks are considered a worldwide public health issue. Current trends show that the extent of such phenomenon may not be limited to subjects with psychiatric disorders, as it also spreads to dance party and nightclub attendees, who often consume prescription drugs in combination with alcohol and psychoactive substances. This study aims to report the sociodemographic data and the psychiatric and clinical features of a sample of clubbers reporting prescription drugs use.
Methods: Patients admitted to the psychiatry ward of the Can Misses Hospital in Ibiza were recruited for the study during a span of four consecutive years (2015-2018). The inclusion criteria were age 18-75 years old and the intake of psychoactive substances or more than five alcohol units during the previous 24 hours. Substances use habits, psychopathological features and use of unprescribed pharmaceuticals were investigated. Urine samples were collected and analysed using Gas Chromatography/Mass Spectrometry.
Results: A total of 110 subjects with psychoactive substance intoxication were recruited for the study. Among these, 37 (40%) disclosed the use of prescription drugs without medical supervision. The most common compounds were benzodiazepines (66%), antiepileptic drugs (8%), antidepressants (6%), opioids (6%), antipsychotics (6%), stimulants (6%) and Non-Steroidal Anti Inflammatory Drugs (NSAIDs, 2%).Prescription drugs misuse was negatively associated with the use of psychodysleptics (Two-tailed Fisher's exact test p=0,018, $\rho = -0{,}262$).
Conclusions: The use of prescription drugs is also common among clubbers, usually characterised by low propensity to be prescribed benzodiazepines, antipsychotics, or antidepressants. Prescription drugs may be an alternative to classic and novel psychoactive compounds or may be used to tamper and self-medicate the effects determined by the use of substances. Party goers should be adequately informed about possible risks of co-intake of psychoactive substances and prescription drugs to prevent serious medical and psychiatric consequences.

Keywords:

Prescription drugs, Club drugs, novel psychoactive substances, psychopathology, Substance Use Disorders

Background

Prescription drugs misuse and related risks, including co-ingestion with recreational drugs, have recently risen as a worldwide public health phenomenon. They may involve a variety of medical and social consequence that require effective public health policies to counteract such habit, as well as continuous updates for health professionals to promote education and harm reduction (Young et al., 2012; Blanco et al., 2007). Prescription medicine misuse or non-medical use is commonly defined as the use of medications without a prescription or in a manner other than prescribed (NIDA, 2020). This includes a number of conditions, such as using these compounds for purposes other than the medical condition they were prescribed for (i.e. recreational use or self-harm), consuming at larger doses or higher frequencies than intended, using an alternative route of administration (e.g. intravenous), or co-using with alcohol or recreational drugs (Bersani & Imperatori, 2018). Studies report that prevalence of misuse of any prescription drug in the United States increased by 67% from 1991–1992 to 2001–2002, while treatment-seeking for prescription drugs use disorders increased by 53% (Blanco et al., 2007). In 2017, 14 countries in EU reported on the non-medical use of such compounds (UNODC 2019). Among the 10,956 drug-related acute toxicity Emergency Room (ER) presentations in the Euro-DEN Plus dataset, approximately 29% involved at least one prescription

medicine (most commonly benzodiazepines and opioids), and 45% of these involved only prescription drugs, with no illicit compounds involved (EMCDDA, 2016).

Current trends show that the extent of prescription drugs misuse is not limited to subjects with psychiatric disorders or co-occurring Substance Use Disorders (SUDs). Admissions to ER and psychiatric intensive care units due to psychotropic pharmaceuticals intoxications involve a heterogeneous cohort of users, including traditional drug users, 'psychonauts' [from the Ancient Greek ψυχή ('soul') and ναύτης ('sailor'), i.e. subjects who define themselves as explorers of the human soul through the use of psychoactive substances], clubbers, students, marginalized populations and individuals with patterns of non-habitual recreational drug consumption (Martinotti et al., 2018). In this context, the phenomenon of co-ingesting prescription drugs in order to imitate, potentiate, modulate, or counteract the effects of prohibited psychoactive substances has been increasingly reported (Schifano et al., 2018). This trend involves not only novel highly potent opioid such as fentanyl and its derivatives, or designer benzodiazepines, but also antipsychotics, antidepressants, stimulants, performance enhancing drugs (PEDs), hormones, vitamins, beta-blockers, gabapentinoids and over-the-counter (OTC) drugs (Schifano et al., 2018).

