

# The contributing factors to suicide in Italian prisons: An 11-year analysis (2010–2020)

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## Abstract

**Background:** Suicide is a leading cause of death globally, with approximately 800,000 deaths annually and accounting for 1.5% of all deaths. Risk factors are multifaceted, encompassing individual factors (such as genetics, family history and mental illnesses) and environmental factors (such as economic conditions, social support and life events). In prisons, suicide rates are markedly higher than in the general population, particularly in Italy, where the prisoner suicide rate is approximately 20 times that of the non-incarcerated population. There is, however, little research on suicide in Italian prisons.

**Aims:** To analyse the characteristics of all people who died by suicide in Italian prisons between 2010 and 2020.

**Methods:** We carried out a records-based cohort study analysing official data from the Italian Ministry of Justice on prison suicides between 2010 and 2020. The data were cross-referenced and, when required, supplemented with information from *Ristretti Orizzonti*, a journal specialising in health and living conditions in prisons, as well as from the website of ISTAT (Italian National Statistical Institute), newspapers, radio broadcasts and news agencies.

**Results:** Factors associated with an increased risk of suicide in prisons were nighttime periods, the months of June,

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July and October, a relatively brief duration of detention (<6 months), having been convicted of murder, male gender, being about 40 years old, having access to hanging materials and being interned (i.e. subjected to the execution of custodial security measures) or awaiting trial. Prison overcrowding was not a risk factor for suicide.

**Conclusion:** Our findings hold substantial implications for suicide prevention in Italian prisons as they suggest both characteristics of individuals and characteristics of the institutions that could be taken as risk indicators. This knowledge can inform the development of targeted interventions to manage both individual and environmental factors better, leading to improved prison conditions and reduced suicide rates. Furthermore, our research establishes a foundation for more systematic and in-depth investigations that could further improve suicide prevention strategies in Italian prisons, ultimately influencing policy changes in both practice and research, including perhaps establishing a national database on every completed suicide in prisons.

#### KEYWORDS

case studies, prevention, prison, social epidemiology, suicide

## 1 | BACKGROUND

Suicide is a leading cause of death worldwide, with approximately 800,000 people dying by suicide each year and accounting for 1.5% of all deaths (Naghavi, 2019). Risk factors are diverse and complex, falling into two main categories: individual factors (such as genetic and epigenetic factors, family history, early-life adversities and mental illnesses) and environmental factors (including economic factors, inadequate social support, life events, media influences and access to lethal means) (Fazel & Runeson, 2020).

In prisons, suicide is the leading cause of death, and the percentage of prisoners who die by suicide is significantly higher than that in non-incarcerated populations (Fazel et al., 2008; WHO Regional Office for Europe, 2021; Zhong et al., 2021). An analysis of data from 24 high-income countries between 2013 and 2017 revealed that suicide rates for male prisoners are three to eight times higher than those in the general population, while suicide rates for female prisoners are over 10 times higher (Fazel et al., 2017).

What are the typical characteristics of people who commit suicide in prison? Published literature suggests that demographic and psychological characteristics of individuals who commit suicide in prison can vary significantly across different countries and cultures, although some trends appear to be rather consistent across various regions. Older age is among the latter. It is also important to note that a high proportion of prison suicides occur within the first days or weeks of incarceration, possibly due to the shock and stress of incarceration (Kucmanic & Gilson, 2016). That said, those serving longer sentences, especially life sentences, have been found to be more at risk of suicide (Radeloff et al., 2021), perhaps related to the loss of hope and despair; ironically, in those countries retaining the death penalty, people on death row have a higher risk of suicide.

Prisoners are also more likely than the general population to experience disorders associated with suicide, including depression, anxiety, substance abuse, bipolar disorder or schizophrenia, and this too increases the odds of suicide in prisons (Shaw et al., 2004). Suicide rates within prison populations mirror those in the general public, with higher incidences linked to lower socioeconomic status. Thus, inmates with lower education, higher unemployment rates, or a history of homelessness represent a higher suicide risk group.

Research into suicide in Italian prisons is limited, but available data suggest that the prisoner suicide rate in Italy is roughly 20 times that of the non-incarcerated population (Esposito, 2017). This is one of the highest differentials in Europe. In 2022, Italian prisons experienced the highest number of suicides ever recorded with 74 cases (surpassing the previous record of 72 deaths by suicide in 2009).

Our aims, therefore, were to explore the characteristics of people who died by suicide in Italian prisons between 2010 and 2020. In particular, we focused on two questions: what are the identifiable individual and environmental characteristics of people who die by suicide in Italian prisons? Which of these characteristics are likely to be susceptible to interventions?

## 2 | METHODS

### 2.1 | Ethics

The nature of our study meant that no ethics committee approval was required. Specifically, our investigation involved a retrospective examination of publicly available anonymised data, which required no direct participation from individuals and no adjustment to services.

### 2.2 | Study design

This is a records-based study of a full cohort of people held in Italian prisons over 11 years from 1 January 2010 to 31 December 2020.

### 2.3 | Procedures

First, we accessed data from the Ministry of Justice regarding suicides in Italian prisons. This was limited to the number of suicides annually, without further specifications. It is important to clarify that deaths labelled as 'suicides' were so designated by the public prosecutor after due investigation. These investigative activities may consist of a simple analysis of circumstantial data or involve targeted technical investigations through the assistance of a forensic doctor and investigations required may include judicial inspection of the site, external examination of the corpse or a judicial autopsy. In Italy, the classification of a death in prison as a suicide requires only that the person died by his or her own hand. Documented expression of intent to die is not required.

