

Behavioural profile of drug users attending public drug-treatment centres in Sicily: the role of social context

Francesco Vitale¹, Alessandra Casuccio², Marco Bresciani¹, Anna M. Maggio³, Giorgio Serio³, Tullio Prestileo³, Fabio Tramuto¹, Patrizia Gioè³, Giuliano Milazzo³, Giuseppe Filippone³, Marcello Grasso³, Tommaso Di Marco³, Giuseppe Calamusa¹, Nino Romano¹

¹Dipartimento di Igiene e Microbiologia, Università degli studi di Palermo, Italy; ²Dipartimento di Neuroscienze Cliniche, Università degli Studi di Palermo, Italy; ³Dipartimento delle Dipendenze Patologiche, Azienda Sanitaria Locale 6, Palermo, Italy

Correspondence to: Francesco Vitale, Dipartimento di Igiene e Microbiologia, Università degli Studi di Palermo, Via del Vespro 133, 90127 Palermo, Italy, E-mail: francesco.vitale@unipa.it

Abstract

Objective: Investigations of injecting drug users (IDUs) have suggested that the social context may influence high-risk behaviours in this population. The aim of this study was to describe knowledge, attitudes and behaviours of IDUs attending public drug-treatment centres in our area.

Study design and methods: A cross-sectional survey was conducted between July 2002 and February 2004, enrolling 607 drug users attending four public drug-treatment centres in the Palermo area. Two of them were located inside the urban area, whereas the other two were in rural districts near the city. All participants answered an anonymous questionnaire concerning social and demographic characteristic and potential high-risk behaviours.

Results: IDUs living in urban context have a higher educational level, higher number of sexual partners, as well as a lower prevalence of exchanging sex for drugs. Conversely, IDUs living in suburban/rural context are less likely to share syringes and more likely to have used light drugs in the past. Suburban/rural IDUs drink more alcohol but smoke less cigarettes/day, although both groups are strong smokers.

Conclusions: The results suggest that public drug-treatment centres should take in consideration the adoption of specific programs targeting specific groups, in line with the profile and needs of the subjects in each context in order to promote approaches leading to risk reduction.

Key words: drug users, behaviour, social context, public drug-treatment centres, high risk behaviour

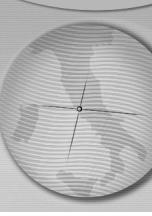
Introduction

Injecting drug users (IDUs) were traditionally considered a high exposure category for infectious diseases because of their lifestyle, as well as a target population to address issues of marginalization and "social exclusion" [1-3]. This latter concept was linked to unemployment, poor skills, lack of income, poor housing and focuses attention on the causal aspects which influence the health status of the drug user [3]. More recently, social and economic disadvantages in rural areas have been highlighted as one of the main reasons of increasing health risks in persons living in these areas compared to urban ones, assuming particular emphasis in drug users [4,5].

Although, this target population is hard to reach, in Italy it has been estimated that more than 60% of drug users obtain substitutive methadone treatment at public drug-treatment centres [6,7].

There are 535 public drug-treatment centres distributed throughout Italy [7]. Each centre offer social and psychological assistance and free medical care throughout the definition of individual-based methadone therapeutic programme to persons who use drugs, whether intravenously or not. Drug users attend these centres on a voluntary basis and, for each attendee, the centres record age, gender, type of drug used, whether or not the individual had attended the centre in previous years and type of treatment received by the centre. The centres also offer the routine screening tests for blood-borne viruses. In Sicily, the largest Italian island, 48 public drug-treatment centres provide services for a total of 10501 attending individuals [7].

The aim of this study was to investigate social characteristics, patterns of drug use, knowledge, attitudes and behaviours of drug users attending



public drug-treatment centres in the Palermo area of Sicily.

Methods

Study population and procedures

A total of 650 drug users who consecutively attended four different public drug-treatment centres for a methadone therapeutic programme between July 2002 and February 2004 were enrolled into the cross-sectional study. All subjects were already in treatment at the date of interview because of their heroin experience.

