Journal of Substance Abuse Treatment 45 (2013) 19–30

Contents lists available at SciVerse ScienceDirect

Journal of Substance Abuse Treatment

Trends of heroin use and heroin injection epidemics in Europe: Findings from the EMCDDA treatment demand indicator (TDI)

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ARTICLE INFO

Article history:
Received 26 June 2012
Received in revised form 30 October 2012
Accepted 5 November 2012

Keywords:
Drug injection
Heroin use
Trends
Europe
Drug treatment demand

ABSTRACT

We estimate trends and geographical differences in the heroin epidemic in the European Union plus Croatia and Turkey by analyzing aggregated data on first heroin treatment admissions (cases) during 2000–2009. In 2005–2009 the proportion of drug injectors was higher in Central and Eastern European countries (CEECs) than in Western European countries (WECs), whereas the opposite occurred with mean age at first heroin use and first treatment. During this period, the number of cases, cases per center, and proportion of injectors in WECs declined, whereas mean age at first treatment and first heroin use increased. The opposite occurred in Turkey, except for proportion of injectors, while trends were less clear in the other CEECs. In the 7 WECs with data, trends in 2000–2005 and 2005–2009 were similar. This suggests that the number of recent-onset heroin users and heroin injectors may have declined some years before the study period, especially in WECs.

1. Introduction

Heroin has accounted for most of the drug treatment demands and social and health problems associated with illegal drug use in Europe for many years (EMCDDA-Pompidou Group, 2000b), and this continues to be the case in more recent years (EMCDDA, 2011a; UNODC, 2011). Although heroin can be injected, smoked or snorted, injection generates by far the most serious health problems, mainly infections and overdoses (EMCDDA, 2010b; Gossop, Griffiths, Powis, Williamson, & Strang, 1996; Sporer, 1999). The vast majority of drug injectors in Europe have always been heroin users (Pompidou Group, 1994), although there are important subgroups of injectors of other drugs in Sweden, Finland, Czech Republic, Slovakia or Estonia (EMCDDA, 2010b; Wiessing, Klempova, Hedrich, Montanari, & Gyarmathy, 2010).

Although the heroin epidemic has affected most of Europe, published data suggest that its temporal evolution has varied across countries (Augustin & Kraus, 2004; Barrio, Bravo, et al., 2011; Barrio, Oliva, Bravo, De Mateo, & Domingo-Salvany, 2011; De Angelis, Hickman, & Yang, 2004; Hartnoll, 1986; Hartnoll et al., 1989; Kelleher, Keown, O'Gara, Keaney, Farrell, & Strang, 2005; Kraus, Augustin, Frischer, Kummler, Uhl, & Wiessing, 2003; Morgan, Vicente, Griffiths, & Hickman, 2008; Pompidou Group, 1994; Sanchez-Niubo, Fortiana, Barrio, Suelves, Correa, & Domingo-Salvany, 2009; Smyth, O'Brien, & Barry, 2000). In most Western European countries (WECs) the heroin use epidemic started in the late 70's or early 80's. In the late 90's and early 2000 a decrease in several indicators of extent of heroin use was observed in many WECs (e.g. number of new clients admitted to drug treatment and number of heroin overdose deaths) (Bargagli, Sperati, Davoli, Forastiere, & Perucci, 2001; Barrio, Bravo, et al., 2011; Barrio, Olivia, et al., 2011b; Costes et al., 2009; Davoli, Pasqualini, Belleudi, Bargagli, & Perucci, 2007; de la Fuente, Brugal, Domingo-Salvany, Bravo, Neira-Leon, & Barrio, 2006; Nordt & Stohler, 2006). However, doubts about trends have arisen recently because these indicators have been seen to increase in some countries since 2003–04 (Carew, Bellerose, Lyons, & Long, 2009; EMCDDA, 2011a; Vicente, Giraudon, Matias, Hedrich, & Wiessing, 2009), and some observers have suggested that heroin use may again be becoming popular among drug users, mainly in the recreational context (Cadet-Taïrou, Gandilhon, Lahaie, Chalumeau, Coquelin, & Toufik, 2010; Gandilhon, Cadet-Taïrou, Lahaie, & Chalumeau, 2010). However, it is necessary to assess whether these increases were isolated or have been maintained over a longer term.