Next, we contacted every regional prison administration. This process produced no further information, but we were generally advised to contact the Department of Penitentiary Administration. This body never responded to our calls.

We then sought information from *Ristretti Orizzonti*, which is an unique and highly reputable Italian periodical that focuses on prisons and the criminal justice system. Established in June 1998, the journal is known for its comprehensive, in-depth coverage of facts about prison life and also for its first-person accounts from prisoners. *Ristretti Orizzonti* also reports on the state of mental health services in prisons, particularly highlighting the impact of events like the COVID-19 pandemic on the mental well-being of prisoners. The journal goes beyond just reporting, also

**TABLE 1** Comparison of the number of suicides for each year reported within the two main and ancillary sources.

Year	Number of suicides according to Ministry of Justice data	Number of suicides according to <i>Ristretti Orizzonti</i>	Data checked and compared with all sources (number of suicides that, according to the authors, best represents reality)
2010	55	66	61 (excluding 5 suspicious deaths)
2011	63	65	63 (excluding 1 death in barracks and 1 death during award permit)
2012	56	60	55 (excluding 2 deaths in hospital, 1 in barracks, 1 at the police station and 1 at police headquarters)
2013	42	49	42 (excluding 1 policeman, 1 death at the identification centre and 5 cases where there were no matches with other sources)
2014	43	44	43 (excluding 1 death on leave)
2015	39	43	39 (excluding 3 cases where there was no match and 1 death at police headquarters)
2016	39	39	39
2017	48	52	48 (excluding 1 death at police headquarters, 1 death in semi-custody and 2 cases where there were no matches with other sources)
2018	61	67	61 (excluding 4 suicides under house arrest and 2 in hospital)
2019	53	53	52 (excluding 1 death under house arrest)
2020	61	61	51 (excluding 1 death at police station and 9 cases where there were no matches with other sources)
Total	560	605	554

showcasing prisoners' poetry and artwork, all of which offer a humanising lens onto the Italian prison system and in addition, advocating for improvements in prison living conditions and mental health services. The periodical is funded mainly by subscriptions and direct sales to the public made during festivals and cultural events.

The data presented in *Ristretti Orizzonti* are obtained through various sources, including official statistics, research studies, interviews and firsthand accounts from individuals involved in the prison system. *Ristretti Orizzonti* is recognised for its rigorous fact-checking process. The *Ristretti Orizzonti Research Center* gathers its information from a variety of sources, including prison newspapers and investigations, spearheaded by civil rights organisations such as *A buon diritto*, *Antigone*, *Nessuno tocchi Caino* and *Osservatorio Calamandran*. They also use reports from volunteer associations. Upon receiving a report or becoming aware of a suicide, they conduct comprehensive interviews with the deceased individual's family members, cellmates, legal representatives, prison officers and prison directors. These pieces of information are then compiled into the comprehensive dossier called 'Dying in Prison'. This significant document was officially unveiled at a press conference held at Montecitorio, the official location of the Italian Chamber of Deputies.

The information we obtained from *Ristretti Orizzonti* encompasses the following: the total number of suicides per year, the age and nationality of individuals who died by suicide, the prisons where the suicides occurred and the methods employed in the suicides. Despite our efforts in comparing data from two sources, we found a significant lack of crucial information required for a comprehensive analysis and variation between the sources (see Table 1).

A further source of data (such as the legal positions of prisoners between 2010 and 2020 and the specific type of crime distribution among them during the period of study) was obtained from the website of ISTAT (Italian National Statistical Institute).

We supplemented our findings with information gleaned from various prominent Italian newspapers, radio broadcasts and the main news agencies (*La Repubblica*, *Il Corriere della Sera*, *Today*, *Il Messaggero*, *Il Sole 24 Ore*, *La*

*Stampa*, ANSA, *Il Fatto Quotidiano*, *Antigone*). We only used information from newspapers when the same information was in at least two of them and/or verifiable from at least one other source.

Given the variety of sources for the data and the fact that from no source other than newspaper reports did we have personal identifying details, we could not collate or pool the data. We compared the sources on overall death by suicide rates, but the more detailed analyses had to rest on the best single main source. Public news stream data were only for illustrative case purposes.

### 3 | RESULTS

#### 3.1 | The number of suicides in Italian prisons

Official statistics from the Ministry of Justice appear to indicate a lower number of prison suicides than *Ristretti Orizzonti*. Table 1 shows how these sources compared. By matching dates and supplementing these data with the soft data sources, mainly newspaper reports, some explanations are given (?) for the discrepancies between the two main sources presented, including the nature of the death and the actual place it occurred. Using this approach, we concluded that a total of 554 in-prison suicides between 2010 and 2020 is likely to be a reliable figure.

#### 3.2 | The suicide rates

The average annual number of prisoners in Italian prisons between 2010 and 2020 was 60,235. In the same time frame, to the nearest whole number, the average annual number of prisoners who died by suicide was 50. Table 2 shows the figures for each of the 11 years. The average suicide rate was 0.09% for the period (range 0.06–0.10). This translates to about one prisoner suicide for every 1196 prisoners. On average, a prisoner dies by suicide every 7 days.

