

THE RELATION BETWEEN SEXUAL ABUSE IN CHILDHOOD AND USE OF ILLICIT DRUGS: IN STUDENTS OF A PUBLIC UNIVERSITY IN NICARAGUA

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ABSTRACT: Illicit drugs with sexual abuse during childhood are responsible for considerable morbidity in the world. The results show that sexual abuse was reported by 8.9% [95% CI (6.1%, 11.8%)] of respondents. The prevalence of illicit drugs (Cannabis, Cocaine, Heroin or Ecstasy) in the last year was 15.5% [95% CI (11.8%, 19.2%)]. After controlling for sex, age and origin of the students, the Generalized Linear Models determined that female students who were sexually abused during childhood are 2.3 [p=0.01, 95% (1.21, 4.55)] more likely to using illicit drugs compared to women who did not suffer from this kind of abuse. These results highlight the extent of sexual abuse in childhood and its relationship, long-term consumption of illicit drugs, and develop preventive actions that aim to minimize these problems.

DESCRIPTORS: Child abuse, sexual. Street drug. students

A RELAÇÃO ENTRE O ABUSO SEXUAL DURANTE A INFÂNCIA E O USO DE DROGAS ILÍCITAS EM ESTUDANTES DE UMA UNIVERSIDADE PÚBLICA DA NICARAGUA

RESUMO: As drogas ilícitas com abuso sexual durante a infância são responsáveis por considerável morbidade no mundo. Os resultados deste estudo mostram que o abuso sexual foi relatado por 8,9% [IC 95% (6,1%, 11,8%)]. A prevalência de drogas ilícitas (maconha, cocaína, heroína ou ecstasy) no último ano foi de 15,5% [IC 95% (11,8%, 19,2%)]. Depois de verificar os Modelos Lineares Generalizados por sexo, idade e origem dos estudantes, foi determinado que os estudantes que foram abusados sexualmente durante a infância tinham 2,3 [p=0,01, 95% (1,21, 4,55)] mais chances de uso de drogas ilícitas em comparação com mulheres que não sofreram esse tipo de abuso. Estes resultados destacam a extensão do abuso sexual na infância e sua relação com o consumo, a longo prazo, de drogas ilícitas, e desenvolver ações preventivas que visam minimizar esses problemas.

DESCRIPTORIOS: Abuso sexual na infância. Drogas ilícitas. Estudantes.

RELACIÓN ENTRE EL ABUSO SEXUAL EN LA INFANCIA Y EL USO DE DROGAS ILÍCITAS EN ESTUDIANTES DE UNA UNIVERSIDAD PÚBLICA EN NICARAGUA

RESUMEN: Las drogas ilícitas junto con el abuso sexual durante la infancia son responsables de una considerable morbilidad en el mundo. Los resultados del presente estudio muestran que el abuso sexual fue reportada por el 8.9% [IC95% (6.1%, 11.8%)] de los encuestados. La prevalencia del consumo de drogas ilícitas (Cannabis, Cocaína, Éxtasis ó Heroína) en el último año fue del 15.5% [IC95% (11.8%, 19.2%)]. Después de haber ajustado los Modelos Lineales Generalizados por sexo, edad y procedencia de los estudiantes, se determinó que estudiantes del sexo femenino que fueron víctima de abuso sexual durante la infancia tienen 2.3 [p=0.01; IC95%; (1.2, 4.5)] más posibilidades de consumir drogas ilícitas en comparación con estudiantes del sexo femenino que no sufrieron de este tipo de abusos. Estos resultados ponen de manifiesto la magnitud del abuso sexual durante la infancia y su relación, a largo plazo, en el consumo de drogas ilícitas.

DESCRIPTORS: Child abuse, sexual. Street drug, students.

