Clinical and forensic impact of chemsex practices: An overview of the phenomenon

Impacto clínico y forense de las prácticas de chemsex: una visión global del fenómeno

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Resumen

El consumo de drogas en el contexto de chemsex trasciende el mero uso sexualizado de sustancias y responde a un patrón idiosincrásico de base sociocultural en el colectivo LGTBI+ que puede implicar una serie de impactos negativos en personas con mayor vulnerabilidad. Para analizar el potencial lesivo de estas prácticas en diferentes facetas de la salud, se ha realizado una revisión de las principales áreas de afectación y sus posibles repercusiones a nivel médico-sexual, toxicofílico, psicopatológico y forense en función de la estructura de un protocolo biosanitario específico para la evaluación de la gravedad de las prácticas de chemsex. Los resultados mostraron que este uso sexualizado de drogas aumenta el riesgo de padecer consecuencias no deseadas. Entre las mismas, se encuentra la transmisión de ITS, alteraciones psicopatológicas (síntomas depresivos, ansiosos, psicóticos y postraumáticos, entre otros), la muerte por suicidio o por otras causas, comisión de ilícitos penales (agresiones sexuales o delitos de tráfico de drogas, principalmente) o, ser víctima de los mismos. Sin perjuicio de lo anterior, el tipo de afectación es individual y depende de las variables moduladoras de cada persona (de riesgo, de protección y de vulnerabilidad) cuyo resultado se da a consecuencia de una dinámica multicausal que se sustenta en la trayectoria biopsicosocial de quiénes lo practican. Por tanto, desde las políticas públicas se debe promover un abordaje que vertebre una atención personalizada (preventiva y asistencial) para afrontar la adicción o el consumo problemático.

Palabras clave

Chemsex; ITS; impacto en la salud; suicidio; repercusiones forenses.

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Abstract

The use of drugs within the context of chemsex extends beyond mere sexualised drug use and stems from a unique sociocultural pattern within the LGBTQ+ community, which may entail various detrimental effects on individuals with increased vulnerabilities. To analyse the potential harm of these practices across different health dimensions, a review has been conducted on the primary areas of impact and their potential consequences on medical-sexual, toxicophilic, psychopathological, and forensic levels, based on the framework of a specific biosanitary protocol designed to assess the severity of chemsex practices. The results showed that this sexualised drug use increases the risk of experiencing unwanted outcomes. Among them are the transmission of STIs, psychopathological changes (such as depressive, anxious, psychotic, and post-traumatic symptoms, among others), death by suicide or other causes, committing criminal offences (mainly sexual assaults or drug trafficking crimes), or becoming a victim of them. Nevertheless, the type of impact is individual and depends on the modulating variables of each person (risk, protective, and vulnerability factors), the outcome of which arises from a multifaceted dynamic, rooted in the biopsychosocial trajectory of those who engage in it. Therefore, public policies should promote an approach that provides personalised (preventative and care-based) attention to address addiction or problematic consumption.

Keywords

Chemsex; ITD; health impact; suicide; forensic repercussions.

INTRODUCTION

Chemsex involves potential harms to individuals who engage in it. Operationally, it is defined as the intentional use of drugs, primarily methamphetamine, mephedrone (and other synthetic cathinones), and GHB (*gamma*-Hydroxybutyric acid)/GBL (*gamma*-Butyrolactone), and/or, secondarily, other substances, to engage in prolonged sexual activities within the sociocultural context of the LGBTQ+ community, mainly among men who have sex with men (MSM) (Paniagua & Dujo, 2022). The consumption in chemsex has particular and differential characteristics compared to other sexualised drug uses (Soriano, 2022). Depending on the definition of chemsex used and the chosen measurement methodology, significant variations in its prevalence can be recorded. For example, ranging from 3% to 45% among MSM in the last 6 to 12 months (Íncera-Fernández et al., 2021; Sewell et al., 2019).

However, when analyzing the impact of chemsex, its harmful potential varies among those who practice it due to the convergence of risk and protective factors. Risk factors are postulated as elements that increase the probability of suffering harm, and protective factors are those that mitigate the impact. In addition, analogous to the assessment of psychological harm in Victimology, vulnerability is understood as the increased likelihood of suffering a greater impact after experiencing harm (Gutiérrez-Bermejo & Amor, 2019). In chemsex, the degree of vulnerability or "possibility of suffering harm" can depend on multiple factors: pattern and frequency of practices, substances, route of administration, duration of episodes, premorbid state etc.

In light of the above, this article analyzes the potential clinical and forensic impacts of chemsex practices from an interdisciplinary perspective.

METHODS

To analyze the potential impacts of chemsex practices, we used the theoretical framework, psychometric definition (operational, semantic, and syntactic), and the four-dimensional model based on empirical relationships (semantic definition) by Paniagua and Dujo (2022) as a reference. The areas of impact described in this model were followed as a framework for organizing the subheadings of the results analysis. These areas encompass: medical-sexual, psychopathological, toxicophilic, and forensic spheres.

Following this structure, a literature review was conducted in clinical and forensic academic bibliography. The temporal scope of the search has been limited to the last five years, except in cases where a lack of data necessitated expanding this range.

