A comprehensive study of medically serious suicide attempts hospitalized in France: incidence and associated factors

Julien Corbé

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THESE

Pour obtenir le titre de

DOCTEUR EN MEDECINE

Présentée et soutenue publiquement
Par

Julien CORBÉ

Le 29 septembre 2021

TITRE

A Comprehensive Study Of Medically Serious Suicide Attempts Hospitalized In France: Incidence And Associated Factors

Directeur de thèse : Monsieur le Professeur Jorge LOPEZ CASTROMAN

JURY

Président : Monsieur le Professeur Jorge LOPEZ CASTROMAN

Assesseurs :

Madame le Professeur Emilie OLIE

Monsieur le Docteur Mathieu LACAMBRE

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A COMPREHENSIVE STUDY OF MEDICALLY SERIOUS SUICIDE ATTEMPTS HOSPITALIZED IN FRANCE: INCIDENCE AND ASSOCIATED FACTORS

Julien Corbé, Christine Montout, Asma Fares, Ihssen Belhadj, Thierry Boudemaghe, Thibault Mura, Jorge Lopez-Castroman, MD, Ph.D

Abstract

Background: People who make medically serious suicide attempts (MSSAs) share a number of features with those who complete suicide, and are at a high risk of suicide themselves. Studies to date have mostly focused on clinical samples; an epidemiological examination at the national level will help to establish risk profiles and pathways of care in this population.

Methods: We explored the French nationwide hospital discharge database (Programme de Médicalisation des Systèmes d'Information, PMSI) to identify any MSSA taking place between 2012 and 2019. Relevant demographic and medical information were collected about the first MSSA of each attempter with a two-year washout period.

Results: First occurrences of MSSAs amounted to 81 959 cases over 8 years, with a mean age of 45.8, and 53.6% women. Incidence was higher in women (18.1 versus 17.3 per 100 000). The most common suicide method was deliberate self-poisoning (64.9% of cases). In comparison, violent methods associated higher mortality and comorbidity and were more frequent in men. The most common mental disorders were mood disorders (55.6%) and substance use disorders (46.2%). A minority of MSSA survivors were hospitalized in psychiatry (32.5%), mostly women.

Conclusions: MSSAs are frequent and easy to identify. There is a need to reinforce the continuity of psychiatric care for this population given the high risk of subsequent suicide, and the poor rates of psychiatric hospitalization after an MSSA. Specific care targeting this population could reduce treatment gaps.

Introduction

Rationnel

On estime que pour chaque décès par suicide, il y a environ, selon les pays, 10 à 30 tentatives de suicide (TS) non mortelles. Un antécédent de TS constitue le meilleur prédicteur de suicide puisqu'environ 40 % des victimes de suicide ont des antécédents de tentatives, multipliant le risque de suicide dans l'année par 49. Cependant, toutes les TS ne véhiculent pas le même risque.

Une tentative de suicide médicalement grave (medically serious suicide attempt (MSSA)) a été définie comme une TS qui aurait été fatale sans l'accès aux soins d'urgence et qui a ensuite nécessité une hospitalisation de plus de 24 heures dans une unité de soins intensifs ou de réanimation, ou une intervention chirurgicale sous anesthésie générale, quelle que soit la violence de l'acte. Les personnes qui font une MSSA sont phénotypiquement plus proches de celles qui se suicident. Elles sont plus âgées, plus susceptibles d'avoir des antécédents de TS, et rapportent une létalité plus élevée lors de TS antérieures par rapport aux individus n'ayant jamais fait de MSSA. Les troubles mentaux et les méthodes de suicide dans les MSSAs sont également à mi-chemin entre les suicides et les TS. De nombreuses études rapportent que l'auto-intoxication est majoritaire dans les échantillons de MSSA (57-79%) mais que les méthodes violentes comme la pendaison sont surreprésentées (10-17%). Le trouble bipolaire, le trouble de l'usage des substances et le trouble du comportement alimentaire sont également surreprésentés dans les groupes de MSSA en comparaison des TS avec des conséquences moins sérieuses. A l'inverse, les diagnostics de psychose non affective semblent être beaucoup plus fréquents dans les échantillons de suicidés (OR=8,5) que dans les échantillons de MSSA (OR=8,5).

Parmi les personnes ayant fait une tentative de suicide, le fait de faire une MSSA double le risque de se suicider à court terme. Un individu sur vingt-cinq (4%) se suicide dans les 18 mois qui suivent une MSSA, mais seulement 1,8% dans l'année qui suit une TS. Ceci est également vrai à moyen terme : 5,3% à 7% de suicides sur 5 ans après une MSSA contre 3,8% sur 5 ans pour une TS. La mortalité globale par suicide après une MSSA serait également multipliée par 5 par rapport

à la population générale. Il est important de noter que l'évaluation directe des individus qui ont fait une MSSA, et qui auraient pu mourir par suicide, fournit des informations sur les troubles mentaux, les processus cognitifs ou les traits psychologiques dans les décès par suicide.

Nous disposons de peu d'informations épidémiologiques sur les MSSAs. Seules quelques études cliniques ont examiné la comorbidité somatique et psychiatrique associée aux MSSAs.

Objectif

Dans notre étude, nous avons voulu décrire d'un point de vue démographique et clinique la population qui fait une première MSSA et son parcours de soins hospitalier au niveau national. Nous avons également calculé l'incidence des MSSAs car, à notre connaissance, cela n'a jamais été fait auparavant. En effet, la plupart des études précédentes ont été réalisées sur des échantillons cliniques ne dépassant pas 1500 individus. Notre base de données fournit des informations exhaustives sur l'ensemble de la population française admise dans les hôpitaux entre 2012 et 2019. En raison de la faible quantité de données disponibles sur ce sujet et du profil à haut risque des survivants de MSSA, nous pensons que cette étude fournira des informations utiles aux soignants dans la gestion des comportements suicidaires.

INTRODUCTION

Rationale

It is estimated that for every suicide death there are about 10 to 30, depending on the country, non-lethal suicide attempts (SAs) (Bachmann, 2018; Han et al., 2016; Kessler et al., 2005; Mościcki et al., 1988). Having attempted suicide constitutes the best predictor of suicide since about 40% of victims of suicide have records of previous attempts (Hawton et al., 2005; Hawton and van Heeringen, 2009), multiplying the risk of suicide in the year by 49 (Hawton et al., 2015). However, not all SAs convey the same risk**.**

A medically serious suicide attempt (MSSA) has been defined as a SA that would have been fatal without access to emergency care and that subsequently required hospitalization for more than 24 hours in an intensive care unit (ICU), or surgery under general anesthesia, regardless of the violence of the act (Levi-Belz and Beautrais, 2016)**.** Individuals who make MSSA are phenotypically closer to those who complete suicide (Beautrais, 2001; Mościcki, 1995). They are older, more likely to have prior records of SAs, and report higher lethality in previous SAs compared to attempters that never made a MSSA (Giner et al., 2014). Mental disorders and suicide methods in MSSAs are also half-way between suicides and SAs. Many studies report that self-poisoning is majoritarian in MSSA samples (57-79%) but violent methods such as hanging are overrepresented (10-17%) (Beautrais, 2003b; Horesh et al., 2012; Kim et al., 2020; Sun et al., 2015). Bipolar disorder, substance misuse and eating disorder are also overrepresented in MSSAs samples in comparison SAs with less serious consequences (Giner et al., 2014). Conversely, the diagnoses of non-affective psychosis seem to be much more common in samples of suicide completers (OR=8.5) than in MSSA samples (OR=8.5) (Beautrais, 2001).

