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Suicide among male prisoners in France: A prospective population-based study*



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ABSTRACT

Background: Suicide rates are high among prisoners but little is known about the precise weight of each risk factor.

Methods: We collected data on the periods of imprisonment of all adult males incarcerated in France between 1 January, 2006 and 15 July, 2009. We used survival analyses from the incarceration to its end, censored by the observation period. We calculated suicide rates and performed a Cox model to assess the link between prisoners' imprisonment characteristics and suicide risk.

Results: Overall, 301,611 periods of imprisonment were observed and 353 suicides were recorded. The suicide rate was 17.9 suicides per 10,000 person-years (95% CI: 16.1–19.9). The hazard ratio (HR) of suicide risk was high for placements in a disciplinary cell (15.7, 95% CI: 10.6–23.5) and varied depending on the main offence (homicide: 7.6, 95% CI: 5.3–10.9, rape: 4.6, 95% CI: 3.2–6.6, other sexual assault: 2.9, 95% CI: 1.9–4.6, other violent offence: 2.1, 95% CI: 1.5–2.8, compared with other offences). HR was lower when visits from relatives were observed (0.4, 95% CI: 0.3–0.5) and higher if a hospitalization was observed (1.6, 95% CI: 1.3–2.0). After conviction, HR halved with respect to the remand period, but there was no difference by sentence length. HR was higher if incarceration occurred after age 30 (1.4, 95% CI: 1.1–1.7). Foreigners tended to have lower risks than French prisoners, with the exception of those incarcerated for rape.

Conclusions: The suicide rate in prison is generally much higher than in the general population. This study has replicated previous international findings, highlighting the impact of the type of offence on suicide risk. Suicide prevention programmes must consider the high risk associated with incarceration for a criminal offence against a person. With regard to the impact of visits from relatives and placements in a disciplinary cell, further work should be conducted from a psychological perspective to examine the effects of physical and social isolation.

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1. Introduction

France is characterized by one of the highest prison suicide rates [1] in Western Europe and prison suicide is a serious concern. The suicide rate among prisoners is much higher than in the general population [1–4] and risk factors are prison-specific. Descriptive studies have indicated that the risk is high immediately after incarceration [5–12], and is also higher during the remand period than after conviction [1,12–14]. Among suicidees,

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prisoners convicted for violent and sexual offences are over-represented [1,4,5,10–12,15,16], as are those serving long sentences [14–17]. The suicide risk is higher among prisoners who are alone in their cells [7,8,14,18] or placed in disciplinary cells [11,19]. Among sociodemographic factors, there is no general consensus about the effect of age [11,17,19,20], but being male [14] and married [14,16] increase the risk of suicide. Race or ethnicity, also pointed out in the literature [14], is not commonly used in the French context as a sociodemographic factor, but having French nationality may be associated with risk differentials. Finally, mental disorders and suicidal behaviour, which are much more frequent among prisoners than in the general population [21–23], are also strongly associated with suicide risk [7,10,11,13,14,22–25].

These studies present significant limitations, however. First, they often have limited statistical power because suicide is a relatively rare occurrence in small populations. Second, they are largely based on aggregate rather than individual-level data. As a

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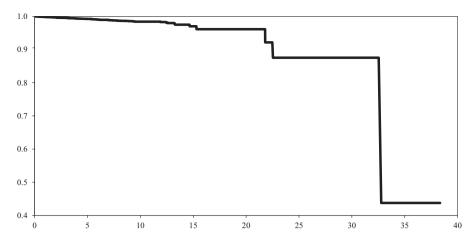


Fig. 1. Survivor function of suicide for adult male prisoners observed in France over the period 1 January, 2006-15 July, 2009.

result, they do not assess the independent contribution of each risk factor to suicide rates since these factors are often interlinked. In this study, we examined suicide risk factors among the entire French prison population over a recent three-and-a-half-year period. We investigated periods of imprisonment of adult males to assess the relative association between suicide risk in terms of the characteristics of their imprisonment.

2. Materials and methods

2.1. Study population

In compliance with French regulations on individual data protection, the French penal administration provided us with data on the 312,595 periods of imprisonment of adult males observed between 1 January, 2006 and 15 July, 2009 in all French prisons. A total of 301,611 periods were analyzed (3.5% were excluded due to missing information on the offence, penal status, date of final conviction or sentence length).

