

Risk factors for HBV/HIV/HCV in drug addicts: a survey of attendees of a Department of Pathological Dependence

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Key words

Illicit drugs • HIV • Hepatitis

Summary

Introduction. *This study aims to determine risk factors for the acquisition of HIV, HBV and HCV infections among Injection Drug Users (IDUs) who attended the out-patient clinic of the Department of Pathological Dependence at Bari Hospital in Bari Province (Italy).*

Methods. *The study was conducted in the year 2008 using the information available in the out-patient files of 291 drug addicts who were undergoing treatment.*

Results. *Their average age was 29.3 and 133 (45.7%) of them were affected by HIV/HBV/HCV.*

The use of injected heroin, being separated or divorced, and having committed a crime were found to be risk factors for infection

by HIV/HBV/HCV, while having a school diploma or a university degree and the use of cannabinoids were negatively associated with the infective diseases.

Discussion and conclusions. *While the data from the Italian Departments of Pathological Dependence concerning HIV diffusion in treated patients have been showing a reduction in the number of cases of seropositivity, drug addiction in industrialized countries is still the second most important risk factor, after promiscuous sexual behaviour, for infection by parenteral transmission. Correct risk assessment is essential for the planning of effective strategies for primary and secondary prevention.*

Introduction

In Europe, on average, 23% of boys and 17% of girls have tried illicit drugs at least once. Reported use of illicit drugs varies considerably across countries. In the Czech Republic, almost half (46%) of students reported such use and a large number of students (approximately a third) did so in France, the Isle of Man, the Slovak Republic and Switzerland, while only around 6% reported illicit drug use in Cyprus, the Faroe Islands, Norway and Romania. Low prevalence rates are also often found among the Nordic countries and in eastern Europe [1].

In Italy, it is estimated that 3 people in a thousand use heroin one or more times in the course of a year with one in a thousand being a frequent user; that 2.2% of people use cocaine, with a rising trend in recent years; and that 14% use cannabinoids [2].

Injection Drug Users (IDUs) constitute a marginalized and hard-to-reach population in society. They tend to socialize with their fellow IDUs rather than with members of the general population and this unique social network configuration can shape their behavior patterns. Within the same group of IDUs, behaviors tend to be similar because of peer influence [3-5].

In developed countries, people who currently inject or previously injected illicit drugs form a very important group at risk of infection, or of continuing infection,

with Hepatitis C Virus (HCV), Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV). During the last decade of the past century this increased risk was associated with the practice of sharing of the equipment used in injecting [6, 7].

However, IDUs can also be heterogeneous with regard to risk behaviors, and subpopulations may be responsible for the majority of blood-borne pathogen transmission. Identification of these high-risk IDU subpopulations is vital in order to efficiently target risk reduction programs and to prevent confounding by risk status in large HIV/AIDS behavioral intervention and vaccine trials [8].

In Italy, the activities of prevention, diagnosis, assistance, therapy, rehabilitation and reintegration into the community for both legal (alcohol and tobacco) and illegal drugs are carried out by the Department of Pathological Dependence within the Local Health Trusts.

Unfortunately, there is still no standardized information flow regarding the patients treated by the Departments, so not allowing the use of reliable and accurate data, neither at regional nor national level.

This study has the aim of determining the risk factors for acquisition of HIV, HBV and HCV infections among IDUs who attended the Department of Pathological Dependence in the Province of Bari in Southern Italy.

Methods

The study was conducted in the year 2008 using the information available in the out-patient files which reported age, sex, educational level, civil status, occupational status, criminal record, age at first drug use, age at continuous use, drug first used, drug habitually used and diagnosis of infection by HIV, HBV, HCV. The database has been created during a pilot-study for the implementation of new informative system of the Department of Pathological Dependence.

The use of anonymous archived data for research purposes was authorized by the Health Trust Director. The study was according Italian privacy law.

The information was loaded into a database and analysed with the statistical software Epi-Info 6.00 (public domain software-CDC Atlanta, Georgia; WHO Ginevra, Svizzera).

The independent samples Student's t-test was used to compare continuous variables. The categorical variables were classified in 2x2 contingency tables and the values of the chi-square test, of the Odds Ratio (OR) and the relative confidence intervals at 95% were calculated, to analyse the associations between specific risk factors and the presence of disease from haemotransmitted infection. A value of $p < 0.05$ was considered significant for all the tests carried out.

Results

The participants in the study totaled 291 drug addicts: 250 males (85.9%; 95% CI = 81.9-89.9) and 41 females (14.1%; 95% CI = 10.1-18.1). Average age was 29.3 (SD = 7.3; range 15-50) broken down into males 29.2 (SD = 7.2; range 15-50) and females 30.3 (SD = 8.2; range 17-50).

