

Infectious and Other Somatic Comorbidity in People who Inject Drugs – Results of a Cross-sectional Survey

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BACKGROUND: Problem drug use is associated with increased somatic comorbidity, including infectious diseases. **METHODS:** A cross-sectional questionnaire study on a sample of problem drug users (PDUs) recruited from low-threshold programmes in Prague was carried out at the end of 2013. The questionnaire focused on drug use, risk behaviour, somatic symptomatology and comorbidity, health seeking behaviour. Descriptive analysis and multivariate linear regression analysis were performed. **RESULTS:** The sample consisted of 240 PDUs, 188 of whom (78.3%) were male, aged 18–64, mean age of 34.8 ± 8.4 years. Methamphetamine was the primary drug for 48.3% of the sample and opioids for 47.9%. Injecting drug use in the past 12 months and 30 days was reported by 96.7% and 95.0%. The self-reported lifetime prevalence of hepatitis C was 63.7%, of HIV 0.9%. HCV was the most frequent diagnosis received from a medical doctor

(59.6%), followed by dental problems (54.6%) and an abscess at an injection site (39.6%). In the past 12 months, 58.8% had sought health care outside low-threshold drug services, and 29.2% had been taken to hospital by an ambulance (half of them repeatedly). The symptoms of somatic problems were more prevalent in users of heroin, in women, and in non-Czech nationals and their frequency increased with the frequency of the injecting and sharing of injecting equipment. **CONCLUSIONS:** Infectious blood-borne diseases transmitted via needle sharing, infectious lesions at an injection site, other skin disorders, and dental problems represent the most prevalent somatic comorbid disorders in people who inject drugs. The need for health care of somatic comorbidity is significant and the specific characteristics of this patient group need to be addressed when providing care

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● 1 BACKGROUND

An established relationship exists between drug use and health problems, including somatic disorders. Somatic comorbidity represents a greater public health burden than drug use or addiction itself. Infectious diseases, gastro-intestinal diseases, and external causes of morbidity and mortality, i.e. overdoses, accidents, and suicides, are prevalent among illicit drug users' morbidity and mortality (Lim et al., 2012; Degenhardt & Hall, 2012). Worldwide, the greatest amount of the harm caused by illicit drugs is due to opioids and amphetamine-type drugs – 46% of the public health burden caused by drugs is attributed to opioid addiction and 13% to amphetamine addiction. The public health burden related to illicit drugs is highest in the developed countries of Europe, North America, and Australia. The greatest contribution to the morbidity and mortality caused by illicit drugs is made by HIV, HCV, and suicides (Degenhardt et al., 2013).

The relationship between injecting drug use and a high prevalence of blood-borne infections is well known and described, especially in HIV, HCV, and HBV. People who inject drugs (PWID) are one of the key at-risk groups (European Monitoring Centre for Drugs and Drug Addiction, 2009). Especially in HCV, parenteral transmission is the main transmission route, which means that the main HCV transmission pattern in developed countries is injecting drug use (Alter, 2007; Urbánek, 2010).

Injecting drug use means repeatedly damaging the integrity of the skin, the main protective barrier of the human body, by unsterile and contaminated injecting equipment. The injecting technique, type of needles and syringes, purity of drugs, amount of acid used to dissolve drugs (heroin), and injection site all play a role, as do other health and social factors (Finnie & Nicolson, 2002; Hope et al., 2008). Risk factors for the prevalence of harm and diseases related to injecting drug use that were found were female gender, older age, unstable dwelling and homelessness, longer and more frequent injecting use, sharing needles and paraphernalia, application by subcutaneous or intramuscular injecting, an unusual injection site (hands, loins, lower limbs), the application of the drug in a form other than a powder or crystal, not disinfecting the injection site, not washing one's hands before application, and experience with overdosing or with providing sex for money (Murphy et al., 2001; Dwyer et al., 2009; Salmon et al., 2009; Hope et al., 2010; Phillips & Stein, 2010).

A recent systematic review of infectious comorbidity associated with injecting drug use comprised 33 studies (Larney et al., 2017). Skin and soft tissue infections were the most frequently reported lifetime disorders (6–69%). Female gender, a higher frequency of injecting, and application by intramuscular or subcutaneous injection were linked to a higher prevalence of skin and subcutaneous infections at the injection site. Disinfecting the injection site proved to be a protective measure that leads to a lower risk of infections. Other frequent diseases were infectious endocarditis (life-

time prevalence 0.5–2%), sepsis (2–10%), bone and joint infections (0.5–2%), and thromboembolism (3–27%).

