

Research Paper

An approximation to the identification of contexts, experiences, and profiles of victims of drug-facilitated sexual assaults

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ABSTRACT

This study advances on overcoming a bias limiting the forensic cases studies of drug-facilitated sexual assaults: a narrow study focus, restricted to assaults affecting young women in leisure contexts related to nightlife, party culture, and dating. A new working framework is applied to analyse data from cases received in the National Institute of Toxicology and Forensic Sciences (Madrid, Spain) over the six years between 2012 and 2017. The work throws light on non-previously described contexts, experiences, and profiles of victims, including domestic cohabitation, labour, education, healthcare, women trafficking, and the daily life of people with intellectual disabilities.

1. Introduction

Violence especially affects the most vulnerable people.¹ Drug-facilitated sexual assault (DFSA) is a representative example of this uncomfortable truth. Assaultants take sexual advantage of victims unable to consent nor resist because of the psychoactive effects of voluntarily or involuntarily used substances.^{1,2} DFSA encompasses two main ways of approaching victims, named opportunism and proactivity. In opportunism, assaultants take advantage of the victim's temporary disability derived from the voluntary use of psychoactive substances. In turn, proactivity involves involuntary drug use by victims resulting from covert or forced administration by assaultants.² In this sense, covert use refers to surreptitious administration, while forced means use by coercion, threats, or physical force.³ The vast majority of the forensic DFSA cases studies over the past three decades have focused on those DFSA suffered by young women in leisure contexts related to nightlife, parties, and dating.^{4–12} This contextualized study approach relates to the severe impact of DFSA in nightlife, importantly highlighted through sensationalist media coverage.^{13–17} Sexual violence and the misuse of

psychoactive substances intersect in the leisure context shaped under the hegemonic recreational nightlife model³, the typical leisure pattern in European societies.¹⁸ However, since sexual violence and drug use also happen in situations different from nightlife, DFSA extends to a broader range of contexts. In this sense, there exists a lack of forensic case studies about DFSA concerning other contexts alternative to the leisure nightlife and affecting other victims different from young women.³ A renewed research approach becomes necessary to improve understanding of DFSA casuistry, study how psychoactive effects add to other vulnerability factors and know different assault contexts and profiles of victims. Victims of DFSA face serious difficulties reporting the assaults, especially those in whom multiple vulnerability factors converge, generating particularly oppressive situations.¹⁹ Because of these increased difficulties, the delay in reporting the assaults becomes common,^{20–23} which reduces the toxicological usefulness of usual biological matrices like blood or urine and favours hair sample collections. In this sense, the more difficulties victims have for accessing justice, the more extended periods elapse between assaults and complaints, increasing the likelihood of hair sample collection. Moreover, the more

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vulnerability factors victims gather, the higher their risk of suffering repeated assaults, increasing hair sample collection as valuable pieces of evidence. For that reason, a research approach focussed on DFSA forensic casuistry with hair collection requests would allow studying assaults contexts and victims' profiles in which more vulnerability factors converge. On the other hand, some authors call for further insight into the DFSA phenomenon through a better study of the casuistry contextual data. Forensic, health, and police reports are valuable information sources.²⁴ Many studies have focussed on institutional data from sexual assault treatment centres^{16,25-30} and judicial authorities.^{20,21,31-38} From this kind of administrative data, a new working framework recently developed in the forensic field for studying DFSA³ could enhance knowledge about casuistry. This framework allows studying the vulnerability factors involved in DFSA by classifying them into four levels: individual, microsystem, exosystem, and macrosystem.³ The microsystem encompasses the situational characteristics and immediate context where people interact and assaults happen,³⁹ while the individual-level comprises personal elements.³ Therefore, this work aims to improve current knowledge about assault contexts and victims of DFSA, paying particular attention to identifying situations and profiles different from the commonly known assaults suffered by young women in the leisure nightlife context.

2. Materials and methods

This work applies a recently developed working framework³ as a research tool to the descriptive analysis of a sample of sexual assault cases reported to the Spanish judicial authorities. As shown in Fig. 1, this research instrument operates as a guide platform conducting the cases study through two main phases. On the one hand, the first phase focuses on the descriptive analysis of data from administrative documentation related to the selected casuistry (Fig. 1. Phase 1). On the other hand, the second phase identifies assault contexts, experiences, and victims' profiles by assembling the study factors described in the first phase (Fig. 1. Phase 2).

The sampling procedure covers the DFSA cases with collection requests of victims' hair samples received at the Madrid Department of the National Institute of Toxicology and Forensic Sciences (INTCF-M) during the six years from January 1st, 2012 to December 31st, 2017. At the national level, the INTCF-M centralized the forensic investigation of most DFSA cases reported in Spain with requests for victims' hair

collection during the six-year study period. The reviewed documentation includes reports from forensics, health practitioners, and police, as well as victims' statements. Once received at the INTCF M, a specific identification code is assigned to each case and related documentation within the Laboratory Information Management System (LIMS). Through authorized access to the LIMS, these identification codes allow ordered reviewing of the documentation related to each sexual assault case, including reports issued by coroners and other medical practitioners, police, and forensic toxicologists (colour blue in Fig. 1.). The University of Alcalá's Ethics Committee approved the projects framing this research.

The flowchart second phase focused only on those cases with data available for all the study factors included in Table 1. In this way, the study sample in the first phase included 53 cases, while the second phase focused on 22 (Fig. 1). Concretely, data description is structured based on the study factors classified within the microsystem level and the individual level of the applied working framework, shown in Table 1. The microsystem includes factors regarding the assaults' context, their situational characteristics, and temporal and spatial location (Table 1a). Moreover, the microsystem also includes study factors about the interaction between victims and assailants: the assailant strategy to approach the victim, the assaults frequency, the number of assailants, the previous

Table 1

The study factors at the microsystem and the individual level of the applied working framework.

MICROSYSTEM LEVEL STUDY FACTORS		
Study of assault contexts - Table 1a	Study of assault experiences - Table 1b	
Situational characteristics	Assailant strategy	Victims number
Spatial location	Assailant data	Frequency of assaults
Temporal location	Assailant - victim relationship	
INDIVIDUAL LEVEL STUDY FACTORS		
Study of profiles of victims - Table 1c		
Victims gender and age	Use of psychoactive substances	
Other vulnerability conditions:		
Physical or mental diseases	Belonging to minority groups	
Intellectual disability	Chronic use of legal or illegal substances	

