



A 17-Year National Study of Prison Suicides in Belgium

Louis Favril¹, Ciska Wittouck², Kurt Audenaert², and Freya Vander Laenen¹

¹Institute for International Research on Criminal Policy (IRCP), Faculty of Law and Criminology, Ghent University, Belgium

²Department of Psychiatry and Medical Psychology, Faculty of Medicine and Health Sciences, Ghent University, Belgium

Abstract. *Background:* Suicide is a leading cause of mortality in prisoners worldwide, yet empirical data on this matter are lacking in Belgium. *Aims:* This study sought to describe characteristics associated with a consecutive series of suicides in Belgian prisons from 2000 to 2016 inclusive, in order to inform suicide prevention strategies. *Method:* All documented cases of suicide ($N = 262$) were reviewed using a standardized assessment checklist. Official records were abstracted for prisoners' sociodemographic, criminological, and clinical information, as well as for suicide-related characteristics. *Results:* Over the 17-year study period, suicides accounted for one third of all deaths in Belgian prisons. The average annual suicide rate in Belgium from 2000 to 2016 was 156.2 per 100,000 prisoners. Examination of all cases highlights both individual (psychiatric disorders and a history of suicide attempt) and situational (the early period of incarceration, interfacility transfers, and placement in solitary confinement) factors common in many prison suicides; some of them amenable to (clinical) management, which presents several potential avenues for suicide prevention. *Limitations:* Given the absence of a matched control group, no conclusions could be ascertained regarding risk factors. *Conclusion:* Suicide is a common, preventable cause of death among prisoners in Belgium. The results underscore the timely need for national standards and guidelines for suicide prevention in Belgian prisons.

Keywords: suicidal behavior, inmates, imprisonment, suicide prevention

Suicide is a leading cause of mortality in custodial settings worldwide (Konrad et al., 2007; Rabe, 2012). Based on data sampled across 24 high-income countries, suicide rates in prisoners are estimated to be at least three times higher than in the general population, reflecting rates in excess of 100 suicides per 100,000 inmates in many European countries (Fazel, Ramesh, & Hawton, 2017). Numerous factors may contribute to this disproportionately high incidence of suicide in prisons. First, prisoners represent a selection of vulnerable individuals who are already at a greater risk of suicide before imprisonment. High rates of psychosocial adversities, mental illness, substance use, impulsive-aggressive personality traits, and prior suicidal behavior have been consistently identified among prisoners (Enggist, Møller, Galea, & Udesen, 2014; Fazel & Baillegeon, 2011; Fazel, Hayes, Bartellas, Clerici, & Trestman, 2016) – all of which are well-established risk factors for suicide (O'Connor & Nock, 2014; Turecki & Brent, 2016). Second, in addition to these individual-level risk factors, characteristics unique to the prison environment and the correctional regime (e.g., the loss of freedom and autonomy, overcrowding, bullying, poor social support, and lack of purposeful activity) may negatively affect prisoners' mental health (Goomany & Dickinson, 2015) and have been shown to increase suicide risk during incarceration (Blaauw, Winkel, & Kerkhof, 2001; Huey & McNulty, 2005; Leese, Thomas, & Snow, 2006; Liebling, 2006).

Taken together, as outlined by the stress–diathesis model of suicidal behavior (van Heeringen, 2012), contemporary research emphasizes the exposure of vulnerable individuals to a stressful setting as a sound empirical explanation for prison suicide (Dye, 2010; Favril, Vander Laenen, Vandeviver, & Audenaert, 2017c; Liebling & Ludlow, 2016; Rivlin, Hawton, Marzano, & Fazel, 2013; Stoliker, 2018), in which suicidal behavior is purported to result from the dynamic interaction between both proximal and distal factors, including individual state- and trait-dependent characteristics, and prison-specific environmental influences (Marzano et al., 2016).

Reducing the number of prison suicides has been highlighted as an international priority by the World Health Organization (WHO, 2007). To this end, several descriptive (Gauthier, Reisch, & Bartsch, 2015; Hayes, 2012; O'Driscoll, Samuels, & Zacka, 2007; Shaw, Baker, Hunt, Moloney, & Appleby, 2004) and case-control (Blaauw, Kerkhof, & Hayes, 2005; Fruehwald, Matschnig, Koenig, Bauer, & Frottier, 2004; Humber, Webb, Piper, Appleby, & Shaw, 2013) studies over the past years have sought to delineate relevant factors associated with prison suicide, in order to inform prevention strategies at individual, staff, and organizational level. According to a meta-analysis of 34 studies comprising around 5,000 cases of suicide, the most important risk factors associated with suicide in prisoners include single-cell occupation, remand status,

serving a life sentence, recent suicidal ideation, a history of attempted suicide, and having a psychiatric diagnosis or a history of alcohol misuse (Fazel, Cartwright, Norman-Nott, & Hawton, 2008). Almost a decade after publication of this oft-cited meta-analysis, the National Institute for Health and Care Excellence (NICE, 2017) recently recommended that it is (still) crucial to identify and understand the factors related to suicide when developing interventions to prevent such outcomes among prisoners. To date, however, not a single study has been noted for suicide mortality among prisoners in Belgium – a country that has, by international standards, a high suicide rate in the general population (Organisation for Economic Cooperation and Development, 2017). Given the clinical and public health significance of prison suicide, and the absence of an evidence-based suicide prevention policy in Belgian prisons, we aimed to conduct a national review of all suicide cases that occurred in the whole prison estate of Belgium from 2000 to 2016.

Method

Setting

With an incarceration rate of 105 per 100,000 individuals (Walmsley, 2016), the average daily prison population in Belgium was just over 11,000 in 2015 (Directory-General of Penitentiary Institutions [DG EPI], 2016). From 2000 to 2013, the inmate population at census grew from 8,464 to 11,645 prisoners, and slightly decreased to 10,619 prisoners in 2016. Nonetheless, despite this decline, overcrowding has been the norm in Belgian prisons during the 17-year period covered by this study (operating at 110% capacity in 2015). Males comprise approximately 95% of all inmates in Belgium. While in some countries individuals held in custody on criminal charges (i.e., pre-trial/remand prisoners) are housed in separate facilities from sentenced prisoners, the majority of Belgian prisons house both types of inmates. Notably, in Belgium, 8.2% of the total prison population in 2015 ($N = 904$) were offenders who were deemed criminally irresponsible (ODCI). As formulated by De Smet and colleagues (2016), in Belgium, ODCI (also referred to as *internees* or *mentally ill offenders*) for their criminal actions because of mental illness or intellectual disability are subject to a specific safety measure with the dual objective of protecting society and providing court-mandated care to the offender. While Belgian law requires that ODCI should be in a hospital, clinic, or other appropriate institution outside of prison, in practice, about one third of all such offenders still reside in prison.