Staphylococcus aureus and *Streptococcus pyogenes* were typical agents of infections at an injection site (Ebright & Pieper, 2002; Gordon & Lowy, 2005). As to the type of skin and soft tissue disorders, apart from frequent acute infections at an injection site (mostly abscesses), a fifth to a quarter of PWID experienced a chronic wound, including varicose ulcers (Smith et al., 2014; Coull et al., 2014). This increased prevalence of varicose ulcers, multiple times higher than in the general population, is probably caused by phlebotrombosis resulting from multiple applications by injecting into the femoral vein (Senbanjo et al., 2012; McColl et al., 2001).

PWID are exposed to an elevated risk of acute systemic infections, such as pneumonia (e.g. Marks et al., 2013) or left- and right-sided infectious endocarditis, which are mostly caused by *Staphylococcus aureus* (Akinosoglou et al., 2013; Fernandez Guerrero et al., 2009; Miro et al., 2002; Hobstová, 2010).

Infections by sporulating bacteria associated with a serious clinical progress and high fatality, which also occur in Europe, are a special topic. They include e.g. anthrax, tetanus, botulism, necrotising fasciitis, and other clinically serious acute infections of soft tissues, usually caused by *Clostridium novyi* or *histolyticum*, or invasive systemic infections caused by *Bacillus cereus* (Ebright & Pieper, 2002; McGuigan et al., 2002; Brett et al., 2005; Lonergan et al., 2004; Palmateer et al., 2013).

Injecting crushed and dissolved pills of medical drugs represents a very specific risk. For instance, previous contact with saliva during the preparation of a drug or the injecting application of a tablet that was in contact with the oral cavity can cause infection with *Candida* and *Candida endophthalmitis*, a very serious acute local infection that might result in blindness (Hirsbein et al., 2008). Injecting tablets that contain talcum powder causes pulmonary talcosis, which might lead to emphysema and shortness of breath (Marchiori et al., 2010; Klochan et al., 2013). Badly dissolved pieces of tablets might cause embolisation during intentional or unintentional injecting application into arteries (Lim et al., 2009).

In problem drug users (PDUs), oral health is usually compromised, mostly through dental caries and parodontosis (Robinson et al., 2005; Saini et al., 2013; Laslett et al., 2008; Murphy et al., 2014). In methamphetamine users, the incessant motor activity of the jaw contributes to fractures of the teeth and significant decay, which is called "meth mouth" (e.g. Wang et al., 2014, De-Carolis et al., 2015).

Overdoses constitute a significant cause of morbidity and mortality among PDUs. Martins et al. (2015) published a systematic review of 169 studies of the prevalence of unintentional drug overdoses in 1980–2013. Wide variability in the lifetime prevalence of non-fatal overdoses was found. The lifetime prevalence of a situation where drug users witnessed an overdose was from 50% to 96% (mean 73%, median 70%). The lifetime prevalence of personal experience

with a non-fatal overdose was from 17% to 68% (mean 45%, median 47%). The drugs most frequently associated with non-fatal overdoses were cocaine, prescription opioids, and heroin, while the risk of an overdose was higher in men and homeless persons or users with a low social and economic status in general. The most important factor that increases the risk of an overdose is a temporary decrease in tolerance, e.g. after abstinence during time spent in prison or in in-patient treatment. The risk is highest in the first (two) weeks after discharge from prison or another type of regime where the individual interrupted their use of the drug (Farrell & Marsden, 2008). A long history of drug use, a high degree of addiction, polydrug use (using more types of drugs in parallel), and social isolation increase the risk of an overdose (Best et al., 2003).

PDUs are at greater risk of accidents while intoxicated and of violent injuries and deaths. In particular, users of central stimulants (cocaine/crack, amphetamine-type drugs) are at greater risk of accidents, including traffic accidents, which is associated with excitement and aggressive and violent behaviour (Best et al., 2003). A systematic review of studies from emergency departments showed that the most frequent injuries in drug users were violence-related, including those associated with involvement in organised crime and other injuries, including traffic accidents (Vitale & van de Mheen, 2006).

