Epidemiology of self-harm

Paul Plener
NSSI: history

- Herodot: 5th century BC „history“, 6th.book
- Bergmann: 1846
- Channing: The case of Helen Miller: 1876
- "Needle-girls," etc.—A peculiar type of self-mutilation is the habit sometimes seen in hysteric persons of piercing their flesh with numerous needles or pins. Herbolt of Copenhagen tells of a young Jewess from whose body, in the course of eighteen months, were extracted 217 needles. [...] Andrews removed 300 needles from the body of an insane female. [...] There is another report of a woman who swallowed great numbers of pins. On her death one pound and nine ounces of pins were found in her stomach and duodenum. There are individuals known as "human pin-cushions," who publicly introduce pins and needles into their bodies for gain's sake. Anomalies and Curiosities of Medicine (Gould & Pyle, 1896)
NSSI: history

- Menninger: „Man against himself“: 1938
  - Neurotic self-mutilation
  - Religious self-mutilation
  - Self-mutilation in psychotic patients
  - Self-mutilation in organic diseases
  - Self-mutilation in customary and conventional forms

- Graff & Mallin: „Wrist cutter syndrome“: 1967

- Pattison & Kahan: „Deliberate Self Harm Syndrome“: 1983

- Favazza: Major, moderate, stereotype: 1992

- Muehlenkamp: Self-Injury syndrome: 2005
Non-Suicidal Self-Injury: Definition

• NSSI is most commonly described as

• deliberate, direct destruction or alteration of body tissue

• without conscious suicidal intent.

• NSSI is deemed socially unacceptable,

• direct, repetitive and leads to minor or moderate harm.
NSSI

Self-Injurious Thoughts and Behaviors

Suicidal (intent to die)
- Suicide Ideation
- Suicide Plan
- Suicide Attempt

Non-Suicidal (no intent to die)
- Suicide Threat/Gesture
- Self-Injury Thoughts
- Self-Injury
  - Mild
  - Moderate
  - Severe

Nock, 2010
Problem of nonsuicidal overdoses

- Intentional overdoses: the person states that they had no intention of dying from the overdose
- Online study (recruitment from web forums, n=183, ≥18y; mAge: 25.16; NSSOD: 45.3%)
  - NSSI in 96.51%, 79.07% suicide attempt
  - OTC (74.4%) & prescription drugs (76.7%)
- Nonsuicidal overdoses: similar age of onset (16.76) as suicide attempts (15.73)
- Similar to NSSI: desire to die and suicidal thoughts
- Unique: reported likelihood of dying

Fox et al., 2016
(Deliberate) Self-harm

“The term ‘self-harm’ is used to describe all intentional acts of self-poisoning (e.g., overdoses) or self-injury (e.g., self-cutting), irrespective of degree of suicidal intent or other types of motivation. Thus it includes acts intended to result in death (‘attempted suicide’), those without suicidal intent (e.g., to communicate distress, to temporarily reduce unpleasant feelings), and those with mixed motivation”

Hawton et al., 2015
Nonsuicidal self-harm

Deliberately harming oneself in any way without suicidal intention
DSM 5: Nonsuicidal Self-Injury

- In the last year, the individual has on five or more days, engaged in intentional self-inflicted damage to the surface of his or her body [...] for purposes not socially sanctioned […], with the expectation that the injury will lead to only minor or moderate physical harm.

- The absence of suicidal intent is either reported by the patient or can be inferred […] The behavior is not of a common and trivial nature […].

APA, 2013
DSM 5: Nonsuicidal Self-Injury


A. In the last year, the individual has on 5 or more days engaged in NSSI that was severe enough to cause minor or moderate damage, but without suicidal intent
B. The individual engages in NSSI with one or more of the following expectations:
   1) to obtain relief from a negative feeling or cognitive state
   2) to resolve an interpersonal difficulty
   3) to induce a positive feeling state.
C. NSSI is associated with at least one of the following:
   1) interpersonal difficulties or negative feelings or thoughts immediately precede engagement in NSSI
   2) a period of preoccupation with NSSI precedes the NSSI
   3) NSSI urges or thoughts occur frequently even if not acted upon.
D. The behavior is not socially sanctioned or restricted to picking a scab or nail biting
E. NSSI causes significant distress or impairment in important areas of functioning
F. NSSI does not occur exclusively in a state of psychosis, delirium, or intoxication and cannot be accounted for by another medical or psychological disorder

APA, 2013; summary by Selby et al., 2015
Pro-/Con-debate

- Enhancing communication: everybody talks about the same thing (science, clinicians, patients)
- No automatic label as BPD
- Treatable condition
- More research: enhancing therapy
- Relevant for prognosis (suicidality)

- Prefix „non-suicidal“ is misleading
- Non-suicidal self-poisoning is not included
- Methods change over time
- Risk of stigmatizing

Wilkinson, 2012, Plener et al., 2012; Kapur et al., 2013
NON-suicidal???