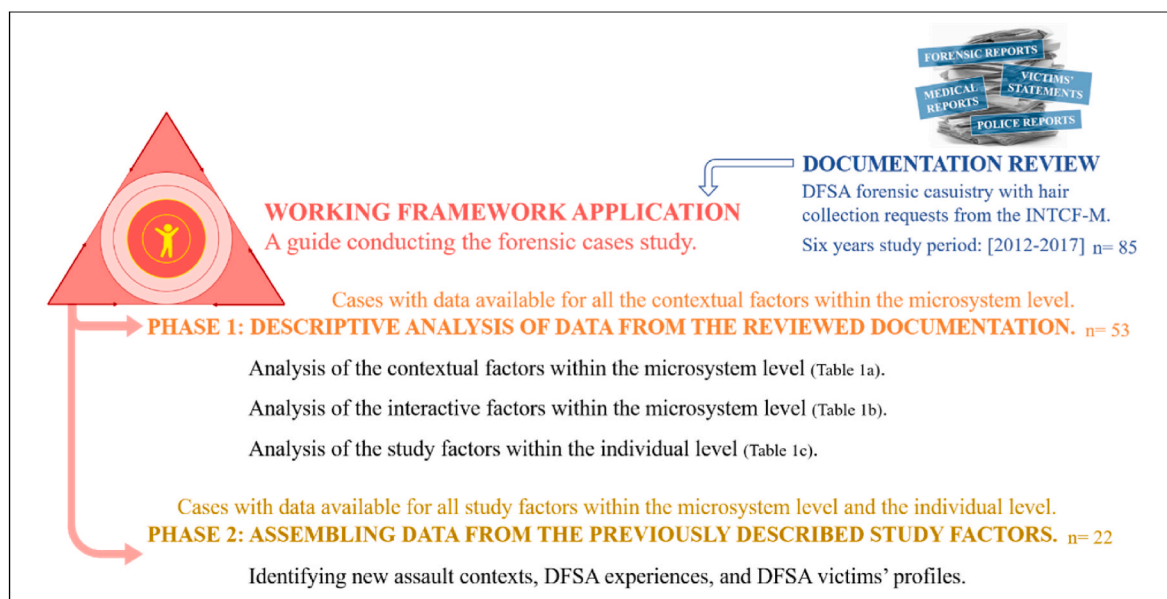


Fig. 1. Study process flowchart.

victims-assailant relationship, and the assailant's gender and age (Table 1b). In turn, the individual level includes victims' features like gender, age, the use of psychoactive substances, and other factors increasing vulnerability to DFSA (Table 1c).

3. Results

3.1. Analysis of the microsystem level study factors

The microsystem's level study factors (Table 1) concerning assault contexts (Table 1a) and experiences (Table 1b) guided the descriptive analysis in the study's first phase.

3.1.1. Study of DFSA contexts

The studied case sample included three groups, differentiated based on situational characteristics and temporal and spatial locations (Table 1a). The assaults happened in the leisure nightlife context in 56% (n = 30) of cases. Around the moment of the assault, these cases involved situational characteristics fitting the hegemonic recreational nightlife model. Spatial location consisted of leisure places related to drinking alcohol, such as pubs, bars, or nightclubs. Temporary location involved events during the night or early morning and at the weekend. On the other hand, the second group included assaults in the domestic cohabitation context, which involved 30% (n = 16) of cases. This group encompassed three situations (Table 2): the cohabitation between underage people and caregiver adults, couple cohabitation, and minors kidnapping. The spatial location involved the domicile where the victim and assailant cohabited. Regarding temporary location, available data were too variable, not showing such a clear trend as victimization in leisure nightlife context. Finally, the third group encompassed the remaining 14% (n = 7) of cases in other contexts: labour, education, healthcare, women trafficking for forced prostitution, and the daily life of people with intellectual disabilities. Two assaults happened within a labour context, during the victims' working day, and in their workplaces. Two other assaults classified within an educational context occurred in education institutions. Another case classified in a healthcare context happened during health counselling sessions. One case involving victim kidnapping and prostitution, classified within a context

Table 2
Identified DFSA contexts in the studied sample, with their situational characteristics, spatial and temporal location (total n = 53).

MICROSYSTEM LEVEL STUDY FACTORS FOR ASSAULT CONTEXTS			
Assault context	Situational characteristics	Spatial location	Temporal location
Nightlife leisure (n = 30; 56%)	Dynamics of leisure and drinking alcohol consistent with the hegemonic recreational model.	Spaces linked to leisure nightlife ^a .	At night or early morning. All the weekend.
Domestic cohabitation (n = 16; 30%)	Childcare by caregiver adults. Couple cohabitation. Minors kidnapping.	Victim and assailant domicile.	Nonspecific. Kidnapping period.
Labour (n = 2; 4%)	The working day of victims.	The workplace of victims.	Nonspecific.
Education (n = 2; 4%)	n.d.	Educational institutions.	Nonspecific.
Healthcare (n = 1; 2%)	Health counselling sessions to victims.	Clinic for health counselling.	Nonspecific.
Women trafficking (n = 1; 2%)	Women kidnapping and trafficking for forced prostitution.	House of prostitution.	Kidnapping period.
The daily life of people with ID (n = 1; 2%)	Community life.	Public space.	n.d.

^a bar, pub, nightclub. ID, intellectual disability. n.d., no data. n, number of cases.

of women trafficking for forced prostitution, happened in a house of prostitution. In turn, the case classified within the context of the daily life of people with intellectual disabilities involved the assault suffered by a person with intellectual disability during a situation of community life and located in the public space. Table 2 shows the situational characteristics and the spatial and temporal locations for the three observed assault contexts.

3.1.2. Study of experiences of DFSA victims

After describing the assault contexts, data disaggregation focused on studying the experiences suffered by victims and their interactions with assailants (Table 1b).

i. Assailants strategy for approaching victims.

Data about the psychoactive substances use by victims around the assault moment threw light on how assailants approached victims. Data about drug use by victims were available in 90% (n = 27) of cases classified in the nightlife context. The 43% (n = 13) of these assaults only involved voluntary drug use by victims, being opportunistic assaults. In turn, victims' drug use was exclusively involuntary in 7% (n = 2) of these cases, being proactive assaults. Likewise, in 40% (n = 12) of these assaults, victims' drug use was voluntary and unintentional, adjusting to mixed assaults through covert administration. On the other hand, data about drug use by victims were available in 75% (n = 12) of cases classified in the domestic cohabitation context. All of them exclusively reported involuntary use, adjusting to proactive assaults. This involuntary use happened through covert administration in the five cases involving couple life situations and in two cases involving the cohabitation of people underage with caregiver adults. However, involuntary use happened through forced administration in four cases involving underage people living with caregiver adults and in the case of minor kidnapping. Finally, data about the voluntary or involuntary drug use by victims were available in all cases happened in other contexts. The 86% (n = 7) were proactive assaults, involving only involuntary drug use. The cases related to the healthcare and the daily life of people with intellectual disabilities involved the covert administration of substances to victims. In turn, one case in the labour context combined voluntary substance use with covert administration, adjusting to a mixed assault. Fig. 2 shows the cases percentages for each type of assault in the identified contexts.

ii. Assaults frequency.

Assaults in the nightlife context were isolated or not repeated attacks in 67% (n = 20) of cases, all those with available data about assault frequency. Concerning domestic cohabitation, 63% (n = 10) of cases involved repeated assaults and 25% (n = 4) isolated assaults. Repeated assaults were frequent among cases involving cohabitation of underage people with caregiver adults. Seven minors suffered from repeated assaults, while two experienced isolated attacks. The kidnapping victim also suffered from repeated assaults. Likewise, assaults during couple cohabitation involved two repeated attacks and two isolated attacks. Finally, regarding other contexts, 43% (n = 3) of cases involved repeated assaults, while 29% (n = 2) were isolated. Victims suffered from repeated assaults in healthcare, forced prostitution, and labour. Fig. 3 shows the cases percentages of repeated or isolated assaults in the identified contexts.

iii. Assailant data and assailant-victim relationship.