The four public drug-treatment centres were all located in the Palermo area, including two inside the urban area and two others in rural districts neighbouring the city, in order to investigate the effects of different social context.

43 subjects (40 males and three females) who have had access to more than one centre during the study period were excluded from the analyses, thus the resulting population consisted of 607 individuals (556 males, median age 32, range 19-59; and 51 females, median age 32, range 21-64) of whom 273 (9,1% females) came from the urban and 334 (7,8% females) from the rural areas.

All individuals gave their consent to participate into the study and were given a self-administered anonymous questionnaire. Not all participants answered all questions; therefore in the tables base numbers may vary because of missing data.

Information was collected about a) social and demographic characteristics; b) behaviours that included sexual orientation, number of sexual partners in the last year, condom use, c) type and habits of drug use including exchange of syringes and previous use of light drugs (i.e. Cannabinoids); d) behaviours concerning alcohol and smoking.

Statistical analysis

The answers to questionnaire were numerically codified and data were analysed using SYSTAT software either in the whole population or in subgroups.

Standard descriptive statistics, by applying the Pearson's χ^2 -test and Fisher's exact test, were used to analyse each subject's variables according to their social and demographic characteristics including their attendance to inner or outer city drug-treatment centres. A p-value ≤ 0.05 was considered significant.

Results

Table 1 shows the demographic and social conditions of subjects attending four drug-treatment centres in the Palermo area. Most of

participants were males with a male to female ratio of 10:1 to 12:1 among those attending respectively urban or rural drug-treatment centres. Mean age was quite similar among drug users living in the urban or rural area (33.4 ± 6.7 and 32.6 ± 6.7 respectively). More than 99% of the study group was Italian without differences between the living area, whereas the educational level was statistically higher among urban drug-users ($p = 0.004$).

Moreover the majority of the study population was living alone either in urban (62.2%) or in rural (65.6%) areas and had no children (52.1% and 60.5% respectively).

Overall, about 50% of all respondent subjects had attended their drug treatment centre for more than three years, 25% between one and three years, and the remaining 25% for less than one year. More than half of IDUs had income from work. Of those in the urban area, 4.1% were homeless, compared to 8.7% among those attending rural centres ($p = 0.03$).

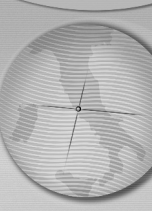
Regarding sexual habits (Table 2), the vast majority reported exclusive heterosexual activity, although a non significant trend of homo-bisexual orientation was observed among IDUs living in rural areas.

62.2% and 54.9% of participants living inner or outer of the city had a regular sexual partner but in less than 10% their partner used drugs. A statistically significant trend of more sexual partners was observed in drug users attending urban drug treatment centres whereas the rural counterpart tended to be more stable with a unique partner ($p < 0.0005$). Condoms were ever or never used by a similar proportion of subjects independent of their location. Knowledge about the protective efficacy of condoms against STDs was declared by more than 95% of the whole group of respondents.

On the contrary, sex trading for drugs was reported by a higher proportion of the rural IDUs ($p = 0.001$), whereas sexual intercourse under drug effects did differ significantly between the two groups.

In Table 3 are shown the results of addiction behaviours among subjects enrolled into the study. This section of the questionnaire was charged by the higher proportion of missing data, but the distribution of non respondent subjects was quite similar between the two groups. Thus the data were tabulated.

24.4% and 33.5% ($p = 0.017$) of IDUs, respectively, from urban or rural areas reported currently using drugs. Duration of addiction differed between the two groups, with shorter



(<3 years) drug use among rural participants (64.1% vs 47.6%) and longer (>10 years) among urban IDUs (23.1% vs 15.0%).

The type and mode of drug use was prevalently heroin injection either among urban or rural IDUs, although nearly 25% of them declared to be currently using different drugs (cocaine or other).

Also the number of assumed doses daily did not differed between the two groups, while the proportion of sharing syringes was more associated with urban IDUs.