Comparing this to the non-incarcerated population, the average population in Italy from 2010 to 2020 was 60,315,533, while the average annual number of people who died by suicide was 4007. The suicide rate for non-prisoners is thus 0.006%, substantially lower than the prisoner population's average of 0.09%. Put another way, if prisoners died by suicide at the same rate as in the general population, the expected average number of prisoners dying this way would be between 3 and 4 per year. This figure allows us to calculate the SMR (standardised mortality ratio), which is a statistical indicator of the order of difference between a specified group—here prisoners—compared

TABLE 2 Percentage of prisoners who died by suicide in each year of the period under consideration.

Year	Prisoners	Suicides	Suicide rate
2010	67,961	61	0.08%
2011	66,897	63	0.09%
2012	65,701	55	0.08%
2013	62,536	42	0.06%
2014	53,623	43	0.08%
2015	52,434	39	0.08%
2016	54,653	39	0.07%
2017	57,608	48	0.08%
2018	59,655	61	0.10%
2019	60,769	52	0.08%
2020	53,365	51	0.09%

to a reference population—here the general population. The SMR is calculated by dividing the number of observed deaths in the study group by the number of similar deaths in the reference population. The SMR for prisoners relative to the general population in Italy is 13.94 (50.36/3.61). This, between 2010 and 2020, inclusive, the risk of prisoner suicide in Italy was approximately 14 times higher than that in the general population.

### 3.3 | Variables tested for relationship with suicide among prisoners

#### 3.3.1 | Prison population size and density

Prison population density was calculated by comparing the number of prisoners actually resident and the official prison capacity according to *Ristretti Orizzonti* data. A prison was classed as over-crowded when it was holding 34 prisoners over its designated capacity. The Cagliari Uta Prison, which has the highest suicide rate, also has the lowest average number of prisoners over the designated capacity, indicating overcrowding—here a difference of 34 units between maximum capacity and number of prisoners. The same is true in the Como Prison, where overcrowding is the second lowest—a difference of 201 units between maximum capacity and number of prisoners. By contrast, the Naples Poggioreale Prison, where the suicide rate is the lowest (0.1%), is also the institution with the highest overcrowding, as the average annual daily number of prisoners was 2278, whilst the designated capacity is 1647 places, a difference of 631 units between maximum capacity and number of prisoners (see Figure 1 for more details). Therefore, even though overcrowding can indeed cause discomfort to the prisoners, the analysis of the available data does not reveal any direct correlation with suicide rates.

#### 3.3.2 | Personal characteristics of the prisoners who died by suicide

Among those who died by suicide between 2010 and 2020, 532 were men, 18 were women and 4 were transgender individuals. All of the transgender prisoners who died by suicide were trans women who had been assigned male

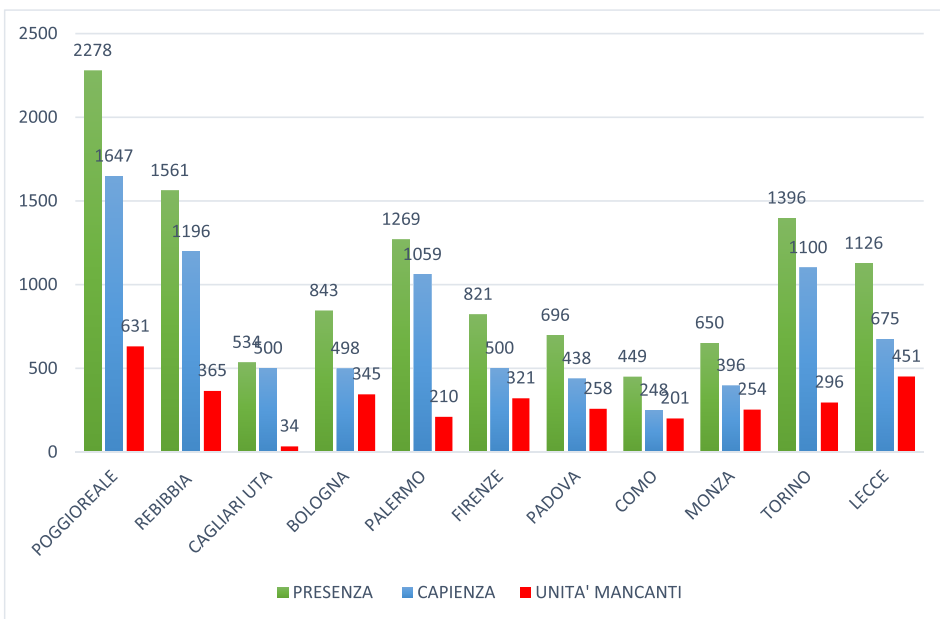


FIGURE 1 Prison capacities and actual populations. For each prison the first column (green) indicates the actual annual average prisoner population, the second (blue) the designated prison capacity and the third (red) the average annual overcrowding. [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/terms-and-conditions)]

at birth; given the very small number over time, further calculations were not attempted. In order to avoid double counting of prisoners who may have been in and out of the prison during the period, we compared the average annual suicide rate with the average annual prison population for men and women separately. In a hypothetically average year, therefore, about 48 (precisely 532 over the entire 11-year period) male prisoners died by suicide within a population of 57,5007 [0.08%] and about two female prisoners died by suicide (precisely 18 over the 11 years) in an annual population of 2531 [0.06%]. Thus, the male prisoners had a higher rate of completed suicide than the female prisoners.