Among suicide attempters, making a MSSA more than doubles the risk of completing suicide in the short term. One in twenty-five individuals (4%) complete suicide in the 18 months that follow a MSSA (Beautrais, 2004), but only 1.8% in the year fallowing a SA (Probert-Lindström et al., 2020). This is also true in the medium term: 5.3% to 7% over 5 years (Beautrais, 2004, 2003a)

versus 3.8% over 5 years (Probert-Lindström et al., 2020). The overall suicide mortality after an MSSA would also be multiplied by 5 compared to the general population (Beautrais, 2003a). Importantly, the direct assessment of individuals who made a MSSA, and could have died by suicide, provides proxy information about mental disorders, cognitive processes or psychological traits in suicide deaths (Clark and Horton-Deutsch, 1992; Hawton, 2001; Hawton et al., 1998).

We have scarce epidemiological information about MSSAs. Only some clinical studies investigated the somatic and psychiatric comorbidity associated to MSSAs.

Objective

Here, we aimed to describe from a demographic and clinical standpoint the population that makes a first MSSA and what use they make of hospital care at a national level. We will also calculate the incidence of MSSAs since, to our knowledge, it has never been done before. Indeed, most previous studies were conducted on clinical samples of no more than 1500 individuals (Beautrais et al., 1996a; Beautrais, 2001, 2004; Kim et al., 2020). Our database provides exhaustive information on the entire French population admitted to hospitals between 2012 and 2019. Because of the small amount of data available on this topic and the high-risk profile of MSSA survivors, we believe that this study will provide useful information to caregivers in the management of suicidal behavior.

METHODS

Study design and data source

We conducted a nationwide observational study in French hospitals using the French nationwide hospital discharge database (Programme de Médicalisation des Systèmes d'Information, PMSI). The PMSI database contains synthetized and anonymized data about, among other kind of care, acute care hospitalizations in France, encompassing medicine, surgery, and obstetrics sector (Medecine, chirurgie, obstétrique (MCO)). MCO sector is made up of all the

medical units of an establishment, providing acute care in medicine, surgery and obstetrics. Conventional psychiatric units are not included in the MCO sector. PMSI data are prospectively collected by all public and private hospitals in a standardized way for care reimbursement purposes. Every discharge summary contains sociodemographic information about the patient, medical information about the hospital stay and data related to the trajectory of the patient. Medical information is coded with the Tenth revision of the International Classification of Diseases (ICD-10).

National PMSI data are anonymized. Access to these data is authorized for research purpose, and does not require the individual information and written consent of the patients. Approval of the National Data Protection Commission (Commission Nationale Informatique et Liberte, CNIL) was obtained for this study and data were handled and analyzed on the secured electronic platform of the National agency for the information on hospitalizations (Agence Technique de l'Information sur l'Hospitalisation, ATIH).

Study population

All the inpatient admissions related to a first episode of MSSA in the acute care sector of French hospitals between 2010 and 2019 were considered for the present study. A hospital stay for a MSSA implied: 1) the presence of an intentional self-harm ICD-10 code X60-X84 in the discharge summary; 2) the admission to an ICU for somatic conditions, including critical care units; and, 3) the absence of previous hospitalizations caused by a MSSA for at least the two preceding years. The two-year period comprises the years 2010 and 2011 for MSSA occurred in the year 2012, or the longest period available since 2010 for MSSA from 2012. To ensure that we were studying a homogenous sample, only first admissions fulfilling the criteria for MSSA were selected.

Study variables

1. Patients' demographics (sex and age), and comorbidities according to the Charlson index algorithm. The Charlson Comorbidity Index is a method of categorizing a range of non-psychiatric comorbidities of patients based on the ICD to predict short-term mortality. The one year mortality rates for the different scores are: "0", 12%; "l-2", 26%; "3-4", 52%; and " >5", 85% (Charlson et al., 1987).
2. Medical variables: primary/main and secondary diagnosis coded with the ICD-10 related to organic and psychiatric comorbidities, method of the SA. To summarize diagnostic data we used ICD-10 chapter codes for mental disorders (F0 to F9). Three specific diagnoses were analyzed separately because of their strong association with suicide risk: bipolar disorder (F30-F31), alcohol use disorder (AUD) (F10) and schizophrenia (F20).
3. Variables related to the patients' intra and inter-hospital trajectory: lengths of stay, admission in ICU, origin of referral and destination, vital status at discharge.
4. Admission in a psychiatric unit at least 3 days after discharge.

Statistical analysis

A total of 735 416 MSSAs were found between January 1, 2012 and December 31, 2019. Among them, 81 959 first-time MSSAs were identified and analyzed (see data flowchart in Figure 1). As we consider only first MSSAs for the present study, one patient corresponds to one discharge summary.

We achieve exclusively descriptive analysis for their characteristics. Qualitative variables were reported with numbers and percentages and quantitative ones, with means and standard deviations (SD). Pearson χ^2 tests were carried out for qualitative variables. Fischer exact tests were used, as appropriate, for small groups. For quantitative variables, T-tests. were realized.

To estimate the incidence rates of first MSSA in the French general population by sex and age, denominators were INSEE (Institut national de la statistique et des études économiques) figures of the general population and numerators were numbers of first MSSA from this study. Incidences of first MSSA were estimated and reported per person-year overall and among subgroups.

Analyses were performed with a bilateral alpha level of 0.05 using the SAS Enterprise guide 7.15 (SAS Institute, Cary, North Carolina).

RESULTS

Sample description by sex

Most MSSAs cases are women (N=43 953, 53.62%; p<.0001), a trend that is particularly evident in extreme age groups (under 25 or over 55 years) (Table 1). In the age group between 25 and 55 years, which counts with the largest caseload (N=46 150, 56.3%), men are overrepresented (N=23 258, 50.4%). MSSAs before 15 are rare in both sexes (N=412, 0.5%).

Deliberate self-poisoning (DSP) by drugs is the most common method of suicide attempt in MSSA (64.9% of the cases), especially among women (72.1% compared to 56.5% among men). Men are more likely to use violent methods such as hanging (7.9% versus 1.9% in women) or firearms (3.1% versus 0.2%). Men are also more likely to die after their first MSSA (68.4% of deaths).

Concerning mental disorders, the most frequent diagnoses are mood disorders (55.6%), including bipolar disorder (7.2%), and substance use disorders (SUD) (46.2%), including alcohol dependence (34.3%). Men seem to suffer significantly more from SUDs (56.3% vs. 37.5%), particularly alcohol dependence (42.8% vs. 27.1%), and schizophrenia (5.5% vs. 2.1%). Women are more concerned by mood disorders (64% vs 45.8%), including bipolar disorder (8.9% vs 5.1%). Personality disorders are balanced (approximately 3% in both genders).

The average length of stay is statistically higher for men, with 5.55 days spent in ICU compared with 4.4 days for women ($p < .0001$). The Charlson Score is also higher in men (4.1% of men with Charlson Score >3 versus 2.5% of women). Women are more likely to enter a psychiatric ward 3 days after their discharge from ICU (N=16 912; 38.5% of women) than men (N=12 309; 32.4% of men).

Comparison by fatal outcome

Following a first MSSA, 4 519 patients died, representing 5.5% of the MSSA population (Table 2). MSSAs are significantly more lethal in men, resulting in death in 8.1% of cases versus 3.3% of women ($p<.0001$). On average, the deceased are older (54.69±19.23 years) than the survivors (45.28±17.41 years). A high case fatality rate is observed over 75 years of age, with 15% of deaths compared to 4.4% in the [25 to 55] age group. The proportion of deceased patients admitted from psychiatry (N=264; 88.6%) is smaller than the proportion of deceased patients admitted from other places (>93%). The number of deaths to MSSA is stable along the study period (every year about 12-13% of the total).

Deliberate self-poisoning (DSP) by drugs appears to be less lethal (1.9% deaths) than any other method (12.2% deaths). Among the deceased, the method chosen to attempt suicide is commonly violent. Hanging/strangulation is used in 38.5% of deaths and 4.7% of MSSAs, firearms are used in 9.8% of deaths and 1.6% of MSSAs. On the contrary, DSP accounts for 67.3% of MSSAs and 22.4% of deaths.