RESULTS

1. Impact on the Medical-Sexual Health Sphere

First of all, references on the evolution of the prevalence of Sexually Transmitted Infections (STIs) in the overall population, data from the *Red Nacional de Vigilancia Epidemiológica* (RENAVE, 2023) indicate an increase in the diagnosis of STIs and a decrease in the transmission of the Human Immunodeficiency Virus (HIV). Between 2010 and 2021, gonorrhea grew 19.16%, syphilis 8.5% (2014-2021), and chlamydia 18% (2016-2021). Except for chlamydia, bacterial infections were more prevalent in men: gonorrhea (83%), syphilis (86.6%), and lymphogranuloma venereum (98.8%). Pre-exposure prophylaxis for HIV (PrEP) and antiretroviral treatment (ART) demonstrate high clinical efficacy as preventive interventions for HIV transmission (Del Romero et al., 2019).

Secondly, concerning evidence on the potential impacts of chemsex on sexual health, a retrospective analysis by Ayerdi, Vera, Arias et al. (2021) in MSM on PrEP (2017-2019) revealed that 47% consumed mephedrone, 56% GHB, and 25% methamphetamine; drugs associated with chemsex. Among those who claimed consumption, 84%, 87%, and 89%, respectively, reported not using condoms under their effects. Chemsex was a risk factor for STI transmission (*RR* = 1.363; 95%*CI* [1.12 – 1.66]; $p = .002$).

In 253 recent seroconverters (SCVr) in Madrid (2014-2019) (Ayerdi, Vera, Puerta et al., 2021), the consumption of mephedrone (16.2%), GHB (24.5%), and methamphetamine (7.1%) was associated with unprotected anal sex in 100%, 95.2%, and 9.5% of cases, respectively. 70.4% of SCVrs attributed transmission to a known contact through contact apps.

Internationally, considering data available for MSM, MacGregor et al. (2021) analysed a European sample of 9,375 individuals (EMIS-2017). In those HIV-positive men, the consumption of stimulant drugs to intensify/extend sexual activity (last year) increased the prevalence of syphilis (*aOR* = 2.6; 95%*CI* [1.7 – 4.1]; $p < .001$), gonorrhea (*aOR* = 3.9; 95%*CI* [2.6 – 5.8]; $p < .001$), and chlamydia

(*aOR* = 2.9; 95%*CI* [1.9 – 4.3]; $p < .001$) compared to those without such drug use. Similar results were observed in PrEP users who reported consumption of stimulant drugs to intensify/extend sexual activity (last year), for syphilis (*aOR* = 1.9; 95%*CI* [1.1– 3.3]; $p < .018$), gonorrhea (*aOR* = 2.9; 95%*CI* [2.0 – 4.2]; $p < .001$), and chlamydia (*aOR* = 1.9; 95%*CI* [1.3 – 2.8]; $p < .001$) compared to PrEP users without such consumption.

Marcus et al. (2023) observed in a study with 9,219 MSM that practicing chemsex increased the incidence of STIs 1.62 times (*aOR* = 1.62; 95%CI [1.32 – 2.0]). The heterogeneous behavioral elements of chemsex position it as a risk factor for STI transmission according to latent class analysis (Slurink et al., 2020).

2. Impact Related to Drug Consumption

The early writings on chemsex by David Stuart (2013) highlighted an increase in substance abuse in sexual contexts, emphasizing three drugs known as "Chems": methamphetamine, GHB/GBL, and mephedrone. Recent systematic reviews include studies that have also identified the use of other substances in this context, such as ketamine, other synthetic cathinones, cocaine, MDMA, etc. (Amundsen, 2023; Paniagua & Dujo, 2022). Polydrug use is common in the context of chemsex (Ministerio de Sanidad, 2020; Paniagua, 2021).

In chemsex, intravenous drug administration (known as "slam"), although in a minority, increases the risk of serious clinical impacts such as psychopathological and autolytic alterations (including suicidal), paranoia, aggressiveness, as well as tissue injuries or infections. Here, the most commonly used substances are synthetic cathinones and methamphetamine, including less prevalent ones. Injected methamphetamine causes severe physical and psychological damage (Knoops et al., 2022; Ministerio de Sanidad, 2020). In Spanish samples (n = 564), 10.8% of mephedrone consumers and 8.7% of methamphetamine consumers (last year) used the injection route (Íncera, Gámez, Ibarguchi et al., 2021).

Chemsex is an unstable phenomenon that may involve different substances depending on the local drug market. Approaching chemsex requires understanding the reality of each local scenario and its connection to the global context (Ministerio de Sanidad, 2020). The impact of consumption transcends the biomedical level and can potentially affect multiple spheres of the individual and society. This makes clear the complexity of the phenomenon, as evidenced in the literature concerning the clinical and forensic impacts of the substances most commonly consumed in this context.

The case of γ-hydroxybutyric acid (GHB)

The risk of acute intoxication by GHB is attributed, on one hand, to the consumption context (low risk perception) and the physiopathological mechanisms of the molecule. According to its behavioral pharmacology (dose-dependent effects) and compared to other drugs, GHB presents a therapeutic index of 8, while cocaine has a therapeutic index of 15, and heroin of 6. This narrow margin of safety is the primary danger of GHB, exacerbated by policonsumption of another depressant (Trombley et al., 2021),

increasing the risk for a lethal toxidrome (Galicia et al., 2019). Acute GHB intoxication or pharmacodynamic analogs such as GBL (γ-butyrolactone) or 1,4-butanediol (1,4-BD) manifests with a sudden loss of consciousness and a comatose state; GBL and 1,4-BD ("unregulated" alternatives to GHB) are more lipophilic than GHB and have a faster absorption, leading to greater unpredictability of their effects (Dufayet et al., 2023).