Trends in drug injection across populations are strongly conditioned by the number of heroin users who inject. In WECs, heroin

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0740-5472/$ – see front matter © 2013 Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.jsat.2012.11.002

injection rose quickly in the early 1980s, and in many countries was accompanied by a rapid increase in the number of HIV and other infections among heroin users, mainly since 1985 (EMCDDA, 2010b). Since 1990 there is evidence that the proportion of heroin users who inject varies widely by geographical area, and may be decreasing in countries like the Netherlands, Spain, the UK or Ireland, whereas the proportion of heroin smokers is increasing (de la Fuente, Barrio, Royuela, & Bravo, 1997; Gervin, Hughes, Bamford, Smyth, & Keenan, 2001; Griffiths, Gossop, Powis, & Strang, 1992; Hartgers, Van den Hoek, Krijnen, van Brussel, & Coutinho, 1991; Smyth et al., 2000; Strang, Des, Griffiths, & Gossop, 1992; Strang, Griffiths, & Gossop, 1997; Strang, Griffiths, Powis, Abbey, & Gossop, 1997; Strang, Griffiths, Powis, & Gossop, 1992; Swift, Maher, & Sunjic, 1999; van Ameijden & Coutinho, 2001). However, in countries like France a high proportion of heroin sniffers has been found (Cadet-Taïrou et al., 2010; Costes, 2010; 1999). Subsequently, declines in the proportion of drug injectors among heroin users have been observed in many WECs (EMCDDA, 2010a; EMCDDA, 2010b). These data raise the hypothesis that the proportion of drug injectors may be falling in most WECs, accompanied by a parallel increase in the proportion of heroin smokers and sniffers.

Less is known about the evolution of the heroin epidemic in the Central and Eastern Europe countries (CEECs). In some of them, such as Poland, Czech Republic, Hungary, the Baltic States, Bulgaria and parts of former Yugoslavia, opioids (usually prepared homemade or pharmaceutical) were used during the 1980s and continued through the 1990s. Evidence suggests that heroin use began after the break-up of the Soviet Union in 1989 and increased during the 1990s, especially after the middle of this decade. This increase was accompanied by an increase in drug injection, which became the predominant route of heroin administration in most of these countries, although in Poland there was a certain proportion of heroin smokers. Beginning in 1995, an increase in the number of new HIV diagnoses related to drug injection was noted in some CEECs, especially the Baltic States. Furthermore, in the early 2000s the age of heroin users at treatment admission in CEECs (early 20's) was lower than in WECs (late 20's). This, together with the above data, suggested the hypothesis that the heroin epidemic started and evolved later in CEECs (EMCDDA, 2010b; Hartnoll, 2003; Hartnoll, Gyarmathy, & Zabransky, 2010).

Monitoring trends and patterns of heroin use and drug injection in Europe has always been a priority concern because of their public health impact, and treatment demand has been used for many years for this purpose (Davoli et al., 2007; de la Fuente, Barrio, Vicente, Bravo, & Lardelli, 1994; Millar, Craine, Carnwath, & Donmall, 2001; Nordt & Stohler, 2006; Pompidou Group, 1994; Sanchez-Niubo et al., 2009; Smyth et al., 2000; Stauffacher, 2002; Stauffacher, Arpa, & Vassilev, 2003). Changes in the size or composition of the population seeking heroin treatment may indicate changes in the size or composition of the population experiencing heroin problems (Donmall et al., 2007). However, the shortage of valid and comparable time series in many European countries, along with the lack of implementation of a systematic methodology of analysis, has hindered the interpretation of trends. The absolute number of first heroin treatments (FHT) has been used to derive trends in the incidence of problem heroin use, after correcting the individual records for time lag between first use and first treatment (DuPont & Greene, 1973; Hickman, Seaman, & De Angelis, 2001; Nordt & Stohler, 2006; Sanchez-Niubo et al., 2009). However, trends in the number of FHT will only properly reflect trends in the incidence of problem heroin use if the probability of ever entering heroin treatment, the time lag between first use and first heroin treatment, and reporting coverage have all remained relatively stable over the study period (Hickman et al., 2001). If these factors have changed, the interpretation is more complicated. If new forms of treatment are introduced (e.g. opioid substitution treatment), centers can attract “old” heroin users who have not previously been in contact with the treatment system, and the effect may be an increase in the number of FHT or mean age at first heroin treatment (MAFT), as well as changes in patterns of drug use (Stauffacher, 2002; Stauffacher et al., 2003).