Mortality is particularly important in patients diagnosed with mood disorders or organic mental disorders (F3 and F0) when compared to any other diagnosis. On the contrary, diagnoses of SUD (F1), psychotic disorder (F2) or personality disorder (F6) are less often associated with a fatal outcome. Deceased patients have longer lengths of stay (8.57±20.31days) than survivors do (7.13±13.23 days). In addition, the Charlson score is statistically higher in the decedents (15.9% with Charlson Score >1 in the decedents vs. 10.1% in the survivors).

Discharge to a psychiatric service

One third of surviving MSSA patients are discharged directly to a psychiatric service (N=25 177, 32.5%), while almost half are discharged directly to their home (N=37 652; 48.6%) (Table 3). These numbers are stable over the study period. Women are more likely to be discharged to psychiatry than men. They represent 58.5% of discharges to a psychiatric service, whereas they constitute 54.9% of survivors. The extreme age groups are less likely to be hospitalized in psychiatry after ICU, less than 25% in the youngest and oldest age groups (8-15 years and over 75 years) compared to more than 30% in the other age groups (25-75 years).

MSSA survivors after DSP are more frequently hospitalized in psychiatry than those using different methods (34.2% vs. 28.9%). Discharges to psychiatric inpatient units for MSSAs using violent methods such as hanging (N=925; 24%) or firearm (N=167;12.9%) are particularly infrequent.

Patients with psychotic disorder (N=1 969; 45.1%) or mood disorder (N=11 843; 37.4%) are more often hospitalized in psychiatry, in contrast to those with SUD (N=7 639 ;28.7%). Nearly three quarters (N=205; 77.7%) of psychiatric inpatients are re-admitted after intensive care in a psychiatric ward. On the other hand, about one-third of MSSA survivors coming from the emergency room (N=17 525; 33.9%) or home (N=6 928; 29.5%) are subsequently admitted to a psychiatric unit.

Patients who have less comorbidities are more discharged to psychiatry (33.2% with Charlson Score=0 vs. 17.7% with Charlson Score>5). They spend less time in intensive care (4.61±7.2 vs. 8.34±15.17 days) than those discharged elsewhere. Methods of attempting suicide are represented in Table 4.

Incidence

We find an overall increase in the incidence of MSSA over the study period, from 16.57 in 2012 to 17.75 in 2019 (cases per 100 000 person-years). This tendency was particularly marked

in females aged 15-25 years with a ten-point increase (Table 5). In women, the incidence is consistently higher than in men, with a trend towards a narrowing of this gap. In 2012, the incidence is 17.42 in women and 15.66 in men. In 2019, 18.14 in women versus 17.33 in men.

DISCUSSION

To our knowledge, this is largest study to date focused on MSSA. It provides an 8-year coverage of first MSSAs in the entire French population aged 8 or more. According to the literature, first MSSAs were mostly made by women and the most common method in both sexes was DSP, although violent suicide methods were over-represented in men (Beautrais, 2003b, 2001; Giner et al., 2014; Kim et al., 2020). Mood disorders (55.6%) and SUDs (46.2%) were by large the most common psychiatric disorders and showed a clear gender pattern, women more often diagnosed with mood disorders and men with SUDs. Importantly, less than one-third of MSSA survivors are hospitalized in psychiatry after discharge and the patients most at risk for completed suicide are the least hospitalized (for instance, men with substance use disorders or using violent methods). The use of violent methods in MSSAs was associated with the highest lethality and comorbidity.

Similar to suicide completers (Bachmann, 2018; Cibis et al., 2012; Värnik et al., 2008), MSSA attempters who die seem to be mostly men over 65 years that use hanging as a method. In our sample death was frequent (one in twenty attempters), representing more than fivefold the death rate by any SA leading to hospitalization in France between 2004 and 2011 (Christine Chan Chee, Delphine Jezewski-Serra, 2014). MSSA perpetrators are older compared to other suicide attempters (Giner et al., 2014; Horesh et al., 2012; Kim et al., 2020), but younger than suicide victims (Beautrais, 2001). Women make more attempts but men die more often which is consistent with the “gender paradox” in suicide (Canetto and Sakinofsky, 1998; Schrijvers et al., 2012). Indeed, men represent 68.4% of deaths in our study, spend more time in intensive care and have

more somatic comorbidity than women. These differences could be explained by the choice of more lethal methods in men (Beautrais, 2003b) but even when using similar methods men have higher mortality rates in our sample. It has been reported that one in ten survivors of a MSSA die within 5 years, mostly by suicide (59%) (Beautrais, 2003a). Overall mortality is sharply increased in the years that follow a violent self-harm, especially the first year, and also among men and physically vulnerable persons (Bergen et al., 2012; Chen et al., 2011; Goldman-Mellor et al., 2019; Stenbacka and Jokinen, 2015; Vuagnat et al., 2019). This may explain the increase in natural mortality.

One in ten patients with MSSA (10.5%) had multiple somatic comorbidities. Coherently, physical illnesses have been found to precipitate MSSA (Kim et al., 2020). Physical sequelae secondary to MSSA may also be independent risk factors for suicide. Patients with somatic pathology complete suicide 2 to 3 times more than general population in Taiwan (Cheng et al., 2000), even more so in the presence of multiple co-morbidities or social isolation due to disability (Ahmedani et al., 2017; Kennedy and Garmon-Jones, 2017). Besides, intensive care survivors (all reasons for hospitalization combined) had higher risk of suicide after discharge than other inpatients (Fernando et al., 2021). In a national population study, the interaction of psychiatric and somatic illnesses increased the risk of suicide (Qin et al., 2014). This trend was even more significant in men and the elderly (Blasco-Fontecilla et al., 2010). The physical consequences of a MSSA can also hinder psychiatric care, especially after a violent SA (Persett et al., 2018).

In our study, only 32.5% of MSSA survivors were subsequently admitted in a psychiatric clinic. Between 2004 and 2011, 20% of all SAs hospitalized in French hospitals (MCO) were subsequently admitted in psychiatry (Christine Chan Chee, Delphine Jezewski-Serra, 2014). These weak rates are partly explained by admissions in psychiatric units within general hospitals, which are not counted in our study. In France these units are mostly conceived to provide emergency psychiatric care in academic hospitals, and despite an increase in recent years they are still uncommon and most psychiatric care takes place in psychiatric clinics (public or private).

Besides, stays in emergency or crisis units are short and most patients in our study were discharged to their home (48.6%). Male sex and advanced age decreased the likelihood of admission in psychiatry after critical care according to our results. In addition, the longer the time spent in ICU, the fewer psychiatric admissions. These patients had also more physical comorbidities and made the most serious attempts. In summary, they had the more severe risk profile.

Non-psychiatric medical departments are not well-adapted to the management of suicide attempters (less communication, untrained teams) (Betz et al., 2013; Chen et al., 2016; Cheng et al., 2009). Non-fatal self-harm attempters admitted to non-psychiatric departments are more likely to complete suicide in the following year than those admitted to psychiatry (Vuagnat et al., 2019). Consultation-Liaison Psychiatry (CLP) should identify and manage these cases to reinforce continuous care (Stein et al., 2020), but the accessibility to CLP varies widely among hospitals (Olfson et al., 2014; Wand et al., 2016; Wood and Wand, 2014). According to one study, when CLP intervenes only 29.2% of violent or serious attempts are discharged (Cooper-Kazaz, 2013). Of note, the risk of suicide seems to be higher among women after a MSSA (Beautrais, 2004) but higher among men after a nonfatal SA (Hawton and Fagg, 1988).

Two out of three MSSA used DSP as a method for suicide. Similar results were found in previous studies with intoxications accounting for 57-79% of MSSA (Beautrais, 2003b; Horesh et al., 2012; Kim et al., 2020; Sun et al., 2015). Suicide attempt methods in our sample are thus close to those of non-lethal SAs if we compare with previous studies: 1) 81.7% of the suicides used a highly lethal method against 17.6% in MSSA (Beautrais, 2003b), 2) DSP accounts for approximately two out of three of SAs not requiring intensive care (Cibis et al., 2012), but 3) only for 12.7% of suicides in Europe (Värnik et al., 2008).