For example, students and workers may consume attention deficit hyperactivity disorder (ADHD) medications such as methylphenidate to improve their academic performance or working tasks (Young et al., 2012). Gamma hydroxybutyrate (GHB), a drug used for many conditions, has been increasingly associated with practices such as 'chemsex' (Edmunson et al., 2018). Furthermore, compounds such as benzodiazepines (e.g. diazepam, alprazolam), or atypical antipsychotics (e.g. quetiapine, risperidone) are often used by club goers to counteract the effects of psychostimulant drugs, such as cocaine or methylenedioxymethamphetamine (MDMA) (Messina et al., 2016; Vento et al., 2020). Venlafaxine, a selective noradrenaline reuptake inhibitor, has been associated with recreational use at high dosages, earning for itself the name of "baby ecstasy" (i.e. MDMA) (Schifano et al., 2018). With regard to the nightlife and clubbing scene, the situation shows peculiar characteristics. The growing offer of novel and traditional prescription drugs has found a fertile ground in this scenario. Summer holiday periods in popular resorts have historically represented an opportunity for excesses and experimentation, especially among young people who find an environment in which hedonistic partying is socially accepted and drugs are typically easily available (Kelly et al., 2014). Alcohol use, particularly during binge drinking, and psychoactive substances use are commonly reported among festival-goers and clubbers in holiday resorts; practices such as poly-substance abuse and prescription drugs misuse have also been reported (Esser et al., 2019; Busto Miramontes et al., 2019; Grigg et al, 2018; Martins et al, 2017). The use of a variety of pharmaceuticals including benzodiazepines (Kurtz et al., 2005; Kurtz et al., 2017), stimulants (Butler & Sheridan, 2010; Leon & Martinez, 2017), opioids (Palamar, 2019), antidepressants (Schifano et al., 2018) and sedatives such as GHB (Brennan & Van Hout, 2014) has been associated to dance music party attendees. Such heterogeneous cohort of compounds, presented in different forms and with various ways of intake (e.g. ingested, snorted, intravenous), may lead to potential negative medical outcomes, including acute intoxications, SUD and other psychiatric disorders. Nevertheless, pharmaceuticals are often perceived as less harmful and less stigmatizing than illicit drugs, particularly among young people, partly due to these substances' legitimate medical purposes (Hernandez & Nelson, 2010; Kelly & Vuolo, 2019). Moreover, information on the actions of these drugs is widely available in package inserts, advertisements and on the internet, therefore their effects (including adverse reactions) and dosages are considered more predictable (UNODC, 2010).

Such phenomenon is further complicated by the rise on the nightlife market of Novel Psychoactive Substances (NPS). A number of these substances were originally developed as research chemicals and diverted for recreational purposes, as they often mimic the pharmacological effect of traditional drugs of abuse or popular prescription drugs (Bersani & Imperatori, 2018). Their effects and related risks are often unknown to both users and health professionals, due to the scarcity of evidence-based information regarding their toxicological profiles and to the ever-changing nature of this market (Schifano et al., 2003; O. Corazza, et al., 2013; Martinotti et al., 2018). Nevertheless, growing

evidence reported potential acute and chronic psychiatric risks associated to NPS consumption, including confusion, paranoid thoughts, auditory and visual hallucinations, dissociation, delusions of reference, persecution, grandeur and jealousy, cognitive impairment, hypomanic states, aggressiveness and irritability, violence and suicidal thoughts (Kehr J, et al, 2011; Lovrecic B et al, 2019; Schifano et al, 2016; Martinotti et al., 2020).

The current dynamic of recreational substance use is a serious matter of concern for public health institutions worldwide. In particular, the threats posed by psychoactive compounds and concomitant prescription drugs misuse require updated policies provided by local and supranational regulatory agencies, as well as appropriate approaches by health professional, to prevent negative outcomes and reduce associated harms (Santacroce et al, 2017), including deaths (Corkery et al., 2020). In such context, Ibiza and the Balearic Islands, two of the most popular destinations with nightlife resorts for summer holidays in Europe, may be considered as an interesting real life scenario to explore such phenomenon. Previous studies confirmed a higher prevalence of risky behaviours for both residents and tourists in Ibiza, including problematic alcohol use, substances use and sexual disinhibition (Bellis et al, 2000; Bellis et al, 2002; Martinotti et al, 2017). Moreover, it has been reported that traffickers and dealers have introduced NPS and pharmaceuticals into the Ibiza drug market to test new compounds and drugs combinations on unaware customers (Martinotti et al., 2017).