In 47% (n = 14) of cases in the nightlife context, only one man perpetrated the assault, while 17% (n = 5) involved the participation of two or more assailants. Assailants and victims knew each other before the assault in 37% (n = 11) of these cases, being friends or new acquaintances. However, in 10% (n = 3) assailants were unknown to

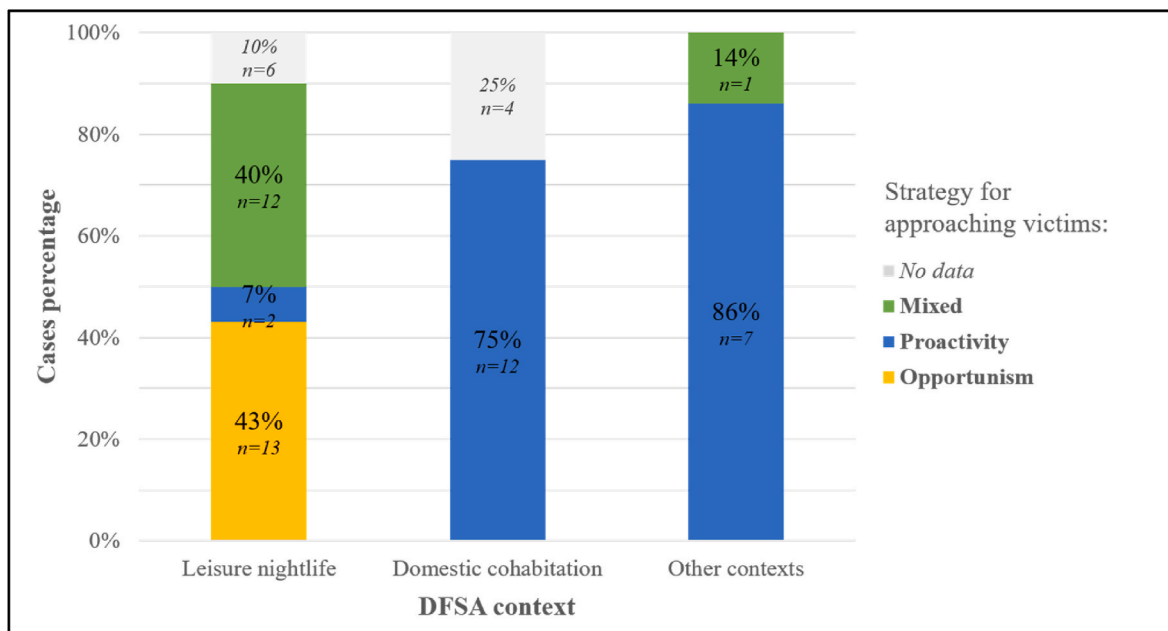


Fig. 2. Assaultant strategy for approaching victims in the different DFSA contexts.

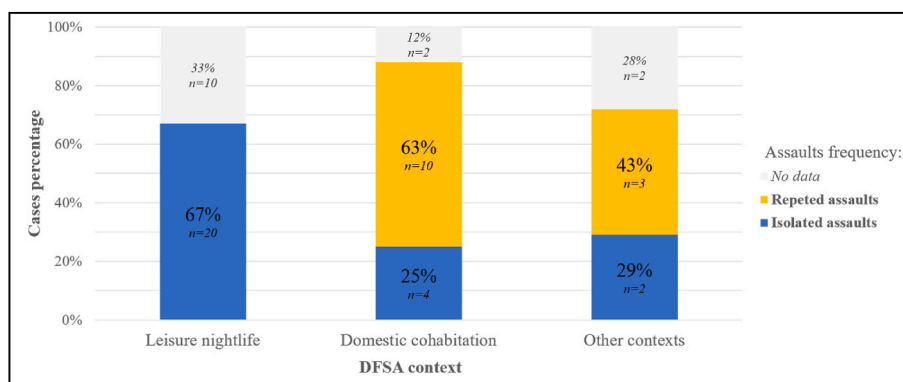


Fig. 3. Assault frequency in the different DFSA contexts.

victims. Regarding assaults in the domestic context, 94% (n = 15) involved only one male assailant previously known by victims. Assaultants were victims' relatives in all cases that happened during the

cohabitation of underage people with caregiver adults, prevailing victims' fathers, stepfathers, and victim's mothers' couples. Assaultants were the victims' couple in cases involving couple's cohabitation. Finally,

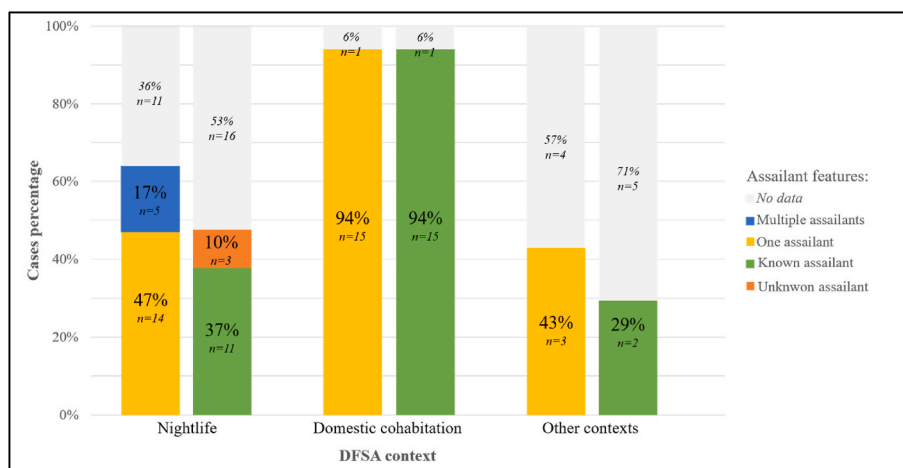


Fig. 4. Assailant features in the different DFSA contexts: number of assailants and victim-assailant relationship.

only one male assailant perpetrated the assault in 43% (n = 3) of cases concerning other contexts. The assailant was a victim’s co-worker in one case that happened in the labour context, while the victim’s health care provider perpetrated the assault in the case involving the healthcare. Fig. 4 shows cases percentages concerning the number of assailants and the victim-assailant relationship.

3.2. Analysis of the individual level study factors

Data description also focused on the individual level’s study factors (Table 1c), including victims’ gender, age, geographical origin, drug use and abuse around the assault, and other conditions increasing victims’ vulnerability such as physical and mental diseases, intellectual disability, and belonging to minorities and risky groups.

3.2.1. Victims’ gender and age

The vast majority of cases affected only one victim, a woman. In this line, only two nightlife cases involved multiple victims. The victim was a man only in one assault within this context. Similarly, the victim was a woman in all the assaults that happened during couple life, kidnapping, and seven cohabitation cases of underage people with caregiver adults. Three incidents related to caregiver adults affected male victims. In turn, all the assaults classified in other contexts affected one woman. Fig. 5 shows victims’ gender according to the assault context. On the other hand, victims’ age ranged from 15 to 43 in nightlife cases, with an average of 26 years old. Twenty-four victims were 35 years old or younger, five victims aged less than 18, and five ranged from 37 to 43. Concerning domestic cohabitation, women assaulted by their couples ranged between 33 and 40 years in three cases and between 16 and 25 in two cases. The assaults by caregiver adults affected in four cases children between 2 and 8 years old, and teenagers between 13 and 15 in other six incidents, just as the kidnapping case. Concerning the labour context, victims were 19 and 44 years in two cases related to leisure nightlife work and domestic service, respectively. Likewise, all the victims were from 40 to 44 years old in the assaults that happened during healthcare, forced prostitution, and the daily life of people with intellectual disabilities.