INTRODUCTION

Illicit drugs are the cause of a considerable number of diseases and morbidities in the world. It is also known that the use of illicit drugs fulfills the needs of users not to be despised, to escape from problems, or to avoid feared situations.¹⁻³ On the other hand, it is assumed that there is a loss in the number of years of life during childhood and adolescence due to disability, representing a significant number of diseases in some countries, where the main causes are alcohol abuse and drug addiction.² In this context, and according to the results of other studies, a significant relationship has been found between drug use and people who were sexually abused by adults during childhood or adolescence.⁴⁻⁷

In 2006 in Nicaragua, according to sub-national data, it was found that the prevalence of consumption of cannabis, cocaine, and opioids in the last 12 months was 1.1%, 0.5%, and 0.02% respectively.⁸ In a population-based study carried out in the county of León, Nicaragua, it was found that 20% of men and 26% of women had suffered some sexual abuse during childhood. This same study mentioned that 33% of sexual abuse of men and 66% of women was perpetrated by a family member.⁹ According to the Legal Medicine Institute of Nicaragua, sexual abusers are mostly fathers, stepfathers, neighbors, uncles, or brothers. Only 10% of perpetrators are unknown to the victims.⁸

Because most studies on licit or illicit drugs are restricted to estimates of prevalence of consumption of these substances, and because studies that attempt to demonstrate the relationship between sexual abuse in childhood and the use of illicit drugs in adolescence are rare, our study aims to fill this gap by studying the relationship between sexual

abuse during childhood and the use of the following illicit drugs: cannabis; cocaine; ecstasy; and heroin.

METHOD

This is a cross-sectional study that employed a questionnaire about experiences of sexual abuse during childhood. For sample size calculation, we considered the total population of students enrolled in a public university in Nicaragua (17,700 students), with a prevalence of psychoactive drug consumption of 42.6%, a confidence level of 95%, and precision of 5%. The sample size found for this investigation was 368 students. The sample unit was university students selected using a non-probabilistic sampling technique. For students to be eligible for interviews, they had to be over 18 years old and therefore legally adults, and active students in a public university in Nicaragua.

The instrument validated for this study was designed with a total of 60 questions, among which was a test to determine whether the student was sexually abused during childhood. These questions considered three different forms of abusive behavior: penetration; touching of genitals; and other nonspecific acts of sexual abuse. Penetration includes oral, anal, or other types. Sexual penetration was considered as a severe form of sexual abuse.¹⁰ Data collection took place in March 2011.

Questions from CICAD/OEA questionnaires were applied to record responses from students to questions related to the use of illicit drugs. A team of five interviewers was trained to manage the data collection instrument and to approach interviewees. At the end of each day, data collection instruments were received, and quality control was performed before entering data into the database. A database was created on Microsoft Access with the corresponding screens for data collection, and

validation rules were created in order to minimize typing errors.

The software used for data analysis was Stata v11.2. For the descriptive analysis, we used measures of central tendency and dispersion (mean, median, and standard deviation), absolute and relative frequencies, and contingency tables through which a chi-square test¹⁰ was applied in order to assess the relationship between sexual abuse during childhood and the use of illicit drugs. Comparison of proportions tests was performed in order to verify the existence of significant differences in the prevalence of use of illicit drugs and sexual abuse during childhood among male and female students.¹¹ A Mann-Whitney U-test¹² was performed to verify the existence of significant differences between the averages of male and female students' age. This test was performed when the Kolgomorov-Smirnov¹³ test had no statistical significance.

The risk of consuming any illicit drug in students who were sexually abused during childhood was estimated using Generalized Linear Models (GLM) for binomial distributions related to the logit function.¹⁴ These models had their respective p-values and a confidence interval of 95%. To validate the GLMs, the Akaike information criterion was used.¹⁴

The protocol was submitted to the Research Ethics Board of the Centre for Addiction and Mental Health (CAMH) for approval, under number 141-

2010, and to the Ethics Committee of the public university in Nicaragua under number 75. Students participated in the study on a voluntary basis. Before the interviews, they were asked to sign a Free and Informed Consent form. Interviews were conducted in a private location. Students had the possibility of interrupting the interview at any time or not answering questions they felt were inappropriate.