This study aimed to assess patients admitted to the psychiatric ward of the Can Misses Hospital in Ibiza for psychoactive substance intoxication, in order to: (1) identify which psychotropic prescription drugs are mostly involved in cases of concomitant psychoactive substance use and (2) report the psychopathological features and patterns of consumption associated to prescription drugs use in a nightlife resort setting.

Material & Methods

Patients admitted to the psychiatry ward of the Can Misses Hospital in Ibiza during summer when nightclubs are open (May – October) were recruited for the study during a span of four consecutive years (2015-2018). The subjects were evaluated according to the DSM-5 diagnostic classification. The inclusion criteria were age 18–75 years old and the intake of psychoactive substances or more than five alcohol units (i.e. 10ml or 8g of pure alcohol) during the previous 24 hours. Clinical conditions such as *delirium tremens*, epilepsy, liver encephalopathy, dementia and other neurological diseases, severe cardiac failure, diabetes mellitus, severe liver impairment, kidney failure or neoplastic diseases were among the exclusion criteria, as the presence of such conditions could present a confounding factor. Demographic (age, gender, family, nationality) and socioeconomic data (living status, job status, level of education) were collected, as well as recent and past medical and psychiatric history, current pharmacological treatment, alcohol and substance use habits (including NPS), with a specific focus on prescription drugs misuse. Among these, recent and lifetime use of benzodiazepines (e.g. diazepam, alprazolam, lorazepam), ADHD medications (e.g. amphetamine/dextroamphetamine, methylphenidate) and opioid painkillers (e.g. morphine, methadone, oxycodone, fentanyl), as well as other popular prescription drugs (e.g. GHB, gabapentinoids) was investigated.

To explore the different psychopathological aspects related to substance use, such as depressive or manic symptoms, anxiety, psychosis negative and positive symptoms, somatic disorders, aggressiveness, and suicidality, the following psychodiagnostic tests were administered to patients during their hospitalization: Timeline follow-back for psychoactive substances and alcohol (TLFB); Brief Psychiatric Rating Scale (BPRS); Positive and Negative Symptoms Scale (PANSS); Mania Rating Scale (MRS); Hamilton Depression Scale (HAM-D); Hamilton Anxiety Scale (HAM-A); Modified Overt Aggression Scale (MOAS). TLFB was used to identify the main substance of abuse for each patient. The subjects were divided in three macro groups according to the TLFB and the results of the urinalysis: psychostimulants (e.g. cocaine, amphetamines, synthetic cathinones),

depressors (e.g. opioids, alcohol, benzodiazepines), psychodysleptics (e.g. cannabinoids, psychedelics, dissociatives). This classification was derived from our previous reports on the topic (Martinotti et al., 2017; Martinotti et al., 2018).
Data collection was carried out in an anonymous and confidential way; all participants received a detailed explanation of the design of the study and a written informed consent was systematically obtained from every subject, according to the Declaration of Helsinki. Ethics approval was granted by the University of Hertfordshire Health and Human Sciences ECDA, protocol no. aPHAEC1042(03); by the CEI Illes Balears, protocol no. IB 2561/15 PI; and by the University "G. d'Annunzio" of Chieti-Pescara, no. 7/09-04-2015. Majorcan local ethics committee also gave approval to the study.