Furthermore, most of those interviewed reported previous use of light drugs, although it was higher among rural IDUs, who practised it for a shorter time than urbans, whereas these latter had a major previous use of heavy drugs.

Other drug habits are showed in Table 4. IDUs, independently of the attendance of drug treatment centre had low consumption of psychotropic drugs (15.3% vs 20.5%), preferred to drink beer (53.6% and 63.5%), and were heavy smokers (92.2% vs 92.6%). The daily dose of

smoke was higher among urban IDUs, and alcohol drinking was higher among rural IDUs (41.5% vs 24.2%; $p < 0.0005$).

Discussion

In this paper we have tried to trace the behavioural profile of drug users attending four public drug treatment centres located, two in the urban area of Palermo city and in two small communes at the west and east outskirts of the city.

The objective of the investigation was to develop a baseline description of the subjects' knowledge, attitudes and behaviour concerning the lifestyle of drug users living in an urban or suburban/rural context. Although the influence of urban/rural context on drug use was studied in several surveys conducted mainly in the United States and Australia [4,5,8,9], and to a lesser extent in Europe [10], this is, to our knowledge, the first one carried out in Italy analysing this point of view.

Overall, the emerging data show that IDUs living

Table 1. Sociodemographic characteristics of subjects attending four drug-treatment centres in the Palermo area

Demographics and Social items	Urban (%)	Rural (%)	p
Males/females	248/25	308/26	0.56
Mean age (\pm SD)	33.4 (6.7)	32.6 (6.7)	0.12
Birth country			0.65
Italy	272 (99.6)	324 (99.4)	
Europe	0	1 (0.3)	
outside Europe	1 (0.4)	1(0.3)	
Educational level			0.004
\leq middle school	209 (77.4)	264 (86.6)	
high school or university	61 (22.6)	41 (13.4)	
Marital status			0.43
Single, separated, widow	166 (62.2)	193 (65.6)	
married, living with someone	101 (37.8)	101 (34.4)	
Number of children			0.06
None	121 (52.1)	161 (60.5)	
1	47 (20.3)	55 (20.7)	
2 or more	64 (27.6)	50 (18.8)	
Years of drug-treatment			0.57
>3	140 (52.8)	122 (50.2)	
1-3	67 (25.3)	58 (23.9)	
<1	58 (21.9)	63 (25.9)	
Source of income			0.59
No income	124 (46.3)	145 (48.5)	
Pension/Work	144 (53.7)	154 (51.5)	
Living home			0.03
Homeless/Other	11(4.1)	26 (8.7)	
Parental/Own residence	255 (95.9)	272 (91.3)	

Note: Base numbers may vary because of missing data; % are by column

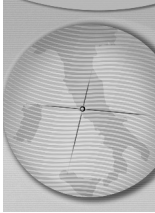


Table 2. Sexual orientation and condom use among subjects attending four drug-treatment centres in the Palermo area

Sexual behaviours related items	Urban (%)	Rural (%)	p
Sexual orientation			
Homo-bisexual	3 (1.1)	10 (3.0)	0.11
Heterosexual	265 (98.9)	316 (97.0)	
Regular partner			
No	102 (37.8)	137 (45.1)	0.08
Yes	168 (62.2)	167 (54.9)	
Partner's use of drugs			
Yes	11 (8.9)	14 (6.4)	0.39
No	112 (91.1)	204 (93.6)	
N° of partners during the last year			
>4	19 (7.3)	6 (2.6)	<0.0005
2-4	54 (20.7)	46 (20.0)	
1	77 (29.5)	116 (50.4)	
0	111 (42.5)	62 (27.0)	
Regular use of condom			
No	139 (53.0)	151 (51.6)	0.83
Yes	123 (12.6)	142 (14.3)	
Sex trade (sold) or exchanging for drugs			
Yes	14 (5.2)	83 (31.7)	<0.0005
No	254 (94.7)	179 (68.3)	
Sexual intercourses under drug effect			
Yes	191 (68.8)	172 (51.6)	0.42
No	72 (27.4)	76 (30.6)	
Knowledge of protective efficacy of condom against STDs			
No	9 (3.4)	5 (2.2)	0.44
Yes	256 (96.6)	219 (97.8)	

Note: Base numbers may vary because of missing data; % are by column

in urban context have a higher educational level, change sexual partners more frequently, and have a lower prevalence of exchanging sex for drugs.