Moreover, GHB dangers goes beyond the biomedical context. In situations where a person suffers harm, and chemsex partners do not seek help, they could be charged with a crime since they "provide assistance" (Article 195 of the Spanish Penal Code). Additionally, GHB-induced sedation increases the risk of drug-facilitated sexual assaults (DFSA) due to the advantages it offers the perpetrator over the victim and its narrow toxicological detection window, recommended within less than 6 hours (Trombley et al., 2021). GHB is endogenous in mammals so, from a forensic perspective, determining its exogenous presence is crucial (UNODC, 2011). However, opportunistic DFSA due to chemical vulnerability in self-consumption is common (Carthy et al., 2021).

Epidemiologically, GHB was the fifth most reported drug by hospitals in the Euro-DEN Plus project in 2020, present in 11% of emergency room visits for acute toxicity and in 35% of intensive care unit admissions (OEDT, 2022). In 2021, the Hospital Clinic de Barcelona reported 209 GHB-related intoxications, representing 26.8% of admissions for psychoactive substances, linked to chemsex profiles (Euro-DEN plus, 2023).

In summary, the harmful capacity of GHB and its pharmacodynamic analogs is in its clinical and legal consequences. This underscores the importance of a comprehensive scientific-legal approach in problematic consumption.

Acute intoxication by mephedrone and other synthetic cathinones

Synthetic cathinones are a pharmacological family with amphetamine-like properties. They have a structure of β-ketophenethylamine and their molecular alterations allow the design of new psychoactive drugs (NPS). A total of 222 cathinones have been identified in three toxicological databases (Schifano et al., 2019). Despite their heterogeneity, they can be classified based on their pharmacological profile regarding their effects on dopamine (DAT), serotonin (SERT), and norepinephrine (NET) transporters (Schifano et al., 2019) or according to the inhibitory ratio of DAT to SERT (Luethi & Liechti, 2020), resulting in four groups: 1) Mixed action on DAT, SERT, and NET (DAT/SERT Ratio ≈ 1; mephedrone). 2) Greater inhibitory potency on SERT than DAT (DAT/SERT Ratio < 0.1; releasing more 5-HT and NE; methedrone, MDMA analogs). 3) More selective for DAT, greater release of DA and NE than 5-HT (DAT/SERT Ratio > 10; amphetamine analogs: methcathinone and 3-MMC/mephedrone). 4) With pyrrolidine in α carbon (DAT/SERT Ratio > 100: "alpha" or α-PVP and MDPV). The presence of pyrrolidine in the α carbon of the terminal amine increases lipophilicity, providing enzymatic protection and a high distribution volume (Lugo-Vargas et al., 2020). The potency of MDPV is approximately 50 and 10 times greater than cocaine on NET and DAT blockade, respectively (Baumann et al., 2013), similar to "alpha" or α-PVP (Nelson, 2021).

Acute intoxication by synthetic cathinones can lead to an excited delirium, a syndrome of extreme agitation and decreased consciousness as a neurophysiological response (Penders et al., 2012). It underlies an abnormality in the catecholaminergic cellular metabolism of a vulnerable nervous system. Symptomatic intensity varies from hypoactive states to disorganised and aggressive states with psychosis and paranoia (Martín Cazorla, 2021). At high doses, sympathetic and psychotic symptoms are common (Lusthof et al., 2011), such as delusions, paranoia, and hallucinations where the person perceives the environment hostilely (Benzer et al., 2013; Penders et al., 2012). The onset of a sympathomimetic or serotonergic syndrome can be lethal (Domagalska et al., 2021), especially in the presence of rhabdomyolysis, hyperkalemia, hyperthermia, renal failure, cardiopulmonary arrest (Penders et al., 2012), under stress-induced cardiomyopathy (Martín Cazorla, 2021), or valvulopathy mediated by the toxicity of prolonged activation of 5-HT_{2B} receptors due to chronic consumption of amphetamines (Luethi & Liechti, 2020). The practice of chemsex correlates with cardiac toxicity and dysfunctions in thermoregulation (Donnadieu-Rigole et al., 2020).

From a clinical-forensic perspective, Paniagua and Dujo (2019) developed a sequential theoretical model that facilitates the functional behavior assessment and associated psychopathology in mephedrone intoxication, extendable to other synthetic cathinones (Paniagua & Dujo, 2022b). The model highlights a continuum between agitation and psychotic and affective symptoms modulated by vulnerability factors: duration of consumption, insomnia and lack of apetite, intravenous route, and cathinone typology (especially with pyrrolidine), polydrug use, paranoia, stress, and hyperthermia. Impairment associated with consumption can trigger suicidal ideation and consummation. In Spain and Europe, there has been an increase in treatment demands for synthetic cathinone consumption since 2016, especially after the COVID-19 pandemic (EMCDDA, 2023b).

However, the adulteration or mixture of various cathinones in a single sample exacerbates the risk. The potentiated-effect, along with possible voluntary polydrug use, increases the unpredictability of effects. Understanding the drug market is crucial for designing preventive and surveillance strategies, mitigating the impacts of chemsex, and opening avenues for harm reduction, especially when substance illegality precedes the emergence of NPS with unknown effects.

Methamphetamine in Chemsex

In Spain, there is evidence of the growth of methamphetamine supply, derived both from small local production laboratories and large seizures in international drug trafficking operations, with users engaged in chemsex being one of the target populations for this consumption (Ministerio de Sanidad, 2023). In 2022, 81,026 kg of methamphetamine were seized, representing a 28.72% increase compared to 2021 (Ministerio del Interior, 2021).