Urine sample analysis

A urine sample was collected at admission, stored at −30°C and subsequently analysed at the laboratory of the Department of Forensic Toxicology of the Università Politecnica delle Marche, at the FMSI Antidoping of Rome, and at University of Verona, Italy. The urine samples were analysed at FMSI Antidoping of Rome using a routine screening test for drugs of abuse. The urine samples were extracted with a solid phase cartridge (Oasis MCX), the obtained solution was evaporated until dry and reconstituted with mobile phase. An Agilent 1290 Infnity II UHPLC with a binary gradient system and an automatic injector (Agilent Technologies, Cernusco sul Naviglio, Milano, Italy) was used for the chromatographic separation. The instrument was equipped with an Agilent Zorbax Eclipse plus C18 column (100×2.1 mm i.d., particle size 1.8 µm) (Chieffi et al., 2020). The detector was an Orbitrap Q Exactive (Thermo Fisher Scientific) with an ESI source. The method was validated according to WADA guidelines and for a screening method in antidoping test defining selectivity, limit of detection (LOD), recovery, carry over and repeatability (Camuto et al., 2020). The method showed no interference or carry over, LOD <1ng/ml, recovery >70% and repeatability estimated as CV%<1% for all the analytes.
A comprehensive screening of urine samples were performed at both the Unit of Forensic Medicine of the University of Verona and at the Politecnico of Ancona, by using a Toxtyper™ LC/IT-MS platform (Bruker Daltonics, Bremen, Germany) consisting of an ultra-high-performance-liquid-chromatography (UHPLC) coupled to a high-speed ion trap mass analyzer (IT-MS). The instrument applied the analytical protocols provided by the manufacturer and compound identification was provided by using the Maurer/ Wissenbach/Weber (MWW) library containing as many as 4500 therapeutic, toxic/illicit drugs and their metabolites (including NPS) (Gottardo et al., 2020). Prior to injection, urine sample were diluted 1/10 (v/v) with water (van der Schaar et al., 2020).

Data Analysis

Statistical analysis was performed by using IBM SPSS® Statistics software, version 20 and GraphPad 5.0 software for Windows (La Jolla, CA, USA). Fisher's exact test was used to determine whether or not there was a significant association between the categorical variables "abuse of prescription drugs" and "use of distinct categories of psychoactive substances". Spearman's correlation value (ρ) was calculated to determine if variables (abuse of prescription drugs and categories of substances) were positively or negatively correlated. Independent samples *t*-test was used to determine whether or not there was a significant difference in scale scores between subjects who abused and subjects who did not abuse prescription drugs. One-way Analysis of Variance (ANOVA) followed by Tukey's post-hoc test was used to assess whether or not there was a significant difference in scale scores among subjects who abused different classes of prescription drugs. For all tests, a two-tailed p-value < 0.05 was considered statistically significant.

Results

A total of 110 subjects were recruited for the study, with most of them being of European nationality (n=76, 71,8%). Age ranged from 19 years old to 63 years old, with the majority of patients (n=57, 51,8%) under 30 years old. The median age of the 110 patients was 32,57 years. A higher percentage of males (n=76, 69,1%) was reported in our sample. Nine patients were full-time or part-time students (8,1%), 52 (47,3%) were employees and 40 (36,4%) were unemployed.
All the subjects of the sample were diagnosed with substance intoxication at admission. Although the majority of patients declared multiple substance use (n=77, 70,0%) and 33% of them reported the use of more than two substance, the participants were divided in three macro groups according to their responses to the TLFB test and their urinalysis results to identify a category of substances 'of choice' for each patient. Thus, 17 (15%) depressors users, 44 (40%) stimulant users and 49 (45%) psychodysleptics users were identified.
When asked about lifetime use of specific groups of substances, stimulant use was disclosed by 74 patients (32%), and cannabinoids use by 68 patients (29%). These were followed by depressors (n=32, 14%), empathogens-entactogens (n=28, 12%), dissociatives (n=15, 6%), opioids (n=9, 4%), and psychedelic drugs (n=7, 3%). Almost half of the participants (46%) declared to have used a substance without knowing what it was at least once in their life. These results will be described in a separate manuscript (Martinotti et al., in press).
In our sample, 37 patients (40%) disclosed a lifetime misuse of prescription drugs. The most commonly reported compounds were benzodiazepines, which were used by 32 subjects. Table 1 presents the complete information on the type of pharmaceuticals reported by users.

Table 1: The most common substances used by patients who declared prescription drugs misuse

Prescription Drug	N	%
Benzodiazepines (e.g. diazepam, alprazolam)	32	66
NSAIDs (e.g.paracetamol)	1	2
Antidepressants (e.g. paroxetine, clomipramine)	3	6
Antipsychotics (e.g. risperidone, clotiapine)	3	6
Anticonvulsants (e.g. valproate, pregabalin)	4	8
Opioid derivatives and Syntethic opioids (e.g.methadone, fentanyl)	3	6
Stimulants (e.g. Methylphenidate)	3	6

Prescription drugs misuse was reported for eight psycho-depressors (e.g. non-prescription opioids, alcohol) users, 19 psycho-stimulants (e.g. cocaine, amphetamines) users and 10 psychodysleptics (e.g. cannabis, dissociatives) users. The percentage for each group of substances users is reported in Figure 1. Abuse of unprescribed pharmaceuticals was negatively associated with the use of psychodysleptics (Two tailed Fisher's exact test p=0,018, ρ=-0,262).