RESULTS

A total of 368 students aged over 18 years old were interviewed; 48.4% (178) were male, and 51.6% (190) were female. Eighty-two point nine percent of participants came from rural areas; 63.3% stated that they had a medium socioeconomic status; and 82.6% considered that religion was important to them. Thirty-six point one percent of these students' fathers had completed higher education, whereas 38.6% of mothers had done so. No differences were observed in sociodemographic characteristics among male and female students. Therefore, previous results indicate that the studied population was composed of young students with a medium socioeconomic status, who came mainly from urban areas, who considered, at the moment of the interview, that religious beliefs were important, and stated that their parents had a high level of education (see Table 1).

Table 1 - Sociodemographic characteristics, parents' education, and importance of religious beliefs, divided by students' gender. León, Nicaragua 2011

Variables	Total n=368	Geder		p-value propor- tion test
		Male n=178	Female n=190	
Average age	20 [2.2]*	20 [2.4]	19 [2.0]	0.09 [†]
Socioeconomic status				
High	47 (12.8) [†]	24 (13.5)	23 (12.11)	0.88
Medium	233 (63.3)	104 (58.4)	129 (67.9)	0.13
Low	88 (23.9)	50 (28.1)	38 (20.0)	0.38
Origin				
Rural	63 (17.1)	25 (14.0)	38 (20.0)	0.54
Urban	305 (82.9)	153 (85.9)	152 (80.0)	0.16
Religious beliefs				
Important	304 (82.6)	137 (76.9)	167 (87.9)	0.01
Fairly important	47 (12.8)	33 (18.5)	14 (7.4)	0.32
Not important	17 (4.6)	8 (4.5)	9 (4.5)	0.98
Education level of the father				
Primary school	116 (31.5)	46 (25.8)	70 (36.8)	0.21
Secondary school	119 (32.3)	59 (33.2)	60 (31.6)	0.85
Higher education	133 (36.1)	73 (41.0)	60 (31.2)	0.26
Education level of the mother				
Primary school	92 (25.0)	39 (21.9)	53 (27.9)	0.51

Variables	Total n=368	Geder		p-value propor- tion test
		Male n=178	Female n=190	
Secondary school	134 (36.4)	62 (34.8)	72 (37.9)	0.71
Higher education	142 (38.6)	77 (43.3)	653 (4.2)	0.27

* Standard Deviation; †Percentages; ‡Mann-Whitney test

The prevalence of sexual abuse was estimated at 8.9% [CI95% (6.1%, 11.8%)]. This prevalence was lower among male students (5.6%) [CI95% (2.2%, 9.0%)] than among female students (12.1%) [CI95% (7.5%, 16.7)]. Significant differences were found between the respective prevalence of male and female students [$p=0.02$; CI95% (0.7%, 12.2%)], that is, 6.5 percentage points higher among female students. A significant association was found between gender and sexual abuse during childhood [$p=0.03$].

The most prevalent type of sexual abuse was offensive touching (6.8%), followed by sexual caress (6.5%) and the attempt to have sexual contact (6.3%). Three point five percent of students [CI95% (1.7%, 5.4%)] stated that they had had some sexual contact with their parents or another adult who lived in the household. An association was found between students' gender and offensive touching ($p=0.01$) and the attempt to have sexual contact ($p=0.02$) (see Table 2).

Among all students interviewed, the preva-

lence of use of illicit drugs (cannabis, cocaine, heroin, or ecstasy) in the last year was 15.5% [CI95% (11.8%, 19.2%)]. The distribution per type of drug was: cannabis 13.9% [CI95% (10.3%, 17.4%)], cocaine 8.4% [CI95% (5.6, 11.3)], heroin 2.7% [CI95% (1.1, 4.4)], and ecstasy 2.2% [CI95% (0.7, 3.7)].

The prevalence of any drug among male students was 24.7% [CI95% (18.4%, 31.5)] and 6.8% [CI95% (3.3%, 10.4%)] among female students, with significant differences between the respective prevalence of male and female students [$p=0.00$; CI95% (10.6, 25.2)], that is, 17.9 percentage points higher for men. The prevalence of cannabis (21.8%) and cocaine (6.8%) was higher for men than for women.