Study Design and Data Sources

The present study set out to conduct a retrospective analysis of a consecutive series of suicides that occurred in the whole Belgian prison estate between 2000 and 2016 inclusive. In Belgium, every death occurring during imprisonment is subject to a coronial inquest and an inquiry by the public prosecutor. Only deaths where suicide was the official cause of death by a coroner's verdict were included in the present study. Suicides among offenders who were administratively registered in the prison database but who were not physically residing in a correctional facility, for example, in the case of electronic monitoring or those who were granted a penitentiary leave, were not included in the study.

The DG EPI provided a list of all prisoners who died by suicide from January 1, 2000, to December 31, 2016. For each suicide case, we requested the inmate's official records (i.e., general prison files, psychosocial evaluation reports, and suicide review reports). During this 17-year period, the total number of deaths that were classified as suicides by coroner's verdict was 262, of which most personal records were available for scrutiny. Employing a standardized assessment checklist to ensure consistent data collection across the whole study population, all available records were abstracted by the two researchers (L.F. and C.W.) for sociodemographic, criminological, and clinical information, as well as for suicide-related characteristics. Questionable information was scored based on team consensus. Primary sources of data comprised inmates' general prison files (containing sociodemographic and criminological information) and suicide review reports (a mandatory report prepared by the local prison governor following each suicide describing its details and circumstances). These two sources of information were available for all cases, except for 13 suicide review reports that could not be retrieved. Supplementary sources of information, if available, consisted of psychosocial evaluation reports and suicide notes.

Data Analysis

The annual reports of the DG EPI were examined for official statistics of the average daily population (ADP) and the total number of deaths in Belgian prisons for 2000–2016. Combined with the number of suicides identified in this study, unadjusted annual suicide rates were calculated per 100,000 inmates using the ADP figures of the respective year as denominator. Since no matched control group was included in the current study, data analysis was essentially descriptive in nature. If an item of information was missing for a case, the case was removed from the analysis of

that item. The denominator in all estimates is therefore the number of valid cases for each item (Shaw et al., 2004).

Ethical Considerations

Ethical approval for the study protocol was granted by the Ethics Committee of Ghent University, Faculty of Law and Criminology. The study was registered with the Belgian Commission for the Protection of Privacy (CPP). Permission to carry out the study was obtained from the DG EPI – the department of the Federal Public Service of Justice responsible for all prison affairs in Belgium.

Results

Suicide Rates

According to the data obtained from DG EPI, there were a total of 794 deaths in the Belgian prison system between 2000 and 2016. Of these deaths, 262 (33.0%) were classified as suicides – reflecting an average of 15.4 suicides per annum. Based on ADP figures, the annual suicide rate fluctuated widely; from 86.9 per 100,000 prisoners in 2004

to 270.7 per 100,000 in 2001 (see Table 1). During the 17-year period covered by this study, the average suicide rate in Belgium was estimated to be 156.2 per 100,000 prisoners per year.

Sociodemographics

Table 2 shows the sociodemographic characteristics of all cases. Of the total 262 suicides included in this study, 248 were males (94.7%) and 14 were females (5.3%). At the time of suicide, the mean age of all cases was 37.0 years ($SD = 10.9$, range = 19–72), and prisoners' modal age was 25–34 years (36.3%). Only five prisoners (1.9%) were aged 65 or older. The large majority of cases (77.5%) were Belgian nationals. About three prisoners in four were single at the time of death (which includes being divorced, separated, or widowed), whereas 24.8% were married.

Criminological Variables

Criminological features of all prisoners included in the study are presented in Table 2. At the time of suicide, 109 inmates were on remand (41.6%), 47 were ODCI (17.9%),

Table 1. Total number of deaths and suicides in Belgian prisons, 2000–2016

Year	ADP	Number of deaths ^a	Number of suicides (% of prison deaths)	Suicide rate per 100,000
2000	8,464	53	19 (35.8)	224.5
2001	8,497	52	23 (44.2)	270.7
2002	8,769	45	22 (48.9)	250.9
2003	9,008	44	11 (25.0)	122.1
2004	9,201	31	8 (25.8)	86.9
2005	9,238	34	13 (38.2)	140.7
2006	9,579	38	14 (36.8)	146.2
2007	9,873	49	14 (28.6)	141.8
2008	9,891	51	16 (31.4)	161.8
2009	10,238	43	13 (30.2)	127.0
2010	10,536	46	20 (43.5)	189.8
2011	10,974	49	12 (24.5)	109.4
2012	11,330	47	13 (27.7)	114.7
2013	11,645	56	15 (26.8)	128.8
2014	11,578	59	20 (33.9)	172.7
2015	11,041	44	16 (36.4)	144.9
2016	10,619	53	13 (24.5)	122.4
<i>M</i>	10,028	46.7	15.4 (33.0)	156.2

Note. ADP = average daily population. ^aTotal number of deaths in prison, including suicides (source: Directory-General of Penitentiary Institutions, 2016).

Table 2. Demographic and criminological details of all suicide cases ($N = 262$)

	<i>N</i>	%
Gender: male	248	94.7
Age, years		
18–24	31	11.8
25–34	95	36.3
35–44	79	30.2
45–54	36	13.7
55–64	16	6.1
≥65	5	1.9
Nationality: Belgian	203	77.5
Marital status: married	65	24.8
First incarceration	165	52.5
Custodial status		
Remand	109	41.6
Sentenced	106	40.5
ODCI ^a	47	17.9
Sentence length ^b		
≤1 year	4	3.8
>1–3 years	24	22.6
>3–5 years	28	26.4
>5–10 years	26	24.5
>10 years	24	22.6
Index/main offence		
Sexual offence	42	16.0
Murder/manslaughter	85	32.4
Acquisitive crimes	76	29.0
Drug-related offences	29	11.1
Other	30	11.5

Note. ^aOffenders deemed criminally irresponsible. ^bSentenced prisoners only ($N = 106$).

and 106 were sentenced (40.5%). For the latter group, modal sentence length was more than 3 years up to 5 years (26.4%). Irrespective of custodial status, one third of all cases (32.4%) was charged with, or convicted of, murder or manslaughter, followed by acquisitive crimes with or without violence (29%), and sexual offences (16%). Approximately half of all prisoners died by suicide during their first-ever episode of imprisonment; 47.5% had a prior history of incarceration.