In November 2013, a cross-sectional study among clients of low-threshold programmes for drug users in Prague was carried out. It aimed at analysing somatic comorbidity, the associated treatment needs, and barriers to treatment in active PDUs. The study comprised three parts: (1) a cross-sectional questionnaire study focused on health complications and barriers to the use of health services, (2) two focus groups with PDUs, and (3) an anamnestic and somatic examination of selected PDUs by a doctor. The results of the third part, which simulated a general preventive examination by a general practitioner on a sample of 40 PDUs, were published elsewhere (Mravčík et al., 2016).

This article summarises somatic comorbidity data from the questionnaire study and does not include analysis of questions about barriers to treatment and focus groups, which will be presented separately.

● 2 METHODS

A cross-sectional questionnaire survey on a sample of 240 clients of four low-threshold programmes in Prague was carried out. The respondents were recruited from the drop-in and counselling centre STAGE 5 of the Progressive organisation (55 clients), the low-threshold centre of the Drop In organisation (62 clients), and the contact centre (56 clients) and streetwork programme (67 clients) of the SANANIM organisation. Participation was voluntary and the respondents were mostly recruited by programme workers (no random sampling was organised). The respondents were interviewed in private, separately from the rest of the

programme (in a separate room or in an ambulance parked near the premises, or in an open space near the ambulance). They received a meal coupon worth CZK 70 (about EUR 2.6) as an incentive.

Data was collected by means of the PAPI method (a face-to-face interview with a paper questionnaire). The questionnaire consisted of 209 items and the questions covered the following areas:

- social and demographic characteristics, drugs used, risk behaviour, previous testing for HIV, HAV, HBV, and HCV and the results, previous experience with addiction treatment,
- involvement in needle and syringe programmes, previous diagnoses, and treatment of selected somatic diseases – the questions were taken from the Example questionnaire for bio-behavioural surveys in people who inject drugs (EMCDDA, 2013),
- Health Section of the Opiate Treatment Index (OTI Health), which contains eight groups of questions about general health problems, problems related to injecting drug use, circulatory and respiratory problems, reproductive and excretory problems, gynaecological problems, musculatory and skeletal problems, and neurological and digestive problems (Darke et al., 1991),
- the Barriers to Treatment Inventory, a tool to measure barriers to the use of addiction treatment (Rapp et al., 2006); 38 of the original 59 questions were used (the results concerning barriers to treatment are described in another article),
- the respondents' own experience with the use of health care services when treating somatic problems.

The questionnaire was tested in a cognitive interview with four PDUs. The data was analysed in IBM SPSS Statistics v. 23 and Stata IC 14. Descriptive analysis and multiple linear regression were carried out, with the total score in OTI Health (number of positive symptoms) being used as the dependent variable and social and demographic variables (gender, age, education, two variables about housing – who they live with and the character of the housing, economic situation, nationality), primary drug, injecting use history, frequency of primary drug use in the last month, injecting use in the last month, and lifetime sharing of injecting equipment being used as the independent variables.

● 3 RESULTS

3.1 Social, demographic, and user characteristics

Of the 240 participants, 188 (78.3%) were males, 52 (21.7%) females. The age range was from 18 to 64, with the mean age being 34.8 ± 8.4 years (males 18 to 64, mean age 35.8 ± 8.4 ; females 19 to 49, mean age 31.4 ± 7.7 years). A total of 116 persons (48.3%) were homeless, 53 (22.1%) lived in temporary housing, and 26 (10.8%) in an institution. The majority (69.6%) were unemployed. Secondary education

without a diploma was the most frequent type (48.3%) of education, followed by primary education (30.4%). Only nine respondents were foreigners (eight Slovaks and one Hungarian). *Table 1* shows the proportions of the sample by primary drug. Methamphetamine (called pervitin in Czech) was the most frequent primary drug, reported by 48.3%, followed by opioids (mostly buprenorphine from the black market or heroin) in 47.9% and other drugs in 3.8% of the sample.

Drug	Number	Percentage
Pervitin	116	48.3
Buprenorphine	80	33.3
Heroin	22	9.2
Methadone	12	5.0
Opium	1	0.5
Other drugs	9	3.8
Total	240	100.0

Table 1 | Respondents by primary drug

In total, 150 respondents (62.5%) reported using two drugs at the moment and 60 (25.0%) three. A total of 198 respondents (82.5%) reported using pervitin, 101 (42.1%) buprenorphine, and 44 (18.3%) heroin. Cannabis use was reported by 46 people (19.2%), for seven of whom it was the primary drug; five respondents (2.1%) said they used new synthetic drugs, probably cathinones (called Funky or Magico).