Trends in FHT could also reflect trends in heroin use prevalence because the probability of starting heroin treatment is conditioned, not only by having previously started using heroin, but also by having continued such use (length of use), which increases the risk of dependence and other adverse consequences and brings new heroin addicts to treatment systems. In Switzerland and Spain, there is evidence suggesting an important parallelism between the evolution of three curves (incidence of use, prevalence of use and number of FHT), although, as would be expected, the downward trend of prevalence is slower. In addition, the time elapsed between the peak curves for number of FHT and prevalence is somewhat shorter than the time between the peak number of FHT and peak incidence (Nordt, Landolt, & Stohler, 2009; Nordt & Stohler, 2006; Nordt & Stohler, 2008; Sanchez-Niubo et al., 2009). However, there are few empirical data supporting the validity of the use of FHT trends to derive trends in the prevalence of heroin use. In any case, the FHT curve would be a better reflection of trends in the prevalence of recent-onset heroin use (which usually corresponds to younger heroin users) than of trends in global prevalence. Therefore, if there is a persistent decrease in heroin use incidence, the number of FHT would be expected to decrease more rapidly than heroin prevalence.

Perhaps the main limitation of number of FHT for estimating the dynamics of the heroin epidemic is the lack of information about changes in the probability of starting treatment, which is conditioned not only by the incidence and prevalence of heroin use in the population but also by the availability of treatment, social and legal pressure to start treatment, severity of the problems of heroin users, reporting coverage (of both treatment centers and treatments within each center), and other factors. However, the joint use of several indicators based on first heroin treatment admissions, such as number of FHT, FHT as a percentage of total first drug treatments (FHT percentage), ratio of first heroin treatments per reporting center (ratio FHT/center), MAFT, and mean age at first heroin use (MAFU) could help to more accurately interpret the time trends. FHT percentage is widely used in many countries to monitor problems due to heroin (EMCDDA, 2011a; EMCDDA, 2012; Substance Abuse and Mental Health Services Administration–Center for Behavioral Health Statistics and Quality, 2012; Dirección General del Plan Nacional Sobre Drogas, 2012) and could partially correct the effect of changes in the probability of admission to treatment and reporting coverage if it can be assumed that those changes affect heroin and other drugs equally. However, even in that case, the value of this indicator alone is limited because it is greatly affected by changes in the volume of treatment for drugs other than heroin. The ratio FHT/center could partially correct the effect of changes in reporting coverage due to the change in the number of reporting centers, but this ratio is very sensitive to the input or output of the reporting system of centers with a small unit volume of notifications, such as general practitioners, or by changes in the capacity of treatment centers. For example, the ratio may artificially decrease if the system maintains the capacity to treat the same number of patients, but these patients are redistributed in a larger number of centers.

Changes in MAFU may reflect changes in the incidence of heroin use. In general, evidence shows that increases in this indicator coincide with declines in incidence (and later in prevalence) and vice versa (Lynskey & Hall, 1998), although other scenarios are theoretically possible. Finally, changes in MAFT may also reflect changes in the incidence of heroin use, although they must always be interpreted together with the MAFU (or the time lag between first use and first treatment). For example, an increase in MAFT may reflect a decrease in the incidence of heroin use, but may also result from the greater availability of opioid substitution treatment which attracts old heroin