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Chemical submission in cases of alleged crimes against sexual freedom 2016–2018, Lima, Peru[☆]

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KEYWORDS

Drug facilitated
sexual assault;
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Ethanol;
Psychotropic drugs;
Illicit drugs

Abstract

Introduction: Chemical submission is the use of chemical substances to manipulate the will of a person, producing incapacity or unconsciousness that facilitates criminal action. It has gained in prominence in recent years, due to its frequent use in cases of alleged crimes against sexual freedom.

Materials and methods: An observational descriptive-retrospective study of cases of alleged crimes against sexual freedom committed using chemical substances was carried out, to determine the profile of the victims according to the samples analysed and the substances detected in 2016, 2017 and 2018, registered with the Criminalistics Directorate (DIRCRI) of the Peruvian National Police (PNP).

Results: Of the 1841 cases of crime against sexual freedom, 445 (24.17% ± 2%) met the inclusion criteria. The victim's profile is that of a young (Lima) woman (mean age: 22.56 ± 1.14 years). The cases were from San Juan de Lurigancho (10.56% ± 2.9%). The samples submitted were urine (62.47% ± 4.5%), and urine and nail plaque (37.53% ± 4.5%). The toxicological analysis of probable cases showed substances identified as psychotropic drugs (57.53% ± 4.6%, mainly benzodiazepines), ethanol (26.29% ± 4.1%), and illicit drugs (11.24% ± 2.9%, mainly marijuana and cocaine), alone or in combination.

Conclusions: The study showed that 24.17% ± 2% were probable cases of Lima women who had been sexually assaulted under the influence of chemical substances, predominantly in the district of San Juan de Lurigancho at 10.56% ± 2.9%, most of the samples analysed were urine with 62.47% ± 4.5%; the most prevalent group of substances were psychotropic drugs at 57.53% ± 4.6%, with benzodiazepines being the only subgroups that were recorded.

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PALABRAS CLAVE

Sumisión química;
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Psicofármacos;
Drogas ilícitas

Sumisión química en casos de presuntos delitos contra la libertad sexual 2016–2018, Lima, Perú**Resumen**

Introducción: La sumisión química es el uso de sustancias químicas con el fin de manipular la voluntad en las personas produciendo una incapacidad o inconsciencia que facilita la acción criminal, por lo que han tomado un gran protagonismo en los últimos años, debido al uso frecuente en los casos de presuntos delitos contra la libertad sexual.

Materiales y métodos: Se ha realizado un estudio observacional descriptivo-retrospectivo de casos de presuntos delitos contra la libertad sexual ejercidos mediante sustancias químicas, con el fin de determinar el perfil de las víctimas según las muestras analizadas y las sustancias detectadas en los años 2016, 2017 y 2018, que han sido registrados en la Dirección de Criminalística (DIRCRI) de la Policía Nacional del Perú (PNP).

Resultados: De los 1841 casos de delito contra la libertad sexual, 445 ($24,17 \pm 2\%$) cumplieron los criterios de inclusión. El perfil de la víctima es de una mujer limeña joven con una edad media de $22,56 \pm 1,14$ años. La procedencia de casos fue de San Juan de Lurigancho ($10,56 \pm 2,9\%$). Las muestras remitidas han sido orina ($62,47 \pm 4,5\%$), y en conjunto con el sarro ungueal ($37,53 \pm 4,5\%$). El análisis toxicológico de los casos probables han sido sustancias identificadas como psicofármacos ($57,53 \pm 4,6\%$, fundamentalmente benzodiazepinas), etanol ($26,29 \pm 4,1\%$), y drogas ilícitas ($11,24 \pm 2,9\%$, fundamentalmente marihuana y cocaína), solas o en combinación.

Conclusiones: El estudio demostró que el $24,17 \pm 2\%$ fueron casos probables de mujeres limeñas, agredidas sexualmente bajo efectos de sustancias químicas, predominando el distrito de San Juan de Lurigancho con el $10,56 \pm 2,9\%$, cuya mayoría de muestras analizadas fueron a partir de la orina con el $62,47 \pm 4,5\%$; el grupo de sustancias que más prevalencia se obtuvo fueron los psicofármacos con $57,53 \pm 4,6\%$, siendo las benzodiazepinas los únicos subgrupos que fueron registrados.