Of these, 51.2% (n = 149; 95% CI = 45.5-56.9) were single, 36% (n = 105; 95% CI = 30.6-41.6) married or living with a partner, 10.9% (n = 32; 95% CI = 7.4-14.6) divorced or separated and 0.6% (n = 2; 95% CI = -0.3-1.6) widowed. For 4 subjects (1.3%; 95% CI = 0.04-2.7) civil status was not ascertainable.

The educational level was determined to be: 5 years of schooling for 14.8% (n = 43; 95% CI = 10.7-18.8), 8 years of schooling for 63.6% (n = 185; 95% CI = 58-69.1), 13 years of schooling for 17.2% (n = 50; 95% CI = 12.8-21.5), while those with a university degree were 1.7% (n = 5; 95% CI = 0.2-3.2). The educational level was not reported in 2.7% (n = 8; 95% CI = 0.9-4.6) of cases.

The number of subjects in employment was 160 (55%; 95% CI = 49.3-60.7) while the unemployed numbered 128 (44%; 95% CI = 38.3-46.7). Employment status was not available for 3 subjects (1%; 95% CI = -0.1-2.2). There were 49 (16.8%; 95% CI = 12.5-21.1) subjects from nuclear families composed of more than 5 people, defined as "large families" in Italy.

More than half the subjects had committed crimes: 57.4% (n = 167; 95% CI = 51.7-63.1).

Average age at first drug use was 19.6 (SD = 5.1; range 11-36) while age at habitual use was 22.1 (SD = 5.7; range 12-40).

The drug first used was heroin in 153 cases (52.6%; 95% CI = 46.8-58.3), cannabinoids in 120 cases (41.2%; 95% CI = 35.6-46.9), cocaine in 15 cases (5.2%; 95% CI = 2.6-7.7) and methadone in 3 cases (1%; 95% CI = -0.1-2.2).

Average age at first drug use was 19.5 years (SD = 5.1; range 11-36) while average age at habitual use was 22.1 years (SD = 5.7; range 12-40).

Table I shows the drug habitually used by the study population.

There were 133 subjects (45.7%; 95% CI = 39.9-51.4) with infections from parenteral or sexual transmission. Table II shows the distribution of the population affected by disease.

The percentage of subjects affected by one or more diseases of parenteral or sexual transmission did not differ between the sexes ($p > 0.05$).

Having a university degree or 13 years of schooling was associated as a protective factor against the presence of one or other of the three haemotransmitted diseases studied (OR = 0.5; 95% CI = 0.2-0.9; $\chi^2 = 4.8$; $p = 0.01$) (Tab. III).

Having used heroin as the first drug was associated with the presence of one or other of the three haemotransmitted diseases studied (OR = 1.9; 95% CI = 1.2-2.9; $\chi^2 = 6.8$; $p = 0.004$) (Tab. III) and with the infection HIV (OR = 5.2; 95% CI = 1.5-18.4; $\chi^2 = 8.1$; $p = 0.004$).

The use of a cannabinoid as the habitual drug was negatively associated with the presence of one or other of the infections studied (OR = 0.5; 95% CI = 0.3-0.8; $\chi^2 = 8$; $p = 0.002$) (Tab. III) while its use as the first drug was positively associated with the infection HCV

Tab. I. Drug habitually used.

Drug	N	%	95% CI
Heroin	145	49.9	44.1-55.6
Cocaine	125	42.9	37.3-48.6
Barbiturates	2	0.7	-0.3-1.6
Methadone	2	0.7	-0.3-1.6
Alcohol	1	0.3	0.3-1
Benzodiazepine	1	0.3	0.3-1
Not reported	15	5.2	2.6-6.7
Total	291		

Tab. II. Injection Drug Users affected from parenteral or sexual transmission diseases (n = 291).

Disease	N	%	95% CI
Hepatitis C	96	33	27.6-38.4
Hepatitis B	27	9.2	5.9-12.6
HIV	19	6.5	3.7-9.4
Hepatitis B/HIV	4	1.4	0.04-2.7
Hepatitis C/HIV	5	1.7	0.2-3.2

Tab. III. Determinants of acquiring one or more infections.

Determinants	OR	95% CI	χ^2	p
University degree or 13 years of schooling	0.5	0.2-0.9	4.8	0.01
Having used heroin as the first drug	1.9	1.2-2.9	6.8	0.004
Use of a cannabinoid as the habitual drug	0.5	0.3-0.8	8.0	0.002

(OR = 0.5; 95% CI = 0.3-0.9; $\chi^2 = 5.9$; p = 0.01) and HIV (OR = 0.2; 95% CI = 0.1-0.8; $\chi^2 = 5.4$; p = 0.02).