The consumption of methamphetamine, also known as "*tina*," in chemsex is common (Íncera, Gámez, Ibarguchi et al., 2021) and may interact with some antiretrovirals. This is particularly relevant when considering toxic psychosis and its management with antipsychotics that can increase the interaction (Garvín et al., 2021). Chronic use

is associated with a high level of dependence, psychopathologies such as depression and/or psychosis, and the transmission of bloodborne viruses through intravenous use, with this route being especially harmful (Soria, 2021).

3. Psychopathological Impact

Various theories describe the psychological basis of chemsex from the perspective of mental health, converging on the existence of vulnerability variables that promote the development and maintenance of problematic habits (Curto et al., 2020). According to Paniagua (2021), from a sociocultural perspective, belonging to the LGBTQ+ community may involve exposure to a stigmatizing and discriminatory environment. The experience of threatening events, along individual vulnerability, can be hypothesised as one of the causes of abusive drug use in chemsex, whose hedonic value is used to mitigate negative emotional states as a coping method.

Epidemiologically, there are clinical trends among those who practice chemsex. A systematic review (n = 12) observed that 75% of the studies linked chemsex practice to mental health problems. The most documented symptoms being: depressive (50% of the articles), anxious (33%), suicidal ideation (25%), and substance abuse and psychotic symptoms (16.67%), especially in people who inject drugs (Íncera, Gámez, and Moreno; 2021). However, the authors emphasize the importance of considering individual trajectories. A causal link between chemsex and observed psychopathology cannot be established. These findings align with epidemiological data from surveys such as Zaro et al (2016), EMIS (2017), Homosalud (2021), and Íncera, Gámez, Ibarguchi et al. (2021) as analysed by Paniagua (2021). Significant differences exist between chemsex and non-chemsex users in scales for anxious-depressive symptoms and psychological traumas (Bohn et al., 2020).

Regarding psychotic symptoms, the systematic review (n = 10) by Moreno-Gámez et al. (2022) estimates a prevalence of 6.7% and 37.2% (higher than the general population), usually comorbid with other psychopathologies. Psychosis was associated with the consumption of smoked/injected methamphetamine and injected mephedrone, with polydrug use and various stressors as risk factors for its onset.

From the perspective of Victimology, using damage assessment methods (Dujo et al., 2022; Gutiérrez-Bermejo & Amor, 2019), practicing chemsex is not always a necessary and sufficient cause to generate harm. Instead, along with other co-causes or vulnerability variables, it can exacerbate a pre-existing mild or subclinical injury. Thus, the impact of chemsex is the result of a multicausal dynamic inherent to individual vulnerability.

Deaths and suicides related to chemsex

One of the inevitable consequences of drug use is death (UNODC, 2022). According to the Dirección General de Salud Pública (2022), in the Community of Madrid, 4 deaths linked to chemsex have been recorded (average age: 40.0 years; SD = 12.9). The substances detected in toxicology tests were mephedrone, other cathinones, GHB, methamphetamine, and ketamine. Reporting mortality associated with chemsex provides insight into the social, health, and forensic impact, and allow the monitoring of the severity

of the phenomenon. However, Carthy et al. (2021) highlight that the number of deaths in chemsex is underestimated. The analysis of the Spanish national notification protocol shows that this hypothesis may be plausible in the case of chemsex.

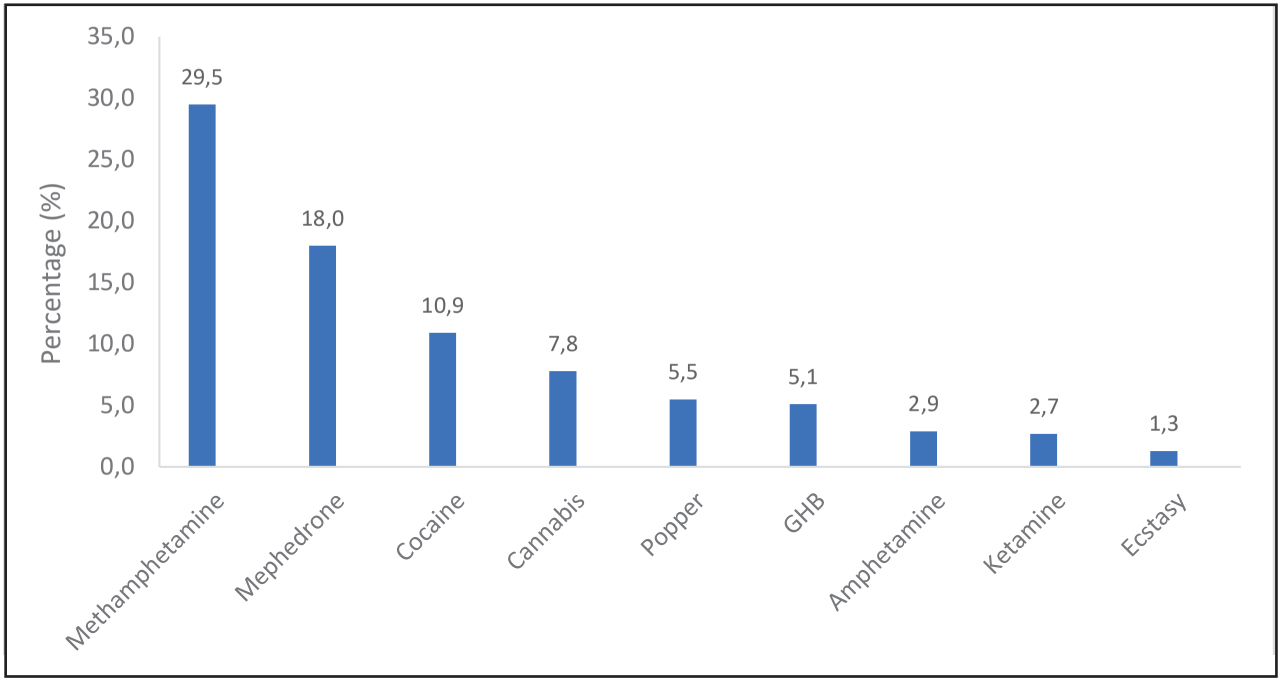
The RASUPSI mortality indicator (Spanish acronym of Acute Reaction to Psychoactive Substances) records deaths due to acute adverse reactions after recent (7 days) non-medical and intentional consumption of psychoactive substances in individuals aged 10 to 64 years in a specific geographic area (OEDA, 2003). The RASUPSI death registry follows a protocol with inclusion and exclusion criteria. However, deaths indirectly related to consumption, such as infections, homicides, accidents, and suicides not attributable to poisoning or intoxication, are exclusion criteria. In other words, the RASUPSI death protocol does not encompass the entirety of the impact of chemsex. Therefore, the number of people who, due to their experiences related to chemsex, have opted for suicide is unknown.