No significant differences were found between men and women for the prevalence of use of heroin or ecstasy. However, a relationship was found between gender and the use of any drug, that is, cannabis and cocaine ($p=0.00$), but not for heroin ($p=0.45$) or ecstasy ($p=0.92$) (see Table 2).

Table 2 - Types of sexual abuse, diagnosis of sexual abuse according to DECQ, prevalence of use of illicit drugs in the last 12 months, and chi-square test to find relationships, divided by students' gender. León, Nicaragua, 2011

	Total n=368	Geder		p-value for the chi-square test
		Male n=178	Female n=190	
Sexual abuse according to DECQ	33 (8.9) [†]	10 (5.6)	23 (12.1)	0.03 [‡]
Type of sexual abuse*				
Offensive touching	25 (6.8)	6 (3.4)	19 (10.0)	0.01 [‡]
Sexual caress	24 (6.5)	8 (4.5)	16 (8.4)	0.12
Attempt to have sexual contact	23 (6.3)	6 (3.4)	17 (8.9)	0.02 [‡]
Actual sexual contact	13 (3.5)	6 (3.4)	7 (3.7)	0.87
Use of illicit drugs per type				
Any illicit drug	57 (15.5)	44 (24.7)	13 (6.8)	0.00 [‡]
Cannabis	51 (13.9)	38 (21.4)	13 (6.8)	0.00 [‡]
Cocaine	31 (8.4)	24 (13.5)	7 (3.7)	0.00 [‡]
Heroin	10 (2.7)	6 (3.4)	4 (2.1)	0.45
Ecstasy	8 (2.2)	4 (2.3)	4 (2.1)	0.92

* Multiple answer; †Percentages; ‡Significant to 0.0 level

Of the 33 students (8.9%) who were sexually abused during childhood, 18.2% stated that they had used at least one of the four types of drug (cannabis, cocaine, ecstasy, or heroin) in the last

12 months. There was no significant difference in the percentages of use of drugs between students who were sexually abused (18.2%) and those who were not (15.2%) [$p=0.65$; CI95% (-16.7%, 10.7%)].

In this same group of students, 18.2% used cannabis, 15.2% cocaine, and 9.1% heroin or ecstasy (see Table 3).

Significant differences were found in percentages of use of heroin (p=0.01) and ecstasy (p=0.00)

among students who were sexually abused during childhood and students who were not. A significant relationship was also found between sexual abuse during childhood and the use of heroin (p=0.01) (see Table 3).

Table 3 - Prevalence of use of illicit drugs per type in the last 12 months and chi-square test to assess relationships. León, Nicaragua, 2011

Illicit drug use	Total n=368	Sexual abuse according to DECQ		p-value for the chi-square test
		No n=335	Yes n=33	
Use of any illicit drug	57 (15.5) [†]	51 (15.2)	6 (18.2)	0.65
Type of drugs*				
Cannabis	51 (13.9)	45 (13.4)	6 (18.2)	0.45
Cocaine	31 (8.4)	26 (7.8)	5 (15.2)	0.14
Heroin	10 (2.7)	7 (2.1)	3 (9.1)	0.01 [‡]
Ecstasy	8 (2.2)	6 (1.5)	3 (9.1)	0.00 [‡]

* Multiple answer; [†]Percentages; [‡]Significant to 0.05 level

Tables 4 and 5 show the Generalized Linear Models (GLM) after controlling for gender, age, and origin of students. The GLM presented in Table 4 shows that the possibility of students using any of the four illicit drugs (cannabis, cocaine, ecstasy, or heroin) in the last year was OR_{aj}=1.42 [p=0.20; CI95% (0.83, 2.44)]. The risks for using cocaine, ecstasy, or heroin were OR_{aj}=1.98 [p=0.02; CI95% (1.10, 3.57)], OR_{aj}=2.45 [p=0.01; CI95% (1.18, 5.08)], and OR_{aj}=2.22 [p=0.02; CI95% (1.09, 4.52)] respectively, which allows us to affirm that the risk for consuming one of these illicit drugs in the last 12 months was higher among students who were sexually abused during childhood when compared to those who were not (see Table 4). Table 5 pre-