3.2.2. The use of psychoactive substances by victims

In assaults classified in the nightlife context, alcohol was the most common substance, alone and in combination with pharmaceuticals and illegal drugs. Victims’ statements reported voluntary alcohol use in nineteen cases, cannabis in two others, and cocaine use in one. According to their medical histories, victims were regular users of psychoactive pharmaceuticals and illegal drugs in four and two cases. Hair samples’ toxicological analysis showed regular use by victims of psychoactive medications around the assault in six cases. These substances included the anxiolytic diazepam and the benzodiazepine analogue zolpidem, the antihistamines cetirizine, brompheniramine,

chlorpheniramine, and the antidepressants citalopram and trazodone. Hair analyses also reported the use by victims of the illegal drugs cocaine, 3,4-Methylen edioxy methamphetamine (MDMA), and methadone in five cases. Likewise, toxicological results from blood reported the antihistamine brompheniramine, alcohol, cannabis, and cocaine, in seven cases with positive results. Similarly, victims’ urine samples reported antihistamines and alcohol in six cases. Table 3 shows substances involved in DFSA by assault context.

Pharmaceuticals prevailed between assaults in the domestic cohabitation context. Benzodiazepines or analogues were involved in two cases of couple living and four cases involving the cohabitation of people underage with caregiver adults. Likewise, the antihistamine diphenhydramine was involved in two other assaults affecting minors. Other two assaults on people underage involved lidocaine and cocaine. In turn, substances involved in the minors’ kidnapping case included alcohol, cannabis, and metoclopramide. In five cases of repeated assaults on minors during cohabitation with adults, hair analyses showed the regular use of pharmaceuticals or abuse drugs by victims during the assault periods. Two of them involved the antihistamine diphenhydramine, while three cases reported zolpidem, cocaine, and lidocaine, respectively. Likewise, in two assaults during couple cohabitation, victims’ hair samples showed the regular use of chlorpheniramine, in one case and zolpidem and citalopram, in another case, during the assault periods. In turn, in the minors kidnapping case, victims’ hair samples showed the repeated use of metoclopramide by the victim during the assaults period. Concerning blood analyses, the benzodiazepine lorazepam was observed in one case involving assaults during couple cohabitation. Similarly, urine analyses also reported benzodiazepines in five cases, both of couple cohabitation as assaults during cohabitation of minors with adults.

Regarding other assaults, those in the labour context involved benzodiazepines, the antihistamine brompheniramine, and alcohol. In this

Table 3
Psychoactive substances according to the DFSA context.

Assault context	Psychoactive substances
Nightlife	Alcohol, cannabis, cocaine, MDMA, methadone, citalopram, trazodone, diazepam, zolpidem, cetirizine, brompheniramine, chlorpheniramine
Cohabitation with minors	Diphenhydramine, zolpidem, cocaine, lidocaine, benzodiazepines
Couple cohabitation	Chlorpheniramine, zolpidem, citalopram, lorazepam, other benzodiazepines
Minors kidnapping	Alcohol, cannabis, metoclopramide
Labour	Alcohol, brompheniramine, benzodiazepines
Education	Chlorpheniramine, metoclopramide
Healthcare	Zolpidem
Forced prostitution	Trazodone, nordiazepam, lidocaine, metoclopramide, cocaine, amphetamine

MDMA: 4-Methyl enedioxy methamphetamine.

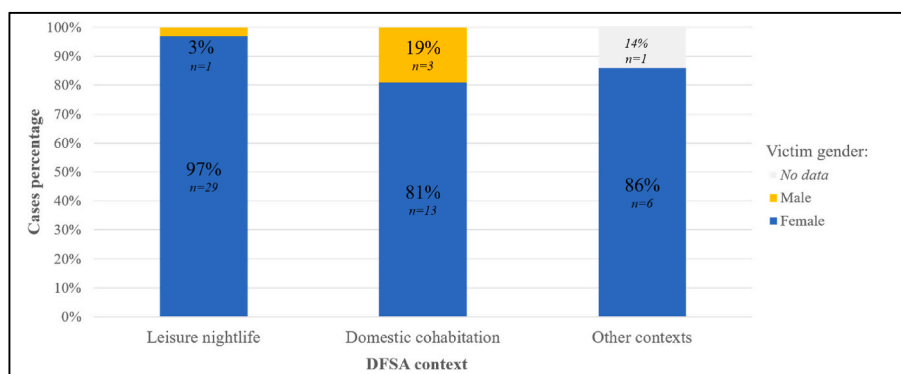


Fig. 5. Victims’ gender according to the assault context.

sense, the case in a labour context related to nightlife had the victim's statements about alcohol use around the assault. In this case, toxicological results from the victim's blood and urine reported the antihistamine brompheniramine in both matrices. Analytical data from hair samples showed the regular use of brompheniramine in another case classified in the labor context and related to domestic service. Likewise, cocaine was involved in the forced prostitution case, in which toxicological findings from the victim's hair samples showed the regular use of trazodone, nordiazepam, lidocaine, metoclopramide, cocaine, and amphetamine, coinciding with the assaults period. In turn, regarding the case classified in the healthcare context, the victim's hair samples reported the frequent use of zolpidem coinciding with the times of assaults. Toxicological results from hair samples showed the frequent use of chlorpheniramine and metoclopramide in the case classified within the educational context.

3.3. Other victims' vulnerability conditions

In five cases, victims of assaults in nightlife suffered from diseases or mental disabilities before the assault, being anxiety the most frequent issue, often treated with anxiolytics. Other illnesses included depression, bipolar disorder, and chronic abuse of alcohol and other drugs. Regarding victims' belonging to minority groups, the victim was homosexual in the only one nightlife case affecting men. Likewise, four assaults involved students, a condition commonly related to DFSA. On the other hand, victims were healthcare professionals in three cases affecting couple cohabitation. Finally, victims assaulted during healthcare and forced prostitution suffered from chronic alcoholism and personality disorder before the assault. Another victim had an intellectual disability.

4. Identification of assault experiences and victims' profiles

The studied casuistry embraced a wide range of experiences suffered by diverse victims in very different situations. For each previously identified assault context, this section shows these experiences and victims' profiles, working only with those cases with data available for all the study factors at the microsystem and individual levels.

4.1. Leisure nightlife context

Data for all the study factors at the microsystem and the individual level were available in 37% (n = 11) of the cases classified within the nightlife context. Four victims' profiles were identified based on gender and age. The first group encompassed women aged 15 to 25, the second group women ranging between 26 and 36, and the third group older women, from 37 to 41. The fourth profile included men from 40 to 45

years old. On the other hand, women assaulted in the nightlife suffered one isolated assault perpetrated by one or various male assailants, mainly people previously known, such as friends and recent acquaintances. These assailants approached victims through an opportunistic or mixed strategy, taking advantage of the temporary disability suffered by victims resulting from voluntary drug use. Likewise, the assault on men also was one isolated attack perpetrated by one male assailant, a recent acquaintance who approached the victim through a proactive-covert strategy. Fig. 6 shows the identified profiles and experiences.