Suicide is defined as the intentional act of ending one's own life; however, it is a multicausal phenomenon that encompasses various dimensions, such as suicidal ideation, self-harming behavior, parasuicide, suicide attempts (with greater or lesser lethality), and completed suicidal behavior (Gvion & Apter, 2011; Gvion & Levi-Belz, 2018). Its multicausality involves numerous associated risk factors (see Figure 1), with one of the most prominent being psychopathology. It is estimated that 90% of individuals who die as a result of completed suicide meet criteria for some mental disorder. The lifetime prevalence of mental disorders is 2.41 times higher in LGBTQ+ individuals (*OR* = 2.41; 95%*CI* [1.91-3.02]) (Meyer, 2003). Major depression, cluster B personality disorders, schizophrenia, and substance abuse are categories frequently correlated with lethal suicidal behavior (O'Connor & Nock, 2014). Post-traumatic stress is also related. Individuals who have experienced childhood and lifelong traumatic experiences have a higher risk of lethal suicide attempts (López-Castroman et al., 2015).

The relationship between psychopathology and suicide is not strictly direct; it is mediated by variables such as personal suffering (continual experience of negative emotions), interpersonal factors (limited interaction and lack of social support) (Levi-Benz et al., 2013), personality, cognitive core beliefs, hopelessness, and a lower tendency to openness or difficulty expressing intimate information (Levi-Belz et al., 2020). Another relevant element is decision-making. This cognitive domain can be affected in cases of substance abuse (severe addiction, intoxication, withdrawal, and craving) common in chemsex (Paniagua & Dujo, 2022). Traumatic experiences increase the probability of suicide attempts (Husky et al., 2017). Studies with chemsex users highlight the presence of social problems and traumatic events in their history, with their impact being mediated by substance use, maladaptive coping (Mustanski et al., 2007), and deficits in emotional regulation (Fassbinder et al., 2016). It is particularly relevant to consider predisposing factors such as childhood sexual abuse, disruption of social-familial ties, or traumatic events associated with chemsex (retraumatization). The impulsivity-aggression variables in suicidal behavior (trait and state) are very relevant and involve deficits in self-regulation, decision-making without considering conse-

Figure 1. Model of risk factors involved in suicidal behavior

Figure 1: Drugs that most concerned GBMSM[1] engaged in chemsex sessions in the last 12 months (n=779).



Adapted from: Gvion and Levi-Belz (2018)

quences, impaired inhibitory control, and a tendency for immediate gratification (Gvion, 2018). These factors may be present in the individual's habitual repertoire (personality) or arise due to a habitual pattern of consumption or pharmacological circumstances (particularly in chemsex). In 203 cases of suicides related to NPS, the presence of cathinones was observed in more than half (Elliott & Evans, 2014).

Within the framework of psychopathology and personal suffering (as a modulating variable), the importance of communication and openness stands out. Difficulty in expressing feelings and seeking help (less openness and greater loneliness) is identified as a risk factor for lethal suicidal behavior (Gvion et al., 2014). This is especially relevant concerning predisposing variables related to the lack of social support, experiences of discrimination, and revictimization in the context of chemsex. The history of previous suicide attempts is a key predictor due to the repetition of self-injurious approaches, leading to habituation to the experience of pain and associated feelings (Joiner et al., 2009). In line with this, MSM have a 4.28 times higher risk of suicide in their lifetime (*RR* = 4.28; 95%*CI* [2.32, 7.88]) (King et al., 2008). Although suicide linked to chemsex presents heterogeneous data (Strasser et al., 2023), the relationship between psychopathology and consumption (Chippiani et al., 2021) and the vital risk that their synergy entails is evident.

4. Legal and Forensic Impact

Chemsex practices can have impacts on various facets of sexual, physical, mental, and social health. These outcomes may become more frequent when chemsex is intensified and prolonged. Additionally, they encompass areas that directly affect the functioning and development of society, including the legal context.

