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Origer A. Prevalence of Problem Drug Use and Injecting Drug Use in Luxembourg: A Longitudinal and Methodological Perspective. *Eur Addict Res.* 2012;**18**:288-296

A summary of main findings.

Background

- To estimate national PDU and IDU prevalence (2009 data) and perform a trend analysis 1997 - 2009 based on results from serial national surveys.
- To assess the feasibility of prevalence estimations building upon drug monitoring systems.
- To assess the possible added value of the '*institutional contact indicator*' applied by the national drug surveillance system RELIS.

Methodology

- Serial multi-methods PDU/IDU prevalence estimations based upon capture-recapture, Poisson regression, multiplier and back-calculation methods.

- Comparative analysis of estimation methods and assessment of their robustness to variations of external factors.

Methods (1)

CR2 / **CR3** / **CR4**: capture-recapture on 2, 3 and 4 sources.

M1: multiplier method; police and drug-related deaths registers.

M2: multiplier method: N drug law offenders / law enforcement contact rate of drug offenders.

M3: multiplier method: N fatal overdose cases / drug related mortality and overdose rate.

M4: multiplier method: N treatment demanders / in-treatment rate.

MtP: truncated Poisson Model on institutional contact frequencies – Zelterman and Chao estimators.

P(IDU/PDU): multiplier method: PDUs estimates / IDUs rates.

M(IDU/HIV): N HIV infected IDUs / rate of HIV infections among IDUs.

Methods (2)

National specificities:

- Serial estimates based on comparable methodologies and on the same data sources in 1997, 1999, 2000, 2003, 2007 and 2009.

- Multi-sources and multi-settings framework: i.e. data sources from various **DR fields** (Detoxification units, treatment offers, OST, harm reduction services, mortality registers) and **SR fields** (police registers, od registers, specialised treatment units in prisons)

- Nation-wide identifier (RELIS code) approved by the *National Data Protection Agency* allowing to excluding multiple counts and enabling capture-recapture techniques and Poisson regressions.

- Since RELIS includes SR and DR sources, it also provides additional equation variables such as 'duration of dependence, overdoses, first offenders' and allow to dispose of highly representative samples.

Results (1)

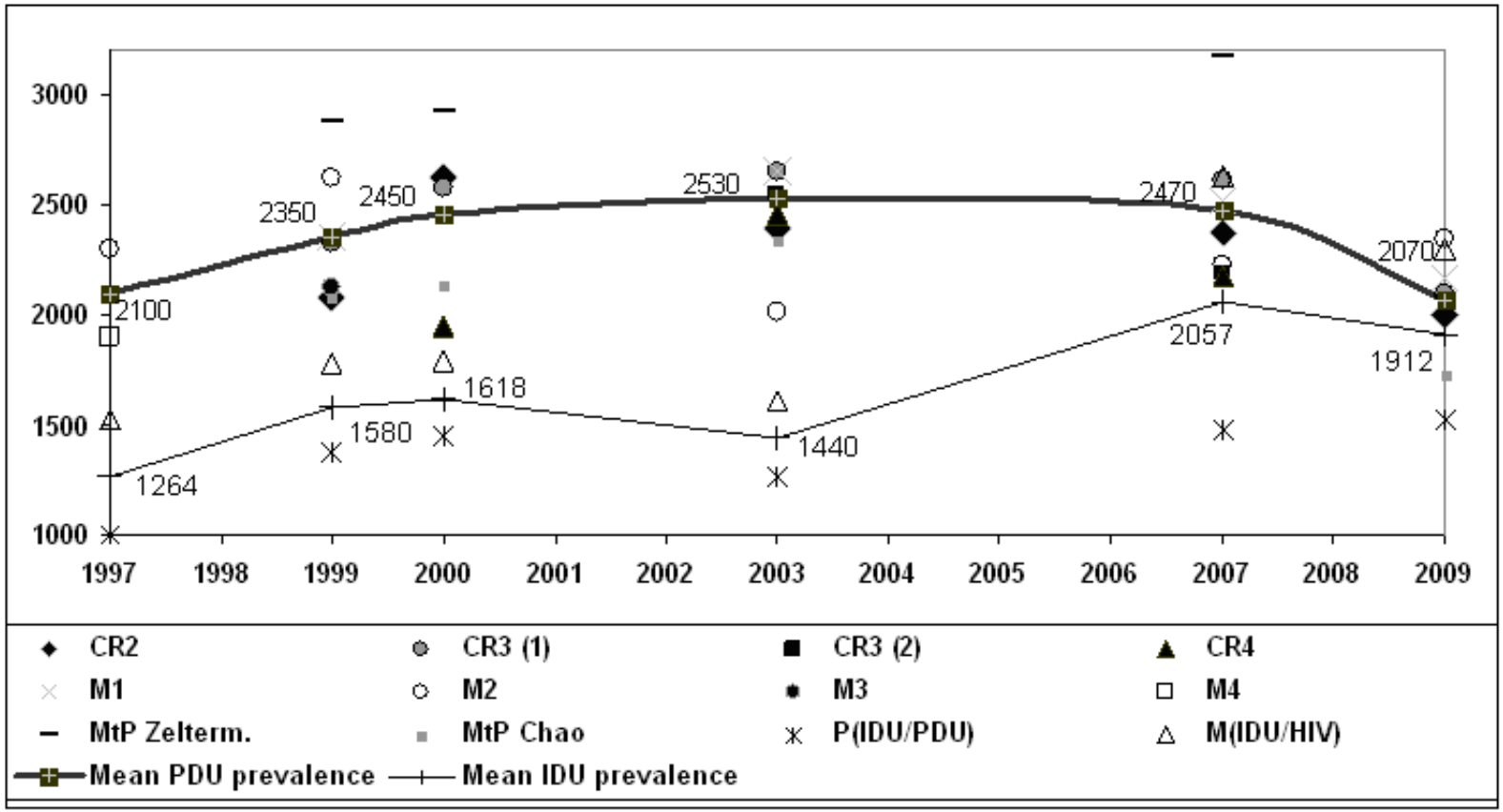
Table 2 Absolute prevalence and prevalence rates according to selected sub-groups – Grand Duchy of Luxembourg (1997 – 2009)