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Introduction

Chemical submission is defined as the ingestion of one or several psychoactive substances by a person without their consent, with criminal purposes of an economic or sexual nature. The latter occurs in a higher proportion of cases, and there is growing interest in this particular field^{1,2}. Submission is one condition for the practice of sexual crimes, and it is usually achieved by means of physical force or domination of the victim by means of substance ingestion (alcohol, drugs, medication, etc.), either alone or in combination³.

The typical scenario in such cases is that of a male aggressor placing a drug in the drink of an unsuspecting woman, before waiting for her to become unconscious and rape her. Later on, the woman may experience sensations such as feeling hangover, nausea, vomiting and/or partial or total amnesia⁴. The particularity which differentiates the victims of sexual crimes involving chemical submission from those of other rape victims is therefore that the former experience a loss of power and awareness due to the effect of the substances administered. The rapist takes advantage of this situation to achieve their aims. This does not mean that the victim is necessarily unconscious, as they may be conscious but equally under the control of their aggressor^{5,6}.

For the aggressor, the ideal substance in these cases is one that is easy to obtain and administer and which modifies the state of consciousness, achieving a state of pre-existing amnesia⁷. Toxicological analysis is extremely important in these cases, as it gives us scientific proof of the submission as well as diagnostic certainty. It is therefore absolutely necessary for the victim to supply a sample as soon as possible, to prevent the disappearance of the analyte from the body⁴. When victims decide to report these cases, they are often rejected because of the amnesia they may suffer, and this makes them vulnerable when trying to obtain evidence⁸.

Two groups of drugs have been implicated in rape mediated by chemical submission: central nervous system depressants and stimulants. The evidence indicates that some stimulant drugs such as 3,4-methylenedioxyamphetamine (MDMA) and cocaine cause a lack of inhibition that leads to inappropriate or more risky acquiescence in sexual activity⁹. Two different types of chemical submission may also be differentiated: proactive or premeditated submission, in which the aggressor administers the drug to the victim intentionally, and opportunistic or chemical vulnerability, where the aggressor takes advantage of a victim who has previously and voluntarily taken a substance which renders them vulnerable to a situation such as rape^{1,10}. It is important to state that some authors believe that a third mixed type of

chemical submission exists, in which the victim may take a substance that alters their decision-making capacity and the aggressor then adds another product which accelerates the final effect of chemical submission¹¹. Other terms in connection with this subject are date-rape (opportunistic chemical submission) and drug-rape, the situation in which the criminal drugs the victim with the aim of raping them (premeditated chemical submission)¹².

According to the World Health Organisation, rape has been a forgotten subject, even though it is a major public health problem in many countries. It has therefore been studied in many countries, including the United States, the United Kingdom, France and Spain^{5,6}. The aim of this work is to determine the profile of the victims according to the samples analysed and the samples detected in presumed crimes against sexual freedom in Lima, Peru, from 2016 to 2018.

Materials and methods

Type of study

An observational descriptive-retrospective study of sexual crimes associated with the consumption of chemical substances, analysed in Metropolitan Lima, Peru by the *Dirección de Criminalística* (DIRCRI) laboratories of the Peruvian National Police (PNP), from January 2016 to December 2018.

Method

Cases were selected from the Peruvian National Police *Dirección de Criminalística* (DIRCRI) database of the Department of Forensic Toxicology and Chemistry of victims of alleged cases against sexual freedom, using the method of chemical submission and which occurred in Metropolitan Lima during the years 2016–2018. These data were also classified according to the following parameters:

- Prevalence of the cases: ruled out, possible and probable, in the years 2016–2018.
- Victim profile characteristics: age group and the location of the case.
- Characteristics of the sample analysed: the sample taken, the elapsed time before the sample was taken.
- Characteristics of the substances analysed: general appearance and type of sample.

Inclusion criteria

The inclusion criterion is the study population consisting of all the reports of cases of women within Metropolitan Lima with tests that fulfil the study aim, specificity of chemical submission by the victim (age group, location of the case, elapsed time before the sample was taken, general appearance of the sample and the type of sample identified). The cases that fulfilled these requisites were classified as probable.