Chemsex, by its very nature and within the Spanish legal framework, exposes those who practice it to situations of risk for the commission or experience of criminal offenses. From the perspectives of Criminology and Victimology, certain situations potentially constituting criminal acts can significantly disrupt the lives of those involved. The two most prevalent scenarios are described below: sexual assaults and crimes against public health (drug trafficking).

Sexual crimes (Arts. 178-180 of the Spanish Penal Code)

Following the modification of law (Ley Orgánica 10/2022), the Spanish Penal Code, in Article 178, defines sexual assault as "*any act that violates another person's sexual freedom without their consent*", aggravating the penalty in cases where "*the victim had her will annulled for any reason*" (Art. 179), especially when "*the victim's will has been annulled by supplying drugs, substances, or any other natural or chemical substances suitable for that purpose*" (Art. 180.7), which can result in a prison sentence of up to fifteen years for the offender. The comprehensive protection measures outlined in the specific legislation on sexual assaults (Ley de garantía integral de la libertad sexual: LO 10/2022), or the "*only yes means yes*", do not apply to men (Art. 3). However, MSM victims in chemsex, if applicable, can receive assistance under the "Law on aid and assistance to victims of violent crimes and sexual freedom

offenses." (Ley de ayudas y asistencia a las víctimas de delitos violentos y contra la libertad sexual: LO 35/1995). According to Articles 2 and 4, evidence of "*serious injuries that impair physical or mental health and incapacitate temporarily or permanently*" must be provided. However, the law presupposes certain incompatibilities (Art. 5) that make individuals vulnerable, especially if they are in an irregular administrative situation (Art. 2) (Paniagua et al., 2022).

In light of the above, a comprehensive forensic psychological evaluation is essential to establish a causal link between psychopathological alteration and criminal activity. This includes probabilistic estimation of causality, a differential diagnosis related to potential harm caused by chemsex, and determination of the degree of functional impairment due to drug abuse as a differential diagnosis. These aspects are approached from Victimology, considering the hypothesis of possible malingering/exaggeration and potential revictimization (Dujo et al., 2022).

However, from the offender's perspective, the mere practice of chemsex presents multiple risk factors with significant predictive potential for the commission of sexual assaults (Paniagua et al., 2022). This is consistent with definitions in general contexts, analogous to actuarial assessment methods for predicting the risk of sexual violence (Herrero, 2018; Tharp et al., 2012). In theoretical and probabilistic terms, it could be asserted that the practice of chemsex increases the risk of non-consensual sexual acts that may constitute offenses against sexual freedom.

Epidemiological information confirms this. In Spanish national samples, Cabezas et al. (2021) observed a prevalence of sexual violence of 30.6% (n = 229), with 27.1% reporting having been raped. These findings align with international values, where the rate of sexual assaults in chemsex is 32.4 times higher compared to the non-chemsex group (aOR = 32.4; 95%IC [14.2 – 73.8]; p < .05) (Wilkerson et al., 2021). Bohn et al. (2020) estimated the prevalence at 47.2% (p = 0; phi = 0.194). Finally, the offense against the personal image (Title X of the Spanish Penal Code), although not constitutive of a sexual assault, has victimological impact. Given the sexualised component of drug use, recording and distributing without consent can cause psychological harm that violates the law. Sexual assaults on men in chemsex involve significant stigmatization. The processes of secondary victimization constitute a "double injury" (Gutiérrez-Bermejo & Amor, 2019) since, as affirmed by the Council of Europe (2020/C 76/13), the judicial process is a form of victimization in itself.

The interaction of Forensic Psychology and chemsex not only involves the perpetrator and the criminal offense but also the victim. From a forensic perspective, the forensic psychologist must evaluate the potential psychological damage resulting from sexual assault or impairment of consent, considering all individual and environmental variables involved in violence (Dujo et al., 2022) (see Figure 2). Chemsex involves numerous factors associated with victimogenesis. Risk behaviors, disinhibition induced by substances, and its role in issues such as consent and dynamics of coercion and sexual aggression associated with consumption/overdose must be considered (Drückler et al., 2021).

Figure 2. Expert assessment model in chemsex from the perspective of forensic psychopathology

Crimes against public health (Articles 359-378 of the Spanish Penal Code)

The Spanish Penal Code penalizes those who "*promote, favor, or facilitate the illegal consumption of drugs*" (Art. 368) and those who "*manufacture, transport, distribute, trade, or possess equipment, materials, or substances listed in Annex I and Annex II of the United Nations Convention*" (Art. 371). The regulated chemical substances are detailed in the Annexes of legislation "Real Decreto 2829/1977" with subsequent modifications by Ministerial orders and European directives.

In the idiosyncrasy of chemsex, there is evidence of an increase in the consumption of NPS such as synthetic cathinones and GHB and pharmacodynamic analogs, notwithstanding a general toxicophilic profile. Part of this increase is due to molecular modifications of the drug, allowing it to evade international scrutiny. An example is the regulation of mephedrone (4-methylmethcathinone) by Spanish Ministerial Order SCI/2011/2011, which led to an increase in the consumption of metaphedrone (3-methylmethcathinone) and clophedrone (3-chloromethcathinone), regulated a decade later by Ministerial Order SCO/136/2023 following European directive UE/2022/1326.