sents GLMs and the relationship between having been sexually abused during childhood and being female. The results show that the risk of using any illicit drug is greater among female students who were sexually abused during childhood than among female students who were not, OR_{aj}=2.35 [p=0.01; CI95% (1.21, 4.55)]. Female students who were sexually abused during childhood presented the following risks: cocaine [OR_{aj}=4.27; p=0.00; CI95% (1.96, 9.33)], ecstasy [OR_{aj}=4.04; p=0.00; (1.55, 10.50)], heroin [OR_{aj}=3.94; p=0.00; (1.52, 10.21)], and cannabis [OR_{aj}=2.35; p=0.01; (1.21, 4.55)], compared to female students who were not abused during childhood (see Table 5).

Table 4 - Generalized linear models: factors associated with the use of any illicit drug in the last 12 months regardless of gender after controlling for gender, age, and origin of students. León, Nicaragua, 2011

Type of drugs* (Dependent variables)	Explanatory variables (independent)			
	Sexual abuse (1=Yes, 0=No)	Gender (1=Female, 0=Male)	Age (18-31 yrs)	Origin (1=Rural, 0=Urban)
	OR _{aj} [†] ; p [‡] ; (IC95%)	OR _{aj} [†] ; p; (IC95%)	OR _{aj} [†] ; p; (IC95%)	OR _{aj} [†] ; p; (IC95%)
Any illicit drug	1.42; 0.20; (0.83, 2.44)	0.44; 0.00; (0.31, 0.62)*	1.05; 0.10; (0.98, 1.13)	1.11; 0.64; (0.70, 1.77)
Cannabis	1.50; 0.13; (0.87, 2.59)	0.49; 0.00; (0.34, 0.69)*	1.05; 0.14; (0.98, 1.12)	1.02; 0.92; (0.64, 1.62)
Cocaine	1.98; 0.02; (1.10, 3.57)*	0.47; 0.00; (0.30, 0.73)*	1.10; 0.00; (1.02, 1.18)*	1.13; 0.67; (0.63, 2.01)
Ecstasy	2.45; 0.01; (1.18, 5.08)*	0.81; 0.51; (0.41, 1.52)	0.98; 0.82; (0.84, 1.14)	1.02; 0.94; (0.43, 2.44)
Heroin	2.22; 0.02; (1.09, 4.52)*	0.70; 0.24; (0.38, 1.27)	1.02; 0.71; (0.91, 1.14)	1.18; 0.70; (0.50, 2.78)

* (Significativo a un nivel de significancia del 0.05); [†]OR_{aj}; Odd Ratio Ajustado; [‡]p; Valor de p; (IC95%: Intervalo de Confianza del 95%)

*OR_{aj}: Odds Ratio after controlling for gender, age, and origin of students.

Table 5 - Generalized linear models: factors associated with the use of illicit drugs in the last 12 months, with a relationship between female gender and having been abused during childhood after controlling for gender, age, and origin of students. León, Nicaragua, 2011

Type of drugs* (Dependent variables)	Explanatory variables (independent)			
	Sexually abused woman (1=Yes, 0=No) OR _{aj} [†] ; p [‡] ; (IC95%)	Gender (1=Female, 0=Male) OR _{aj} [†] ; p; (IC95%)	Age (18-31 yrs) OR _{aj} [†] ; p; (IC95%)	Origin (1=Rural, 0=Urban) OR _{aj} [†] ; p; (IC95%)
Any illicit drug	2.35; 0.01; (1.21, 4.55)*	0.38; 0.00; (0.26, 0.57)*	1.05; 0.11; (0.98, 1.12)	1.11; 0.65; (0.69, 1.77)
Cannabis	2.37; 0.01; (1.22, 4.58)*	0.43; 0.00; (0.29, 0.63)*	1.04; 0.16; (0.97, 1.12)	1.02; 0.92; (0.64, 1.62)
Cocaine	4.27; 0.00; (1.96, 9.33)*	0.33; 0.00; (0.18, 0.60)*	1.10; 0.00; (1.02, 1.18)*	1.12; 0.62; (0.62, 2.03)
Ecstasy	4.04; 0.00; (1.55, 10.50)*	0.59; 0.20; (0.26, 1.33)	0.97; 0.74; (0.83, 1.14)	1.04; 0.92; (0.43, 2.53)
Heroin	3.94; 0.00; (1.52, 10.21)*	0.51; 0.09; (0.23, 1.11)	1.01; 0.79; (0.90, 1.14)	1.19; 0.68; (0.49, 2.89)

