Medically serious suicide attempts: A demographic and clinical study

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Vall d’Hebron Hospital. Barcelona
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• Introduction
  • Why is it important to study MSSA?
  • Definition of MSSA
  • Are MSSA a heterogeneous group?

• MSSA study conducted in Spain
  • Aims
  • Results
  • Conclusion
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Suicide is the cause of 800,000 deaths yearly worldwide (WHO, 2014).

Suicide research involves heterogeneous groups of patients who have attempted or completed suicide.

Survivors of medically serious suicide attempts (MSSA) are epidemiologically very similar to individuals who complete suicide but different from those who attempt medically non-serious suicide attempts (MNSA) (Beautrais 2001; Daniel & Fleming 2005).

Persons who make a MSSA are at higher risk for later completed suicide than those who make a MNSA (Beautrais, et al., 2012; Levi-Belz et al., 2013).
The information obtained in completed suicides is from the psychological autopsy.

The information obtained in MSSA is directly from the survivor.
• High diversity of criteria to define a MSSA.

• **Basic / simple definition:**

  Patients with serious medical injuries, where the severity of the injuries is not directly related to the seriousness of the psychiatric illness.
Required hospital admission for > 24h and met one of the following treatment criteria:
   a) Treatment in specialized unit (ICU, hyperbaric unit, burn unit)
   b) Surgery under general anesthesia
   c) Medical treatment beyond gastric lavage, activated charcoal, or routine neurological observations

Required hospital admission for > 24h but didn’t meet the preceding treatment criteria:
   a) Methods with high risk of fatality (hanging or gunshot)
• **Psychometric scales I**

  **Self inflicted Injury Severity form –SIISF-** *(Potter et al., 1996).*  
  *Hawton et al., 2001; Simon, 2001.*

  **Lethality Scale** *(Beck et al., 1975).*  
  *Brown et al., 2004.*

  **Lethality of suicide attempt Scale II -LSARS-II-** *(Berman et al., 2003).*  
  *Fowler et al., 2012.*
Introduction

Definition of MSSA

• **Psychometric scales II**

  **Lethality Rating Scale –LRS-** *(Mann & Malone, 1997)*  
  Gvion et al., 2014; Horesh et al., 2012; Levi-Belz et al., 2013; 2014.

  **Risk Rescue Rating Scales –RRRS-** *(Weisman & Worden 1972)*  
  Giner et al., 2014; Sudhir Kumar et al., 2006a; 2006b.
• **Time spent in the hospital**

  MSSA: 19 days (SD=30)

  *Levi-Belz et al., 2008; 2013; 2014.*

  MSSA: 22.7 days (violent MSSA: 34.23 days)

  *Cooper-Kazaz, 2013.*
Are MSSA a heterogeneous group?

Clinical profiles of serious suicide attempters consecutively admitted to a university-based hospital: a cluster analysis study *(Rapeli & Botega, 2005)*

<table>
<thead>
<tr>
<th>1- Impulsive-ambivalent</th>
<th>2- Marked intent</th>
<th>3- Definite /aborted suicides</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=43 Females</td>
<td>N=53 Males</td>
<td>N=17 Males</td>
</tr>
<tr>
<td>Method: Medic. overdose</td>
<td>Method: poisoning (pesticides)</td>
<td>Violent methods</td>
</tr>
<tr>
<td>↓ lethality</td>
<td>&gt; lethality</td>
<td>↑↑ lethality</td>
</tr>
<tr>
<td>↓ suicide intent</td>
<td>&gt; suicide intent</td>
<td>↑↑ suicide intent</td>
</tr>
<tr>
<td>Dg:</td>
<td>Dg:</td>
<td>Dg:</td>
</tr>
<tr>
<td>Moderate depressive D</td>
<td>Adjustment D.</td>
<td>Severe depressive D. (23%)</td>
</tr>
<tr>
<td>Adjustment D</td>
<td>Moderate depressive D.</td>
<td>Moderate depressive D (18%)</td>
</tr>
<tr>
<td>51% previous SA</td>
<td>29% previous SA</td>
<td>59% NO previous SA</td>
</tr>
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</tr>
</tbody>
</table>

N=53 Males Method: poisoning (pesticides) Dg: Moderate depressive D. Moderate depressive D. (14%) 51% previous SA

N=17 Males Violent methods ↑↑ lethality ↑↑ suicide intent

Dg: Severe depressive D. (23%) Moderate depressive D (18%) 59% NO previous SA
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Study was conducted in two general hospitals in Barcelona to assess MSSA
1) To describe the clinical and socio-demographic profile of a sample of patients with MSSA and the suicidiological features of their attempts.