2.2. Data

We selected the reliable and most significant information from among the many types of data available for each period: the inmate's year of birth and nationality; penal information (offence, date of incarceration, date of final conviction and length of prison sentence if any); precise dates of stays in disciplinary cells, hospitalizations (whatever the reason, the location and the duration but with subsequent return to cell) and visits from relatives or friends during the 3.5-year-period of observation. Offences were ranked in five categories and, in cases of multiple offences, the first was selected as the main offence: (1) homicide; (2) rape; (3) other sexual assault; (4) other violent offence; and (5) other offence

2.3. Statistical analysis

We performed survival analyses from the incarceration start-date to end-date (due to suicide or another event, i.e. release, escape or death from another cause). Data were censored for periods of imprisonment already begun on 1 January, 2006 and those not ended on 15 July, 2009 (Fig. 1). We calculated the mean observed

Table 1Mean duration of periods of adult male imprisonment observed in France over the period 1 January, 2006–15 July, 2009, by main offence.

	Duration of imprisonment periods (censored)	
	Mean (95% CI)	N
Main offence		
Homicide	2.00 (1.97-2.03)	7824
Rape	1.80 (1.78-1.82)	14,814
Other sexual assault	0.84 (0.82-0.86)	10,686
Other violent offence	0.66 (0.65-0.67)	66,890
Other offence	0.50 (0.50-0.51)	201,397
Total	0.65 (0.65-0.66)	301,611

Source: French penal administration.

duration of the imprisonment periods and the prison suicide rates, and we identified the association between characteristics and suicide risk using a Cox proportional hazard model. The model fit was tested with the Schoenfeld residuals method [26].

3. Results

From 1 January, 2006 to 15 July, 2009, 301,611 periods were observed with a mean duration of 0.65 years (Table 1). The mean length of the observed periods of imprisonment varied by type of offence, with 2.00 years (95% CI: 1.97–2.03) on average for homicide, 1.80 years (95% CI: 1.78–1.82) for rape, 0.84 years (95% CI: 0.82–0.86) for other sexual assault, 0.66 years (95% CI: 0.65–0.67) for other violent offences, and around six months for other offences.

During the observation period, 353 suicides were recorded over 196,916.8 person-years, giving a rate of 17.9 suicides per 10,000 person-years (95% CI: 16.1–19.9) (Table 2). We measured significant differentials for age at incarceration, with a higher rate for adults above 30 years old (22.1, 95% CI: 19.4–25.2). There was no difference between French prisoners and the others. The suicide rate was high for prisoners places in a disciplinary cell (180.4, 95% CI: 124.6-261.3), for prisoners who had been hospitalized at least once during the observation period (26.4, 95% CI: 22.1–31.6), for those on remand (37.2, 95% CI: 31.7–43.7) and those sentenced to more than 15 years in prison (26.7, 95% CI: 19.2–37.2). It was low for prisoners who received at least one visit from relatives or friends during this period (9.6, 95% CI: 7.7-12.1). The suicide rate was highest for prisoners convicted of homicide (50.5, 95% CI: 40.5-63.0), while rates for rape or sexual assault were equivalent (28.5, 95% CI: 22.7-35.6 and 26.7, 95% CI: 17.9-39.9). The rate for other violent offences was 17.5, 95% CI: 14.0-21.8. and the rate was lowest for other offences (9.6, 95% CI: 7.8-11.7).

In the multivariate analysis, with the exception of nationality, all covariates remained significantly associated with suicide risk: the highest hazard ratio (HR) was for placement in disciplinary cell versus an ordinary cell (15.7, 95% CI: 10.6–23.5). The HR varied considerably depending on the main offence. Compared to other offences it was 7.6, 95% CI: 5.3–10.9 for homicide, 4.6, 95% CI: 3.2–6.6 for rape, 2.9, 95% CI: 1.9–4.6 for other sexual assault, and 2.1, 95% CI: 1.5–2.8 for other violent offences. HR was low when at least one visit from relatives or friends was observed (0.4, 95% CI: 0.3–0.5) and high when at least one hospitalization was observed (1.6, 95% CI: 1.3–2.0). During the remand period, HR was twice as high as after conviction, but there was no difference by sentence length. HR was higher for prisoners above 30 years old at incarceration (1.4, 95% CI: 1.1–1.7).

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