* (Significativo a un nivel de significancia del 0.05); [†]OR_{aj}; Odd Ratio Ajustado; [‡]p: Valor de p; (IC95%: Intervalo de Confianza del 95%)

DISCUSSION

This study analyzed the influence of sexual abuse during childhood on the risk of using illicit drugs (cannabis, cocaine, ecstasy, and heroin) in the last 12 months among young students at a public university in Nicaragua. The GLM results show an association between sexual abuse during childhood and the use of cocaine, ecstasy, and heroin, regardless of gender, and after controlling for gender, age, and origin of students. On the other hand, GLM results show a significant increase in the risk of using cannabis, cocaine, ecstasy, and heroin when the abused student is female. Identifying the consequences of sexual abuse during childhood is essential, especially in populations for whom sexual violence is considered a public health issue, although substantial progress has been made in Nicaragua in order to address this matter.¹⁵⁻¹⁷

Prevalence found for the use of ecstasy (9.1%) in the last 12 months among participants in this study is consistent with the results found in the report *Monitoring the Future*, by the University of Michigan's Institute for Social Research, although the prevalence of use of cannabis, cocaine, and heroin is lower in our student population than in the population studied in the aforementioned report.¹⁸

After an unstratified analysis of results, we can see a relationship between students' gender and sexual abuse during childhood, as well as the use of cannabis, cocaine, heroin, and ecstasy. On the other hand, an association was found between sexual abuse and the use of heroin and ecstasy, but not with the use of any other type of illicit drug.

GLMs without any relationship show that, regardless of gender, sexual abuse during childhood poses a significant risk for using drugs in

the following order: ecstasy (ORaj:2.4); heroin (ORaj:2.3); cocaine (ORaj:1.98); and cannabis (ORaj:1.50). On the other hand, in GLMs with any relationship, for which being a woman and having been sexually abused during childhood are taken into consideration, it is possible to observe a significant increase in the risk of using these substances, and the order of these risks is: cocaine (ORaj:4.2); ecstasy (ORaj:4.0); heroin (ORaj:3.9); and cannabis (ORaj:2.3), which is in line with recent studies on the topic that highlight the association between sexual abuse during childhood and the risk of using illicit drugs during adolescence and adulthood.¹⁹⁻²¹

CONCLUSIONS

The results of the present study reveal the extent of sexual abuse during childhood and the long-term effects on health, especially on female students, regarding the use of illicit drugs such as ecstasy, heroin, cocaine, or cannabis. Quantifying the problem and identifying relationships justifies the creation of public policies against violence, especially towards children, and the implementation of specific programs aimed to reduce the consumption of these types of psychoactive drugs.

Limitations

The results of other studies must be compared with caution to those of the present study, because this is not a population-based survey and it is not representative of student populations as a whole, due to its sample type (non-probabilistic). Questions about sexual abuse during childhood concern students' past recollections, which can result in recall bias. Therefore, these limitations can lead to an underestimate of the prevalence

of sexual abuse during childhood and the use of illicit drugs in this population. On the other hand, the study design was cross-sectional, so we were not able to identify a causal relationship between sexual abuse during childhood and the use of illicit drugs such as cannabis, cocaine, ecstasy, or heroin.

Recommendations

Given the association found between women who were sexually abused during childhood and the use of psychoactive drugs, we suggest that professionals and teachers who are engaged in this issue be provided with comprehensive information about how to address sexual abuse. Regarding the general population and especially parents or caregivers, we share the view of some researchers who suggest that the prevention of sexual abuse during childhood can be achieved through education and training of family members in the early detection of this type of child abuse.^{16, 20- 21}

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