Table 1 Distribution of cases per year and type.

| Type of cases | Year | | | Total | CI 95% |
|---------------|------|------|------|-------|--------------|
| | 2016 | 2017 | 2018 | | |
| Ruled out | 335 | 435 | 451 | 1221 | 66.32 ± 2.2% |
| Possible | 37 | 67 | 71 | 175 | 9.51 ± 1.3% |
| Probable | 145 | 148 | 152 | 445 | 24.17 ± 2% |
| Total | 517 | 650 | 674 | 1841 | 100% |

CI 95%: Confidence Interval 95%.

Table 2 Distribution of victims according to age group.

| Age group | Years | | | Total | CI 95% |
|-----------|-------|------|------|-------|--------------|
| | 2016 | 2017 | 2018 | | |
| Under 15 | 19 | 16 | 15 | 50 | 11.24 ± 2.9% |
| 15–19 | 47 | 54 | 55 | 156 | 35.06 ± 4.4% |
| 20–24 | 36 | 32 | 39 | 107 | 24.04 ± 4% |
| 25–29 | 19 | 26 | 24 | 69 | 15.5 ± 3.4% |
| 30–34 | 10 | 8 | 9 | 27 | 6.07 ± 2.2% |
| 35–39 | 6 | 7 | 4 | 17 | 3.82 ± 1.8% |
| Over 40 | 8 | 5 | 6 | 19 | 4.27 ± 1.9% |
| Total | 145 | 148 | 152 | 445 | 100% |

IC 95%: Confidence Interval 95%.

CI 95% (average age) = 22.56 years ± 1.14 years.

Exclusion criteria

All of the cases that did not fulfil the characteristics we required for this work were excluded, and cases of alleged crimes against sexual freedom - rape without evidence that supports the objective of this study or the specification of chemical submission by the victim were ruled out.

Likewise, cases in which the victim described chemical submission but when results were negative were classified as possible.

Lastly, to be considered as ruled out or possible, cases had to have been recorded in Metropolitan Lima.

Statistical analysis

Statistical analysis was performed using version 1.2.5042 of the RStudio statistical package.

Results

1841 cases of alleged sexual assault were reported in the period from January 2016 to December 2018 (Table 1), 1221 cases of which were ruled out (66.32% ± 2.2%), 175 cases were classified as possible (9.51% ± 1.3%) and 445 cases were classified as probable as they fulfilled all of the inclusion criteria. The latter amounted to 24.17% ± 2% of the total.

With regard to the distribution of the victims according to age group, the majority were young women with an average age of 22.56 ± 1.14 years. Likewise, the majority of cases were in women aged from 15 to 19 years old, with 156 cases (35.06% ± 4.4%), followed by those aged from 20 to 24 years old, with 107 cases (24.04% ± 4%), etc. (Table 2).

Table 3 Distribution of cases per year and district of Metropolitan Lima.