	1997	**1999**	**2000**	**2003**	**2007**	**2009**
GENERAL POPULATION						
National population on 1st January	418300	429200	435700	448300	476200	493500
National population aged between 15 and 64 years on 1st January	281100	287100	291000	300800	322000	336015
PROBLEM DRUG USERS (PDU)						
PDU mean prevalence	**2100**	**2350**	**2625**	**2530**	**2470**	**2070**
Mean C.I. (95%)	1900-2300	1994 – 2758	2246 – 3295	2144 – 3293	1945 – 3343	1553 – 2623
Total mean prevalence rate - PDU	5 /1000	5·48 /1000	6·02 /1000	5·64/1000	5·19 /1000	4·19 /1000
Total mean prevalence rate - PDU-age:15-64	7·47 /1000	8·19 /1000	9·02 /1000	8·41 /1000	7·67 /1000	6·16 /1000
INJECTING DRUG USERS (IDU)						
IDU mean prevalence	**1656**	**1757**	**1765**	**1745**	**2173**	**1907**
Estimate margins	1528 - 1785	1686 - 1828	1610 - 1920	1735 - 1755	1924 - 2422	1524 - 2301
Total mean prevalence rate - IDU	3·96 /1000	4·09 /1000	4·05/1000	3·89/1000	4·56/1000	3.86/1000
Total mean prevalence rate-IDU-age :15-64	5·89 /1000	6·12 /1000	6·07/1000	5·80/1000	6·75/1000	5.68/1000

Source : Origer 2012

Results (2)

Figure 1 Absolute prevalence estimates of problem drug use and injecting drug use – Grand Duchy of Luxembourg (1997 – 2009)[1]



Source: Origer 2012

Results (3)

Trends 1997 - 2009:

- 2009 results: Absolute PDU prev.: **2,070** (95% CI: 1,553 – 2,623)
  PDU prev. rate 15-64 Y: **6.16** / 1,000 inhabitants
  Absolute IDU prev.: **1,907** (95% CI: 1,524 – 2,301)
  IDU prev. rate 15-64 Y: **5.68** / 1,000 inhabitants

- Absolute prevalence and prevalence rates of PDU have been increasing between 1997 and 2000 and declining 2003 onwards.

- IDU absolute prevalence and prevalence rates have been witnessing a generally increasing trend between 1997 and 2007 and have been showing signs of decrease between 2007 an 2009.

- Results have been compared to trends of indirect indicators (e.g. drug law offenders, OD, OST clients…) and allowed to further validate outputs from serial prevalence studies. (A dedicated paper is *in press*)

Discussion (1)

- Methodological assumptions (e.g. closed population, homogeneity, independence of sources, structural factors, trap attraction/avoidance) and means to reduce their impact and the impact of external factors (e.g. local drug scenes, HIV outbreaks, increase in mortality due to contaminated drugs, access to treatment) are discussed in the paper. Special attention has been paid in this context to the possible added value of routine drug surveillance systems versus trans-sectional surveys.

- Determination of methods that tend to provide upper bound and lower bound estimates (e.g Zelterman's versus Chao's estimators in tPm).

- Prevalence estimates are about '*size*' but do not necessarily inform on the genuine composition of the target population an the extend of correlated problems.

Discussion (2)

°Drug use surveillance systems can be valuable instruments for the estimation and trend analysis of drug misuse prevalence given:

- they build upon standardized and sustained data collection routines;

- multiple methods are applied that rely on serial and representative (case exhaustive) data from different sources and different settings (total institutional contacts),

- they rely on an approved identifier code allowing to control multiple counts and perform multiple and advanced estimation techniques (CR and tPm).

- sound knowledge of the national situation (drug use patterns, drug markets, health correlates, etc.) is available;

- indirect indicators (drug availability, service usage, mortality figures, etc.) can be used to validated 'calculated' estimates. (Real world versus statistical outputs)

Further research

° Use of indirect trend indicators to consolidate prevalence estimates and to follow up trends between 2 consecutive complete prevalence studies. (in LU each 2-3 years)

° Investigate means to describe PDU population in a more dynamic way (e.g. recent findings on entry and cessation rates).

° Further assess possible applications and added value of the '*institutional contact indicator'.*

THANK YOU FOR YOUR ATTENTION

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