Regarding the nationality of the prisoners who died by suicide, 358 were from Italy and 196 were from other countries. To appreciate these figures, it is crucial to understand that they relate to different population sizes. The average Italian prisoner population was nearly double that of foreign prisoners (39,097 vs. 20,466) over the decade. Despite more Italian prisoners in the prison system and a larger number of suicides among them, the suicide rates, when adjusted for population size, thus reveal a slightly different story. The suicide rate among Italian prisoners was 0.083% (358 suicides out of a total of 430,070 Italian prisoners). The rate for foreign prisoners was slightly higher at 0.087% (196 suicides out of 225,131 foreign prisoners). Thus, while absolute numbers show more suicides among prisoners with Italian nationality, foreign-born prisoners were slightly more likely to die by suicide (0.004%). This warrants further research.

### 3.3.3 | The geographical location of suicides

The distribution of prisoner suicides across Italian regions varied significantly, with Lombardy (north-west) and Campania (south) recording the highest numbers. No recorded suicides occurred in Valle d'Aosta (north-west) and Molise (south) during this time frame. To better understand this disparity, an examination of regional overpopulation in prisons was conducted. Regions with higher suicide rates often also had higher levels of prison overpopulation. A deeper analysis of the data shows that Marche (centre) and Trentino-Alto Adige (north-east) had the highest suicide rates at 0.13%, followed by Veneto (north-east) and Friuli-Venezia Giulia (north-east) at 0.12% and 0.11%, respectively. Basilicata (south) reported the lowest rate at 0.01%. To put these percentages into perspective, in Marche and Trentino-Alto Adige, there was approximately one suicide for every 718 and 729 prisoners, respectively, significantly lower than the national average of one suicide for every 1196 prisoners. Conversely, Basilicata reported a much lower rate with one suicide for every 5366 prisoners. Furthermore, the data also reveal a correlation between the type of institution and suicide rates. From 2010 to 2020, there were 23 suicides in psychiatric facilities and secure residential centres compared to 531 suicides in prisons. Notably, since the abolition of psychiatric prisons and the introduction of secure residential centres in 2015, only two suicides were recorded, implying the remaining 21 occurred in psychiatric prisons prior to 2015.

## 3.4 | Characteristics of the suicide

### 3.4.1 | The time of day of suicides

We were only able to establish the timing of suicides for 396 out of 554 prisoners; data for the remaining 158 individuals were unavailable. We rated according to three time periods, chosen to reflect the typical daily routine within a prison environment:

- Morning: from 6:00 AM (unlocking cells) to 12:00 PM.
- Afternoon: from 12:01 PM to 7:00 PM.
- Night: from 7:01 PM (locking cells) to 5:59 AM.

The largest proportion of suicides took place at night (172, 43%), followed by the afternoon (123, 31%) and lastly, the morning (101, 26%). A few prisoners are in some sort of solitary confinement, but generally cells are shared between three or four prisoners. A total of 72 prisoners over the 11 years completed suicide while in solitary confinement. The higher frequency of suicides at night can probably be attributed to factors such as cellmates typically being asleep, which allows the individual contemplating suicide to execute their plan more easily. In addition, there is generally less supervision and fewer staff members on duty during nighttime hours.

### 3.4.2 | The month of suicide

It was possible to ascertain the month in which the suicides occurred in only 202 cases. The months with the highest number of suicides were June (53), July (59) and October (57). Conversely, there were fewest suicides in April, with just 33 recorded incidents over the span of the 11 April months.

### 3.4.3 | The time interval between admission to prison and suicide

To calculate the time period between prison admission and suicide, we had data from 330 prisoners; information for the remaining 224 was not available. Just over a quarter of suicides for which these data were available (93) occurred between 2 and 6 months after entering the prison. The second highest number of suicides (60) took place within the first 7 days of entry. Many of these prisoners were awaiting trial, so were unconvicted, but we could not match data further. Although we are cautious about these figures because of the extent of missing data, it thus appears that sentenced prisoners who have been in prison for over 6 years are least likely to die by suicide.

### 3.4.4 | The suicide method

Information on suicide method was available for all 554 cases. Most deaths (463, 83.5%) were by hanging; 63 (11%) deaths were due to inert gas asphyxiation, nine (2%) by poisoning, eight (1%) by suffocation and seven (1%) by exsanguination. The possibility of gas asphyxiation arises because trusted prisoners are allowed to have small gas stoves for cooking in their cells. The four remaining suicides were by disparate measures—one by fire, one by falling from a window, one falling downstairs and one engaging in a hunger strike.

### 3.4.5 | Psychiatric disorders and suicide

Mental health data were available for only 138 (25%) of the prisoners who died by suicide. Almost half of these (66, 48%) had only 'unspecified psychiatric disorders'; 37 had a diagnosis of depression, 8 with personality disorders, 10 with psychotic disorders (4 of them schizophrenia) and 3 with anxiety syndrome; an additional 14 people had a legal categorisation of 'partial insanity'.