Injecting drug use at some point in their lifetime was reported by 237 respondents (98.8%). 232 (96.7%) reported it in the last year, 228 (95.0%) in the last month, and 222 (92.5%)

reported current injecting drug use. The length of time they had been using their primary drug ranged from one to 43 years (mean 11.1 ± 7.6 years). A total of 230 respondents (95.8%) used their primary drug at least once a week; 174 (72.5%) used it daily. Application with a used needle or syringe at some point in their lifetime was reported by 116 of the 237 respondents (48.9%). Receptive sharing of needles/syringes in the last month was reported by 35 people (15.4%) out of those who had injected in the last month.

A total of 78 clients (32.5%) had participated in an opiate substitution programme at some point and 58 (24.2%) were in such a programme at the time of the interview; 133 (55.4%) had experience with a different type of programme for drug users – 30 (12.5%) outpatient programmes, 79 (32.5%) detoxification programmes, 82 (34.2%) a psychiatric hospital, 43 (17.9%) a therapeutic community, and 35 (14.6%) treatment in prison.

A total of 220 respondents (91.7%) had participated in a needle and syringe programme in the last month; 54 (22.5%) had purchased injecting equipment in a pharmacy. People who reported injecting drug use in the last month said that they usually had about 50 sterile needles and syringes at their disposal every month.

3.2 Examination and treatment of somatic illnesses

Lifetime prevalence of testing for HIV was reported by 219 respondents (79.2%–0.9% reported a positive result), 215 (89.6%) for hepatitis A (16.3% reported a positive result),

Disease	People with diagnosis		Health care provided or medicines prescribed for people with diagnosis		
	n	% (N=240)	yes (%)	no (%)	yes but refused treatment (%)
HCV	143	59.6	60.8	30.8	7.7
Parodontosis or dental caries	131	54.6	42.0	45.8	8.4
Abscesses at injection site	95	39.6	77.9	17.9	0.0
Pneumonia	81	33.8	82.7	14.8	1.2
HBV	71	29.6	63.4	33.8	1.4
Abscesses elsewhere	40	16.7	75.0	20.0	2.5
Urinary tract infection	32	13.3	71.9	28.1	0.0
Liver cirrhosis	24	10.0	54.2	41.7	4.2
Heart attack	14	5.8	85.7	7.1	0.0
Endocarditis or sepsis	13	5.4	92.3	7.7	0.0
Gonorrhoea	10	4.2	90.0	10.0	0.0
Cancer	9	3.8	66.7	0.0	22.2
Syphilis	8	3.3	62.5	37.5	0.0
Cerebral stroke	4	1.7	75.0	25.0	0.0
Tuberculosis	3	1.3	100.0	0.0	0.0
HIV	2	0.8	50.0	50.0	0.0

Table 2 | Diseases diagnosed in respondents by doctors at any time in their life

General health problems		Cardio-respiratory problems		Musculo-skeletal problems	
fatigue/loss of energy	75.8	persistent cough	18.8	joint pains/stiffness	47.1
poor appetite	35.8	coughing up phlegm	50.0	broken bones	12.5
weight loss/underweight	50.8	coughing up blood	4.6	muscle pain	52.1
trouble sleeping	51.7	wheezing	39.2	Neurological problems	
fever	35.8	sore throat	26.3	headaches	60.4
night sweats	45.0	shortness of breath	35.8	blackouts	8.8
swollen glands	15.0	chest pains	28.3	tremors (shakes)	32.9
jaundice	26.3	heart flutters/racing	42.1	numbness/tingling	40.0
bleeding easily	20.4	swollen ankles	23.8	dizziness	20.0
tooth problems	54.6	Genito-urinary problems		fits/seizures	14.2
eye/vision problems	40.4	painful urination	15.8	difficulty walking	35.8
ear/hearing problems	15.8	loss of sexual urge	20.8	head injury	10.4
cuts needing stitches	10.8	discharge from penis/vagina	7.5	forgetting things	51.3
Injecting-related problems		rash on/around penis/vagina	1.7	Gastro-intestinal problems	
overdose	16.3	Gynaecological problems (women only)		nausea	34.2
abscesses/infections from injecting	16.7	irregular period	53.8	vomiting	22.9
dirty hit (made them feel sick)	24.2	miscarriage	15.4	stomach-aches	35.4
prominent scarring/bruising	10.8			constipation	29.2
difficulty injecting	40.0			diarrhoea	24.6