4.2. Domestic cohabitation context

Data for all the study factors at the microsystem and the individual level were available in 73% (n = 11) of the cases classified within the domestic cohabitation context. These cases comprise five assaults during the cohabitation of people underage with caregiver adults, four incidents of couple living, and the only one known case involving minors kidnapping. Assaults during the cohabitation of people underage with caregiver adults included four victims' profiles: female and male children aged from 2 to 8, and girls and boy teenagers aged from 13 to 15. Regarding assault experiences, female and male children, as well as teenage girls, suffered from repeated attacks perpetrated by one male assailant, a victim relative, through a proactive-forced strategy. In turn, boy teenagers suffered only one isolated assault perpetrated by one male assailant, relative or not, through a proactive-covert strategy. Concerning couple living, assaults in this context involved two victims' profiles: women aged 33 to 40 and younger women ranging between 16 and 25 years old. Assault experiences included both isolated as repeated assaults perpetrated by one male assailant, the victim's couple, through a proactive-covert strategy. Finally, in the minors kidnapping case, the victim was also a teenage girl aged 13 to 15, who suffered from repeated assaults perpetrated by one male assailant, the kidnapper, a man already known by the victim, through a proactive forced strategy. Fig. 7 illustrates the identified profiles and experiences.

4.3. Other contexts

Regarding cases within the educational context, victims were teenage girls who suffered from proactive assaults perpetrated by male assailants. In turn, the two different situations involving assaults in the labour context affected two specific profiles of victims. The first related to leisure nightlife: the victim was a young woman aged 15 to 25 who suffered from one isolated assault perpetrated by one previously known male assailant, a co-worker, through a mixed strategy. The second situation involved domestic service: a woman aged 40 to 45 suffered repeated assaults by a proactive-covert strategy. Victims were also women aged from 40 to 45 in contexts involving healthcare, women

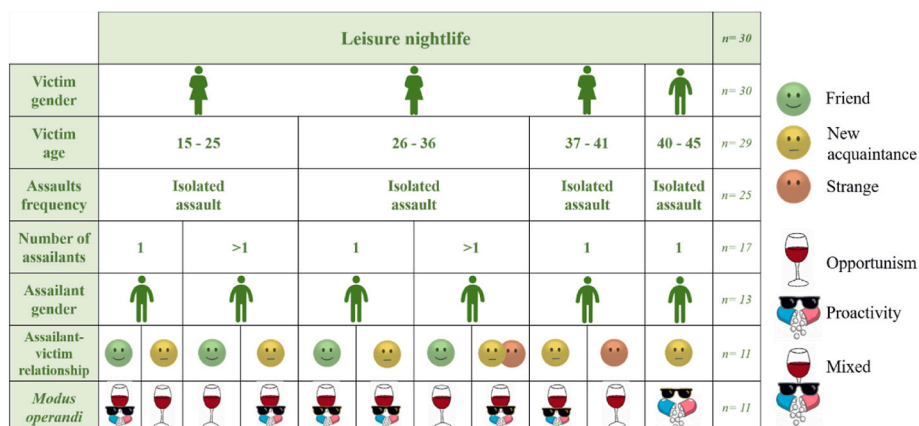


Fig. 6. Assault experiences and victims' profiles in the nightlife context.

	Child care by caregiver adults				n=10	Couple cohabitation				n=5
Victim gender					n=10					n=5
Victim age	13 - 15	2 - 8	13 - 15	2 - 8	n=9	33 - 40		16 - 25		n=5
Assaults frequency	Isolated assault	Repeated assault	Repeated assault	Repeated assault	n=8	Isolated assault	Repeated assault	Repeated assault	Repeated assault	n=4
Number of assailants	1	1	1	1	n=7	1	1	1	1	n=4
Assailant gender					n=7					n=4
Assailant-victim relationship					n=7					n=4
Modus operandi					n=7					n=4

Fig. 7. Assault experiences and victims' profiles in the domestic context. *Not include the minors kidnapping case (n=1).*

trafficking for forced prostitution, and the daily life of people with intellectual disabilities. They had additional vulnerability conditions affecting their ability to resist an assault, including mental illnesses, chronic alcohol use, and intellectual disability. In these situations, assailants applied proactive strategies for approaching victims. Cases related to healthcare and forced prostitution involved repeated assaults on victims, while the victim with intellectual disability suffered one isolated assault.

5. Discussion

Forensic DFSA cases studies have focused up to date mainly on the assaults that happen in the leisure nightlife context involving situations of party and dating. Because of that, there is a significant lack of knowledge about the affectation of other contexts. Some terms used to refer to the problem and its related substances reflect this contextual bias conditioning our understanding of the DFSA. For instance, date rape, date rape drugs, or club drugs. However, despite the specific situations referred to by these names, DFSA is not limited to the nightlife leisure context. Because violence mainly affects the most vulnerable people, this study applied a renewed research approach to know how psychoactive effects add to other vulnerability factors. As expected, the results obtained from the reviewed cases showed that most of the assaults happened in the leisure nightlife context. However, beyond the

assaults in leisure nightlife, this study identified other assault contexts, including domestic cohabitation, education, labour, healthcare, women trafficking for forced prostitution, and the daily life of people with intellectual disabilities. Likewise, several assault experiences and profiles of victims were identified within each of these contexts, improving our understanding of DFSA. This advance resulted from implementing a new research scheme, which combines a working framework recently developed for studying the DFSA phenomenon with a research approach focussed on casuistry with hair collection requests. Fig. 8 illustrates these two crucial elements combined for improving our understanding of DFSA and the affectation of other contexts and profiles of victims.

According to the new working framework, the victimization process by DFSA results from the configuration of multiple factors classified in four influence levels, represented by the concentric rings within the triangle in Fig. 8 (red left side). This study worked at the levels microsystem and individual, the two innermost circles. In this sense, from this analysis framework's perspective, the biased study focus starts at the microsystem level, which encompasses the situational characteristics of the assault, its spatial and temporal location, and the personal interactions between victims and assailants around the assault moment (Tables 1a & 1b). Likewise, the individual level involves individual and personal characteristics like gender, age, and vulnerability conditions (Table 1c). The disaggregated, tidy, descriptive study of factors classified in these levels allowed identifying different assault contexts,