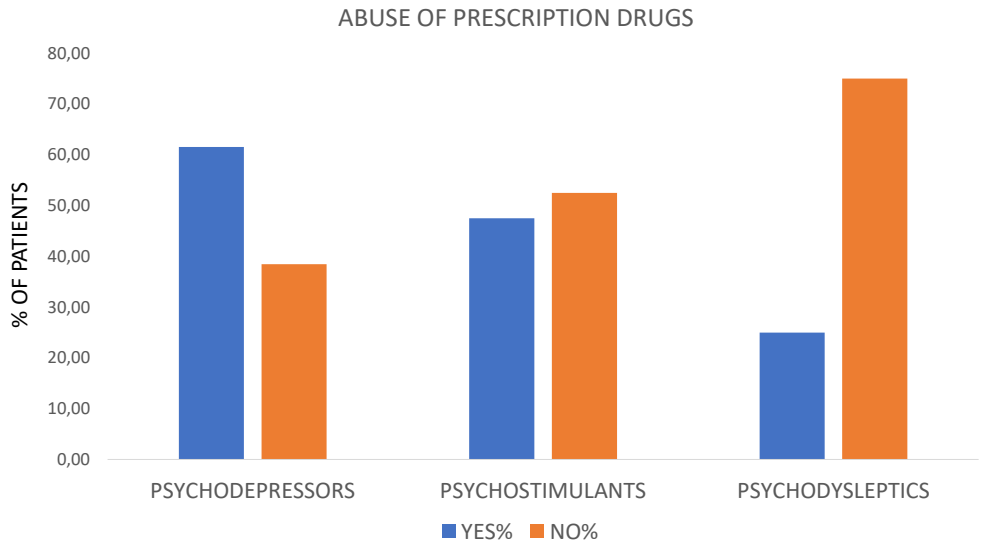
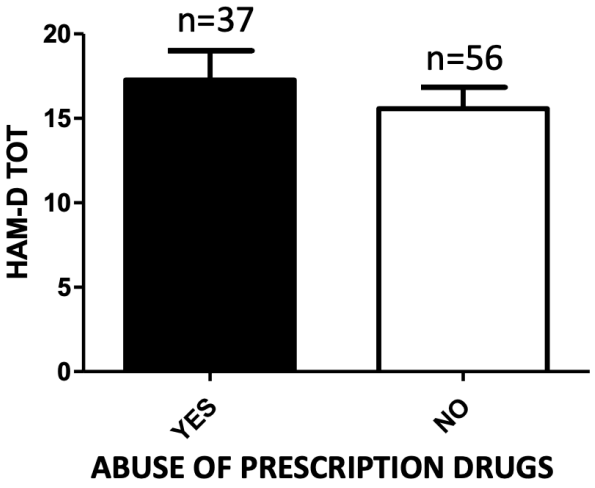


Figure 1: Percentage of patients abusing (YES%) or not abusing (NO%) prescription drugs stratified for the following substance categories: Psychodepressors, Psychostimulants or Psychodysleptics.

According to their lifetime use of specific compounds, prescription drugs consumption without medical supervision was reported by 31 stimulants users, 21 cannabinoids users, 10 depressors users, 7 opioids users, 7 empathogen-entactogens users, 5 dissociatives users and one psychedelic user. The severity of psychiatric symptoms according to HAM-A Psychotic Anxiety scale, PANNS BPRS and MRS were comparable among users and non-users of unprescribed pharmaceuticals. Patients who disclosed prescription drugs misuse tended to report higher scores in HAM-D and HAM-A Somatic Anxiety, although this tendency did not reach the statistical significance (Figure 2)

A



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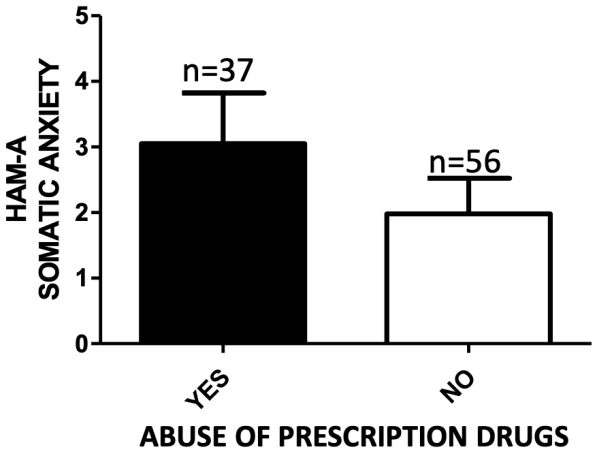