High levels of psychopathology increase the susceptibility to MSSA (Beautrais, 2003b). The diagnostic profile of MSSA patients (mood disorders, SUDs) in our study is similar to previous reports by Beautrais's group, which found high rates of current and lifetime mental

disorder (around 90%), and previous SAs (23.6 to 52.7%) (Beautrais, 2001; Beautrais et al., 1998, 1996b). Post-traumatic stress disorder (PTSD) was also more prevalent among MSSA survivors (Lopez-Castroman et al., 2015). Consistently with previous studies (Beautrais et al., 1999; Gvion and Levi-Belz, 2018), SUDs and particularly AUDs were very frequent in our sample, one in three MSSA survivors (31.1%) had an AUD in the previous month (Beautrais et al., 1999). Alcohol dependence more than doubles the risk of making a MSSA compared to the general population (Conner et al., 2003a), and drinking within 3 hours of a SA causes a 6-fold increase in the risk of MSSA (Powell et al., 2001). In a prior study, the comorbidity of alcohol dependance and a mood disorder had lower odds of making a MSSA compared to a mood disorder alone (OR=6 vs 17), but alcohol-dependent patients making MSSA were more likely to have a mood disorder (Conner et al., 2003a, 2003b). Other SUDs, such as cannabis or tobacco dependence, have been strongly associated with MSSA (Beautrais et al., 1999; Lopez-Castroman et al., 2016).

Strong similarities in psychiatric diagnoses have been shown between MSSAs and suicides: mood disorders, substance use disorders and anxiety disorders are overrepresented compared to the general population (Arsenault-Lapierre et al., 2004; Beautrais, 2001). Nevertheless, non-affective psychosis was a risk factor for suicide and not for MSSA (5.9% vs. 1.1%), whereas anxiety disorders and mood disorders were more present in MSSA (Beautrais, 2003b, 2001). Compared with non-critical care SAs, psychotic disorders, bipolar disorder, eating disorders, SUDs and SA recidivism were overrepresented in MSSA (Giner et al., 2014; Kim et al., 2020).

Given the low rate of psychiatric hospitalizations in our study, it seems essential to improve care pathways for MSSA survivors. The two-year period following discharge after a SA is at high risk for suicide (Parra-Uribe et al., 2017; Tejedor et al., 1999). Continuous psychiatric and somatic outpatient care is very important. A 7-day follow-up after discharge from a psychiatric hospital was associated with an important decrease in suicide rates in the 3-month period following discharge (While et al., 2012). Specific training or sensibilization of non-

psychiatric teams about the risk of suicide and its management is important. Less than 70% of emergency physicians know how to assess the risk of suicide. (Betz et al., 2013).

The incidence rate in our study is lower (45.7 per 100 000 person-years) than in a Chinese study (Sun et al., 2015), which aimed to calculate the incidence rate in 3 counties from two public health surveillance systems during 2009-2011, but this one included deaths of MSSA before their arrival at the hospital. Our figures are lower than SAs (148.8 per 100 000 person-years) according to a US study (Kuo et al., 2001).

Strengths and Limitations of our Study

The main limitation of this study is that it is based on administrative data, ICD-10 codes are mainly used for billing purposes by physicians on the hospital ward. They might vary according to the practitioner or the institution. Besides, in some university hospitals in France, patients are hospitalized in psychiatric departments associated to the emergency care. These cases have not been counted as psychiatric stays and may lead to an underestimation of psychiatric hospitalizations. Also, short stays, especially in services other than intensive care, may raise questions about the severity of the suicidal act, as simple monitoring may be sufficient. Finally, important information such as suicidal intent or records of previous suicidality is not available in the database. However, PMSI data provides exhaustive and updated information on all health establishments at the national level for almost 10 years. To our knowledge, this is the first epidemiological study of this magnitude conducted on MSSA.

Conclusions

In conclusion, the phenotype of MSSA survivors is midway between that of suicide victims and suicide attempters. MSSA survivors are more often female, use more violent methods of suicide, and have more serious somatic and psychiatric pathologies. Given the risk of suicide and somatic complications after a MSSA (Beautrais, 2003a; Chen et al., 2011; Goldman-Mellor et al., 2019; Vuagnat et al., 2019) and the low rate of psychiatric hospitalizations in our study, it

seems essential to improve care pathways for MSSA survivors. This retrospective study needs to be completed by prospective studies mixing somatic and psychiatric aspects in order to better understand the consequences of MSSA and thus adapt the management.

CONCLUSIONS

En conclusion, le phénotype des survivants de MSSA est à mi-chemin entre celui des suicidés et de ceux faisant des tentatives de suicide. En effet, les survivants de MSSA sont plus souvent des femmes, d'un plus grand âge, utilisant des moyens plus violents, décédant plus, et présentant des pathologies psychiatriques et somatiques plus graves que ceux ayant fait une TS moins sérieuse. Compte tenu du haut risque de suicide et de complications somatiques après une MSSA et du faible taux d'hospitalisation en psychiatrie dans notre étude, il semble essentiel d'améliorer les parcours de soins des survivants d'une MSSA en intra-hospitalier mais également en ambulatoire. Cette étude rétrospective doit être complétée par des études prospectives mêlant les aspects somatiques et psychiatriques afin de mieux comprendre les conséquences des MSSAs et ainsi adapter la prise en charge.

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TABLES

Table 1. Description of MSSA population by sex.

	Male N=38006 N (%)	*Female N=43953 N (%)*	*Total N=81959 N (%)*	***p-value***
Age (mean±SD)	45.04±16.81	46.45±18.31	45.8±17.64	**<.0001**
Age in five classes				**<.0001**
[8 years; 15 years [	89 (21.6%)	323 (78.4%)	412 (0.5%)	
[15 years; 25 years [	4550 (40.9%)	6570 (59.1%)	11120 (13.6%)	
[25 years; 55 years [	23258 (50.4%)	22892 (49.6%)	46150 (56.3%)	
[55 years; 75 years [	7817 (42.1%)	10766 (57.9%)	18583 (22.7%)	
75+ years	2292 (40.3%)	3402 (59.7%)	5694 (6.9%)	
Drug poisoning (X60-X64)	21472 (40.4%)	31695 (59.6%)	53167 (64.9%)	**<.0001**
Death because of the attempt	3090 (68.4%)	1429 (31.6%)	4519 (5.5%)	**<.0001**
Admission				
From emergency room	25073 (46.2%)	29185 (53.8%)	54258 (66.2%)	0.31
From a psychiatric unit	134 (45%)	164 (55%)	298 (0.4%)	
From home	11731 (46.6%)	13443 (53.4%)	25174 (30.7%)	
Other	1048 (47.7%)	1147 (52.3%)	2195 (2.7%)	
Discharge				
To home	17638 (46.8%)	20014 (53.2%)	37652 (45.9%)	**<.0001**
To psychiatric unit	10456 (41.5%)	14721 (58.5%)	25177 (30.7%)	
Other	6822 (46.7%)	7789 (53.3%)	14611 (17.8%)	
Days in intensive care (mean±SD)	5.55±10.12	4.4±7.39	4.93±8.78	**<.0001**
Charlson Score				
0 (one-year mortality=12%)	33553 (45.7%)	39839 (54.3%)	73392 (89.5%)	**<.0001**
1-2 (one-year mortality=26%)	2897 (48.8%)	3041 (51.2%)	5938 (7.2%)	
3-4 (one-year mortality=52%)	1035 (61.4%)	652 (38.6%)	1687 (2.1%)	
5+ (one-year mortality=85%)	521 (55.3%)	421 (44.7%)	942 (1.1%)	
ICD 10 Codes for Mental and behavioural disorders				
F01-F09	1212 (50.5%)	1187 (49.5%)	2399 (4.1%)	**<.0001**
F10-F19	15423 (56.4%)	11923 (43.6%)	27346 (46.2%)	**<.0001**
F20-F29	2698 (59.8%)	1814 (40.2%)	4512 (7.6%)	**<.0001**
F30-F39	12548 (38.2%)	20339 (61.8%)	32887 (55.6%)	**<.0001**
F40-F48	2989 (37.7%)	4942 (62.3%)	7931 (13.4%)	**<.0001**
F50-F59	101 (15%)	573 (85%)	674 (1.1%)	**<.0001**
F60-F69	908 (44.4%)	1139 (55.6%)	2047 (3.5%)	0.07
F70-F79	79 (60.8%)	51 (39.2%)	130 (0.2%)	**.0009**
F80-F89	37 (62.7%)	22 (37.3%)	59 (0.1%)	0.01
F90-F98	344 (40.9%)	497 (59.1%)	841 (1.4%)	**.002**