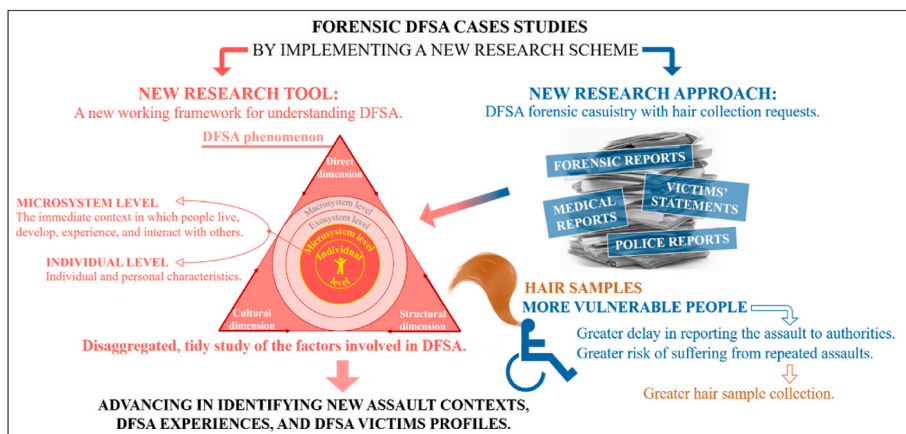


Fig. 8. The new study tool and research approach applied for improving knowledge about affectation by DFSA of other contexts and profiles of victims. Advances in identifying different DFSA contexts, experiences, and profiles of victims became possible by combining a new working framework as a study tool (red left) and a research approach focussed on DFSA cases with hair collection requests (blue right). (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

experiences, and profiles of victims. In turn, this advance regarding the DFSA understanding also resulted from a research approach focusing on cases with hair collection requests (Fig. 8. Blue right side). This casuistry helps go in-depth on how DFSA affects other particularly vulnerable profiles of victims. In this sense, the more vulnerabilities the victims gather, the more their difficulties for reporting and, consequently, the more extended periods elapsing between assaults and complaints. This temporal lapse reduces the forensic-toxicological usefulness of usual biological matrices like blood or urine, increasing the likelihood of hair sample collection (Fig. 8). Likewise, the more vulnerabilities victims gather, the higher their risk of suffering from repeated assaults during a more extended period. This situation favours hair sample collection for toxicological analyses exploring repeated drug use matching the assaults period (Fig. 8). Indeed, hair samples are especially useful for toxicological studies in cases involving repeated drug consumption.⁴⁰

Most assaults were connected to the hegemonic nightlife model,¹⁸ characterized by a culture of self-intoxication⁴¹ and binge drinking.^{18,42,43} Some authors highlight that this model can carry worst consequences for women than men,⁴⁴ especially in communities where a violent cultural background against women prevails, with sexist perceptions about female drug use and sexual interaction.¹⁹ According to this study, DFSA is one of these negative consequences mainly affecting women in the leisure nightlife context. In this sense, the most frequent victim profile was a young woman who suffered from an isolated assault perpetrated by one male assailant, a friend, or a recent acquaintance, through an opportunistic assault, taking advantage of the disability resulting from voluntary drug use. As such, alcohol was the drug involved in most of these cases, an observation consistent with many studies about DFSA.^{26,32,33,45} Likewise, regarding mixed and proactive assaults, several aspects may affect the victims' statements about drug use around the assault moment: the misperceptions about drink-spiking,^{14,19} and the fear of being blamed when the assailant took advantage of vulnerability derived from voluntary drug use. On the other hand, the profiles of victims of DFSA in the nightlife context also included adult homosexual men suffering from one isolated assault perpetrated by one male assailant, a recent acquaintance, through a covert-proactive. Recent studies observed the affectation of the gay community by DFSA related to *Chemsex*.^{46,47}

Assaults that happened in the domestic cohabitation context were the second largest group and involved three different situations: living of people underage with caregiver adults, couple cohabitation, and minors kidnapping. Regarding the assaults during the cohabitation of minors with caregiver adults, victims were girl teenagers aged from 13 to 15 and female and male children aged from 2 to 8. These three profiles of victims suffered from repeated proactive-forced assaults by one relative man, mainly the victims' father or stepfather, or the victim's mother's couple. The fourth victim profile affected during minors caregiver were boy teenagers, aged 13 to 15, suffering from one isolated assault by one male victim's relative, or by a not relative male, through a proactive covert attack. On the other hand, assaults during couple cohabitation affected two victims' profiles: women aged around their thirties and younger women aged 16 to 25. Both groups suffered from isolated or repeated assaults by their male couple through covert-proactive attacks. Interestingly, victims were healthcare professionals in most assaults during couple cohabitation. This observation may indicate a more remarkable ability for self-acknowledgment as a victim resulting from knowledge or professional skills related to healthcare. Likewise, this condition may hide a more severe affectation by DFSA of women in the domestic context. Finally, the third assault situation in the domestic cohabitation context involved minor kidnapping. The profile of the victim was a teenage girl aged from 13 to 15, who suffered from repeated forced proactive assaults by the kidnapper, a known man. Concerning substances, psychoactive pharmaceuticals were the more frequent in the domestic context, including benzodiazepines and benzodiazepines analogues, like lorazepam or zolpidem, and antihistamines, such as diphenhydramine. Other substances involved in assaults

on minors were cocaine and lidocaine, the last previously observed in DFSA by other studies.^{21,34}

On the other hand, regarding the educational context, girls aged 13 to 15 suffered from proactive assaults that happened within educational institutions. In turn, cases affecting the labour context included assaults in the victims' workplaces during their working days. Assaults during labour situations related to the leisure nightlife involved experiences and profiles of victims similar to those previously observed for the leisure context but perpetrated by victims' co-workers. Assaults during domestic service involved repeated assaults on women aged 40 to 45 through covert proactive attacks. Remaining contexts comprised healthcare, women trafficking for forced prostitution, and the daily life of people with intellectual disabilities. In these three contexts, victims were women aged 40 to 45, with more vulnerability factors than in the other contexts, like mental illness, intellectual disability and chronic alcohol use, who suffered from proactive assaults.

The assault experiences varied widely among the contexts and profiles of victims when considering two particularities: how assailants approached victims and the assault frequency. In the leisure nightlife context, isolated opportunistic assaults were the most usual experience. However, most victims in the domestic cohabitation context suffered from repeated proactive assaults. Covert proactivity prevailed in those cases affecting couple life and caregiving of male teenagers. In contrast, forced proactivity was more usual in assaults on female teenagers and male and female children. These differences point towards two significant, complementary observations. First, the active involvement of assailants in the sexual attack increases as more vulnerability factors victims gather, an observation consistent with the hunting model, according to which assailants select their victims based on their vulnerability to resist an assault [48–50]. Second, the more vulnerable victims are, the higher their risk of suffering from repeated assaults. At this point, we must reconsider that the DFSA suffered by victims gathering multiple vulnerability conditions reflect an even more harmful and oppressive reality if no one, even researchers, pays attention to the adversity involving such casuistry. The lack of a broader research focus in the forensic cases studies concerning DFSA favours that other contexts, experiences, and profiles of victims remain unnoticed. This forensic cases study throws some light on the non-previously described DFSA casuistry, an effort adjusted to the 2030 Agenda's challenge of "leaving no one behind" in the fight against all forms of violence.⁴⁸

6. Limitations

The observations in this study result from analysing a sample formed by cases reported to authorities. In this sense, some victims may report more than others because of a higher capacity to seek help. Consequently, the lower presence of specific contexts, profiles, or victimization experiences in the analyzed sample does not necessarily mean a lower affectation. As such, it is crucial to consider underreporting, especially when studying less-known cases. On the other hand, access to classified information is a critical factor limiting the practical implementation of the presented research approach depending on the available data and the information collection system in the relevant jurisdiction.