Figure 2 A) HAM-D total score of subjects abusing (YES, n=37) or not abusing (NO, n=56) prescription drugs. Independent samples *t*-test , p >0.05; B) HAM-A SOMATIC ANXIETY scale score of subjects abusing (YES, n=37) or not abusing (NO, n=56) prescription drugs. Student's t test, p >0.05.

One Way Anova analysis for HAM-A Tot (F=0,6808, p>0,05), PANNS (F=1,487, p>0,05), MRS (F=0,4402, p>0,05) and BPRS (F=3,094, p>0,05) did not report any statistically significant difference among users of benzodiazepines, methylphenidate, prescription opioids, anticonvulsants, antipsychotics and antidepressants. A statistical difference was found for HAM-D scores between methylphenidate and antidepressants users (One Way Anova, followed by Tukey's post hoc test, F=3,032, *p<0,05 methylphenidate vs antidepressants) (Figure 3), with higher scores of depression in the group of patients taking antidepressants.

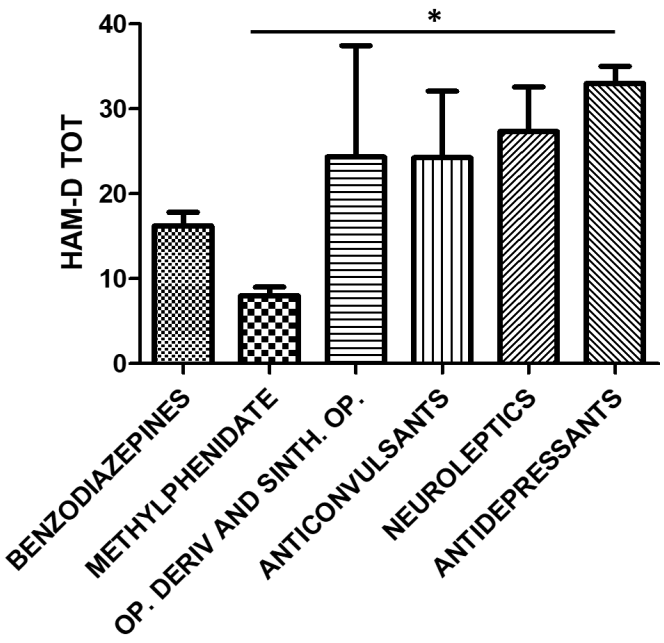

Figure 3: HAM-D total score stratified for the following classes of abused prescription drugs: benzodiazepines (n=32), methylphenidate (n=3), opioid derivatives and synthetic opioids (n=3), anticonvulsants (n=4), neuroleptics (n=3) and antidepressants (n=3). One Way ANOVA, followed by Tukey's post-hoc test, F=3,032, *p<0,05 methylphenidate vs antidepressants.

The most common diagnosis at discharge among the patients who disclosed prescription drugs use was Substance or Alcohol use disorder (n=26, 48%), followed by Schizophrenia spectrum disorders (n=10, 18%) (Figure 4).