1) To identify sub-groups of MSSA patients according to the severity of the attempt, the suicide method, and the presence of psychiatric disorders (excluding adjustment disorders).
Sample

- Cross-sectional exploratory study

- n = 168 patients
  - H. Clínic → n = 100
  - H. U. Vall d’Hebron → n = 68

- Patients required hospital admission > 48 hours in non-psychiatric wards for medical injuries due to the suicidal attempt.
Hospital admission for longer than 48 hours

<table>
<thead>
<tr>
<th>A. Inclusion criteria:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment in specialized unit (ICU, hyperbaric unit, burn unit)</td>
</tr>
<tr>
<td>Surgery (superficial cuts were excluded)</td>
</tr>
<tr>
<td>Medical treatment beyond gastric lavage, activated charcoal, or routine neurological observations</td>
</tr>
<tr>
<td>Methods with high risk of fatality (hanging or gunshot), but did not meet the preceding treatment criteria</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A. Exclusion criteria:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital admissions &lt; 48 h</td>
</tr>
<tr>
<td>Patients under 18 years old</td>
</tr>
<tr>
<td>Patients admitted to the hospital for other reasons (not for a suicide attempt)</td>
</tr>
<tr>
<td>Patients who don’t agree to participate in the study</td>
</tr>
</tbody>
</table>
• Semi-structured interview was conducted:
  – Socio-demographic data
  – Recent stressful life events
  – Medical-Surgical history:
    • Acute medical condition
    • Chronic medical condition
  – Mental health history
  – Family mental health history

• Diagnostic and therapeutic assessment were conducted by DSM-IV-TR criteria
• Assessment of the suicide attempt:
  - Method
  - Previous suicide attempts
  - Family suicidal events
  - Beck Suicidal Intent Scale (SIS)

• Assessment of the impulsivity
  - Barratt Impulsivity Scale (BIS-11)

  – Assessment of the hopelessness
    • Beck Hopelessness Scale (BHS)
1º Objetive:

- to describe the clinical and socio-demographic profile of a sample of patients with MSSA and the suicidiological features of their attempts
• **Sociodemographic data:**
  – 52.4% women
  – Average age: 45 years old
  – Living alone: 20%
  – No formal educational qualifications: 38%
  – History of abuse:  - physical: 13.7%
    - sexual: 7.1%
  – Stressful life events the year prior to the SA: 92%  
    • Serious interpersonal difficulties (73.8%)
    • Work related (32.1%)
  – Physical illness not related to the SA injuries: 56.5%
    • Cardiovascular diseases
Clinical aspects:

- Previous psychiatric disorder: 90.5%
- Previous suicide attempts: 62.5%: hospital admission: 42.3%
- Current Psychiatric Disorder: 98.8%

<table>
<thead>
<tr>
<th>Diagnostic group</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personality disorders</td>
<td>69</td>
<td>41.9</td>
</tr>
<tr>
<td>Affective disorders</td>
<td>69</td>
<td>41.9</td>
</tr>
<tr>
<td>Substance Use disorders</td>
<td>62</td>
<td>36.9</td>
</tr>
<tr>
<td>Adjustment disorders</td>
<td>47</td>
<td>28</td>
</tr>
<tr>
<td>Psychotic disorders</td>
<td>26</td>
<td>15.5</td>
</tr>
<tr>
<td>Impulsive-control disorders</td>
<td>9</td>
<td>5.4</td>
</tr>
<tr>
<td>Eating disorders</td>
<td>4</td>
<td>2.4</td>
</tr>
</tbody>
</table>
Suicide Attempt aspects:

• **Average length of hospital stay:** 23.68 days (DT=41.14)

• **Admission wards:**
  – ICU → 59% (n=99)
  – Other medical /surgery units → 41% (n=69)