7. Conclusions

This study opens new research lines within the DFSA forensic case studies, throwing light, for the first time, on poorly known victimization contexts, including domestic cohabitation, education, labor, healthcare, trafficking of women for forced prostitution, and the daily life of people with intellectual disabilities. Assaults in the domestic cohabitation context involved situations of minors living with caregiver adults, couple life, and minors kidnapping. Both males and females, children and teenagers, were affected by assaults during adult care for underage people. In turn, assaults that involved couple life situations affected

young and middle-aged women. Professional healthcare knowledge may help DFSA victims to identify themselves as such in situations of couple life. However, the repeated observation of this professional profile in this group of victims may be hiding a wider affectation of women without such skills. Repeated proactive assaults involving the administration of psychoactive pharmaceuticals by assailants prevailed in domestic cohabitation and other contexts, while in nightlife, opportunistic isolated attacks related to voluntary alcohol use. Victims of assaults in different contexts such as healthcare, forced prostitution, or the daily life of people with intellectual disabilities had additional vulnerability conditions like mental diseases, chronic drug abuse, or intellectual disabilities. The applied research approach allows advancement in DFSA understanding. It can help study new contexts, victimization experiences, and victims' profiles in the future, such as young and foreign people in institutions or internment centres.

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Declaration of competing interest

None. The authors affirm that there are no conflicts of interest.

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References

- World Health Organization. *World Report on Violence and Health: Summary*. Geneva: World Health Organization; 2002:360. Online available at: https://www.who.int/violence_injury_prevention/violence/world_report/en/.
- Advisory Council on the Misuse of Drugs. *Drug Facilitated Sexual Assault*. London: Advisory Council on the Misuse of Drugs; 2007:18. Online available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/119111/ACMDDFSA.pdf.
- Prego-Meleiro P, Montalvo G, Quintela-Jorge O, García-Ruiz C. An ecological working framework as a new model for understanding and preventing the victimization of women by drug-facilitated sexual assault. *J Forensic Sci Int*. 2020; 315, 110460. <https://doi.org/10.1016/j.forsciint.2020.110438>.
- Humphrey JA, White JW. Women's vulnerability to sexual assault from adolescence to young adulthood. *J Adolesc Health*. 2000;27(6):419. [https://doi.org/10.1016/S1054-139X\(00\)00168-3](https://doi.org/10.1016/S1054-139X(00)00168-3). December.
- Abbey A. Alcohol-related sexual assault: a common problem among college students. *J Stud Alcohol Suppl*. 2002;63(14):118–128. <https://doi.org/10.15288/jas.2002.s14.118>.
- Abbey A, Zawacki T, Buck PO, Clinton AM, McAuslan P. Sexual assault and alcohol consumption: what do we know about their relationship and what types of research are still needed? *Aggress Violent Behav*. 2004;9(3):271–303. [https://doi.org/10.1016/S1359-1789\(03\)00011-9](https://doi.org/10.1016/S1359-1789(03)00011-9).
- Sipsma E, Carrobes JA, Montorio CI, Everaerd W. Sexual aggression against women by men acquaintances: attitudes and experiences among Spanish university students, Spain. *J Psychol*. 2000;3(May 1):14–27. <https://doi.org/10.1017/s1138741600005503>.
- Lindquist CH, Barrick K, Krebs C, Crosby CM, Lockard AJ, Sanders-Phillips K. The context and consequences of sexual assault among undergraduate women at historically black colleges and universities (HBCUs). *J Interpers Violence*. 2013;28(August 12):2437–2461. <https://doi.org/10.1177/0886260513479032>.
- Mustaine EE, Tewksbury R. Sexual assault of college women: a feminist interpretation of a routine activities analysis. *Crim Justice Rev*. 2002;27(May 1): 89–123. <https://doi.org/10.1177/07340168020700106>.
- Benson B, Gohm C, Gross A. College women and sexual assault: the role of sex-related alcohol expectancies. *J Fam Violence*. 2007;22:341–351. <https://doi.org/10.1007/s10896-007-9085-5>. August 6.
- Bureau of Justice Statistics. *Rape and Sexual Assault Victimization Among College-Age Females, 1995-2013* 20 P. Washington: Office of Justice Programs; 2014. Online available at: <https://www.bjs.gov/content/pub/pdf/rsav-caf9513.pdf>.
- Krebs CP, Lindquist CH, Warner TD, Fisher BS, Martin SL. *The Campus Sexual Assault (CSA) Study 111* P. Washington: National Institute of Justice (NIJ); 2007. Online available at: <https://www.ncjrs.gov/pdffiles/nij/grants/221153.pdf>.
- ElSohly MA, Salamone SJ. Prevalence of drugs used in cases of alleged sexual assault. *J Anal Toxicol*. 1999;23(May 3):141–146. <https://doi.org/10.1093/jat/23.3.141>.
- Anderson LJ, Flynn A, Pilgrim JL. A global epidemiological perspective on the toxicology of drug-facilitated sexual assault: a systematic review. *J Forensic Leg Med*. 2017;47:46–54. <https://doi.org/10.1016/j.jflm.2017.02.005>.
- Monk L, Jones A. Alcohol consumption as a risk factor for sexual assault: a retrospective analysis. *J Forensic Leg Med*. 2014;23(March):55–61. <https://doi.org/10.1016/j.jflm.2014.01.015>.
- Hagemann CT, Helland A, Spigset O, Espnes KA, Ormstad K, Schei B. Ethanol and drug findings in women consulting a Sexual Assault Center – associations with clinical characteristics and suspicions of drug-facilitated sexual assault. *J Forensic Leg Med*. 2013;20(6):777–784. <https://doi.org/10.1016/j.jflm.2013.05.005>.
- Hindmarch I, ElSohly M, Gambles J, Salamone S. Forensic urinalysis of drug use in cases of alleged sexual assault. *J Clin Forensic Med*. 2001;8(December 4):197–205. <https://doi.org/10.1054/jcfm.2001.0513>.
- Calafat A, Fernández C, Juan M, et al. *Cultural Mediators in a Hegemonic Nightlife. Opportunities for Drug Prevention Online available at, Palma de Mallorca. IREFREA; 2004:162*. http://www.irefrea.eu/uploads/PDF/Calafat%20et%20al_2004_Cultural%20Mediators.pdf.
- Prego-Meleiro P, Montalvo G, Quintela-Jorge O, García-Ruiz C. Increasing awareness of the severity of female victimization by opportunistic drug-facilitated sexual assault: a new viewpoint. *J Forensic Sci Int*. 2020;315, 110460. <https://doi.org/10.1016/j.forsciint.2020.110460>.
- Florentin TR, Logan BK. Toxicological findings in 1000 cases of suspected drug facilitated sexual assault in the United States. *J Forensic Leg Med*. 2019;61(February): 56–64. <https://doi.org/10.1016/j.jflm.2018.11.006>.
- Scott-Ham M, Burton FC. Toxicological findings in cases of alleged drug-facilitated sexual assault in the United Kingdom over a 3-year period. *J Clin Forensic Med*. 2005; 12:175–186. <https://doi.org/10.1016/j.jcfm.2005.03.009>. August (4).
- Bectel LK, Holstege CP. Criminal poisoning: drug-facilitated sexual assault. *Emerg Med Clin*. 2007;25(2):499–525. <https://doi.org/10.1016/j.emc.2007.02.008>.
- Igareda N, Bodelón E. Sexual violence at university: when what it is not denounced it does not exist. *Rev Española Invest Criminol*. 2014;12:1–27. Online available at: https://ddd.uab.cat/pub/artpub/2014/192726/reic_a2014v12ai1spa.pdf.
- United Nations Economic Commission for Europe. *Developing Gender Statistics: A Practical Tool. Reference Manual Prepared by the UNECE Task Force on Gender Statistics Training for Statisticians with Contributions from Various Experts*. Geneva: United Nations Economic Commission for Europe; 2010:182. Online available at: http://www.unece.org/fileadmin/DAM/stats/publications/Developing_Gender_Statistics.pdf.
- Du Mont J, Macdonald S, Rotbard N, et al. Drug-facilitated sexual assault in Ontario, Canada: toxicological and DNA findings. *J Forensic Leg Med*. 2010;17(6):333–338. <https://doi.org/10.1016/j.jflm.2010.05.004>.
- Xifró-Collsamata A, Pujol-Robinat A, Barbería-Marcain E, et al. A prospective study of drug-facilitated sexual assault in Barcelona. *Med Clin*. 2015;144(9): 403–409. <https://doi.org/10.1016/j.medcli.2014.11.026>. May.
- Juhascik MP, Negrusz A, Faugno D, et al. An estimate of the proportion of drug-facilitation of sexual assault in four U.S. Localities. *J Forensic Sci*. 2007;52: 1396–1400. <https://doi.org/10.1111/j.1556-4029.2007.00583.x>. November (6).
- Bertol E, Di Milia MG, Fioravanti A, et al. Proactive drugs in DFSA cases: toxicological findings in an eight-years study. *Forensic Sci Int*. 2018;291(October): 207–215. <https://doi.org/10.1016/j.forsciint.2018.08.032>.
- Elliott SP, Burgess V. Clinical urinalysis of drugs and alcohol in instances of suspected surreptitious administration ("spiked drinks"). *Sci Justice*. 2005;45(3): 129–134. [https://doi.org/10.1016/S1359-0306\(05\)71646-4](https://doi.org/10.1016/S1359-0306(05)71646-4).
- Du Mont J, Macdonald S, Rotbard N, Asllani E, Bainbridge D, Cohen MM. Factors associated with suspected drug-facilitated sexual assault. *Can Med Assoc J*. 2009; 180:513–519. <https://doi.org/10.1503/cmaj.080570>. March (5).
- Hurley M, Parker H, Wells DL. The epidemiology of drug facilitated sexual assault. *J Clin Forensic Med*. 2006;13(4):181–185. <https://doi.org/10.1016/j.jcfm.2006.02.005>.
- Tiemensma M, Davies B. Investigating drug-facilitated sexual assault at a dedicated forensic centre in Cape Town, South Africa. *Forensic Sci. Bar Int*. 2018;288(July): 115–122. <https://doi.org/10.1016/j.forsciint.2018.04.028>.
- Caballero CG, Quintela-Jorge O, Landeira AC. Alleged drug-facilitated sexual assault in a Spanish population sample. *Forensic Chem*. 2017;4(June):61–66. <https://doi.org/10.1016/j.forc.2017.02.009>.
- Bosman IJ, Verschraagen M, Luthof KJ. Toxicological findings in cases of sexual assault in The Netherlands. *J Forensic Sci*. 2011;56:1562–1568. <https://doi.org/10.1111/j.1556-4029.2011.01888.x>. November (6).