| District | Year | | | Total |
|-------------------------|------|------|------|-------|
| | 2016 | 2017 | 2018 | |
| San Juan de Lurigancho | 10 | 21 | 16 | 47 |
| Los Olivos | 16 | 10 | 11 | 37 |
| Ate | 13 | 14 | 9 | 36 |
| Comas | 13 | 4 | 10 | 27 |
| San Juan de Miraflores | 7 | 4 | 14 | 25 |
| Lima | 12 | 3 | 5 | 20 |
| Villa María del Triunfo | 7 | 8 | 5 | 20 |
| Chorrillos | 5 | 8 | 4 | 17 |
| Lince | 8 | 4 | 5 | 17 |
| Miraflores | 2 | 8 | 6 | 16 |
| Santa Anita | 6 | 4 | 6 | 16 |
| San Martín de Porres | 2 | 5 | 6 | 13 |
| Santiago de Surco | 5 | 2 | 6 | 13 |
| Pachacamac | 2 | 6 | 4 | 12 |
| Puente Piedra | 4 | 5 | 2 | 11 |
| Rímac | 5 | 2 | 3 | 10 |
| La Victoria | 2 | 3 | 4 | 9 |
| Lurín | 1 | 4 | 4 | 9 |
| Carabayllo | 3 | 4 | 1 | 8 |
| El Agustino | 3 | 1 | 4 | 8 |
| Independencia | 2 | 3 | 3 | 8 |
| Lurigancho | 2 | 3 | 3 | 8 |
| Surquillo | 1 | 3 | 3 | 7 |
| Villa El Salvador | 2 | 2 | 3 | 7 |
| Breña | 2 | 2 | 2 | 6 |
| Magdalena del Mar | 3 | 2 | 1 | 6 |
| Barranco | | 3 | 2 | 5 |
| Cieneguilla | 1 | 2 | 1 | 4 |
| San Miguel | | 2 | 2 | 4 |
| Acón | 0 | 1 | 2 | 3 |
| La Molina | 1 | 1 | 1 | 3 |
| San Borja | 1 | 1 | 1 | 3 |
| San Isidro | 1 | 0 | 2 | 3 |
| Pueblo Libre | 2 | 0 | 0 | 2 |
| Punta Hermosa | 1 | 1 | 0 | 2 |
| Chaclacayo | 0 | 1 | 0 | 1 |
| Jesús María | 0 | 1 | 0 | 1 |
| San Luis | 0 | 0 | 1 | 1 |
| Pucusana | 0 | 0 | 0 | 0 |
| Punta Negra | 0 | 0 | 0 | 0 |
| San Bartolo | 0 | 0 | 0 | 0 |
| Santa María del Mar | 0 | 0 | 0 | 0 |
| Santa Rosa | 0 | 0 | 0 | 0 |
| Total | 145 | 148 | 152 | 445 |

CI 95%: Confidence Interval 95%.
 CI 95%(San Juan de Lurigancho) = 10.56% ± 2.9%.
 CI 95%(Los Olivos) = 8.31% ± 2.6%.
 CI 95%(Ate) = 8.09% ± 2.5%.
 CI 95%(Comas) = 6.07% ± 2.2%.
 CI 95%(San Juan de Miraflores) = 5.62% ± 2.1%.

The locations of the cases in Metropolitan Lima are shown in Table 3. The first 5 districts in terms of the number of cases against sexual freedom by means of chemical submission were: San Juan de Lurigancho with 47 cases (10.56% ± 2.9%),

Table 4 Distribution of the time elapsed from the incident until sample taking, according to year.

| Time elapsed before sample taking | Year | | | Total | CI 95% |
|-----------------------------------|------|------|------|-------|-------------|
| | 2016 | 2017 | 2018 | | |
| Less than 6 h | 35 | 42 | 28 | 105 | 23.6 ± 3.9% |
| 6–12 h | 43 | 60 | 55 | 158 | 35.5 ± 4.5% |
| 13–24 h | 41 | 31 | 37 | 109 | 24.5 ± 4% |
| 25–36 h | 14 | 9 | 18 | 41 | 9.2 ± 2.7% |
| More than 36 h | 12 | 6 | 14 | 32 | 7.2 ± 2.4% |
| Total | 145 | 148 | 152 | 445 | 100% |

CI 95%: Confidence Interval 95%.
 CI 95%(average time elapsed before sample taking) = 25.4 h ± 4.6 h.

Los Olivos with 37 cases (8.31% ± 2.6%), Ate with 36 cases (8.09% ± 2.5%), Comas with 27 cases (6.07% ± 2.2%) and San Juan de Miraflores with 25 (5.62% ± 2.1%).

The type of sample taken for toxicological analysis in the majority of cases consisted of urine, in 278 instances (62.47% ± 4.5%), or in combination with nail plaque in 167 instances (37.53% ± 4.5%); it should be underlined that in no case was nail plaque the only sample taken from a victim.

Table 4 shows the average time which transpired after the incident until the sample was taken. This stands at 25.4 h ± 4.6 h, while in the largest number of cases recorded the interval was 6–12 h, with 158 cases (35.5% ± 4.5%), followed by the interval of 13–24 h, with 109 cases (24.5% ± 4%). Lastly, the smallest number of cases corresponded to when the sample was taken more than 36 h after the incident occurred, with 32 cases (7.2% ± 2.4%).