Next, the interval from the prisoners' initial reception into prison to the time of suicide was examined for all cases (Table 3). Results show that 20 inmates (7.6%) died by suicide within the first 24 hr of confinement. One fifth of all suicides (21.8%) occurred during the first month of incarceration, with 15.6% of suicides occurring within the first week after initial reception in prison. Cumulatively, half of all suicides (50.8%) occurred within 6 months of reception. The median length of time between prisoners' initial reception and their suicides was 171.5 days (corresponding to 5.6 months). When considering interfacility transfers, the majority of all cases ($N = 162$, 61.8%) died in the prison where they were initially incarcerated; the remaining 100 cases were transferred to another prison at least once during their period of detention. Taking the interval between the last transfer (i.e., reception into the prison where the suicide occurred; the initial confinement for individuals without a transfer) and the suicide into account (Table 3), 21.8% of all suicides took place within 7 days of the last transfer (30.9% within the first month). In this case, the median length of incarceration was 87 days (2.8 months).

Clinical Characteristics

The clinical features of the suicide cases where information was available are presented in Table 4. In this study, 86.7% of prisoners who died by suicide were identified as

Table 3. Time interval from reception and last transfer to suicide ($N = 262$)

Duration of incarceration	Since initial incarceration ^a		Since last transfer ^b	
	<i>N</i> (%)	Cumulative %	<i>N</i> (%)	Cumulative %
≤24 hr	20 (7.6)	7.6	22 (8.4)	8.4
>1 day – 1 week	21 (8.0)	15.6	35 (13.4)	21.8
>1 week – 1 month	16 (6.1)	21.8	24 (9.2)	30.9
>1–6 months	76 (29.0)	50.8	93 (35.5)	66.4
>6–12 months	39 (14.9)	65.6	42 (16.0)	82.4
>1–5 years	67 (25.6)	91.2	41 (15.6)	98.1
>5 years	23 (8.8)	100	5 (1.9)	100

Note. ^aInitial reception into prison, not necessarily the facility where the suicide occurred. ^bTime interval from last transfer to the prison where the suicide occurred. For the subgroup of prisoners without an interfacility transfer ($N = 162$), *last transfer* refers to the initial incarceration.

Table 4. Charted clinical features of suicide cases

	N	Valid %
(History of) mental disorder ^a	156	86.7
Prior suicide attempt ^b	71	50.4
Before imprisonment	25	17.7
While incarcerated	50	35.5

Note. Percentages calculated based on the number of valid cases.

^aData available for 180 cases. ^bData available for 141 cases.

Table 5. Characteristics of suicide cases (N = 249)

Characteristics	N	Valid %
Location		
Single cell	151	60.6
Shared cell	60	24.1
Solitary confinement	28	11.2
Outside cell (in prison)	9	3.6
Outside prison	1	0.4
Timing		
00:01–03:00	32	12.9
03:01–06:00	37	14.9
06:01–09:00	16	6.4
09:01–12:00	24	9.6
12:01–15:00	22	8.8
15:01–18:00	42	16.9
18:01–21:00	38	15.3
21:01–24:00	38	15.3
Method		
Hanging/self-strangulation	224	90.0
Laceration	8	3.2
Jumping from height	7	2.8
Self-poisoning/overdose	9	3.6
Other	1	0.4
Increased monitoring measure	104	41.8

having a (history of) mental disorder, including personality and substance use disorders. In half (50.4%) of all prisoners for whom information was available in their case files, a history of at least one suicide attempt was documented; 17.7% attempted suicide before imprisonment, and one in three did so while incarcerated (35.5%).

Circumstances of the Suicides

Location and Cell Accommodation

Table 5 shows the circumstances of 249 prison suicides (95% of all identified cases), since details were not available for 13 cases. In total, 211 suicides took place in the prisoners' regular cells (84.7%). Over half of all suicides (60.6%) occurred in single-occupant cells, and 60 suicides (24.1%) in shared cells. In the latter case, cellmates were absent from the cells (e.g., due to visitation or airing) in 63.3% of the suicides that occurred in multiple-occupancy cells. Of the suicides that did not occur in regular cells (15.3%), 28 (11.2% of all suicides) took place in solitary confinement.¹ The remaining suicides occurred outside the prison cell but within the correctional facility (e.g., in the laundry room or in common areas such as the prison hallway or stairwell), and one suicide took place outside prison (more specifically, when the prisoner was temporarily transferred to a courthouse).

Suicide Method

The vast majority (90%) of suicides occurred as the result of hanging or self-strangulation (Table 5). Of these suicides (N = 224), the most common ligature was bedding (49.6%) followed by clothing (including shoelaces and belts; 35.3%). Cell window bars were the ligature point used in two thirds of all suicides by hanging (67.0%), followed by inmates' bed or bunk (9.4%). In the other suicides by hanging, anchoring points consisted of easily accessible cell fittings such as ventilation or heating, pipes, sanitary devices (toilets and sinks) or doors. The remaining suicides (N = 25) involved jumping from a height in prison (2.8%), laceration (3.2%), and self-poisoning or intentional overdose (3.6%).

Timing

Overall, the timing of suicides was fairly spread by day and by month, and there was no distinguishable pattern. More specifically, suicides were evenly distributed throughout the week, ranging from 13.7% to 14.9% per day. Furthermore, there was no pronounced accumulation of suicides during certain months (range = 6.5–10.3%). There was, however, some discernible pattern by time of day. In all, 56 suicides (24.8%) occurred between 6:00 a.m. and 3:00 p.m., whereas 43.1% occurred during the night shift of prison staff (9:00 p.m. to 6:00 a.m.).

¹ In Belgium, solitary confinement refers to the physical and social isolation of a prisoner for disciplinary reasons or protective purposes. Irrespective of reason, prisoners are temporarily housed alone in a specially designed bare-walled cell for 23 hr a day. Inmates placed in a disciplinary or security cell – in practice, a different label for the same type of cell – are subjected to a highly restricted regime and closer levels of monitoring by prison staff (see Shalev, 2015).

Significant Events Surrounding the Suicides

Of all cases, 33 prisoners (12.6%) had been transferred from another prison within 6 months prior to suicide, with 24 prisoners (9.2%) being transferred to the facility where they died by suicide within 1 month of the suicide. Furthermore, 21.1% of all suicides occurred before or after 5 days of a significant event related to the criminal case, such as a court proceeding, conviction, reconstruction of the crime, or prolongation of the pre-trial detention by the Council Chamber.

Increased Monitoring Measure

At the time of suicide, 41.8% of all prisoners were subject to conditions of increased monitoring due to a disciplinary or safety measure. This monitoring measure encompasses a visual check by prison staff every 15 or 30 min. Prisoners who are subjected to this measure can be housed in their regular cells in the general prison population, or can be physically and socially isolated from the general prison population in solitary confinement; as was the case for, respectively, 76 and 28 prisoners in the study population.