	Male *N=38006* *N (%)*	*Female* *N=43953* *N (%)*	*Total* *N=81959* *N (%)*	***p-value***
F99	293 (41%)	422 (59%)	715 (1.2%)	**.004**
Alcohol use disorder	11733 (57.7%)	8593 (42.3%)	20326 (34.3%)	**<.0001**
Bipolar disorder	1407 (33.1%)	2843 (66.9%)	4250 (7.2%)	**<.0001**
Schizophrenia	1504 (68.8%)	681 (31.2%)	2185 (3.7%)	**<.0001**
Psychiatric admission in the 3 days following discharge	12309 (42.1%)	16912 (57.9%)	29221 (35.7%)	**<.0001**

Table 2. Description by living vs. deceased status

	Alive following first MSSA N=77440 *N (%)*	*Died following first MSSA N=4519* *N (%)*	*Total N=81959* *N (%)*	***p-value***
Male	34916 (91.9%)	3090 (8.1%)	38006 (46.4%)	
Female	42524 (96.7%)	1429 (3.3%)	43953 (53.6%)	
Age (mean±SD)	45.28±17.41	54.69±19.23	45.8±17.64	**<.0001**
Age in five classes				
[8 years; 15 years [	398 (96.6%)	14 (3.4%)	412 (0.5%)	**<.0001**
[15 years; 25 years [	10848 (97.6%)	272 (2.4%)	11120 (13.6%)	
[25 years; 55 years [	44111 (95.6%)	2039 (4.4%)	46150 (56.3%)	
[55 years; 75 years [	17242 (92.8%)	1341 (7.2%)	18583 (22.7%)	
75+ years	4841 (85%)	853 (15%)	5694 (6.9%)	
Admission				
From emergency room	51636 (95.2%)	2622 (4.8%)	54258 (66.2%)	**<.0001**
From a psychiatric unit	264 (88.6%)	34 (11.4%)	298 (0.4%)	
From home	23456 (93.2%)	1718 (6.8%)	25174 (30.7%)	
Other	2053 (93.5%)	142 (6.5%)	2195 (2.7%)	
Discharge				**<.0001**
To home	37652 (100%)	0	37652 (45.9%)	
To psychiatric unit	25177 (100%)	0	25177 (30.7%)	
Other	14611 (100%)	0	14611 (17.8%)	
MSSA mechanism				
Drug poisoning (X60-64)	52155 (98.1%)	1012 (1.9%)	53167 (64.9%)	**<.0001**
Other (X65-X84)	25285 (87.8%)	3507 (12.2%)	28792 (35.1%)	
Days in intensive care (mean±SD)	7.13±13.23	8.57±20.31	7.21±13.72	**<.0001**
Charlson Score				
0 (one-year mortality=12%)	69592 (94.8%)	3800 (5.2%)	73392 (89.5%)	**<.0001**
1-2 (one-year mortality=26%)	5513 (92.8%)	425 (7.2%)	5938 (7.2%)	
3-4 (one-year mortality=52%)	1509 (89.4%)	178 (10.6%)	1687 (2.1%)	
5+ (one-year mortality=85%)	826 (87.7%)	116 (12.3%)	942 (1.1%)	
Alcohol SUD	19754 (97.2%)	572 (2.8%)	20326 (34.3%)	**<0.001**
Bipolar disorder	4118 (96.9%)	132 (3.1%)	4250 (7.2%)	**0.13**
Schizophrenia	2111 (96.6%)	74 (3.4%)	2185 (3.7%)	**0.74**
ICD 10 Codes for Mental and behavioural disorders				
F01-F09	2291 (95.5%)	108 (4.5%)	2399 (4.1%)	**.007**
F10-F19	26593 (97.2%)	753 (2.8%)	27346 (46.2%)	**<.0001**
F20-F29	4368 (96.8%)	144 (3.2%)	4512 (7.6%)	0.22

	Alive following first MSSA N=77440 *N (%)*	*Died following first MSSA N=4519* *N (%)*	*Total N=81959* *N (%)*	***p-value***
F30-F39	31624 (96.2%)	1263 (3.8%)	32887 (55.6%)	**<.009**
F40-F48	7773 (98%)	158 (2%)	7931 (13.4%)	**<.0001**
F50-F59	657 (97.5%)	17 (2.5%)	674 (1.1%)	0.19
F60-F69	2025 (98.9%)	22 (1.1%)	2047 (3.5%)	**<.0001**
F70-F79	126 (96.9%)	4 (3.1%)	130 (0.2%)	1
F80-F89	58 (98.3%)	1 (1.7%)	59 (0.1%)	_
F90-F98	822 (97.7%)	19 (2.3%)	841 (1.4%)	**.047**
F99	697 (97.5%)	18 (2.5%)	715 (1.2%)	0.15
Psychiatric admission in the 3 days following discharge	29221 (100%)	0	29221 (35.7%)	

Table 3. Description of patients discharged to a psychiatric service following the first MSSA (77 440 patients alive following the MSSA)

	Discharge to a psychiatric unit: 0 N=52263	*Discharge to a psychiatric unit: 1 N=25177*	*Total N=77440*	
	N (%)	*N (%)*	*N (%)*	***p-value***
Male	24460 (70.1%)	10456 (29.9%)	34916 (45.1%)	**<.0001**
Female	27803 (65.4%)	14721 (34.6%)	42524 (54.9%)	
Age (mean±SD)	45.13± 17.93	45.58±16.27	45.28±17.41	**.0006**
Age in five classes				
[8 years; 15 years [	317 (79.6%)	81 (20.4%)	398 (0.5%)	**<.0001**
[15 years; 25 years [	7735 (71.3%)	3113 (28.7%)	10848 (14%)	
[25 years; 55 years [	29390 (66.6%)	14721 (33.4%)	44111 (57%)	
[55 years ;75 years [	11099 (64.4%)	6143 (35.6%)	17242 (22.3%)	
75+ years	3722 (76.9%)	1119 (23.1%)	4841 (6.3%)	
Admission				
From emergency room	34111 (66.1%)	17525 (33.9%)	51636 (66.7%)	**<.0001**
From a pychiatric unit	59 (22.3%)	205 (77.7%)	264 (0.3%)	
From home	16528 (70.5%)	6928 (29.5%)	23456 (30.3%)	
Other	1541 (75.1%)	512 (24.9%)	2053 (2.7%)	
Discharge				
To home	37652 (100%)	0	37652 (48.6%)	**<.0001**
To psychiatric unit	0	25177 (100%)	25177 (32.5%)	
Other	14611 (100%)	0	14611 (18.9%)	
MSSA mechanism				
Drug poisoning (X60-64)	34296 (65.8%)	17859 (34.2%)	52155 (67.3%)	**<.0001**
Other (X65-X84)	17967 (71.1%)	7318 (28.9%)	25285 (32.7%)	
Days in intensive care (mean±SD)	8.34±15.17	4.61±7.2	7.13±13.23	**<.0001**
Charlson Score				
0 (one-year mortality=12%)	46460 (66.8%)	23132 (33.2%)	69592 (89.9%)	**<.0001**
1-2 (one-year mortality=26%)	3955 (71.7%)	1558 (28.3%)	5513 (7.1%)	
3-4 (one-year mortality=52%)	1168 (77.4%)	341 (22.6%)	1509 (1.9%)	
5+ (one-year mortality=85%)	680 (82.3%)	146 (17.7%)	826 (1.1%)	
Alcohol SUD	14142 (71.6%)	5612 (28.4%)	19754 (34.6%)	**<.0001**
Bipolar disorder	2130 (51.7%)	1988 (48.3%)	4118 (7.2%)	**<.0001**
Schizophrenia	1120 (53.1%)	991 (46.9%)	2111 (3.7%)	**<.0001**
ICD 10 Codes for Mental and behavioural disorders				
F01-F09	1735 (75.7%)	556 (24.3%)	2291 (4%)	**<.0001**
F10-F19	18954 (71.3%)	7639 (28.7%)	26593 (46.6%)	**<.0001**