In the general results of the samples from the alleged victims analysed, the majority of the agents identified were psychotropic drugs alone, in 256 (57.53% ± 4.6%) cases. In these cases the drugs were only identified as benzodiazepines, without specifying the type, and thin layer chromatography was used as the detection method. Ethanol alone came in second place, at 117 cases (26.29% ± 4.1%) while illicit drugs used alone were in third place, with 50 cases (11.24% ± 2.9%). The minority result of toxicological analysis of the cases presented was the use of a combination of psychotropic and an illicit drug, with 6 cases (1.35% ± 1.1%), similarly to the result for the presence of ethanol and an illicit drug, with 7 cases (1.57% ± 1.2%) and ethanol and psychotropic drugs, with 9 cases (2.02% ± 1.3%) (Table 5).

Finally, in the type of sample identified according to year (Table 6), in first place the result was that benzodiazepine was the substance that was reported the most often, with 271 cases (58% ± 4.5%). This quantity is the result of the addition of 3 groups (a psychotropic alone, ethanol + psychotropic drugs, and psychotropic drugs + an illicit drug), as may be seen in Table 5. It should be pointed out that the psychotropic drugs were benzodiazepines in all cases, without specifying the type of benzodiazepine, and that no other type of psychotropic drug was recorded. Ethanol was in second place, with 132 cases (28.14% ± 4.1%).

Table 5 General appearance of the sample, identified according to year.

| General appearance | Year | | | Total | CI 95% |
|-----------------------------------|------|------|------|-------|--------------|
| | 2016 | 2017 | 2018 | | |
| Only ethanol | 24 | 42 | 51 | 117 | 26.29 ± 4.1% |
| Only a psychotropic drug | 113 | 82 | 61 | 256 | 57.53 ± 4.6% |
| Only illicit drugs | 6 | 16 | 28 | 50 | 11.24 ± 2.9% |
| Ethanol + psychotropic drugs | 0 | 4 | 5 | 9 | 2.02 ± 1.3% |
| Ethanol + illicit drug | 1 | 4 | 2 | 7 | 1.57 ± 1.2% |
| Psychotropic drugs + illicit drug | 1 | 0 | 5 | 6 | 1.35 ± 1.1% |
| Total | 145 | 148 | 152 | 445 | 100% |

CI 95%: Confidence Interval 95%.

Table 6 Type of sample identified according to year and percentage.

| Type of sample | Year | | | Total | CI 95% |
|----------------|------|------|------|-------|--------------|
| | 2016 | 2017 | 2018 | | |
| Benzodiazepine | 114 | 86 | 71 | 271 | 58 ± 4.5% |
| Marihuana | 5 | 14 | 30 | 49 | 10.45 ± 2.8% |
| Cocaine | 3 | 7 | 6 | 16 | 3.41 ± 1.6% |
| Ethanol | 24 | 50 | 58 | 132 | 28.14 ± 4.1% |
| Total | 146 | 158 | 165 | 468 | 100% |

CI 95%: Confidence Interval 95%.

This is the result of the addition of 3 groups (ethanol alone, ethanol + psychotropic drugs, and ethanol + an illicit drug) (Table 5). Marihuana came in third place, with 49 cases (10.45% ± 2.8%), and there were 16 cases with cocaine (3.41% ± 1.6%).

Discussion

Cases were selected as objectively as possible, that is, only cases that fulfilled the inclusion and exclusion criteria were included. They were also classified into 3 categories (cases that were ruled out, possible cases and probable cases) based on examination of their characteristics. These characteristics included the age of the victim, the district where the case occurred, the type of sample taken, the time that had elapsed before the sample was taken, samples identified in the toxicological analysis and possible combinations of the same.

Restricting the inclusion and exclusion criteria, 1841 cases were found of alleged crimes against sexual freedom. However, only 24.17% ± 2% (445) of these cases fulfilled the specific characteristics corresponding to probable cases. This is a lower result than those of other similar studies, which stand within the parameters of 30% and 34%^{13,14}. This is because of the size of the sample that was studied, as according to Fisher and cited by Pineda et al., the larger and more representative a sample is, the lower will be its error¹⁵.