Being divorced or separated was positively associated with infection by HCV (OR = 2.8; 95% CI = 1.3-5.6; $\chi^2 = 8.2$; p = 0.04).

Having committed a crime was positively associated, as a risk factor, with infection by HCV (OR = 1.7; 95% CI = 1.01-2.8; $\chi^2 = 3.9$; p = 0.04).

Being unemployed was associated with infection by HIV (OR = 3.8; 95% CI = 1.3-10.9; $\chi^2 = 7$; p = 0.007).

No significant differences were observed between healthy subjects and those infected with one or more sexually or parenterally transmitted diseases with regard to age at first drug use or age at continuous use.

Coming from a "large family" did not result in being a risk factor for early initiation or for infection by sexually or parenterally transmitted disease.

Discussion

The present study shows how applied research can be done on data already present in the Italian National Health Service. However, the data available at a local level is difficult to combine at a regional or national level due to the lack of a uniform system of Diagnosis Related Groups (DRG) which has been in place for some years in the hospitals but not within departments which work within the community. The analysis carried out can be seen as a pilot project for a multicentre analysis and so be a first step to lead to the planning and creation of standardized information systems for the Departments of Pathological Dependence by the Regional Health Authority and so on up to national level.

This introduction clearly defines the limits of our study which had to be based on the data limited in time from only one Department giving care to addicts. While the data from the Italian Departments of Pathological Dependence concerning HIV diffusion in treated patients have been showing a reduction in cases of seropositivity, drug addiction is still in industrialized countries the second most important risk factor, after promiscuous sexual behaviour, for infection by parenteral transmission [9].

Correct risk assessment is essential for the planning of effective strategies for primary and secondary prevention.

The average age of initiation in our study was higher than the national average as reported in recent research, which shows that for most drug users the age for the first experience falls between 11 and 17, with the average being under 13 [10].

The risk factors revealed by our analysis were heroin use, being separated or divorced and having committed

a crime, while having a school diploma or a university degree and the use of cannabinoids were negatively associated with the infective diseases.

The data on the use of cannabinoids and the lower risk of infection by HIV/HCV/HBV for its users must be the object of an appropriate communication strategy which covers the risks involved, especially as the movement from the use of cannabis to other drugs is happening in shorter times than in the past [11, 12].

Our data show the urgency of a preventive strategy with a multidimensional approach which must involve sections of society different and complementary to the health system.

The practice of secondary prevention should naturally be a part of the activities of the Departments of Pathological Dependence which have to diagnose the active pathologies, giving particular attention to an early diagnosis of those linked to drug addiction, and have to guarantee the appropriate diagnostic-therapeutic approach through the application of a multidiscipline integration strategy [13].

However the strategy of secondary prevention must pass from a concept based on reception and assistance of the addict who comes to the clinic, to one of active surveillance which involves the family, the school the community, one aimed at quickly identifying those subjects who initiate drug use and so can activate the necessary measures to prevent addiction and the health dangers associated with it [14]. Our study confirms the need for the community to offer assistance to those who start on the road to addiction as they have a greater risk of dropping out of school and of committing crime.

Our study results show that the period to carry out secondary prevention is limited as the period from first use to habitual use is less than three years long.

Primary prevention of drug addiction and of parenterally transmitted infections needs the combined efforts of different agents within the health system and the community.

Appropriate public strategies against drug use need government bodies to promote a culture against the idea that recreational drugs are substantially innocuous and that their use is "normal". This conception creates a dangerous increase in the level of the public alarm threshold, which contributes in the determining of an objective advantage to the criminal market in drugs.

Within the area of preventive strategies in the health system, the associations of single factors, like those indicated in this study, seemingly not part of the drug scene and not linked to infection, reinforce the necessity to take synergic and integrated measures. Such measures, aimed at promoting behaviors which tend to reduce risk factors, lead to synergic effects on health, with a better

cost-effect ratio than measures aimed at modifying single factors only.

The Italian Prevention Plan for 2010-2012 establishes that Local Health Trusts must develop public health strategies to prevent drug and alcohol addiction in middle and high school in collaboration with formal and informal groups of young people. For the first time in the history of Italian Health Service, Departments of Public Health and Pathological Dependence in the Health Trusts must plan a shared strategy that uses the tools of public health and the experience of addiction prevention services.

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Conclusions

The treatment of health problems caused by drug addiction and good practice for the prevention of both parenterally transmitted infections and sexually transmitted diseases should be linked together in a core structure which concentrates on the promotion of health through the encouragement of healthy lifestyles and this should be an integral part of the educational strategy of the public school system.

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