Discussion

The present study reports findings from a review of all documented suicides in the whole Belgian prison estate within a 17-year period. During 2000–2016, suicide was a leading cause of mortality in Belgian prisons, accounting for one third of all deaths during imprisonment. Based on ADP figures, the average annual suicide rate was estimated to be 156.2 per 100,000 prisoners – echoing the recent finding that Belgium has one of the highest prison suicide rates in Western Europe (Fazel et al., 2017). Although not standardized by age and gender, the annual prison suicide rates calculated here are substantially higher than those recorded in the general population in Belgium (see Appendix), and such a large discrepancy can and should not be disregarded.

The general demographic profile of the prisoner who died by suicide was that of a single, young (aged 25–34) male of Belgian nationality, which resonates with prior findings from Europe (Gauthier et al., 2015; Radeloff et al., 2017) and Australia (O’Driscoll et al., 2007). This finding is, however, not surprising since this profile mirrors the vast majority of prisoners throughout Belgium, making reliance on such demographic indicators of limited use for identifying at-risk prisoners (Hayes, 2012). For example, 5% of all cases comprised women, reflecting the relative size of the female prison population.

Half of all prisoners who died by suicide were charged with, or convicted of, homicide or sexual offences. In light

of data provided by the Council of Europe (Aebi & Delgrande, 2014) and a Belgian study (Favril et al., 2017c), indicating that 20–25% of offenders in Belgium are incarcerated because of such crimes, we can conclude that violent index offences were proportionally more common among suicide cases, which is in keeping with prior international findings (Fruehwald et al., 2004; Webb et al., 2012). Furthermore, nearly one in five suicides involved ODCI, whereas this specific group of offenders only accounts for roughly 8% of the total prison population (DG EPI, 2016). It has been repeatedly stressed (among others by the European Court of Human Rights) that ODCI should not be imprisoned, but rather should receive appropriate care within psychiatric facilities outside of prison (Meysman, 2016; Vandeveldel et al., 2011). Although the first high-risk forensic psychiatric hospital in Belgium became operational in November 2014, approximately 900 ODCI are still (unlawfully) residing in prison to date. Hence, reducing the incarceration of ODCI – and offenders with severe mental illness more generally – by diverting them to appropriate facilities for (forensic) mental health care would be a legitimate prevention strategy, both ethically and judicially.

Mental illness was, however, not exclusive to the group of ODCI. Clinically, more than 80% of all cases (82% of non-ODCI) had a charted lifetime psychiatric disorder and approximately 50% (47% of non-ODCI) had a documented history of a prior suicide attempt. As a basis of comparison, recent findings from a representative sample of more than 1,000 prisoners in Belgium suggest that lifetime prevalence rates of psychiatric diagnoses (46.3%) and suicide attempts (21.8%) are – albeit highly elevated in reference to their nonincarcerated counterparts – markedly lower compared with those found in the current population of prisoners who died by suicide (Favril, Vander Laenen, & Audenaert, 2017a, 2017b). This resonates with findings from a 2008 meta-analysis identifying such clinical vulnerabilities as significant risk factors for suicide in prisoners (Fazel et al., 2008). Therefore, adequate treatment and management of psychiatric disorders by means of psychological interventions should be provided (Bolton, Gunnell, & Turecki, 2015; Marzano et al., 2016), which is insufficiently the case in Belgian prisons to date (Favril et al., 2017a; Mistiaen et al., 2017).

As previously highlighted (O’Driscoll et al., 2007; Shaw et al., 2004), the first months of imprisonment were found to represent a critical risk period for suicide, which underscores the importance of screening for suicide risk during the early stages of custody (for a review, see Gould, McGeorge, & Slade, 2018). Since suicidality is a dynamic process fluctuating over time rather than a static phenomenon (Sveticic & De Leo, 2012), screening for suicide risk should not be limited to the point of reception at prison, but must be an ongoing and systematic process, at regular

intervals throughout the period of detention. Such subsequent re-assessments are especially indicated at critical times during their incarceration, when inmates' circumstances or conditions change while detained (Marzano et al., 2016). As our results suggest, events such as inter-facility transfers, periods shortly before and after significant court appearances, and changes in custodial status (after sentencing or appeal) should prompt a screening protocol.

In the present study, there was no discernible pattern of suicides by month, nor was there a clear accumulation on particular days of the week (e.g., weekends). However, time of day seems to have some significance, in that two out of five suicides (43.1%) occurred between 9:00 p.m. and 6:00 a.m. Since this period roughly corresponds to the interval between lock-up and reveille of prisoners, this disproportionate number of suicides is possibly due to lower staff supervision during the overnight shift. Not surprisingly (Gauthier et al., 2015), the large majority of all suicides occurred in prisoners' own cells, in the absence of a cell mate, by means of hanging (most commonly from the cell window bars using bedding or clothing as ligatures). A recent US-based study found that, compared with suicide attempters, prisoners who died by suicide were more likely to be accommodated in single cells, to act during overnight hours, and to use more lethal methods such as hanging (Boren et al., 2017). The latter finding relates to the most accessible method in custody, and further supports the need for restriction of lethal means in correctional settings, especially for prisoners who are identified as suicidal (Gunnell, Bennewith, Hawton, Simkin, & Kapur, 2005). With regard to cell accommodation, single-cell occupancy has been consistently identified as a major risk factor for suicide (Fazel et al., 2008; Humber et al., 2013). Since prisoners housed in single cells may lack informal monitoring provided by cell mates, allowing for more undisturbed opportunities to engage in (lethal) suicidal behavior, placement in shared accommodation has been put forward as a prevention strategy (WHO, 2007). In the present study, however, two thirds of all 60 suicides in multi-occupant cells occurred when prisoners were alone in their cell, even if they were technically sharing one. Similarly, a national study in the UK found that, when prisoners ended their life in shared accommodation, half of them did so in the absence of their cell mate (Shaw et al., 2004). Hence, although we were not able to investigate the number of suicides that may have been prevented by this measure, such a prevention strategy should only be considered a supple-

ment to, and not a substitute for, other prevention efforts such as social support by trained correctional staff (Konrad et al., 2007).