### 3.4.6 | The legal status at the time of death

Data on this were available for most (484, 87%) of the cases. Just over half of the cases for whom we had data had been convicted (263, 54%); 198 were awaiting trial and 23 were 'interned', that is held in prison after breach of placements in an agricultural colony, workhouse, care and custody home or forensic psychiatric hospital on grounds of



impaired mental capacity. Again, in order to minimise double counting of prisoners over the whole period, we calculated per year average rates. The average annual numbers of prisoners in these three classes were 10,599 pre-trial, 48,893 convicted and 808 detained in prison for other reasons. Using these baseline figures, the suicide rate among those awaiting trial was 0.17% (198 of a 116,589 total over 11 years), the suicide rate among convicted prisoners was 0.05% (263 of 537,823) and the suicide rate among interned prisoners was 0.26% (23 of 8888). Thus, the highest suicide rate is observed among people under internment, closely followed by those awaiting trial.

### 3.4.7 | Offence types committed by prisoners who died by suicide

We had offence data available for 413 (75%) of the prisoners, with information missing for the remaining 141. During the period 2010–2020, 86 prisoners who died by suicide were under investigation, awaiting trial, convicted or serving sentences for homicide. It is important to note that 43% of these homicides (37 out of 86) involved a family member, usually a wife, ex-wife, girlfriend or ex-girlfriend. We also recorded 23 prisoners who had attempted murder, with 35% (8 out of 23) of cases involving a partner or an ex-partner.

In addition to homicide, we found that drug-related offences also had a potentially significant relationship with suicide, these being a factor in 73 suicide cases. Most of these prisoners had a history of substance abuse. Robbery and theft were also common offences associated with 59 and 45 suicide cases, respectively. Given the complexity of the prisoner population, it is not appropriate simply to add up the number of prisoners for specific crimes across the years as this could lead to multiple counts of the same individuals. Therefore, we estimated an average annual figure of prisoners, based on the crime they committed, and then extrapolated a theoretical number for the entire period. On this basis, our data shows that the suicide rate among prisoners convicted of homicide was 0.08% (86 out of 103,774), while for those convicted for drug offences it was 0.03% (73 out of 237,853). Similarly, the rates for robbery and theft were 0.03% (59 out of 189,431) and 0.03% (45 out of 140,558), respectively. Therefore, our analysis indicates that, proportionally, prisoners convicted of homicide seem to have a higher suicide rate compared to those convicted of drug trafficking, robbery and theft.

### 3.4.8 | Prison conditions

We obtained data on the different areas within a prison facility: the general or ordinary location, solitary confinement, protected, vulnerable prisoner wings or maximum-security wings or prisons. Such data were available for only two-thirds of the suicide cohort (369, 67%). No less than 33 of these suicides were in high security conditions; 72 were in the isolation unit, 37 in the vulnerable prisoner units and 124 among prisoners in ordinary locations. We were not able to obtain annual figures for the total number of prisoners in these various prison locations, so we cannot estimate relative proportions, but it is known that there are small numbers of isolation and vulnerable prisoner places relative to the general location. Therefore, it would appear that the risk of suicide is highest in the specialist units.

## 4 | DISCUSSION

It seems crucial to consider the mental health of prisoners who complete suicide, and yet data were extensively missing in this area. Prisons tend to accommodate individuals who are already at a high risk of suicide, often due to pre-existing mental disorders. Among prisoners, major depressive disorder, substance use disorders and psychosis are particularly likely (Fovet et al., 2020; Gabrysch et al., 2019; James et al., 2006). Apart from our caution in this area, do the data we collected allow for other conclusions regarding the factors predisposing prisoners to suicide in Italian prisons? In our view, yes. By comparing the findings with the critical analyses proposed by the journal *Ristretti*

Orizzonti and with relevant literature on the topic (Bani et al., 2019; Castelpietra et al., 2018; De Luca d'Alessandro et al., 2015), it is possible to develop observations both about prison conditions and the prisoners that may help identify those who are more vulnerable.

First, it is essential to note that while prison is a risk factor, it may not be prison per se, but rather specific aspects of the environment it embodies (Fazel et al., 2016; Saavedra & López, 2015). Consequently, designating prison as a 'risk factor' for suicide is less helpful than being specific about its riskier aspects. These are illustrated in the list below and compared with what can be gleaned from the international literature.

- *The nighttime period.* Our finding in Italian prisons fits well with prior findings that prisoners are more likely to die by suicide between 7:00 PM and 7:00 AM (DuRand et al., 1995; He et al., 2001), although according to one study, the time of day when suicide is most common is the afternoon (Bardale & Dixit, 2015).
- *A relatively short period of detention (<6 months) and pre-conviction.* In the literature, there is also some scientific evidence suggesting that prisoners are more prone to suicide in the first months of detention and when the sentence is not yet final (Bukten & Stavseth, 2021; Duthé et al., 2009); although, there is no clear scientific consensus and the literature is still relatively limited on this point.
- *Access to means of hanging.* As widely known and demonstrated in literature, hanging is notoriously the most common method of suicide in prison; until all ligature points are removed from prisons, as it happens as far as possible in hospitals, this will remain the simplest method of suicide in prisons.
- *Being interned (i.e. subjected to the execution of custodial security measures) or awaiting trial.* This contrasts with findings reported in the literature that those most prone to suicide are prisoners sentenced to long custodial sentences (Zhong et al., 2021).

Surprisingly, according to our study, overcrowding in prisons does not seem to contribute to an increased risk of suicide, contrary to existing literature (Davies, 2004; Preti & Cascio, 2006; Rabe, 2012). Perhaps having people more-or-less constantly present is protective.

We are not sure how to interpret the seasonal findings.

