# Mortality risk among cocaine users after and before economic recession

This study targeted residents in northern Italy who turned to a public treatment centre for primary cocaine use between 1982 and 2016. Its aims were to estimate mortality risk, and to examine mortality for subjects who have never used heroin (CUs) compared to that of subjects who have used heroin (HCUs).

We selected 1,993 subjects; 18,015 Person Years (PY). Mortality rate was 5.55 per 1000 PY, higher for HCUs, men and subjects aged over 44 years, declining for all causes from 2008 to 2012 and rising in the last period.

| | | All causes of death (100) | |
|---|---|---|---|
| | | RR | 95% CI |
| **Sex** | Females | 1 | Referent |
| | Males | 1.35 | 0.72-2.54 |
| **Age** | >=25 years | 1 | Referent |
| | <25 years | 1.82 | 0.73-4.56 |
| **Heroin use** | Cocaine no heroin | 1 | Referent |
| | Cocaine and heroin | 1.68 | 1.12-2.53 |
| **Calendar period** | <=2004 | 1 | Referent |
| | 2005/2008 | 0.89 | 0.48-1.63 |
| | 2009/2012 | 0.40 | 0.21-0.75 |
| | 2013/2016 | 1.13 | 0.63-2.00 |

Fig. 1. Rate ratio for all causes of death (Poisson multiple regression analyses).

We highlight two different populations of patients, which are distinguished not only by heroin use, but also by age, personal characteristics, socioeconomic status, health status and risk of death. Indeed, among CUs, who were older on average, there was a higher percentage of subjects with regular income and a high school diploma or university degree (*socially integrated drug users*); among HCUs, there was a higher percentage of positive hepatitis C and HIV status, injectors, MDMA and benzodiazepine use (*marginalized drug users*).

Regarding mortality excess respect to general population, SMRs were 3.49, higher for women and HCUS. Among CUs, most of the deaths were from injury excluding drug-related and tumors; among HCUs, from drug-related causes and diseases of the cardiovascular system. Multivariate analysis confirms the higher mortality risk for HCUs and the decreasing trend in the 2009–2012 period.

This variability in cocaine-related mortality could be attributed to the fact that cocaine users are not a homogeneous group and that the concomitant use of cocaine with other drugs, primarily opioids, would

establish differences among cocaine users in the prevalence of injected use, HIV and other infectious diseases, and in socioeconomic background, that may distort mortality findings.

Another aspect concerns the possible effects of the economic recession on the problematic consumption of cocaine and on the risk of death, which decreased during the years 2009–2012 and increased in the following period. The effects of the 2008 economic crisis on substance use patterns within countries of the European Union are two-sided. Despite the reduction in the population's overall substance use, vulnerable subgroups experience serious negative effects, and most studies highlight the negative effect of job-loss and unemployment on substance use patterns. While there is evidence that drug use increases in times of recession because unemployment increases psychological distress, which increases drug use, some studies observed a decrease in cocaine use, because individuals have reduced incomes and purchasing power. Analysis of wastewater also showed a decrease in the use of more expensive drugs (i.e., heroin and cocaine) and an increase in the use of cheaper drugs (cannabis and amphetamine) in northern Italy. In particular, daily cocaine usage did not change from 2005 to 2008 but fell 45% in 2009, suggesting a trend toward a decrease in consumption. This might be due to a reduction in the number of consumers and/or a change in their behaviour. It is an interesting hypothesis, which must be confirmed by further studies, particularly regarding the specific impact on cocaine mortality.

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## Publication