At the time of suicide, one in ten prisoners was residing in solitary confinement. Since precise data on utilization of solitary confinement across the Belgian prison estate are elusive, it was not possible to generalize whether this number was disproportionate. However, given the specific Belgian setting², one in 10 suicides occurring in such restrictive conditions is worrying at the very least. As it inherently reduces protective factors against suicidal behavior (such as purposeful activity and social support), the use of solitary confinement can be detrimental to prisoners' mental health and well-being (Grassian, 2006; Haney, 2018; Smith, 2006) and has been shown to increase the risk of suicide (Bonner, 2006; Duthé, Hazard, Kensey, & Pan Ké Shon, 2013; Kaba et al., 2014). Therefore, although inappropriate for those at risk of suicide, solitary confinement should only be adopted in exceptional circumstances for those known to pose an acute danger to themselves, for a period as short as necessary. Furthermore, 40% of all prisoners were the subject of an increased monitoring measure, irrespective of cell accommodation. In this regard, it should be emphasized that mere isolation and monitoring, in the absence of any psychosocial support or clinical intervention, does not suffice and should not be considered a stand-alone intervention. Moreover, prisoners may fear such restrictive measures owing to their harsh and often punitive nature, which may discourage the communication of suicidal thoughts or plans to prison staff (Kerkhof & Bernasco, 1990; Way, Kaufman, Knoll, & Chlebowski, 2013). As such, denial or nondisclosure of suicidal feelings impedes the early identification of at-risk prisoners.

Collectively, most of the findings outlined here corroborate prior international research on prison suicides, indicating that existing national standards and guidelines for the prevention of prison suicide in other countries (see Daigle et al., 2007) could serve as an evidence-based starting point for the development of a national blueprint for suicide prevention in Belgian prisons, tailored to its specific prison system.

Methodological Limitations

The present study was the first endeavor to examine characteristics of the total Belgian penitentiary suicide population, by reviewing official prison files of suicide cases over

2 Solitary confinement in Belgian (and by extension European) prisons is a rather exceptional form of short-term isolation (Shalev, 2015). By international standards (e.g., the United States), Belgium sets a high bar for the use of solitary confinement and restricts its application to no more than seven to nine consecutive days.

a relatively long period. The strength of this study lies in the complete nature of a national population (rather than a sample) of prisoners who died by suicide, and the fact that detailed reports were obtained from DG EPI – of which the large majority were available for scrutiny. When interpreting the study's findings, four important methodological issues should nonetheless be considered.

First, only deaths receiving a coroner's verdict of suicide were included in the study. There may be some degree of inaccuracy in such data; for instance, it is possible that some suicides were not recognized as such. For example, in the absence of a suicide note from which to infer suicidal intent, research has shown that suicides by self-poisoning are not uncommonly misclassified as accidental overdoses or undetermined deaths, especially for individuals with a history of substance use disorders (Bohnert et al., 2013; Olsson, Bradvik, Öjehagen, & Hakansson, 2016; Stone et al., 2017). As such, official figures possibly represent an underestimation of the actual number of suicides in prison.

Relatedly, since prison files provided the sole source of information, we were highly reliant on the quantity and quality of archival data available in prisoners' official records – which are initially not collected for scientific purposes. As file information may be incorrect, biased, or incomplete, a problem inherent to retrospective record-based research is the potential unreliability of the information available in case records (Liebling, 1992). In a similar vein, information relating to the subjective experience of imprisonment and the context in which suicides arise (e.g., social isolation or bullying) was marginally reported in prisoners' case files. An alternative methodological approach, that of interviewing prisoners who have engaged in near-lethal suicide attempts (Marzano, Rivlin, Fazel, & Hawton, 2009), allows for a broader and deeper range of risk and protective factors to be assessed, as well as the investigation of the psychological processes leading up to suicidal behavior, which is not possible through analyses of official records.

A third issue that warrants attention relates to the calculation of suicide rates among prisoners. Several issues have been raised as to whether the prison suicide rate should be calculated based on the ADP, or rather on the number of receptions (i.e., the annual number of unique individuals who entered prison) as denominator (for a discussion, see O'Mahony, 1994). Here, we calculated suicide rates based on ADP figures, which does not factor in the number of receptions into prison. As many prisoners do not stay for a 12-month period, ADP figures will invariably underrepresent the number of people passing through the prison system, consequently leading to the overestimation of the actual rate (Fazel et al., 2017), especially in populations with substantial turnover (Gallagher & Dobrin, 2007). However,

in spite of this issue of overestimation, suicide rates calculated using the ADP are commonly reported in the literature (e.g., Joukamaa, 1997; O'Driscoll et al., 2007; Preti & Cascio, 2006), enabling fair comparisons across studies and countries (Pratt, 2016).

Last, and most importantly, the current descriptive study examined characteristics of prisoners who died by suicide without the inclusion of matched controls for each suicide case. Since it is not possible to ascertain risk factors when studying only the suicide group itself, we were unable to delineate which variables were significantly more common among suicide cases, and which characteristics merely reflect those of the whole prison population from which the suicide group was drawn (Liebling, 1992; Pratt, 2016). To partially overcome this limitation, we benchmarked aggregated data of all cases against information about the general Belgian prison population, when available. Ideally, however, our next step should encompass a case-control study in order to elucidate the unique contribution of risk factors to the outcome of suicide in custody.

Implications for Suicide Prevention

As in other countries, suicide is common among prisoners in Belgium, underscoring the seriousness of this preventable cause of death. By stark contrast, a national strategy for suicide prevention is currently lacking in Belgian prisons (Favril et al., 2017c). Yet, several prominent studies have unambiguously concluded that multifaceted and prison-wide prevention strategies are of paramount importance in order to reduce the incidence of suicidal behavior in custodial settings (Barker, Kölves, & De Leo, 2014; Konrad et al., 2007; Marzano et al., 2016). To date, however, the implemented prevention measures in Belgian prisons are for the most part restrictive in nature (such as increased monitoring and placement in solitary confinement). As our results indicate, the fact that inmates residing in solitary confinement – conditions that are supposed to be safe and subject to increased levels of monitoring – still had both the means and the opportunity to engage in fatal suicidal behavior represents a structural frailty in Belgian prisons' approach to suicide prevention. Hence, although temporarily useful to a certain degree, suicide prevention should not be limited to such situational prevention strategies, as these do not address the underlying problem (Kerkhof & Bernasco, 1990; Liebling, 1992). Therefore, prevention efforts should equally target the psychosocial etiology of suicidal thoughts and behavior. In this respect, international good practices include the Assessment, Care in Custody and Teamwork (ACCT) procedure as implemented in UK prisons (Humber, Hayes, Senior, Fahy, & Shaw, 2011), the provision of appropriate mental health care (Marzano

et al., 2016), peer support initiatives (Bagnall et al., 2015; Hall & Gabor, 2004), and cognitive-behavioral therapy for suicidal inmates (Pratt et al., 2015). In sum, rather than relying on physical methods of suicide prevention, more emphasis should be placed on screening and risk assessment, providing training for prison staff, promoting suicide awareness, and ensuring that multi-disciplinary care and support are available for prisoners at risk.