However, the hidden impact of the drug trafficking of synthetic cathinones is reflected in the data from the Statistical Yearbook of the Ministerio del Interior (2022). For that year, 2.5 tons of 3-MMC (2,517,170 grams), 293.75 kg of chloromethcathinone, 28,566 kg of 4-MEC, 1.31 kg of mephedrone, 390.48 kg of other synthetic cathinones, and other derivatives in smaller quantities were seized. It is challenging to make a year-on-year comparison; nevertheless, the data indicate an active and heterogeneous market for cathinones in Spain. Variations in the molecular structure of synthetic cathinones and possible adulterations pose serious risks to consumers. Understanding the type of substance consumed by chemsex users is highly relevant in terms of health, politics, legality, and forensics.

The same occurs with GHB (regulated by Ministerial Order SSI/806/2014) but not with its analogs: GBL (*gamma*-butyrolactone), an industrial substance, or 1,4-BD (1,4-butanediol); both metabolize in vivo to GHB after ingestion. This "unregulated" situation in NPS allows their commercialization online and even generates a false awareness of their legality and safety among chemsex users.

In the context of chemsex, it is common for the user to move between home and other locations while under the influence of substances and presumably carrying them. This could constitute a criminal offense if intercepted in public or in venues during raids (Art. 371 Spanish Penal Code) when it could actually be considered cases of self-consumption in response to an addiction. The Spanish Penal Code itself contemplates as a mitigating circumstance (Art. 21.2), an exempting circumstance (Art. 20.2), or another analogous circumstance modifying criminal responsibility. This suggests the need to establish specific legal approaches for cases related to chemsex, such as specialised forensic expert assessments.

DISCUSSION

It is essential to address the issues associated with chemsex through specialised and comprehensive public health policies to reduce individual and social impact. The use of selective and indicated preventive strategies at primary, secondary, and tertiary levels should form the framework for a robust response to the potential negative consequences of problematic consumption. The comprehensive analysis conducted in these four areas of impact reveals four interconnected domains (medical-sexual, toxicophilic, psychopathological, and forensic), highlighting the need for an interdisciplinary approach (Paniagua & Dujo, 2022).

The assessment of the relationship between chemsex and STIs transmission reveals that, based on a Spanish increase in STIs incidence (RENAVE, 2023), multiple studies have demonstrated a higher prevalence of STIs diagnoses in individuals practicing chemsex compared to non-practitioners (Amundsen et al., 2022; Ayerdi, Vera, Arias et al., 2021; MacGregor et al., 2021; Marcus et al., 2023; Slurink et al., 2020) and alarming data on substance use among recent seroconverters (Ayerdi, Vera, Puerta et al., 2021). The rise in STIs linked to chemsex poses a public health problem that exacerbates the clinical status and suffering of users experiencing addiction or problematic consumption without perceiving control.

It has been repeatedly emphasised that the assessment of harm or possible repercussions of chemsex should consider both the practice itself (due to its inherently higher potential for harm) and individual modulating variables (vulnerability, risk, and protection). In the clinical-forensic analysis of chemsex, one must consider the clinical effects arising from its practice and also pre-existing pathological indicators (premorbid) that can be a risk factor in the genesis and maintenance of clinical problems and risk behaviors. As pointed out by Del Romero et al. (2019), this perspective underscores the need for a comprehensive approach and individualised clinical advice.

Despite the differential clinical presentation for each person, several systematic reviews show patterns of mental health deterioration in some chemsex users. It indicates common acute psychiatric symptoms such as depressive episodes, anxiety, panic attacks, agitation, suicidal ideation, and psychosis (Diestelmann et al., 2018; Íncera, Gámez, & Moreno, 2021; Moreno-Gámez et al., 2022). Traumatic factors (acute and complex) worsen the consumption pattern and make it a plausible coping method under favorable sociodemographic and cultural conditions (Tan et al., 2021). Psychotic symptoms (paranoia, delusions of reference and persecution, and hallucinations) are crucial in the clinical-forensic context due to their impact on mental mechanisms (cognitive and volitional capacities) in victimological scenarios and issues of criminal capacity. Their prevalence ranges from 6.7% to 37.2%, showing high comorbidity with substance use disorder and emotional disorders (Moreno-Gámez et al., 2022).

At a sociocultural level, indicators of premorbid conditions and mental health problems are present in minority populations (Burton et al., 2013). The LGBTQ+ population, in general, exhibits higher rates

of emotional psychopathological disorders (Meyer, 2003) and suicidal behavior (King et al., 2008). Specifically, MSM individuals have more anxiety, depression, substance use, and suicidal ideation than the general population (Prestage et al., 2018). This acts as a risk factor for the genesis of later problems. This impairment may originate from victimization within a structural framework (Minority Stress Model, Meyer, 2003). This model provides a theoretical framework to understand the psychological difficulties associated with minority groups exposed to various stressors (rejection, harassment, prejudice-based victimization, and the risk of experiencing violence simply due to having a sexual orientation different from the dominant or normative one) (McConnell et al., 2018). This pressure can affect mental health and be crucial to understanding interpersonal relationships. Emotional suffering and the experience of potentially stressful or traumatic events influence identity and the sense of belonging. That are key aspects in the subsequent relational dynamics in chemsex subgroups (Lafortune et al., 2021).