	Discharge to a psychiatric unit: 0 N=52263 *N (%)*	*Discharge to a psychiatric unit: 1 N=25177* *N (%)*	*Total N=77440* *N (%)*	***p-value***
F20-F29	2399 (54.9%)	1969 (45.1%)	4368 (7.7%)	**<.0001**
F30-F39	19781 (62.6%)	11843 (37.4%)	31624 (55.4%)	**<.0001**
F40-F48	5456 (70.2%)	2317 (29.8%)	7773 (13.6%)	**<.0001**
F50-F59	441 (67.1%)	216 (32.9%)	657 (1.2%)	**<.0001**
F60-F69	1313 (64.8%)	712 (35.2%)	2025 (3.5%)	0.10
F70-F79	91 (72.2%)	35 (27.8%)	126 (0.2%)	0.18
F80-F89	36 (62.1%)	22 (37.9%)	58 (0.1%)	0.47
F90-F98	572 (69.6%)	250 (30.4%)	822 (1.4%)	0.06
F99	440 (63.1%)	257 (36.9%)	697 (1.2%)	0.06
Psychiatric admission in the 3 days following discharge	8093 (27.7%)	21128 (72.3%)	29221 (37.7%)	**<.0001**

Table 4. Description of MSSA patients according to the suicide attempt method

	Intentional self-poisoning with drugs (X60-X64) *N=53167* *N (%)*	*Intentional self-poisoning with other substances (alcohol, solvents, pesticides, chemicals) (X65-X69)* *N=7673* *N (%)*	*Intentional self-harm by hanging, strangulation and suffocation (X70)* *N=3857* *N (%)*	*Intentional self-harm by drowning and submersion (X71)* *N=256* *N (%)*	*Intentional self-harm by firearm (X72 à X74)* *N=1297* *N (%)*	*Intentional self-harm by smoke, fire and flames (X75-X77)* *N=609* *N (%)*
Male	21472 (56.5%)	4359 (11.5%)	3010 (7.9%)	102 (0.3%)	1196 (3.1%)	399 (1%)
Female	31695 (72.1%)	3314 (7.5%)	847 (1.9%)	154 (0.4%)	101 (0.2%)	210 (0.5%)
Age in five classes						
[8 years; 15 years [	265 (64.3%)	30 (7.3%)	23 (5.6%)	1 (0.2%)	1 (0.2%)	2 (0.5%)
[15 years; 25 years [	7446 (67%)	875 (7.9%)	375 (3.4%)	12 (0.1%)	64 (0.6%)	56 (0.5%)
[25 years; 55 years [	29926 (64.8%)	4471 (9.7%)	2452 (5.3%)	63 (0.1%)	490 (1.1%)	381 (0.8%)
[55 years ;75 years [	11905 (64.1%)	1900 (10.2%)	769 (4.1%)	129 (0.7%)	462 (2.5%)	154 (0.8%)
75+ years	3625 (63.7%)	397 (7%)	238 (4.2%)	51 (0.9%)	280 (4.9%)	16 (0.3%)
Admission						
From emergency room	36254 (66.8%)	5000 (9.2%)	2191 (4%)	161 (0.3%)	801 (1.5%)	217 (0.4%)
From a psychiatric unit	165 (55.4%)	20 (6.7%)	52 (17.4%)	2 (0.7%)	2 (0.7%)	4 (1.3%)
From home	15425 (61.3%)	2432 (9.7%)	1527 (6.1%)	89 (0.4%)	445 (1.8%)	337 (1.3%)
Other	1306 (59.5%)	215 (9.8%)	86 (3.9%)	3 (0.1%)	48 (2.2%)	51 (2.3%)
Missing	17	6	1	1	1	0
Discharge						
To home	26324 (69.9%)	4293 (11.4%)	674 (1.8%)	65 (0.2%)	324 (0.9%)	104 (0.3%)
To psychiatric unit	17859 (70.9%)	1903 (7.6%)	925 (3.7%)	82 (0.3%)	167 (0.7%)	54 (0.2%)
Other	7972 (54.6%)	1183 (8.1%)	516 (3.5%)	44 (0.3%)	362 (2.5%)	314 (2.1%)

	Intentional self-poisoning with drugs (X60-X64) *N=53167* *N (%)*	*Intentional self-poisoning with other substances (alcohol, solvents, pesticides, chemicals) (X65-X69)* *N=7673* *N (%)*	*Intentional self-harm by hanging, strangulation and suffocation (X70)* *N=3857* *N (%)*	*Intentional self-harm by drowning and submersion (X71)* *N=256* *N (%)*	*Intentional self-harm by firearm (X72 à X74)* *N=1297* *N (%)*	*Intentional self-harm by smoke, fire and flames (X75-X77)* *N=609* *N (%)*
Death because of the attempt	1012 (22.4%)	294 (6.5%)	1742 (38.5%)	65 (1.4%)	444 (9.8%)	137 (3%)
Charlson Score						
0 (one-year mortality=12%)	47569 (64.8%)	6788 (9.2%)	3589 (4.9%)	226 (0.3%)	1102 (1.5%)	542 (0.7%)
1-2 (one-year mortality=26%)	3943 (66.4%)	584 (9.8%)	183 (3.1%)	21 (0.4%)	118 (2%)	51 (0.9%)
3-4 (one-year mortality=52%)	1061 (62.9%)	185 (11%)	59 (3.5%)	5 (0.3%)	45 (2.7%)	13 (0.8%)
5+ (one-year mortality=85%)	594 (63.1%)	116 (12.3%)	26 (2.8%)	4 (0.4%)	32 (3.4%)	3 (0.3%)
ICD 10 Codes for Mental and behavioural disorders						
F01-F09	1178 (49.1%)	220 (9.2%)	113 (4.7%)	17 (0.7%)	80 (3.3%)	13 (0.5%)
F10-F19	17690 (64.7%)	3678 (13.4%)	853 (3.1%)	42 (0.2%)	292 (1.1%)	139 (0.5%)
F20-F29	2600 (57.6%)	247 (5.5%)	115 (2.5%)	15 (0.3%)	34 (0.8%)	101 (2.2%)
F30-F39	22376 (68%)	2419 (7.4%)	1429 (4.3%)	121 (0.4%)	503 (1.5%)	209 (0.6%)
F40-F48	5539 (69.8%)	578 (7.3%)	261 (3.3%)	30 (0.4%)	88 (1.1%)	63 (0.8%)
F50-F59	486 (72.1%)	38 (5.6%)	17 (2.5%)	0	4 (0.6%)	3 (0.4%)
F60-F69	1292 (63.1%)	101 (4.9%)	86 (4.2%)	6 (0.3%)	22 (1.1%)	28 (1.4%)
F70-F79	78 (60%)	11 (8.5%)	3 (2.3%)	1 (0.8%)	1 (0.8%)	3 (2.3%)
F80-F89	31 (52.5%)	3 (5.1%)	3 (5.1%)	1 (1.7%)	0	2 (3.4%)