Considering the ongoing austerity measures in the Federal Public Service of Justice, the persistent problem of overcrowding, and the subsequent increasing workload for prison staff, the prevention of suicide in prison currently does not constitute a pronounced policy priority in Belgium. Acknowledging this unfortunate reality, the authors nonetheless emphasize that (more) policy attention toward suicide and its prevention is warranted – not only to reduce the incidence of suicidal behavior among prisoners and its associated costs (Howard League, 2016), but as much as part of a safe and humane execution of the custodial measure in Belgium. Only a holistic and whole-prison approach toward suicide prevention will be able to reduce the number of suicides in prisoners as well as the burden and suffering caused for relatives, incarcerated peers, and prison staff.

Conclusion

Suicide is a leading cause of death in Belgian prisons, warranting a wide implementation of preventive interventions. Given the lives at stake, it is imperative that such prevention strategies are maximally underpinned by high-quality research evidence. Whereas the present study – the first of its kind in Belgium – provides a modest contribution in this direction, further research (both quantitative and qualitative) is needed in order to elucidate causal risk factors and possible points of intervention in the early phases of the suicidal process. The authors firmly emphasize the timely need for elaborating national standards and guidelines for suicide prevention in Belgian prisons, equivalent to the general population (WHO, 2012).

Acknowledgments

This project was supported by the Special Research Fund (BOF) of Ghent University. The funding agency did not have any involvement in the study design, data collection, data analysis, and the interpretation of results, nor in the writing or decision to submit the manuscript for publication. Our sincere appreciation is extended to Dirk Janssens and Patrick Franssen (DG EPI) for facilitating the study and for providing the necessary data. The authors declare that the research was conducted in the absence of any commer-

cial or financial relationships that could be construed as a potential conflict of interest.

References

- Aebi, M. F., & Delgrande, N. (2014). *SPACE I – Council of Europe annual penal statistics: Prison populations. Survey 2012*. Strasbourg, France: Council of Europe.
- Bagnall, A. M., South, J., Hulme, C., Woodall, J., Vinall-Collier, K., Raine, G., ... Wright, N. M. (2015). A systematic review of the effectiveness and cost-effectiveness of peer education and peer support in prisons. *BMC Public Health*, 15, 290.
- Barker, E., Kølves, K., & De Leo, D. (2014). Management of suicidal and self-harming behaviors in prisons: Systematic literature review of evidence-based activities. *Archives of Suicide Research*, 18(3), 227–240.
- Blaauw, E., Kerkhof, A. J. F. M., & Hayes, L. M. (2005). Demographic, criminal, and psychiatric factors related to inmate suicide. *Suicide and Life-Threatening Behavior*, 35(1), 63–75.
- Blaauw, E., Winkel, F. W., & Kerkhof, A. J. F. M. (2001). Bullying and suicidal behavior in jails. *Criminal Justice and Behavior*, 28(3), 279–299.
- Bohnert, A. S. B., McCarthy, J. F., Ignacio, R. V., Ilgen, M. A., Eisenberg, A., & Blow, F. C. (2013). Misclassification of suicide deaths: Examining the psychiatric history of overdose decedents. *Injury Prevention*, 19(5), 326–330.
- Bolton, J. M., Gunnell, D., & Turecki, G. (2015). Suicide risk assessment and intervention in people with mental illness. *BMJ*, 351, h4978.
- Bonner, R. L. (2006). Stressful segregation housing and psychosocial vulnerability in prison suicide ideators. *Suicide and Life-Threatening Behavior*, 36(2), 250–254.
- Boren, E. A., Folk, J. B., Loya, J. M., Tangney, J. P., Barboza, S. E., & Wilson, J. S. (2017). The suicidal inmate: A comparison of inmates who attempt versus complete suicide. *Suicide and Life-Threatening Behavior*. <https://doi.org/10.1111/sltb.12374>
- Daigle, M. S., Daniel, A. E., Dear, G. E., Frottier, P., Hayes, L. M., Kerkhof, A., ... Sarchiapone, M. (2007). Preventing suicide in prisons, part II. *Crisis*, 28(3), 122–130. <https://doi.org/10.1027/0227-5910.28.3.122>
- De Smet, S., De Keyser, W., De Donder, L., Ryan, D., Verté, D., Broekaert, E., & Vandeveld, S. (2016). Older offenders deemed criminally irresponsible in Flanders (Belgium): Descriptive results from a retrospective case note study. *International Journal of Law and Psychiatry*, 46, 35–41. <https://doi.org/10.1016/j.ijlp.2016.02.025>
- Directory-General of Penitentiary Institutions. (2016). *Annual report 2015*. Brussels, Belgium: Author.
- Duthé, G., Hazard, A., Kensey, A., & Shon, J. L. P. K. (2013). Suicide among male prisoners in France: A prospective population-based study. *Forensic Science International*, 233(1-3), 273–277.
- Dye, M. H. (2010). Deprivation, importation, and prison suicide: Combined effects of institutional conditions and inmate composition. *Journal of Criminal Justice*, 38(4), 796–806.
- Eggist, S., Møller, L., Galea, G., & Udesen, C. (2014). *Prisons and health*. Geneva, Switzerland: World Health Organization.
- Favril, L., Vander Laenen, F., & Audenaert, K. (2017a). Psychiatrische morbiditeit bij gedetineerden in Vlaanderen [Psychiatric morbidity among prisoners in the Flanders region of Belgium]. *Panopticon*, 38(4), 231–245.
- Favril, L., Vander Laenen, F., & Audenaert, K. (2017b). Suïcidaal gedrag bij gedetineerden in Vlaanderen: Prevalentie en sa-