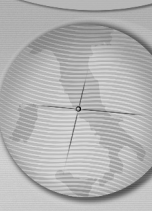
IDUs living in a suburban/rural context seem to be more likely to make use of drugs while attending public drug treatment, to have a less practise of sharing syringes, to be more likely to have used light drugs in the past, although for a shorter time than urban ones. Furthermore, they drink more alcohol but smoke less cigarettes/day, although both groups are strong smokers.

Several cross-sectional surveys conducted in our and in different countries [11- 14] have analyzed IDUs behaviours in relation to the risk of contracting infections such as human immunodeficiency virus (HIV) and/or hepatitis C and B viruses (HCV/HBV).

In Italy a recent large survey covering a period of 11 years and referring to drug users attending a nation-wide network of public drug treatment centres, suggests that the prevalence of HIV infection dramatically decreased from 30.8% in

1990 to 15.8% in 2000 with a further reduction to less than 10% among younger IDUs [15]. Similar trends of decrease among injecting drug users were also reported at a local level by our group [16] and in other countries between 1985 and 1995 [17-19]; these trends may reflect behavioural changes attributable, in part, to the various implemented prevention programs or to a partial exhaustion of the susceptible population; however, all together, indicate that sharing syringes is practiced by a minority of IDUs and could not be more considered a main risk factor for transmission of infections in developed countries.

Moreover, there is substantial evidence that many IDUs continue to engage in high-risk sexual behaviours even after completing drug treatment programs and even making changes to reduce their injection risk practices [20]. Furthermore, other authors found greater changes in the injection drug practices of IDUs than in their sexual behaviours, such as consistent condom use

**Table 3. Addiction behaviours of subjects attending four drug-treatment centres in the Palermo area**

Drug use related items	Urban (%)	Rural (%)	p
Current use of drugs			
Yes	65 (24.4)	89 (35.9)	0.004
No	201 (75.6)	159 (64.1)	
Length of drug addiction (years)			
>10	19 (23.1)	23 (15.0)	0.048
3-10	24 (29.3)	32 (20.9)	
< 3	39 (47.6)	98 (64.1)	
Current type of drug use			
Heroin	69 (74.2)	136 (78.2)	0.30
Cocaine	5 (5.4)	14 (8.0)	
Other	19 (20.4)	24 (13.8)	
Mode of drug assumption			
Injection	69 (75.8)	87 (66.4)	0.08
Inhalation	9 (9.9)	28 (21.4)	
Other	13 (14.3)	16 (12.2)	
Daily use of drug (n. of doses)			
> 3	9 (11.4)	5 (4.4)	0.18
2-3	22 (27.8)	34 (29.8)	
<=1	48 (60.8)	75 (65.8)	
Syringes shared			
Yes	26 (16.2)	20 (9.2)	0.04
No	134 (83.8)	197 (90.8)	
Previous use of light drugs			
Yes	135 (88.8)	190 (94.5)	0.049
No	17 (11.2)	11 (5.5)	
Length of light drugs assumption (months)			
>18	87 (66.9)	82 (49.1)	<0.0005
6-18	29 (22.3)	27 (16.2)	
< 6	14 (10.8)	58 (34.7)	

Note: Base numbers may vary because of missing data; % are by column

[21]. These observations fit well with the result showing that also in our setting only one third of the study population regularly used a condom, suggesting once more that IDUs experience greater difficulties changing their sexual behaviours than changing their injection risk practices.