• **Suicidal method:**
  – 36.3% (violent method)
  – 37.6% (more than one method)
  – The most frequent combination: Medication overdose + drug use
  – 48% impulsive SA (item-15 SIS)
    SIS preparation factor= 2.31

• **SIS global score:** 16.35

### Results

<table>
<thead>
<tr>
<th>SUICIDAL METHOD</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication overdose</td>
<td>113</td>
<td>67.3</td>
</tr>
<tr>
<td>Jumping from height</td>
<td>39</td>
<td>23.2</td>
</tr>
<tr>
<td>Poisoning</td>
<td>14</td>
<td>8.3</td>
</tr>
<tr>
<td>Cuts</td>
<td>14</td>
<td>8.3</td>
</tr>
<tr>
<td>Burns</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Stabbing</td>
<td>4</td>
<td>2.4</td>
</tr>
<tr>
<td>Hanging</td>
<td>2</td>
<td>1.2</td>
</tr>
<tr>
<td>Drug abuse</td>
<td>52</td>
<td>31</td>
</tr>
</tbody>
</table>
2º Objective: to identify sub-groups of MSSA patients according to:

- the severity of the attempt
- the suicide method
- the presence of a psychiatric diagnosis (excluding adjustment disorders).
### 2º Objective – The severity of the attempt

#### Results

**Bivariant analysis**

<table>
<thead>
<tr>
<th>ICU (n=99)</th>
<th>No ICU (n=69)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Educational qualifications: medium and high</td>
<td></td>
</tr>
<tr>
<td>• Previous psychiatric disorders</td>
<td></td>
</tr>
<tr>
<td>• Previous suicide attempts</td>
<td></td>
</tr>
<tr>
<td>• Poisoning</td>
<td></td>
</tr>
<tr>
<td>• Cuts</td>
<td></td>
</tr>
</tbody>
</table>

Bonferroni correction:
- • Previous psychiatric disorders
- • Poisoning
- • Cuts
2º Objective – The severity of the attempt

• Multivariate analysis: logistic regression

<table>
<thead>
<tr>
<th>Variables</th>
<th>Exp(B)</th>
<th>Wald</th>
<th>Sig.</th>
<th>Exp(B) (IC 95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poisoning</td>
<td>8.403</td>
<td>6.965</td>
<td>0.008</td>
<td>(1.73-40.83)</td>
</tr>
<tr>
<td>Cuts</td>
<td>5.893</td>
<td>6.555</td>
<td>0.010</td>
<td>(1.52-22.91)</td>
</tr>
<tr>
<td>Previous psychiatric disorder</td>
<td>0.274</td>
<td>4.097</td>
<td>0.043</td>
<td>(0.08-0.96)</td>
</tr>
<tr>
<td>Constant</td>
<td>1.665</td>
<td>0.671</td>
<td>0.413</td>
<td></td>
</tr>
</tbody>
</table>

Patients admitted to ICU were:
- Less likely to choose poisoning and cutting as suicidal method
- More likely to have had prior mental health problems
Compared to non-ICU patients
Bivariant analysis

**Violent SA (n=61)**
- Length of hospital stay

**Non-violent SA (n=109)**
- Age (older)
- Chronic physical illness
- Previous SA
- SIS Preparation score

Bonferroni correction
- Length of hospital stay
- Previous SA
- SIS Preparation score
2º Objective – *Suicide method* (violent / non-violent methods)

**Multivariate analysis : logistic regression**

<table>
<thead>
<tr>
<th>Variables</th>
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<th>Sig.</th>
<th>Exp(B) (IC 95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enfermedad médica crónica</td>
<td>2,055</td>
<td>4,041</td>
<td>0,044</td>
<td>(1,02-4,15)</td>
</tr>
<tr>
<td>IS previos</td>
<td>3,794</td>
<td>13,287</td>
<td>&lt;0,0005</td>
<td>(1,85-7,77)</td>
</tr>
<tr>
<td>Factor preparación de la SIS</td>
<td>1,255</td>
<td>8,197</td>
<td>0,004</td>
<td>(1,07-1,46)</td>
</tr>
<tr>
<td>Constante</td>
<td>0,326</td>
<td>9,002</td>
<td>0,003</td>
<td></td>
</tr>
</tbody>
</table>

Subjects who chose non violent methods were more likely:
- to suffer from medical conditions
- to have made previous SA
- to have planned SA
2º Objective - the presence of psychiatric disorder (excluding adjustment D.)