In light of the above and based on epidemiological data, individuals practicing chemsex are vulnerable to negative clinical impacts. Especially when modulating variables coexist, aggravating physical and mental harm both premorbidly and concurrently with consumption. This vulnerability transcends the biomedical dimension and positions those who practice chemsex at risk for experiencing and even committing offenses codified in Spanish Penal Code, resulting in greater harm and vital impairment. It is crucial to emphasize that a high percentage of individuals experience psychotic symptoms and loss of consciousness during chemsex practices (Hampel et al., 2020), related to acute intoxications (Weatherburn et al., 2017). Loss of consciousness is associated with GHB/GBL overdoses (Bourne et al., 2015) and experiences of coercion and the absence of limits in sexual consent (Bohn et al., 2020), being a key factor in terms of victimogenesis in cases of sexual abuse.

In cases of crimes against public health, Forensic Psychology in the criminal context (see figure 3) must respond not only to addiction, but also to its severity. Also determine the individual functional interference degree and its relationship with the criminal offense, in addition to the specific expert demands. It is relevant to highlight that the analysis of the impact of chemsex practices affects multiple biosanitary spheres and must be explored over an extensive chronological period, requiring specialised knowledge. The mere presence of a clinical diagnosis is not indicative of the severity of addiction, neither a positive drug test. However, the sum of risk and vulnerability factors inherent in the mentioned areas (medical-sexual, toxicophilic, psychopathological, and forensic) with their respective clinical repercussions is indicative of the importance of an interdisciplinary approach.

This set of health and legal repercussions places chemsex in the spotlight as a phenomenon posing serious clinical and forensic challenges. The need for an approach from public health, specialised, comprehensive, and interdisciplinary, becomes evident given the suffering of individuals practicing chemsex who lack the necessary resources to manage the multiple and varied negative impacts that may arise.

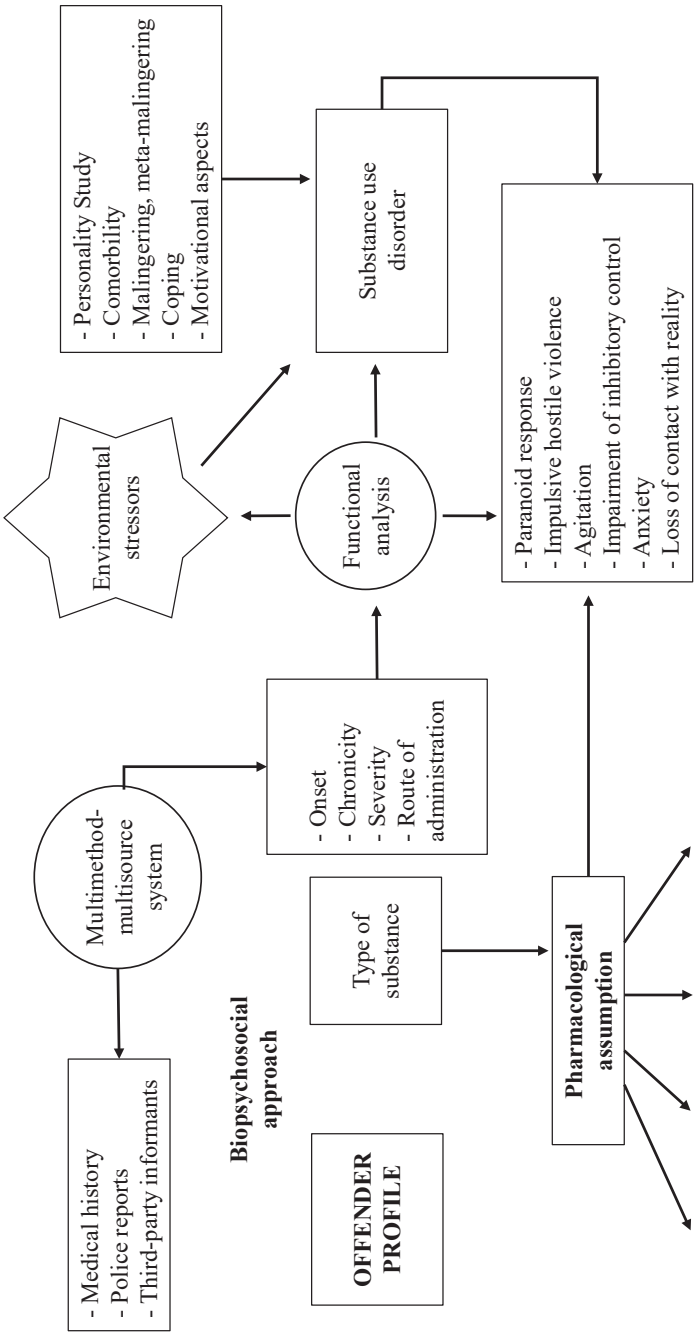


Figure 3. Clinical-forensic assessment model in chemsex (imputability)

Own development

CONCLUSIONS

The analysis of multiple variables associated with drug consumption in the context of chemsex reveals clinical patterns that can directly impact the quality of life of individuals who practice it. The potential consequences are exacerbated in the presence of individual modulating variables, understood as vulnerability factors that amplify harm once the person has been exposed. The outcome depends on a multifactorial dynamic inherent in individual vulnerability, which also occurs in a socially marginalised minority. In other words, to understand the scope of the phenomenon, its significance must be understood from the individual to the sociocultural level.

The level of risk exposure varies in each individual based on their practices and depends on multiple factors that need to be thoroughly analysed at the medical-sexual, toxicophilic, psychopathological, and forensic levels. These repercussions can transcend the health dimension and impact on the social and legal levels.

It is in the face of this particularly sexualised drug use that an interdisciplinary, specialised, and individualised approach becomes of utmost importance. This approach should form the framework for a robust and holistic response to the potential implications of chemsex.

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