The more intriguing result in our study was the discrepancy observed between urban and rural sample in having sex for money or drugs. These data, together with the increasing homeless in the suburban/rural context, may indicate a level of poverty that emerges as a main risk factor for old and new infections. A similar result was reported in a study that analyzed the social characteristics and drug-related behaviours among drug users in socially excluded sites, in 10 cities from 9 European countries, identifying the social exclusion factors that may be related to

intravenous drug use in these settings [22]. Finally, two major limitations of the study should be stressed. The first one is the lack of data about those drug users who are on the street and never attended a drug treatment centre. In fact, this part of drug users population could be consistent because, although there isn't any official estimation in our area, however on a national basis is reported that drug users are estimated to be more than 300,000 of which only 180,117 attended a public drug-treatment centre during 2005 [7]. It derives that street-drug users accounts for about a half of the entire population and could have attitudes and behaviours not comparable with that of those attending a methadone programme.

The second limitation was the self-administration of the interviews that resulted in missing data in some points of the questionnaire.

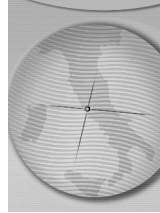


Table 4. Alcohol and smoke habits among subjects attending four drug-treatment centres in the Palermo area

Alcohol and smoke related items	Urban (%)	Rural (%)	p
Psychotropic drug use			
Yes	41 (15.3)	43 (16.8)	0.64
No	227 (84.7)	213 (83.2)	
Alcoholic drink use			
Yes	65 (24.2)	115 (41.8)	<0.0005
No	204 (75.8)	160 (58.2)	
Type of alcoholic drinks			
Wine	31 (36.9)	36 (28.6)	0.35
Beer	45 (53.6)	80 (63.5)	
Strong drinks	8 (9.5)	10 (7.9)	
Daily number of alcoholics (glasses)			
>10	11 (17.3)	18 (20.4)	0.87
>=5-10	20 (31.2)	27 (30.7)	
<5	33 (51.5)	43 (48.9)	
Current smokers			
Yes	248 (92.2)	275 (92.6)	0.86
No	21 (7.8)	22 (7.4)	
Daily number of cigarette smoked			
>20	115 (46.6)	107 (38.9)	0.006
10-20	117 (47.4)	129 (46.9)	
< 10	15 (6.0)	39 (14.2)	

Note: Base numbers may vary because of missing data; % are by column

However, in our series, the overall proportion of non-responders among urban and rural participants respectively did not differ significantly.

Although our sample, for all these considerations, can't be considered representative of the whole drug user population in our country, it enables a general profile to be drawn with a view to setting up actions adapted specifically to this population.

In the light of the outcomes of this study, we believe that there is a clear need for specific programs targeting specific groups, in line with the profile and needs of the subjects in each context.

Priority must be given to the inclusion of this population in health programs so as to prevent infections, ensure early detection of diseases, provides better assistance in illness and promotes approaches leading to harm reduction.

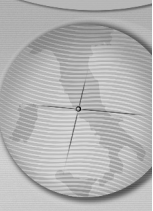
Acknowledgements

The authors are fully indebted to James J. Goedert for the helpful revision of the manuscript

References

1) Angarano G, Pastore G, Monno L, Santantonio T, Luchena N, Schiraldi O. Rapid spread of HTLV-III infection among drug addicts in Italy. *Lancet* 1985 Dec 7;2(8467):1302.