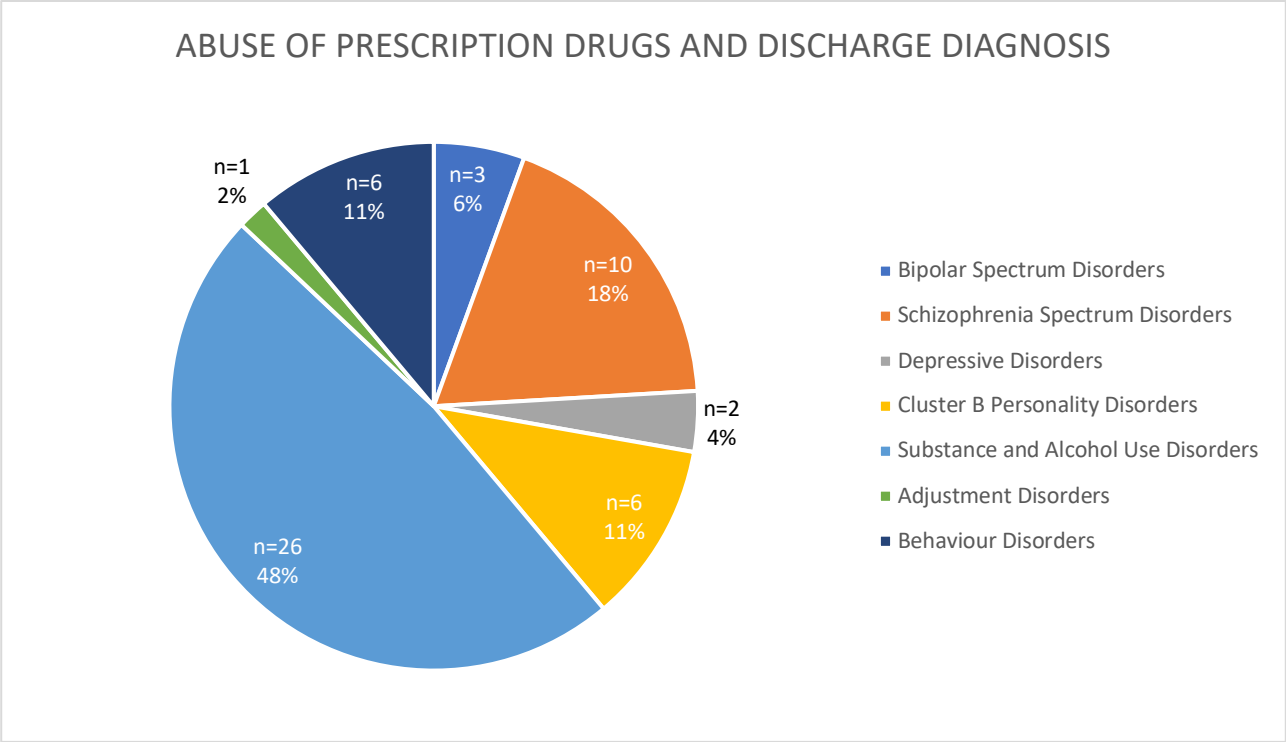

Figure 4 Discharge diagnosis (expressed both as raw number of patients and %) of patients abusing of prescription drugs.

Discussion

Our study evaluated the use of prescription drugs among a sample of clubbers, who were mainly composed of young subjects (more than 50% of the participants being aged under 30) with a medium-high socioeconomic status. Many subjects (40%) reported the use of prescription drugs. Therefore, our results show that such use is not only limited to subjects with psychiatric disorders and co-occurring SUD but can also involve subjects who are usually not considered as typical psychoactive substance users. This data pave the way for serious considerations on the possible pharmacological interactions with alcohol and other substances, as well as on other short- and long-term consequences, both physical and psychiatric. As users may concomitantly consume various prescription drugs and substances of abuse, an increased risk of drug-drug interactions may be observed, both pharmacokinetic (e.g. between prescription opioids and heroin) and pharmacodynamic (e.g. between opioids of abuse and benzodiazepines or other CNS sedative drugs) (Pérez-Mañá et al., 2018). This involves not only depressors, such as benzodiazepines, opioids and alcohol, but also stimulant drugs commonly used by clubbers. For example, metabolic pathways of synthetic cathinones, antidepressants, and ADHD medications have been shown to overlap, including metabolism via cytochrome P450 enzymes and their inhibition (Contrucci et al., 2020).

Benzodiazepines were the most prevalent class of prescription drugs reported in our sample. This result may be explained by the use of benzodiazepines as a 'trip terminator' to calm-down the strong experience caused by the use of multiple substances. This confirms the data from Messina et al., who showed that benzodiazepines and atypical antipsychotics are often used by club goers to counteract the effects of psychostimulant drugs, such as cocaine or MDMA (Messina et al., 2016). In terms of preventive strategies, the use of benzodiazepines in the context of a multiple substance use could be dangerous as it causes respiratory depression and risk of overdoses, specifically in combination with opiates, alcohol, ketamine and derivatives, and inhalants (Kurtz et al., 2017; Riley et al., 2016; Anderson et al., 2020). Specific policies and harm reduction approaches should be advised for these

potentially lethal combinations, particularly with the intake of large amounts of long half-life compounds, such as diazepam. Furthermore, a number of novel designer benzodiazepines, with undisclosed toxicological profiles and variable potencies, has recently been made available in the drug market. They are developed in order to mimic prescription benzodiazepines and Z-drugs, but they may lead users to adverse events of various severities, particularly if used in combination with other substances (Bersani & Imperatori, 2018; Orsolini et al., 2020; Batisse et al., 2020).