The results shown are included within the 6.6% of women who suffered sexual violence in Peru in the years 2016, 2017 and 2018¹⁶. The cases which are considered to be probable show that the average age of the victims who suffer sexual aggression stands a 22.56 ± 1.14 years, and this is

similar to the results observed by Fiorentin and Logan in a 2019 study in the United States¹⁷. Likewise, the distribution of the victims according to age group showed a percentage of sexual aggression in adolescents in the 15–19 years age range (35.06% ± 4.4%), followed by those aged 20–24 years (24.04% ± 4%), 25–29 years (15.5% ± 3.4%) and those under the age of 15 years (11.24% ± 2.9%).

The largest number of cases originated in the district of San Juan de Lurigancho (10.56% ± 2.9%), followed by Los Olivos (8.31% ± 2.6%), Ate (8.09% ± 2.5%), Comas (6.07% ± 2.2%) and San Juan de Miraflores (5.62% ± 2.1%). According to their 2017 study, Rea Abad and Pariona Paquiyauri state that the factors associated with sexual assault in San Juan de Lurigancho are due to dysfunctional families, low incomes and low educational levels¹⁸. It should be underlined that in districts such as Pucusana, Punta Negra, San Bartolo, Santa María del Mar and Santa Rosa there were no crimes against sexual freedom involving submission.

The majority of sample taken for analysis were of urine alone (62.47% ± 4.5%) or together with nail plaque (37.53% ± 4.5%). According to toxicological experts, blood analysis is not necessary because urine analysis is easier and less invasive than blood analysis; the detection time is shorter than it is when complex apparatus is used. On the other hand, studies in Europe and the United States analyse blood or urine or both types of sample for substances associated with cases of chemical submission^{11,14,17}. Therefore, blood is not always the most appropriate sample for the detection of toxic substances (and is only recommendable during the first 48 h), as urine has the advantage of a longer detection window (up to 7 days); however, it will depend on the dose administered to the victim and the sensitivity of

the method, so that to conclude, we should always obtain both types of sample when this is possible⁶.

The most common time period which elapsed until the sample was taken was from 6 h to 12 h (35.5% ± 4.5%), which means that the majority of reports were made during this time interval, followed by the interval from 13 h to 24 h (24.5% ± 4%). Some studies by García Caballero corroborate these results, with parameters from 29 to 40, and 33% of the samples were taken from 6 h to 12 h^{6,14}. It should be pointed out that the delay in taking the sample cause by a delay in reporting may lead to negative analytical results for detection, due to the elimination of the substance from the organism⁶.

The samples identified in toxicological analysis of the alleged victims consisted firstly of psychotropic drugs, in 256 cases (57.53% ± 4.6%). This may be due to the ease with which these drugs can be acquired in pharmacies, although they are not unique in this respect, as in 9 and 7 cases, respectively, they were combined with ethanol and illicit drugs. In all of the cases where psychotropic drugs were employed alone or in combination, the benzodiazepines were the most prevalent, with a total of 271 cases (58% ± 4.5%). The type of benzodiazepine used by the aggressor was not specified, and no records of the use of other psychotropic drugs were found in the cases analysed. Cases in which ethanol was used were the second-most common (26.29% ± 4.1%), in comparison with other studies, in which the prevalence of ethanol use in the samples identified varies from 30.9% to 76.9%^{12,13,16,19}. Illicit drugs are used in third place (11.24% ± 2.9%), and marihuana (10.45% ± 2.8%) and cocaine (3.41% ± 1.6%) are the most widely used of such drugs alone. This percentage is lower than the one shown in the United Kingdom study by Scott-Ham, where these drugs were used in 34% of cases, although their results are similar for the detection of marihuana²⁰.

To conclude, the study showed that 445 cases (24.17% ± 2%) were probably associated with the phenomenon of chemical submission, of a total number of 1841 cases of alleged crimes against sexual freedom. All of the victims were women who live in Lima and who were sexually assaulted under the effects of chemical substances. They were predominantly in the 15–19 year-old age group, which accounted for 156 cases (35.06% ± 4.4%). Likewise, the district of San Juan de Lurigancho had the highest number of cases (10.56% ± 2.9%). Lastly, the largest number of samples analysed consisted of urine, with 278 (62.47% ± 4.5%) cases. Finally, the most prevalent group of substances were psychotropic drugs, with 57.53% ± 4.6%, of which benzodiazepines were the only recorded.

Conflict of interests

The authors have no conflict of interests to declare.

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