- 2) Vitale F, Portera M, De Crescenzo L, et al. AIDS in Sicily: Prevalence of antibodies to Human Immunodeficiency Virus (HIV) in low and high risk groups. *Eur J Epidemiol* 1987;3:278-83.
- 3) Galea S, Vlahov D. Social determinants and the health of drug users: Socioeconomic status, homelessness, and incarceration. *Public Health Rep* 2002;117 (Suppl 1):S135-45.
- 4) Schoeneberger ML, Leukefeld CG, Hiller ML, Godlaski T. Substance abuse among rural and very rural drug users at treatment entry. *Am J Drug Alcohol Abuse* 2006;32(1):87-110.
- 5) Lawrinson P, Copeland J, Indig D. Regional differences in injecting practices and substance use-related behaviour among entrants into opioid maintenance pharmacotherapy treatment in New South Wales, Australia. *Drug Alcohol Depen* 2006;82(Suppl 1):S95-S102.
- 6) European Monitoring Centre for drugs and Drug Addiction: Annual Report on the State of the Drugs Problem in the European Union, 2003. Luxembourg: Office for Official Publications of the European Communities, 2003.
- 7) Relazione annuale al Parlamento sullo stato delle tossicodipendenze in Italia. [Annual report on drug use to Italian Government] - 2005. Available from http://www.governo.it/GovernoInforma/Dossier/relazione_to_ssicodipendenze/index.html. [Accessed december 2007].
- 8) Trends in injection drug use among persons entering addiction treatment. New Jersey, 1992-1999. *MMWR* 2001;50 (19):378-81.
- 9) Aitken C, Brough R, Crofts N. Injecting drug use and blood-borne viruses: a comparison of rural and urban Victoria. 1990-1995. *Drug Alcohol Rev* 1999;18:47-52.
- 10) Haw S, Higgins K. A comparison of the prevalence of HIV infection and injecting risk behaviours in urban and rural samples in Scotland. *Addiction* 1998;93:855-63.
- 11) Pavia M, Indovino A, Nobile CG, Angelillo IF. Intravenous drug users and AIDS: Knowledge, attitudes and behaviour in



Calabria, Italy. *Eur J Public Health* 1997;7:199-204.

12) Momas I, Helal H, Pr  tet S, Marsal L, Poinard L. Demographic and behavioral predictors of knowledge and HIV seropositivity: Results of a survey conducted in three anonymous and free counseling and testing centers. *Eur J Epidemiol* 1997;13:255-60.

13) Vidal-Tr  can G, Coste J, Varescon-Pousson I, Christoforov B, Boissonnas A. HCV status knowledge and risk behaviours amongst intravenous drug users. *Eur J Epidemiol* 2000;16:439-45.

14) Somlai AM, Kelly JA, McAuliffe TL, Ksobiech K, Hackl L. Predictors of HIV sexual behaviours in a community sample of injecting drug-using men and women. *AIDS and Behavior* 2003;7(4):383-93.

15) Suligoi B, Magliochetti N, Nicoletti G, Pezzotti P, Rezza G. Trends in HIV prevalence among drug-users attending public drug-treatment centres in Italy: 1990-2000. *J Med Virol* 2004;73:1-6.

16) Romano N, Vitale F, Russo Alesi D, et al. The changing pattern of Human Immunodeficiency Virus type 1 infection in intravenous drug users. *Am J Epid* 1992;135:1189-96.

17) Hamers FF, Batter V, Downs AM, Alix J, Cazein F, Brunet JB. The HIV epidemic associated with injecting drug use in Europe: Geographic and time trends. *AIDS* 1997;11:1365-74.

18) Piribauer F, Duer W. Trend in HIV seroprevalence AIDS and prevention policy among intravenous drug users and men who have sex with men, before and after 1990 in Austria. *Eur J Epidemiol* 1998;14:635-43.

19) McIntyre PG, Hill DA, Appleyard K, Taylor A, Hutchinson S, Goldberg DJ. Prevalence of antibodies to hepatitis C virus, HIV and T-cell leukemia/lymphoma viruses in injecting drug users in Tayside, Scotland, 1993-1997. *Epidemiol Infect* 2001;126:97-101.

20) Bryan AD, Fisher JD, Fisher WA, Murray DM. Understanding condom use among heroin addicts in methadone maintenance using the information-motivation-behavioral skills model. *Substance Use and Misuse* 2000;35:451-71.

21) Stephens RC, Simpson DD, Coyle SL, McCoy CB. Comparative effectiveness of NADR interventions. In B. Brown and G. Beschner eds., *Handbook on risk of AIDS: Injection drug users and sexual partners* (pp.9-25). Westport, CT: Greenwood, 1993.

22) March JC, Oviedo-Joekes E, Romero M. Drugs and Social Exclusion in Ten European Cities. *Eur Addiction Res* 2006;12:33-41.