- *The months of June, July and October rendered suicide more likely* There is no clear consensus on this in the international literature. Some studies suggest that suicide rates may increase during the winter months, but there are no definitive conclusions on this matter. Three studies were more-or-less consistent with ours in finding that the 2 months when prisoner suicides are most frequent are July and September (Dooley, 1990; Liebling, 1993; Topp, 1979). Further work should explore seasonal variation in mental disorders, but the fact that summer months are more implicated might relate to staff holidays and a consequently temporarily lowered staff: prisoner ratio.

In addition to prison factors, we found that certain classes of people are likely to be more vulnerable in this respect:

- *Having been convicted of murder.* This fits with strong evidence from the literature that prisoners convicted of violent crimes are more likely to commit suicide than those convicted of non-violent crimes (Fazel et al., 2005; Mumola, 2005).
- *Male gender.* As far as we know, the fact that male prisoners are more prone to die by suicide is only clearly confirmed in two international studies (Fazel et al., 2005; Vanhaesebrouck et al., 2022), while in most of the literature there is still no consensus.
- *Forty years of age.* This finding may be more true of Italy than elsewhere. According to published literature, about half of the people who commit suicide in prison are younger, between 25 and 34 years old (Liebling, 1993; Marcus & Alcabes, 1993; Topp, 1979).

Regarding psychiatric disorders, our study's data are too incomplete to draw a definitive conclusion (we only had data for 138 out of 554 prisoners); however, the literature consistently highlights a strong correlation between psychiatric

disorders and an increased suicide risk among prisoners (Baillargeon et al., 2009). Although partial, our collected data seems to support this correlation.

As for nationality, we found no significant differences in suicide rates between Italian and non-Italian prisoners, implying that nationality does not appear to be a relevant factor in determining suicide risk (at least concerning Italian cases).

The Council of Europe released a 2018 document on suicide prevention in prisons, outlining crucial steps towards this, including closer observation of prisoners from the start, medical screening, vigilance during high-risk periods and systematic recording of information about all occurrences. Preventing suicides in prison, however, remains a challenge. A 2011 study recommends enlisting specially trained 'listeners' from among prisoners' peers and involving friends and family members in the care planning process, creating specialised units for treating drug addiction and establishing telephone helplines (Marzano et al., 2011). Literature suggests that many prisoners who self-harmed might not have done so given the opportunity to talk to someone (Borrill et al., 2005; Kucmanic & Gilson, 2016; Rivlin et al., 2013). Similar to findings from prisons in the USA, Canada, Australia and the UK, our research also suggests a need for prevention programmes (Eck et al., 2019; Kucmanic & Gilson, 2016). Though these programmes vary due to differing financial resources, they share some common features, such as staff training in prevention techniques, first aid training, systematic assessment of prisoners, psychological support, facilitation of social ties, limitation of isolation, provision of appropriate security cells and post-suicide debriefings. It is of interest that our study reveals that 'facilitation of social ties' is already evident in Italian prisons due to the introduction of dynamic supervision in 2013, which promotes greater socialisation.

#### 4.1 | Study limitations

Inevitably, this study has several limitations. First, it is a records-based cohort study, which inherently contains limitations such as possible inaccuracies in record-keeping and a lack of individual-level data. The nature of the records was, however, a particular cause for concern. Ministry of Justice data contained only the fact of the suicide and its date. The lack of response from the Department of Penitentiary Administration meant that some potentially critical information could not be accessed, which may have limited the depth and accuracy of the analysis.

We had to rely on softer sources and triage data as far as possible without having any personally identifying features in any of it. It is likely that this particularly affected mental health information as this would be least likely to get into the public domain; therefore, our estimates of mental disorder, which we acknowledge were based on a small subsample, are not likely to be adequate for forward planning.

## 5 | CONCLUSION

Our study on suicides in Italian prisons from 2010 to 2020 provides three key insights that contribute to the existing literature:

1. Our findings challenge the conventional belief that overcrowding directly impacts suicide rates. This was unexpected and does not in anyway suggest that overcrowded prisons are optimal; however, the value of multiple cell occupancy, when planned and monitored may be an advantage in respect of reducing the occurrence of suicide.
2. We identified unique temporal patterns of suicides, such as a higher frequency between 7:01 PM and 5:59 AM and during the months of June, July and October. This diverges from some reports, in particular those referring to winter as a high-risk period. It may be that there is real variation between countries and cultures in this respect, which would merit further exploration.
3. We also found that prisoners are most vulnerable to suicide within the first 6 months of detention and when the sentence is not yet final. In addition, those convicted for homicide and facing long-term sentences are more prone to suicide. These findings highlight the need for increased psychological support during these vulnerable periods.

In many respects, however, our main finding was how difficult it was to get accurate data about suicides in prisons in Italy. We strongly recommend establishing a national database for detailed recording of circumstances to facilitate future research and thus research-informed improvements in practice.

### AUTHOR CONTRIBUTIONS

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in the work to take public responsibility for the content, including participation in the concept, design, analysis, writing or revision of the manuscript. Filippo Gibelli collected the data and wrote a draft of the article, Paolo Baillo revised, linguistically optimised and expanded the article, Asaea Celletti and Anna Caraffa analysed the data, Ascanio Sirignano supervised the work and Giovanna Ricci had the original idea and supervised the work. All authors have read and approved the manuscript. All authors agree the work is ready for submission to a journal. All authors have accepted responsibility for the entire content of this manuscript and approved its submission.

### CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

### DATA AVAILABILITY STATEMENT

The data on which the work is based can be found at the following links: [https://www.giustizia.it/giustizia/it/mg\\_1\\_14.page#](https://www.giustizia.it/giustizia/it/mg_1_14.page#) and <http://www.ristretti.it/areestudio/disagio/ricerca/>.

### INSTITUTIONAL REVIEW BOARD STATEMENT

Not applicable.

### INFORMED CONSENT STATEMENT

Not applicable.

### PATENTS

Not applicable.

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### REFERENCES

- Baillargeon, J., Penn, J. V., Thomas, C. R., Temple, J. R., Baillargeon, G., & Murray, O. J. (2009). Psychiatric disorders and suicide in the nation's largest state prison system. *Journal of the American Academy of Psychiatry and the Law*, 37, 188–193.
- Bani, M., Travagin, G., Monticelli, M., Valsecchi, M., Truisi, E., Zorzi, F., Strepparava, M., Clerici, M., Mazza, U., & Rezzonico, G. (2019). Pattern of self-injurious behavior and suicide attempts in Italian custodial inmates: A cluster analysis approach. *International Journal of Law and Psychiatry*, 64, 1–7. <https://doi.org/10.1016/j.ijlp.2018.12.008>
- Bardale, R. V., & Dixit, P. G. (2015). Suicide behind bars: A 10-year retrospective study. *Indian Journal of Psychiatry*, 57(1), 81. <https://doi.org/10.4103/0019-5545.148531>
- Borrill, J., Snow, L., Medlicott, D., Teers, R., & Paton, J. (2005). Learning from 'near misses': Interviews with women who survived an incident of severe self-harm in prison. *The Howard Journal of Criminal Justice*, 44(1), 57–69. <https://doi.org/10.1111/j.1468-2311.2005.00355.x>
- Bukten, A., & Stavseth, M. R. (2021). Suicide in prison and after release: A 17-year national cohort study. *European Journal of Epidemiology*, 36(10), 1075–1083. <https://doi.org/10.1007/s10654-021-00782-0>
- Castelpietra, G., Egidi, L., Caneva, M., Gambino, S., Feresin, T., Mariotto, A., Balestrieri, M., De Leo, D., & Marzano, L. (2018). Suicide and suicides attempts in Italian prison epidemiological findings from the "Triveneto" area, 2010–2016. *International Journal of Law and Psychiatry*, 61, 6–12. <https://doi.org/10.1016/j.ijlp.2018.09.005>
- Davies, R. (2004). Deaths in UK prisons are due to overcrowding, says report. *Lancet*, 363(9406), 378. [https://doi.org/10.1016/S0140-6736\(04\)15481-0](https://doi.org/10.1016/S0140-6736(04)15481-0)