- menhang met psychische distress [Suicidal behavior among prisoners: Prevalence and association with psychological distress in Flemish prisons]. *Tijdschrift voor Psychiatrie*, 59(4), 203–211.
- Favril, L., Vander Laenen, F., Vandeviver, C., & Audenaert, K. (2017c). Suicidal ideation while incarcerated: Prevalence and correlates in a large sample of male prisoners in Flanders, Belgium. *International Journal of Law and Psychiatry*, 55, 19–28.
- Fazel, S., & Baillargeon, J. (2011). The health of prisoners. *Lancet*, 377(9769), 956–965.
- Fazel, S., Cartwright, J., Norman-Nott, A., & Hawton, K. (2008). Suicide in prisoners: A systematic review of risk factors. *Journal of Clinical Psychiatry*, 69(11), 1721–1731.
- Fazel, S., Hayes, A.J., Bartellas, K., Clerici, M., & Trestman, R. (2016). Mental health of prisoners: Prevalence, adverse outcomes, and interventions. *Lancet Psychiatry*, 3(9), 871–881.
- Fazel, S., Ramesh, T., & Hawton, K. (2017). Suicide in prisons: An international study of prevalence and contributory factors. *Lancet Psychiatry*, 4(12), 946–952.
- Fruehwald, S., Matschnig, T., Koenig, F., Bauer, P., & Frottier, P. (2004). Suicide in custody: Case-control study. *British Journal of Psychiatry*, 185(6), 494–498.
- Gallagher, C. A., & Dobrin, A. (2007). Risk of suicide in juvenile justice facilities: The problem of rate calculations in high-turnover populations. *Criminal Justice and Behavior*, 34(10), 1362–1376.
- Gauthier, S., Reisch, T., & Bartsch, C. (2015). Swiss prison suicides between 2000 and 2010. *Crisis*, 36(2), 110–116. <https://doi.org/10.1027/0227-5910/a000302>
- Goomany, A., & Dickinson, T. (2015). The influence of prison climate on the mental health of adult prisoners: A literature review. *Journal of Psychiatric and Mental Health Nursing*, 22(6), 413–422.
- Gould, C., McGeorge, T., & Slade, K. (2018). Suicide screening tools for use in adult offenders: A systematic review. *Archives of Suicide Research*, 22(3), 345–364. <https://doi.org/10.1080/13811118.2017.1334611>
- Grassian, S. (2006). Psychiatric effects of solitary confinement. *Journal of Law & Policy*, 22, 325–383.
- Gunnell, D., Bennewith, O., Hawton, K., Simkin, S., & Kapur, N. (2005). The epidemiology and prevention of suicide by hanging: A systematic review. *International Journal of Epidemiology*, 34(2), 433–442.
- Hall, B., & Gabor, P. (2004). Peer suicide prevention in a prison. *Crisis*, 25(1), 19–26. <https://doi.org/10.1027/0227-5910.25.1.19>
- Haney, C. (2018). Restricting the use of solitary confinement. *Annual Review of Criminology*, 1, 285–310.
- Hayes, L. M. (2012). National study of jail suicide: 20 years later. *Journal of Correctional Health Care*, 18(3), 233–245.
- Howard League (2016). *The cost of prison suicide*. London, UK: Howard League for Penal Reform.
- Huey, M. P., & McNulty, T. L. (2005). Institutional conditions and prison suicide: Conditional effects of deprivation and overcrowding. *The Prison Journal*, 85(4), 490–514.
- Humber, N., Hayes, A., Senior, J., Fahy, T., & Shaw, J. (2011). Identifying, monitoring and managing prisoners at risk of self-harm/suicide in England and Wales. *The Journal of Forensic Psychiatry & Psychology*, 22(1), 22–51.
- Humber, N., Webb, R., Piper, M., Appleby, L., & Shaw, J. (2013). A national case-control study of risk factors among prisoners in England and Wales. *Social Psychiatry and Psychiatric Epidemiology*, 48(7), 1177–1185.
- Joukamaa, M. (1997). Prison suicide in Finland, 1969–1992. *Forensic Science International*, 89(3), 167–174.
- Kaba, F., Lewis, A., Glowa-Kollisch, S., Hadler, J., Lee, D., Alper, H., ... Venters, H. (2014). Solitary confinement and risk of self-harm among jail inmates. *American Journal of Public Health*, 104(3), 442–447. <https://doi.org/10.2105/AJPH.2013.301742>
- Kerkhof, A. J. F. M., & Bernasco, W. (1990). Suicidal behavior in jails and prisons in the Netherlands: Incidence, characteristics, and prevention. *Suicide and Life-Threatening Behavior*, 20(2), 123–137.
- Konrad, N., Daigle, M. S., Daniel, A. E., Dear, G. E., Frottier, P., Hayes, L. M., ... Sarchiapone, M. (2007). Preventing suicide in prisons, part I. *Crisis*, 28(3), 113–121. <https://doi.org/10.1027/0227-5910.28.3.113>
- Leese, M., Thomas, S., & Snow, L. (2006). An ecological study of factors associated with rates of self-inflicted death in prisons in England and Wales. *International Journal of Law and Psychiatry*, 29(5), 355–360.
- Liebling, A. (1992). *Suicides in prison*. London, UK: Routledge.
- Liebling, A. (2006). The role of the prison environment in prison suicide and prisoner distress. In G. E. Dear (Ed.), *Preventing suicide and other self-harm in prison* (pp. 16–28). Houndmills, UK: Palgrave Macmillan.
- Liebling, A., & Ludlow, A. (2016). Suicide, distress and the quality of prison life. In Y. Jewkes, B. Crewe, & J. Bennett (Eds.), *Handbook on prisons* (pp. 224–245). London, UK: Routledge.
- Marzano, L., Hawton, K., Rivlin, A., Smith, E. N., Piper, M., & Fazel, S. (2016). Prevention of suicidal behavior in prisons. *Crisis*, 37(5), 323–334. <https://doi.org/10.1027/0227-5910/a000394>
- Marzano, L., Rivlin, A., Fazel, S., & Hawton, K. (2009). Interviewing survivors of near-lethal self-harm: A novel approach for investigating suicide amongst prisoners. *Journal of Forensic and Legal Medicine*, 16(3), 152–155.
- Meysman, M. (2016). The tension between cross-border cooperation in the European Area of Freedom, Security and Justice and the fundamental rights of mentally ill offenders in detention. *International Journal of Law and Psychiatry*, 47, 136–147.
- Mistiaen, P., Dauvrin, M., Eyssen, E., Roberfroid, D., San Miguel, L., & Vinck, I. (2017). *Health care in Belgian prisons*. Brussels, Belgium: Belgian Health Care Knowledge Centre (KCE).
- National Institute for Health and Care Excellence. (2017). *Mental health of adults in contact with the criminal justice system*. London, UK: Author.
- O'Connor, R.C., & Nock, M.K. (2014). The psychology of suicidal behaviour. *Lancet Psychiatry*, 1(1), 73–85.
- O'Driscoll, C., Samuels, A., & Zacka, M. (2007). Suicide in New South Wales prisons, 1995–2005: Towards a better understanding. *Australian and New Zealand Journal of Psychiatry*, 41(6), 519–524.
- O'Mahony, P. (1994). Prison suicide rates: What do they mean? In A. Liebling & T. Ward (Eds.), *Deaths in custody: International perspectives* (pp. 45–57). London, UK: Whiting & Birch.
- Olsson, M. O., Bradvik, L., Ojehagen, A., & Hakansson, A. (2016). Risk factors for unnatural death: Fatal accidental intoxication, undetermined intent and suicide: register follow-up in a criminal justice population with substance use problems. *Drug and Alcohol Dependence*, 162, 176–181.
- Organisation for Economic Cooperation and Development. (2017). *Health at a glance 2017*. Paris, France: Author.
- Pratt, D. (2016). *The prevention of suicide in prison*. New York, NY: Routledge.
- Pratt, D., Tarrrier, N., Dunn, G., Awenat, Y., Shaw, J., Ulph, F., & Gooding, P. (2015). Cognitive-behavioural suicide prevention for male prisoners: A pilot randomized controlled trial. *Psychological Medicine*, 45(16), 3441–3451. <https://doi.org/10.1017/S0033291715001348>
- Preti, A., & Cascio, M. T. (2006). Prison suicides and self-harming behaviours in Italy, 1990–2002. *Medicine, Science and the Law*, 46(2), 127–134.
- Rabe, K. (2012). Prison structure, inmate mortality and suicide risk in Europe. *International Journal of Law and Psychiatry*, 35(3), 222–230.