- Bivariant analysis

<table>
<thead>
<tr>
<th>Without psychopathology / Only Adjustment Disorder (n=15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Acute physical illness</td>
</tr>
<tr>
<td>- Discharged home after hospitalization</td>
</tr>
<tr>
<td>- Cuts</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>With Psychopathology (n=153)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Previous SA</td>
</tr>
<tr>
<td>- Drugs use in the SA</td>
</tr>
</tbody>
</table>

Bonferroni correction

- Acute physical illness
- Previous SA
2º Objective - the presence of psychiatric disorder (excluding adjustment d.)

Logistic regression

<table>
<thead>
<tr>
<th>Variables</th>
<th>Exp(B)</th>
<th>Wald</th>
<th>Sig.</th>
<th>Exp(B) (IC 95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute physical illness</td>
<td>5.635</td>
<td>6.827</td>
<td>0.009</td>
<td>(1.54-20.61)</td>
</tr>
<tr>
<td>Previous SA</td>
<td>0.187</td>
<td>7.244</td>
<td>0.007</td>
<td>(0.05-0.63)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.155</td>
<td>23.713</td>
<td>&lt;0.005</td>
<td></td>
</tr>
</tbody>
</table>

Acute physical illness

Without Psychiatric D. / Only Adjustment D.

Previous SA

With Psychiatric D (excluding Adjustment D.)

Individuals without a Psychiatric disorder were more likely to suffer from an acute medical condition
### Sample (n=168)

- Mean age: **45 years-old**
- 20% living alone
- Sexual abuse: 7%
- No formal educ. qualifications: 38%
- **Stressful life events**: 92%
  - Interpersonal difficulties
- **Physical illness in youth population**: 33%
- Affective Disorders / Personality Disorders
- Previous SA: 62,5%

### Other studies

- Mean age: 30-40 years-old
- 23-31% living alone
- Sexual abuse: 26-57%
- **No formal educ. qualifications**: 54%
- Stressful life events: 74%
  - Work related
- Physical illness in youth population: 16%
- Affective Disorders
- Previous SA: (lower %)
No differences were found between our sample and other studies with regards to: gender, prevalence of mental disorders, especially affective disorders; and, main suicidal method (medic. overdose).

<table>
<thead>
<tr>
<th>Sample (n=168)</th>
<th>Other studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>• &gt; Medical severity</td>
<td>• &lt; Medical severity</td>
</tr>
<tr>
<td>• Method: 1- Medication overdose</td>
<td>• Method: 1- Medication overdose</td>
</tr>
<tr>
<td>2- Jumping</td>
<td>2- Jumping/ others (↓%)</td>
</tr>
<tr>
<td>• Impulsive SA: 48%</td>
<td>• Impulsive SA: 24 - 60%</td>
</tr>
<tr>
<td>Planning factor =5,94</td>
<td>Planning factor= 6,6- 7,3</td>
</tr>
</tbody>
</table>
Even though individuals who choose poisoning as a suicidal method are less likely to be admitted to ICU, it should be noted that they actually experience severe, lasting damage that greatly affects their quality of life. Therefore, these attempts should not be taken lightly, although ICU admission is not required.

The fact that low scores in SIS planning factor were linked to individuals who chose violent methods suggests that these individuals could be more impulsive.
• Individuals without any psychiatric disorder can suffer from an adjustment process when they experience a stressful life event and commit a serious SA. This stressful life event could be an acute medical condition.
Limitations of the study

• Cross-sectional study

• The possibly incomplete patient information: their physical conditions (serious injuries related to the SA) make it difficult to carry out the semi-structured assessment and the different scales.
Clinical implications

• There is great clinical importance in being able to assess patients which are so near to suicide directly, instead of through a psychological autopsy.

• In the extensive amount of literature about suicidal behavior, there are not many studies that focus on MSSA, and those that do assume that they are a homogenous group. Few studies have considered studying subgroups within MSSA.
Thank you for your attention