- De Luca d'Alessandro, E., Di Folco, L., Messano, G. A., & Marsella, L. T. (2015). An insight into the occurrence of suicides in jails of an Italian region. *Clinica Terapeutica*, 166, e209–e215. <https://doi.org/10.7417/CT.2015.1856>
- Dooley, E. (1990). Prison suicide in England and Wales, 1972-87. *British Journal of Psychiatry*, 156(1), 40–45. <https://doi.org/10.1192/bjp.156.1.40>
- DuRand, C. J., Burtka, G. J., Federman, E. J., Haycox, J. A., & Smith, J. W. (1995). A quarter century of suicide in a major urban jail: Implications for community psychiatry. *American Journal of Psychiatry*, 152, 1077–1080.
- Duthé, G., Hazard, A., Kensey, A., Shon, J. L. P. K., Bouquet, B., & Bourgeois, N. (2009). Suicide in prison: A comparison between France and its European neighbours. *Population and Societies*, 462(11), 1–4. <https://doi.org/10.3917/popsoc.462.0001>
- Eck, M., Scoufnaire, T., Debien, C., Amad, A., Sannier, O., Chan Chee, C., Thomas, P., Vaiva, G., & Fovet, T. (2019). Le suicide en prison: Épidémiologie et dispositifs de prévention. *Presse Medicale*, 48(1), 46–54. <https://doi.org/10.1016/j.lpm.2018.11.009>
- Esposito, M. (2017). Suicidal risk in Italian prisons. A population-based cohort study. *Sociology Mind*, 8(01), 46–69. <https://doi.org/10.4236/sm.2018.81004>
- Fazel, S., Benning, R., & Danesh, J. (2005). Suicides in male prisoners in England and Wales, 1978–2003. *The Lancet*, 366(9493), 1301–1302. [https://doi.org/10.1016/S0140-6736\(05\)67325-4](https://doi.org/10.1016/S0140-6736(05)67325-4)
- 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. <https://doi.org/10.4088/jcp.v69n1107>
- Fazel, S., Hayes, A. J., Bartellas, K., Clerici, M., & Trestman, R. (2016). Mental health of prisoners: Prevalence, adverse outcomes, and interventions. *The Lancet Psychiatry*, 3(9), 871–881. [https://doi.org/10.1016/S2215-0366\(16\)30142-0](https://doi.org/10.1016/S2215-0366(16)30142-0)
- Fazel, S., Ramesh, T., & Hawton, K. (2017). Suicide in prisons: An international study of prevalence and contributory factors. *The Lancet Psychiatry*, 4(12), 946–952. [https://doi.org/10.1016/S2215-0366\(17\)30430-3](https://doi.org/10.1016/S2215-0366(17)30430-3)
- Fazel, S., & Runeson, B. (2020). Suicide. *New England Journal of Medicine*, 382(3), 266–274. <https://doi.org/10.1056/NEJMr1902944>
- Fovet, T., Plancke, L., Amariei, A., Benradia, I., Carton, F., Sy, A., Kyheng, M., Tasniere, G., Amad, A., Danel, T., Thomas, P., & Roelandt, J. L. (2020). Mental disorders on admission to jail: A study of prevalence and a comparison with a community sample in the north of France. *European Psychiatry*, 63(1), e43. <https://doi.org/10.1192/j.eurpsy.2020.38>
- Gabrysch, C., Fritsch, R., Priebe, S., & Mundt, A. P. (2019). Mental disorders and mental health symptoms during imprisonment: A three-year follow-up study. *PLoS One*, 14(3), e0213711. <https://doi.org/10.1371/journal.pone.0213711>
- He, X. Y., Felthous, A. R., Holzer, C. E., III, Nathan, P., & Veasey, S. (2001). Factors in prison suicide: One year study in Texas. *Journal of Forensic Sciences*, 46(4), 896–901. <https://doi.org/10.1520/jfs15065j>
- James, D. J., & Glaze, L. E., & United States Bureau of Justice Statistics. (2006). *Mental health problems of prison and jail inmates*. U.S. Dept. of Justice, Office of Justice Programs, Bureau of Justice Statistics. [Web.] Retrieved from the Library of Congress <https://lccn.loc.gov/2007395130>
- Kucmanic, M. J., & Gilson, T. P. (2016). Suicide in jail: A ten-year retrospective study. *Academic Forensic Pathology*, 6(1), 109–113. <https://doi.org/10.23907/2016.011>
- Liebling, A. (1993). Suicides in young prisoners: A summary. *Death Studies*, 17(5), 381–407. <https://doi.org/10.1080/07481189308253385>
- Marcus, P., & Alcabes, P. (1993). Characteristics of suicides by inmates in an urban jail. *Psychiatric Services*, 44(3), 256–261. <https://doi.org/10.1176/ps.44.3.256>
- Marzano, L., Hawton, K., Rivlin, A., & Fazel, S. (2011). Psychosocial influences on prisoner suicide: A case-control study of near-lethal self-harm in women prisoners. *Social Science & Medicine*, 72(6), 874–883. <https://doi.org/10.1016/j.socscimed.2010.12.028>
- Mumola, C. J. (2005). *Suicide and homicide in state prisons and local jails*. US Department of Justice, Office of Justice Programs.
- Naghavi, M. (2019). Global, regional, and national burden of suicide mortality 1990 to 2016: Systematic analysis for the Global Burden of Disease Study 2016. *BMJ*, 364. <https://doi.org/10.1136/bmj.194>
- Preti, A., & Cascio, M. T. (2006). Prison suicides and self-harming behaviours in Italy, 1990-2002. *Medicine, Science & the Law*, 46(2), 127–134. <https://doi.org/10.1258/rsmmsl.46.2.127>
- Rabe, K. (2012). Prison structure, inmate mortality and suicide risk in Europe. *International Journal of Law and Psychiatry*, 35(3), 222–230. <https://doi.org/10.1016/j.ijlpp.2012.02.012>
- Radeloff, D., Ten Hövel, M., Brennecke, G., Stoerber, F. S., Lempp, T., Kettner, M., Zacher, H., von Klitzing, K., & Bennefeld-Kersten, K. (2021). Suicide after reception into prison: A case-control study examining differences in early and late events. *PLoS One*, 16(8), e0255284. <https://doi.org/10.1371/journal.pone.0255284>
- 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. <https://doi.org/10.1371/journal.pone.0068944>
- Saavedra, J., & López, M. (2015). Risk of suicide in male prison inmates. *Revista de Psiquiatría y Salud Mental (English Edition)*, 8(4), 224–231. <https://doi.org/10.1016/j.rpsmen.2013.07.002>

- Shaw, J., Baker, D., Hunt, I. M., Moloney, A., & Appleby, L. (2004). Suicide by prisoners: National clinical survey. *The British Journal of Psychiatry*, 184(3), 263–267. <https://doi.org/10.1192/bjp.184.3.263>
- Topp, D. O. (1979). Suicide in prison. *British Journal of Psychiatry*, 134(1), 24–27. <https://doi.org/10.1192/bjp.134.1.24>
- Vanhaesebrouck, A., Tostivint, A., Lefèvre, T., Melchior, M., Khireddine-Medouni, I., & Chee, C. C. (2022). Characteristics of persons who died by suicide in prison in France: 2017–2018. *BMC Psychiatry*, 22, 1–12. <https://doi.org/10.1186/s12888-021-03653-w>
- WHO Regional Office for Europe. (2021). *The WHO Prison Health Framework: A framework for assessment of prison health system performance*. WHO Regional Office for Europe. <https://creativecommons.org/licenses/by-nc-sa/3.0/igo/>
- Zhong, S., Senior, M., Yu, R., Perry, A., Hawton, K., Shaw, J., & Fazel, S. (2021). Risk factors for suicide in prisons: A systematic review and meta-analysis. *The Lancet Public Health*, 6(3), e164–e174. [https://doi.org/10.1016/S2468-2667\(20\)30233-4](https://doi.org/10.1016/S2468-2667(20)30233-4)

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