- Radeloff, D., Lempp, T., Kettner, M., Rauf, A., Bennefeld-Kersten, K., & Freitag, C. M. (2017). Male suicide rates in German prisons and the role of citizenship. *PLoS ONE*, *12*(6), e0178959.
- Rivlin, A., Hawton, K., Marzano, L., & Fazel, S. (2013). Psychosocial characteristics and social networks of suicidal prisoners: Towards a model of suicidal behaviour in detention. *PLoS ONE*, *8*(7), e68944.
- Shalev, S. (2015). Solitary confinement: The view from Europe. *Canadian Journal of Human Rights*, *4*(1), 143–165.
- Shaw, J., Baker, D., Hunt, I.M., Moloney, A., & Appleby, L. (2004). Suicide by prisoners: National clinical survey. *British Journal of Psychiatry*, *184*(3), 263–267.
- Smith, S.P. (2006). The effects of solitary confinement on prison inmates: A brief history and review of the literature. *Crime and Justice*, *34*(1), 441–528.
- Stoliker, B. E. (2018). Attempted suicide: A multilevel examination of inmate characteristics and prison context. *Criminal Justice and Behavior*, *45*(5), 589–611.
- Stone, D. M., Holland, K. M., Bartholow, B., Logan, J., LiKamWa McIntosh, W., Trudeau, A., ... Rockett, I. R. H. (2017). Deciphering suicide and other manners of death associated with drug intoxication: A Centers for Disease Control and Prevention consultation meeting summary. *American Journal of Public Health*, *107*(8), 1233–1239. <https://doi.org/10.2105/AJPH.2017.303863>
- Sveticic, J., & De Leo, D. (2012). The hypothesis of a continuum in suicidality: A discussion on its validity and practical implications. *Mental Illness*, *4*(2), 73–78.
- Turecki, G., & Brent, D.A. (2016). Suicide and suicidal behaviour. *Lancet*, *387*(10024), 1227–1239.
- van Heeringen, K. (2012). Stress-diathesis model of suicidal behavior. In Y. Dwivedi (Ed.), *The neurobiological basis of suicide* (pp. 113–123). Boca Raton, FL: CRC Press.
- Vandevelde, S., Soye, V., Vander Beken, T., De Smet, S., Boers, A., & Broekaert, E. (2011). Mentally ill offenders in prison: The Belgian case. *International Journal of Law and Psychiatry*, *34*(1), 71–78.
- Walmsley, R. (2016). *World prison population list (11th ed.)*. London, UK: Institute for Criminal Policy Research.
- Way, B. B., Kaufman, A. R., Knoll, J. L., & Chlebowski, S. M. (2013). Suicidal ideation among inmate-patients in state prison: Prevalence, reluctance to report, and treatment preferences. *Behavioral Sciences & the Law*, *31*(2), 230–238.
- Webb, R. T., Shaw, J., Stevens, H., Mortensen, P. B., Appleby, L., & Qin, P. (2012). Suicide risk among violent and sexual criminal offenders. *Journal of Interpersonal Violence*, *27*(17), 3405–3424.
- World Health Organization. (2007). *Preventing suicide in jails and prisons*. Geneva, Switzerland: Author.
- World Health Organization. (2012). *Public health action for the prevention of suicide: a framework*. Geneva, Switzerland: Author.

Received July 14, 2017

Revision received December 24, 2017

Accepted January 2, 2018

Published online July 27, 2018

Louis Favril, MSc Clinical Psychology and MSc Criminology, is a PhD researcher and academic assistant at the Faculty of Law and Criminology, Ghent University, Belgium. His PhD research focuses on suicidal thoughts and behavior in prison. Other research interests include forensic psychiatry, substance use, and drug policy.

Ciska Wittouck, MSc Clinical Psychology and MSc Criminology, is a PhD researcher at the Faculty of Medicine and Health Sciences, Ghent University, Belgium. Her PhD research focuses on procedural justice in mentally ill offenders. Other research interests include prison suicide and drug treatment courts.

Kurt Audenaert, MD, PhD, is full professor of psychiatry at the Faculty of Medicine and Health Sciences, Ghent University, Belgium. His expertise focuses on forensic psychiatry, neuroscience, affective disorders, and impulsive behavior.

Freya Vander Laenen, PhD, is professor of criminology at the Faculty of Law and Criminology, Ghent University, Belgium. Her expertise focuses on vulnerable individuals (because of substance use, mental illness, and/or social exclusion) in contact with the criminal justice system.

Louis Favril

Ghent University, Campus Aula
Universiteitstraat 4
9000 Ghent
Belgium
louis.favril@ugent.be

Appendix

Table A1. Prison suicide rates compared with the general population, Belgium (2000–2015)

Year	Suicide rate (per 100,000)		Crude relative rate ^a
	General population	Prison	
2000	20.9	224.5	10.7
2001	21.1	270.7	12.8
2002	20.1	250.9	12.5
2003	19.8	122.1	6.2
2004	19.1	86.9	4.5
2005	19.4	140.7	7.2
2006	18.4	146.2	7.9
2007	17.5	141.8	8.1
2008	18.7	161.8	8.6
2009	18.7	127.0	6.8
2010	18.5	189.8	10.3
2011	19.0	109.4	5.7
2012	18.3	114.7	6.3
2013	17.1	128.8	7.5
2014	17.0	172.7	10.2
2015	16.6	144.9	8.7
<i>M</i>	18.8	158.3	8.4

Note. Data on suicide rates in the general population were not yet available for 2016. ^aPrison suicide rates compared with general population suicide rates.