Table 3 | Prevalence of symptoms in the last month by OTI Health groups, in % (N=240)

213 (88.8%) for HBV (32.9% reported a positive result), and 226 (94.2%) for HCV (63.7% reported a positive result). The most frequent diagnosis that the respondents had received from a doctor was HCV (59.6%), followed in decreasing frequency by dental problems, abscesses at an injection site, pneumonia, HBV, abscesses elsewhere, urinary infections, and liver cirrhosis. The other selected diagnoses were reported by less than 10% of the respondents. Most respondents said that they had received health care for all the diseases, except for dental and parodontal problems, for which only 42.0% received treatment; 60.8% had received treatment for HCV, 77.9% for abscesses at an injection site, and 82.7% for pneumonia – *Table 2*.

In the past 12 months, 141 respondents (58.8%) had sought health care in a medical facility – 100 of those (70.9%) were always examined/treated, 31 (22.0%) were usually examined/treated, and 10 people (7.1%) were examined/treated in half the cases or fewer. 96 respondents (69.1%) were treated in an outpatient setting and 46 (32.6%) were hospitalised. In the past 12 months, 70 respondents (29.2%) had been taken to hospital in an ambulance, 32 (13.3%) of them twice or more often.

3.3 Prevalence of symptoms of a disease

Table 3 shows a detailed list of prevalence of symptoms in the last month according to OTI Health in eight defined groups of diseases.

Table 4 shows the prevalence of problems as the total number of reported symptoms in each group in the whole sample expressed as the proportion (%) of the theoretical maximum of symptoms in each group (the measured number of symptoms in each group multiplied by the sample size).

Group of problems	Theoretical maximum of symptoms	Reported number of symptoms	%
Musculo-skeletal problems	720	268	37.2
General health problems	3120	1148	36.8
Gynaecological problems (women only)	104	36	34.6
Neurological problems	2160	657	30.4
Cardio-respiratory problems	2160	645	29.9
Gastro-intestinal problems	1200	351	29.3
Injecting-related problems	1200	259	21.6
Genito-urinary problems	960	110	11.5

Table 4 | Prevalence of symptoms in each group of problems of OTI Health

Independent variable	Category	Coefficient	p-value	95% CI	
Gender	male	reference cat.			
	female	3.43	0.017*	0.62	6.25
Age	18-24 years	reference cat.			
	25-34 years	0.63	0.789	-4.02	5.28
	35-44 years	1.35	0.607	-3.82	6.53
	45 and more years	1.52	0.617	-4.48	7.53
Education	primary	reference cat.			
	secondary without diploma	-1.50	0.231	-3.95	0.96
	secondary with diploma	-2.78	0.100	-6.09	0.54
	tertiary	2.86	0.712	-12.39	18.10
Lives with...	alone	reference cat.			
	parents	4.63	0.065	-0.29	9.56
	alone with child(ren)	-10.56	0.186	-26.24	5.12
	a partner	-0.78	0.605	-3.75	2.19
	a partner and child(ren)	1.54	0.628	-4.72	7.80
	friends	-1.94	0.211	-4.99	1.11
	other	-4.80	0.086	-10.29	0.69
Economic situation	regular employment	reference cat.			
	retired/in household	3.44	0.413	-4.84	11.73
	unemployed	1.37	0.478	-2.42	5.16
	irregular/temporary employment	-0.51	0.828	-5.14	4.12
	other	7.98	0.043	0.25	15.70
Type of housing	stable housing	reference cat.			
	temporary housing	0.38	0.847	-3.47	4.23
	in institution	1.54	0.510	-3.05	6.12
	homeless	1.94	0.332	-1.99	5.87
Nationality	Czech	reference cat.			
	other	7.07	0.009*	1.78	12.36
Primary drug	heroin	reference cat.			
	pervitin	-6.37	0.003*	-10.53	-2.20
	other opioids than heroin	-5.56	0.016*	-10.06	-1.06
	other	-8.64	0.014*	-15.52	-1.76
Drug use length	0-4 years	reference cat.			
	5-9 years	0.59	0.725	-2.71	3.89
	10-14 years	0.73	0.697	-2.97	4.43
	15 or more years	0.88	0.694	-3.52	5.27
Frequency of use in the last month	never	reference cat.			
	1x/week	2.57	0.439	-3.97	9.12
	2-6x/week	4.26	0.173	-1.89	10.42
	daily	6.68	0.028*	0.74	12.62
	more than once a day	7.21	0.019*	1.22	13.20
Injecting in the last month	no	reference cat.			
	yes	4.44	0.297	-3.93	12.80
Lifetime needle sharing	no	reference cat.			
	yes	2.62	0.025*	0.33	4.91
Constant		5.30			