	Intentional self-poisoning with drugs (X60-X64) *N=53167* *N (%)*	*Intentional self-poisoning with other substances (alcohol, solvents, pesticides, chemicals) (X65-X69)* *N=7673* *N (%)*	*Intentional self-harm by hanging, strangulation and suffocation (X70)* *N=3857* *N (%)*	*Intentional self-harm by drowning and submersion (X71)* *N=256* *N (%)*	*Intentional self-harm by firearm (X72 à X74)* *N=1297* *N (%)*	*Intentional self-harm by smoke, fire and flames (X75-X77)* *N=609* *N (%)*
F90-F98	516 (61.4%)	78 (9.3%)	30 (3.6%)	3 (0.4%)	17 (2%)	3 (0.4%)
F99	128 (17.9%)	14 (2%)	6 (0.8%)	1 (0.1%)	3 (0.4%)	2 (0.3%)
Alcohol use disorder	12595 (62%)	3259 (16%)	646 (3.2%)	39 (0.2%)	238 (1.2%)	101 (0.5%)
Bipolar disorder	3054 (71.9%)	281 (6.6%)	86 (2%)	11 (0.3%)	35 (0.8%)	35 (0.8%)
Schizophrenia	1293 (59.2%)	103 (4.7%)	50 (2.3%)	5 (0.2%)	19 (0.9%)	42 (1.9%)
Missing	14487	1998	1596	73	503	201

Table 4. Description of MSSA patients according to the suicide attempt method (Suite)

	Intentional self-harm by sharp or blunt object (X78-X79) *N=2308* *N (%)*	*Intentional self-harm by jumping from a high place (X80)* *N=2386* *N (%)*	*Intentional self-harm by collision (X81-X82)* *N=316* *N (%)*	*Intentional self-harm by other specified or unspecified means (X83-X84)* *N=10090* *N (%)*	*Total N=81959*
Male	1462 (3.8%)	1214 (3.2%)	209 (0.5%)	4583 (12.1%)	38006 (46.4%)
Female	846 (1.9%)	1172 (2.7%)	107 (0.2%)	5507 (12.5%)	43953 (53.6%)
Age in five classes					
[8 years; 15 years [	16 (3.9%)	29 (7%)	0	45 (10.9%)	412 (0.5%)
[15 years; 25 years [	329 (3%)	508 (4.6%)	68 (0.6%)	1387 (12.5%)	11120 (13.6%)
[25 years; 55 years [	1171 (2.5%)	1287 (2.8%)	181 (0.4%)	5728 (12.4%)	46150 (56.3%)
[55 years ;75 years [	554 (3%)	390 (2.1%)	55 (0.3%)	2265 (12.2%)	18583 (22.7%)
75+ years	238 (4.2%)	172 (3%)	12 (0.2%)	665 (11.7%)	5694 (6.9%)
Admission					
From emergency room	1551 (2.9%)	1392 (2.6%)	203 (0.4%)	6488 (12%)	54258 (66.2%)
From a psychiatric unit	15 (5%)	6 (2%)	0	32 (10.7%)	298 (0.4%)
From home*	696 (2.8%)	873 (3.5%)	100 (0.4%)	3250 (12.9%)	25174 (30.7%)
Other	44 (2%)	111 (5.1%)	13 (0.6%)	318 (14.5%)	2195 (2.7%)
Missing	2	4	0	2	34
Discharge					
To home*	892 (2.4%)	576 (1.5%)	98 (0.3%)	4302 (11.4%)	37652 (45.9%)
To psychiatric unit	826 (3.3%)	298 (1.2%)	60 (0.2%)	3003 (11.9%)	25177 (30.7%)
Other	510 (3.5%)	1300 (8.9%)	142 (1%)	2268 (15.5%)	14611 (17.8%)

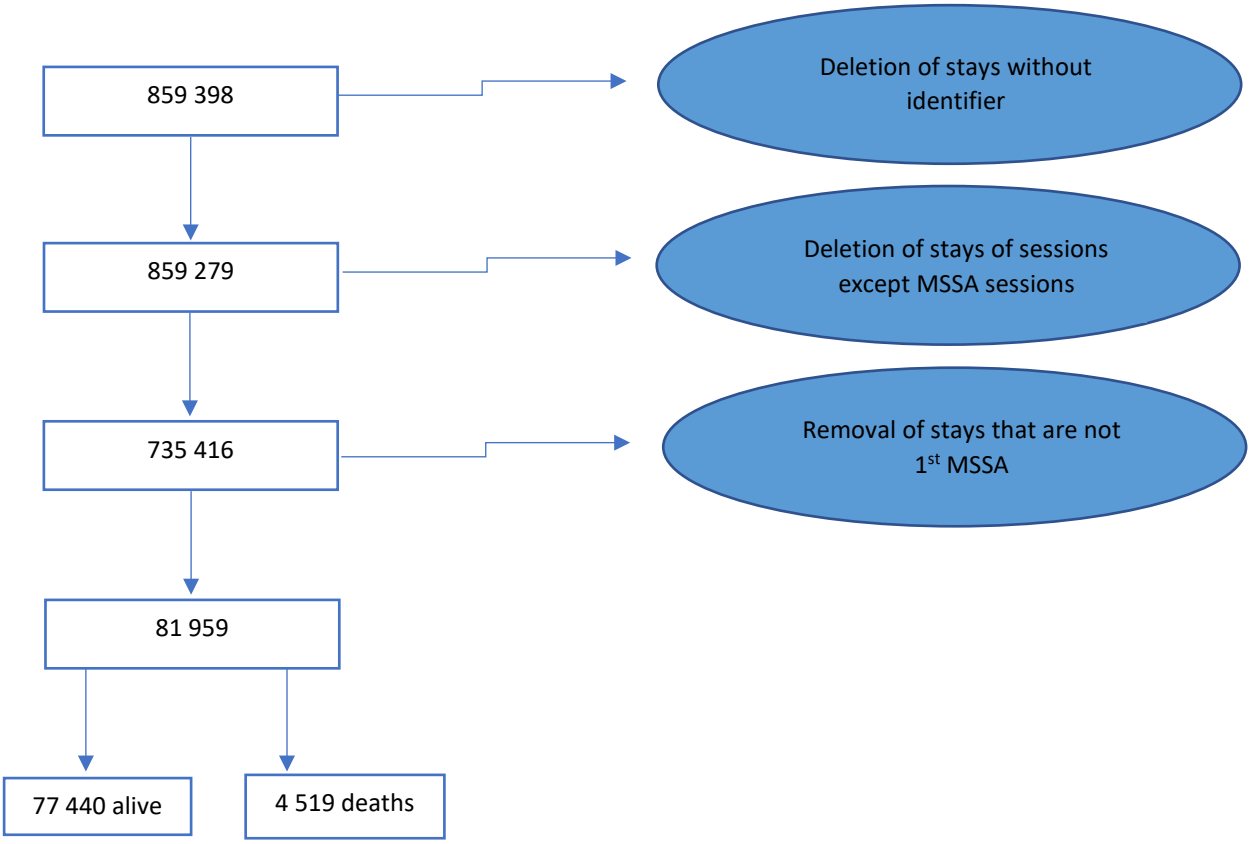
	Intentional self-harm by sharp or blunt object (X78-X79) *N=2308* *N (%)*	*Intentional self-harm by jumping from a high place (X80)* *N=2386* *N (%)*	*Intentional self-harm by collision (X81-X82)* *N=316* *N (%)*	*Intentional self-harm by other specified or unspecified means (X83-X84)* *N=10090* *N (%)*	*Total N=81959*
Death because of the attempt	80 (1.8%)	212 (4.7%)	16 (0.4%)	517 (11.4%)	4519 (5.5%)
Charlson Score					
0 (one-year mortality=12%)	2000 (2.7%)	2197 (3%)	299 (0.4%)	9080 (12.4%)	73392 (89.5%)
1-2 (one-year mortality=26%)	186 (3.1%)	132 (2.2%)	10 (0.2%)	710 (12%)	5938 (7.2%)
3-4 (one-year mortality=52%)	79 (4.7%)	41 (2.4%)	6 (0.4%)	193 (11.4%)	1687 (2.1%)
5+ (one-year mortality=85%)	43 (4.6%)	16 (1.7%)	1 (0.1%)	107 (11.4%)	942 (1.1%)
ICD 10 Codes for Mental and behavioural disorders					
F01-F09	78 (3.3%)	170 (7.1%)	13 (0.5%)	517 (21.6%)	2399 (4.1%)
F10-F19	698 (2.6%)	725 (2.7%)	97 (0.4%)	3132 (11.5%)	27346 (46.2%)
F20-F29	247 (5.5%)	454 (10.1%)	36 (0.8%)	663 (14.7%)	4512 (7.6%)
F30-F39	1006 (3.1%)	814 (2.5%)	124 (0.4%)	3886 (11.8%)	32887 (55.6%)
F40-F48	241 (3%)	198 (2.5%)	30 (0.4%)	903 (11.4%)	7931 (13.4%)
F50-F59	20 (3%)	18 (2.7%)	0	88 (13.1%)	674 (1.1%)
F60-F69	114 (5.6%)	65 (3.2%)	12 (0.6%)	321 (15.7%)	2047 (3.5%)
F70-F79	5 (3.8%)	10 (7.7%)	1 (0.8%)	17 (13.1%)	130 (0.2%)
F80-F89	2 (3.4%)	6 (10.2%)	0	11 (18.6%)	59 (0.1%)