35. Hagan KS, Reidy L. Detection of synthetic cathinones in victims of sexual assault. *Forensic Sci Int*. 2015;257:71–75. <https://doi.org/10.1016/j.forsciint.2015.07.040>.
36. Jones AW, Kugelberg FC, Holmgren A, Ahlner J. Occurrence of ethanol and other drugs in blood and urine specimens from female victims of alleged sexual assault. *Forensic Sci Int*. 2008;181(1):40–46. <https://doi.org/10.1016/j.forsciint.2008.08.010>.
37. Marc B, Baudry F, Vaquero P, Zerrouki L, Hassnaoui S, Douceron H. Sexual assault under benzodiazepine submission in a Paris suburb. *Arch Gynecol Obstet*. 2000;263:193–197. <https://doi.org/10.1007/s004040050282>. April (4).
38. Hall J, Goodall EA, Moore T. Alleged drug facilitated sexual assault (DFSA) in Northern Ireland from 1999 to 2005. A study of blood alcohol levels. *J Forensic Leg Med*. 2008;15(November 8):497–504. <https://doi.org/10.1016/j.jflm.2008.05.006>.
39. Heise LL. Violence against women: an integrated, ecological framework. *Violence Against Women*. 1998;4(June 3):262–290. <https://doi.org/10.1177/1077801298004003002>.
40. Kintz P, Salomone A, Vicenti M. *Hair Analysis in Clinical and Forensic Toxicology*. 1th ed. London: Academic Press; 2015.
41. Romo-Avilés N, Á García-Carpintero M, Pavón-Benítez L. Not without my mobile phone: alcohol binge drinking, gender violence and technology in the Spanish culture of intoxication. *Drugs Educ Prev Pol*. 2019;27(2):154–164. <https://doi.org/10.1080/09687637.2019.1585759>.
42. Calafat A, Gómez CF, Juan M, Becona E. Gestión de la vida recreativa: ¿Un factor de riesgo determinante en el uso reciente de drogas? *Adicciones*. 2005;17(4):337–347. <https://doi.org/10.20882/adicciones.364>.
43. Cortés MT, Espejo TB, Martín RB, Gómez IC. Different typologies of alcohol consumers in the practice of the "botellón" in three Spanish cities. *Psicothema*. 2010;22(3):363–368. Online available at: <https://pubmed.ncbi.nlm.nih.gov/20667261/>.
44. Calafat A, Juan M, Becona E, Mantecon A, Ramon A. Sexualidad de riesgo y consumo de drogas en el contexto recreativo. April (2) *Una Perspect de Género, Psicothema*. 2009;21:227–233. Online available at: http://www.irefrea.eu/uploads/PDF/Calafat%20et%20al_2009_Sexualidad%20Riesgo.pdf.
45. Lorenz MA, Ullman SE. Alcohol and sexual assault victimization: research findings and future directions. *Aggress Violent Behav*. 2016;31:82–94. <https://doi.org/10.1016/j.avb.2016.08.001>.
46. Ballesteros S, Almarza E, Quintela O, Martínez MA. The risk of consuming "Bath Salts". Exemplification through four forensic cases in Spain. *J Forensic Chem Toxicol*. 2018;11:87–96. <https://doi.org/10.1016/j.forc.2018.10.003>. December.
47. Fernández Alonso C, Quintela Jorge Ó, Ayuso Tejedor S, Santiago-Sáez AE, González Armengol JJ. Acute intoxication by new recreational drugs in probable cases of opportunistic and/or mixed chemical submission and chemsex in emergency department patients infected with human immuno-deficiency virus. *Emergencias*. 2019;31(4):289. Online available at: <https://pubmed.ncbi.nlm.nih.gov/31347812/>.
48. United Nations. *Transforming Our World: The 2030 Agenda for Sustainable Development*. New York: United Nations; 2015:41. Online available at: <https://sustainabledevelopment.un.org/post2015/transformingourworld/publication>.