Note: Coefficient represents a change in the OTI Health score in the category compared to the reference category (e.g. with similar values of other variables, users who have shared a needle will score 2.62 points higher than those who have never shared a needle). The minimum score was 0, the maximum was 35, and the mean 11.48. *Significant differences compared to the reference category at the 0.05 level are in bold.

Table 5 | Results of linear regression analysis with OTI Health total score as independent variable

3.4 Regression analysis of dependence of somatic symptoms on sociodemographic and drug use characteristics

Table 5 shows the results of multiple linear regression analysis in which the total score of OTI Health is the independent variable (significant results are provided in bold). The analysis showed that the prevalence of health problems was significantly higher in heroin users, in daily or more frequent daily users, in users who share their injecting equipment, in women, and in people with other than Czech nationality.

● 4 DISCUSSION

The respondents in our study have most often had experience with somatic treatment of infectious diseases, mostly blood-borne infections such as HIV and viral hepatitis, infections at an injection site, other skin defects, or serious acute systemic infections caused by unsterile injecting application, usually contaminated by commensal microflora. Dental problems such as tooth caries are also very frequent.

Although the reported symptoms were many, the highest proportion of PDUs in our survey complained about musculoskeletal problems and pains and general health problems such as fatigue, weight loss, or trouble sleeping, which might be symptoms of various diseases and various organ system disorders.

The reported symptoms appeared significantly more often in users of heroin as a primary drug, in women, and in foreigners, and increased with the frequency of application and with lifetime experience with sharing needles. These results are compliant with the findings about the risk factors of somatic comorbidity from other studies. A higher incidence of abscesses among injecting heroin users than among methamphetamine or cocaine users was also reported in Denver, Colorado, USA (Phillips & Stein, 2010). Our findings also correspond to those of another study among PWID in Prague (Švůgerová, 2015) that found that injecting heroin and buprenorphine users in the Czech Republic apply these drugs more often and more regularly and use more injecting material than pervitin users. On the other hand, the type of drug used was not found to be a significant factor for a higher risk of acquiring HCV in a previous national bio-behavioural survey (Zábranský et al., 2006).

The increased prevalence of somatic comorbidity in women and foreigners might be associated with lower access to health care as a result of stigmatisation, marginalisation, and legal, family, and economic factors (e.g. Scheppers et al., 2006; Greenfield et al., 2007).

The results of a cross-sectional study with a medical examination carried out in parallel (Mravčík et al., 2016) are quite similar to the results of the questionnaire survey. After an anamnestic and physical examination, the most frequent pathological findings were impaired oral health and skin lesions and the most frequent diagnoses were (chronic) HCV,

conditions after HAV and HBV, chronic tooth decay, an incomplete set of teeth, and chronic and purulent skin defects.

Our results also confirm the results of a survey on a sample of patients hospitalised at the infection centre for drug users at the Motol University Hospital in Prague. Between 2002 and 2005, 436 drug users were admitted, mostly for acute or chronic viral hepatitis (59%) and for skin and soft tissue infections (15%) (Hobstová & Vitouš, 2007). Another study, aimed at low-threshold programme workers in Prague, showed that most often, professionals had to deal with skin infections in their clients, especially small purulent abscesses and varicose ulcers (Spůrová, 2013).