	Intentional self-harm by sharp or blunt object (X78-X79) *N=2308* *N (%)*	*Intentional self-harm by jumping from a high place (X80)* *N=2386* *N (%)*	*Intentional self-harm by collision (X81-X82)* *N=316* *N (%)*	*Intentional self-harm by other specified or unspecified means (X83-X84)* *N=10090* *N (%)*	*Total N=81959*
F90-F98	29 (3.4%)	30 (3.6%)	4 (0.5%)	131 (15.6%)	841 (1.4%)
F99	8 (1.1%)	17 (2.4%)	2 (0.3%)	534 (74.7%)	715 (1.2%)
Alcohol use disorder	492 (2.4%)	516 (2.5%)	70 (0.3%)	2370 (11.7%)	20326 (34.3%)
Bipolar disorder	132 (3.1%)	134 (3.2%)	14 (0.3%)	468 (11%)	4250 (7.2%)
Schizophrenia	114 (5.2%)	248 (11.4%)	20 (0.9%)	291 (13.3%)	2185 (3.7%)
Missing	521	537	88	2779	22783

Table 5. Incidence of the first MSSA per 100 000 person-years by age group and sex

	2012			2013			2014			2015			2016			2017			2018			2019		
	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female	Both
Age in five classes																								
[8 years; 15 years [	0.31	1.63	0.95	0.41	1.19	0.79	0.44	1.68	1.05	0.41	1.24	0.82	0.33	1.47	0.89	0.40	1.15	0.77	0.43	1.57	0.99	0.27	1.50	0.87
[15 years; 25 years [	13.07	17.30	15.16	12.14	18.55	15.29	15.74	20.58	18.12	13.28	19.49	16.33	13.48	19.00	16.19	13.54	21.73	17.55	15.74	25.19	20.37	16.51	28.13	22.21
[25 years; 55 years [	22.29	22.55	22.42	22.08	21.57	21.82	24.41	24.65	24.53	22.93	21.71	22.31	22.23	21.06	21.63	23.31	21.69	22.49	24.27	22.06	23.15	24.34	21.79	23.05
[55 years;75 years [	12.42	17.51	15.08	12.87	16.65	14.85	13.85	18.03	16.04	14.12	17.66	15.97	12.81	17.03	15.02	15.11	18.17	16.72	14.54	17.24	15.96	15.10	16.85	16.02
75+ years	12.05	11.08	11.44	11.65	9.29	10.17	12.68	11.35	11.85	12.29	11.47	11.78	12.77	11.91	12.24	12.29	11.24	11.65	13.05	12.04	12.43	11.25	11.25	11.25
All ages	15.66	17.42	16.57	15.48	16.68	16.10	17.30	18.84	18.10	16.31	17.33	16.84	15.68	16.90	16.31	16.67	17.67	17.19	17.25	18.11	17.70	17.33	18.14	17.75

Figure 1 : Data flowchart :



APPENDIX

ICD 10 Codes for Mental and behavioural disorders

F01-F09: Organic, including symptomatic, mental disorders

F10-F19: Mental and behavioural disorders due to psychoactive substance use

F20-F29: Schizophrenia, schizotypal and delusional disorders

F30-F39: Mood [affective] disorders

F40-F48: Neurotic, stress-related and somatoform disorders

F50-F59: Behavioural syndromes associated with physiological disturbances and physical factors

F60-F69: Disorders of adult personality and behaviour

F70-F79: Mental retardation

F80-F89: Disorders of psychological development

F90-F98: Behavioural and emotional disorders with onset usually occurring in childhood and adolescence

F99: Unspecified mental disorder

SERMENT

- *En présence des Maîtres de cette école, de mes chers condisciples et devant l'effigie d'Hippocrate, je promets et je jure, au nom de l'Etre suprême, d'être fidèle aux lois de l'honneur et de la probité dans l'exercice de la médecine.*

- *Je donnerai mes soins gratuits à l'indigent et n'exigerai jamais un salaire au-dessus de mon travail.*

- *Admis dans l'intérieur des maisons, mes yeux ne verront pas ce qui s'y passe, ma langue taira les secrets qui me seront confiés, et mon état ne servira pas à corrompre les mœurs, ni à favoriser le crime.*

- *Respectueux et reconnaissant envers mes Maîtres, je rendrai à leurs enfants l'instruction que j'ai reçue de leurs pères.*

- *Que les hommes m'accordent leur estime si je suis fidèle à mes promesses. Que je sois couvert d'opprobre et méprisé de mes confrères si j'y manque.*

RESUME

Contexte : Les personnes faisant des tentatives de suicide médicalement graves (medically serious suicide attempt (MSSA)) partagent un certain nombre de caractéristiques avec celles qui se suicident et présentent un risque élevé de suicide ultérieur. Les études menées jusqu'à présent ont surtout porté sur des échantillons cliniques ; une étude épidémiologique au niveau national permettra d'établir des profils à risque et des parcours de soins dans cette population.

Méthodes : Nous avons exploré la base de données nationale française des sorties d'hôpital (Programme de Médicalisation des Systèmes d'Information, PMSI) pour identifier toute MSSA ayant eu lieu entre 2012 et 2019. Des informations démographiques et médicales pertinentes ont été collectées sur la première MSSA de chaque patient avec une période de *washout* de deux ans.

Résultats : Le nombre de premières MSSAs s'est élevé à 81 959 cas sur 8 ans, avec un âge moyen de 45,8 ans et 53,6% de femmes. L'incidence était plus élevée chez les femmes (18.1 contre 17.3 pour 100 000 personnes-années). La méthode de suicide la plus courante était l'auto-intoxication médicamenteuse (64,9% des cas). En comparaison, les méthodes violentes étaient associées à une mortalité et à des comorbidités plus élevées et étaient plus fréquentes chez les hommes. Les troubles mentaux les plus fréquents étaient les troubles de l'humeur (55,6%) et les troubles de l'usage de substances (46,2%). Une minorité de survivants de MSSAs ont été hospitalisés en psychiatrie (32,5%), principalement des femmes.

Conclusions : Les MSSAs sont fréquentes et faciles à identifier. Il est nécessaire de renforcer la continuité des soins psychiatriques pour cette population étant donné le risque élevé de suicide ultérieur, et les faibles taux d'hospitalisation en psychiatrie après une MSSA. Une prise en charge spécifique ciblant cette population pourrait réduire les écarts de traitement.

MOTS-CLES Tentative de suicide grave, Suicide, Comportement suicidaire, Troubles affectifs, Epidémiologie, Psychiatrie, Programme de Médicalisation des Systèmes d'Information