Among the different categories of substances, psychodepressors were the most commonly associated with the use of prescription drugs, whereas only a small percentage of psychodysleptics users reported such habit. The typology of subject using psychodysleptics such as LSD, psilocybin, MDMA, ayahuasca and other plants, is characterised by the search for a strong inner experience, spirituality, and high level of emotionality (Hupli et al., 2019; Orsolini et al., 2018). The use of benzodiazepines and antipsychotics can inhibit or temper the perception of these experiences and therefore may not be chosen by users. With regard to antidepressants, which can determine affective blunting and enhance the distance from emotional experiences, the same consideration can be reported.

Interestingly, patients who disclosed prescription drugs misuse tended to report higher scores in HAM-D and HAM-A Somatic Anxiety. This finding emphasises how those patients are the most vulnerable in terms of psychopathological load. In this regard, those who report taking prescription drugs may actually be the subjects with a psychiatric history. A prescription drug may have already been tested for therapeutic purposes and therefore may have made the patient more accustomed to its use out of indication. Moreover, the high level of depression is an issue that needs to be considered and can represent a significant suicidal risk factor in people who misuse alcohol and psychoactive substances. In fact, the use of psychotropics can represent an additional risk factor, given the possibility of a consistent increase in the levels of impulsivity, violence and self-directed aggression due to such drugs. Therefore, it is very relevant to evaluate these patients and to put specific strategies in place to manage these psychopathological manifestations, with a specific focus on the prevention of anti-conservative behaviours.

A further point of interest, although expected, is the presence of high levels of depressive symptoms on the Hamilton scale in relation to the use of antidepressants without a specific medical prescription. This fact suggests how sometimes the use of prescription drugs may not only be related to the goal of 'get high' or to the management of an intoxication, but also to the self-medication need of patients who perceive a sub-levelling of their mood. For this reason, a shared strategy could be justified, even more than in other types of patients with dual disorders. Conversely, methylphenidate use was associated with lower scores at the Hamilton depression scale. This prescription drug with stimulant properties (Guthrie et al., 2003; Sussman et al., 2006), usually indicated for Attention Deficit Hyperactivity Disorder, can probably be chosen by users of psychostimulants as a cheaper alternative to cocaine and amphetamine. In the short run it could also show some antidepressant properties, thus explaining the data observed at the HAM-D. The detection of methylphenidate among the prescription drugs reported in our sample may indicate some level of comorbidity between adult ADHD disorder and SUD, as recently reported (Özgen et al., 2020)

In terms of the role of the discharge psychiatric diagnosis, alcohol or substance use disorder showed a high prevalence, although the diagnoses of schizophrenia and bipolar spectrum disorder were also significantly reported. In some cases, the presence of a psychiatric comorbidity could justify the use of prescription drugs such as antidepressants, mood stabilizers and benzodiazepines. However, the presence of a relevant percentage of addiction diagnoses (Alcohol use disorder and/or Substance use disorder) further confirms that these patients do not typically represent pure psychiatric patients who increase their dosages of prescribed drugs, but are instead classical party-goers who use prescription drugs for other purposes.

Limitations of this study are represented by a low and heterogeneous sample size, with a high prevalence of benzodiazepine as the main prescription drug. Moreover, although the target of the study is that of young clubbers, a significant subgroup of participants were middle-aged adults.

In conclusion, in this study we have highlighted how the use of prescription drugs is common also among clubbers and disco-goers. These subjects usually do not have a previous psychiatric history and share a low propensity to be prescribed with benzodiazepines, antipsychotics, and antidepressants by a mental health professional. These data confirm that prescription drugs may be an alternative for classic and novel psychoactive compounds, may be used to modulate and temper the experience and, in some cases, may be used to reduce the negative effects determined by the use of substances. From the treatment prospective and as a useful preventive strategy, a specific psycho-education process should be indicated for subjects at risk. Party-goers should be adequately informed about the possible risks of co-intake of NPS, classical substances and prescription drugs to prevent serious medical and psychiatric consequences.

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