The relationship between injecting drug use and infections at an injection site is obvious. Their etiology is associated with repeated skin damage along with unsterile and unhygienic drug application. An abscess at an injection site is the most frequently cited symptom. It is a localised collection of pus which might, however, be mistaken for a wound or a red lump (Coull et al., 2014), so the prevalence of abscesses might be overestimated. The high prevalence of infections and skin defects among PWID might also be related to a low standard of hygiene – the population of homeless people has to deal with an increased prevalence of scratches and folliculitis, foot mycosis, bacterial skin infections (ecthyma, impetigo), or scabies (Badiaga et al., 2005).

Half of the women in our study had had an irregular period “in the past few months” and up to 15% reported having had an interruption of a pregnancy. The issue of sexual and reproductive health in female drug users represents a specific area which includes addiction, infectological, psychiatric, and psychosocial topics along with gynaecological and often obstetrical and pediatric topics (Huber & Seelbach-Gobel, 2014; Metz et al., 2012). Therefore, comprehensive and multidisciplinary care for female drug users during pregnancy and motherhood is highly important and beneficial (Gyarmathy et al., 2009).

Our results have shown that the need for, and use of, somatic health care by PDUs are great: almost 60% of the respondents have sought medical care in a health care facility (drop-in centres excluded), of whom one third were hospitalised. About one third were taken to hospital in an ambulance, which shows that the problems were acute or that the users only called for medical care when the problems were severe. It should be remembered that it is estimated that there are over 16 thousand PDUs in Prague (Mravčík et al., 2017).

Quite a high proportion of the clients said that they actually received health care in the case of health problems, but not so in the case of dental care. A low level of use of dental care by PDUs has already been described. Factors such as the perceived low severity of dental problems compared to other priorities (e.g. the need to obtain drugs), a chaotic lifestyle, self-medication, and fear of the treatment or of an injection play a role (Robinson et al., 2005).

Barriers to the use of health care by drug users are a general phenomenon which deserves to be studied. The barriers exist on the side of both patients and medical workers and the treatment system. A delay in the provision of care and problems with continuity of care, gaps in financing regimes, fears about related diseases, fears patients have about the side-effects of the treatment, a reluctance to change drug use habits or fear of going back to drugs, a severe social situation and difficulties in social functioning, a lack of counselling and information about treatment, or the stigmatisation of drug users are all factors that can raise barriers. Therefore, the treatment of drug users requires a specific, comprehensive, multidisciplinary approach (Rapp et al., 2006; Mravčík et al., 2013; Mravčík et al., 2014). A separate paper will focus on the barriers to treatment in our sample in more detail.

● 5 LIMITATIONS

This questionnaire survey was designed as a cross-sectional study, so causality needs to be considered only hypothetically. The results are influenced by information bias because they come from self-reported data which was not verified or confirmed in any way.

● 6 CONCLUSIONS

Problem (especially injecting) drug use is a predictor of multiple somatic comorbidities. In our survey, we found that somatic health status was most often conditioned by

infectious blood-borne diseases transmitted during needle sharing, infections at injection sites, and other skin defects, and less often by acute systemic infections such as pneumonia, uroinfections, or sepsis. The dental conditions of PDUs are also poor and female users often suffer from gynaecological problems. A higher rate of somatic symptoms was found in heroin users, users who use daily or more than once daily, users who share injecting equipment, women, and foreigners. This indicates the association of somatic comorbidity with a higher intensity and more risky application of drugs, but probably also with poorer access to health care on the part of some user subgroups. The specific risks and needs of PDUs should be taken into account when providing health care to this group.

LIST OF ABBREVIATIONS

PAPI: Paper-and-pencil interview

HAV: Hepatitis A virus

HBV: Hepatitis B virus

HCV: Hepatitis C virus

OTI: Opiate Treatment Index

PDU: Problem drug user

PWID: People who inject drugs

Ethics approval and consent to participation: The study was fully anonymous. All the participants provided their oral informed consent prior to participating in this study.

Consent to publication: Not applicable.

Availability of data and material: The datasets generated and analysed during this study are not publicly available. For further information on the data used in this study, please contact the corresponding author.

Authors' contributions: VM drafted the design and initial manuscript. KM performed the statistical analysis. BD provided substantial revisions of the manuscript. All the authors have read and approved the final manuscript.

Declaration of interest: The authors declare that they have no competing interests. All the authors are researchers at the National Institute of Mental Health in Klecany, Czech Republic. VM is the head of the National Monitoring Centre for Drugs and Addiction and Associate Professor at the Department of Addictology, First Faculty of Medicine, Charles University.

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