- Meta-analysis SITB in all age groups (Ribeiro et al., 2016):
  - Later suicide attempts: OR: 2.1
  - Later suicide: OR: 1.5
  - NSSI specifically: later suicide attempt: OR: 4.27

- Meta-analysis SITB: 12-26 years (Castellvi et al., 2017):
  - Suicide: OR: 22.53
  - Suicide attempt: OR: 3.48

- Youth with SITB/NSSI: higher risk for:
  - Later suicidal ideation: OR: 2.95 (Coppersmith et al., 2017)
  - Suicide attempt: HR: 2.00 (Chesin et al., 2017)

- BUT: stopping NSSI in youth: return to „normal“ baseline (n=506) (Koenig et al., 2017)
Timing: NSSI & suicidality

N=111, age: 12-19y; f: 65.8%

N=106 outpatients and 174 inpatients

Behaviors:
- Suicide ideation: 88.7%/ 96.6%
- NSSI: 79.2%/ 83.9%
- Suicide attempt: 39.6%/ 39.1%

Temporal pattern:
- Thoughts of NSSI (13.4/12.7)
- suicidal ideation (13.4/12.7)
- NSSI (14/12.7)
- suicide plans (14.3/13.8)
- suicide attempts (15.2/14.3)

Mage at start

- NSSI: M=12.5 years (SD=2.3)
- Suicide attempt: 13.9 (SD=2.1)

Suicidal ideation starts 4-6 months before NSSI

NSSI starts 3-6 months before a suicide attempt

Groschwitz et al., 2015; Glenn et al., 2017
Self-harm and suicide

  • 2704 deaths: 12.9% suicide, 6.1% probable suicide (19%)
  • Suicide: 1.6% : 49 times higher risk than in general population
    (conservative estimate)

• USA: Medicaid sample:
  • 1-year Follow-up of 61,296 patients with „self-harm“
  • Suicide rate: 439.1/100.000 py: 37.2 times higher than in controls
    without „self-harm“
  • Suicide rate increased in 30d following „self-harm“
Meta-Analysis: NSSI

• Systematic review (n=52 studies from adolescents: 2005-2011)
  • Lifetime prevalence NSSI: 18%
  • Lifetime prevalence DSH: 16%
  • No increase in prevalence

• Meta-Analysis up to 2012 (n=128 prevalence rates)
  • Lifetime prevalence:
    • adolescents: 17.2% (8.0-26.3)
    • Young adults: 13.4% (4.5-22.3)
    • adults: 5.5% (1.7-16.3)
  
  • No increase in prevalence (after adjustment for methodological factors)

Muehlenkamp et al., 2012; Swannell et al., 2014
Self-harm: Meta-Analysis

- Self-harm prevalence from community based studies 1990-2015 in 12-18y olds (n=172 datasets, 261 publications, 597,548 participants from 41 countries)
- Overall self-harm lifetime prevalence: 16.9% (4.1%-39.3%)
  - DSH: 11.4%; NSSI: 22.9%
- Past year self-harm prevalence: 13.0%
  - DSH: 9.0%; NSSI: 18.6%
- ♀>♂: RR1.72
- Most common type: cutting
- 1-2 episodes: 47%
- Most frequent reason: relief from thoughts or feelings
- Suicidal ideation: RR: 4.97, suicide attempt: RR: 9.14

Gillies et al., 2018
Self-harm: Meta-Analysis

Mean starting age: 12.81
Self-harm: Meta-Analysis

Increasing rates 1990-2015
Europe: SEYLE Study

- Comparison of „direct self-injurious behavior“
- 11 European countries, n=12,068 (mean age: ~15)
- Lifetime prevalence: 27,6%
- 7,8% repetitive D-SIB

<table>
<thead>
<tr>
<th>country</th>
<th>Lifetime prevalence</th>
<th>occasional</th>
<th>repetitive ≥ 5x</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>38,5%</td>
<td>25,6%</td>
<td>13%</td>
</tr>
<tr>
<td>Germany</td>
<td>35,1%</td>
<td>22,9%</td>
<td>12,3%</td>
</tr>
<tr>
<td>Estonia</td>
<td>32,9%</td>
<td>23,7%</td>
<td>9,1%</td>
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<tr>
<td>Austria (7)</td>
<td>26,9%</td>
<td>20,0%</td>
<td>6,9%</td>
</tr>
</tbody>
</table>

Prevalence of NSSI in Europe

Brunner, Kaess et al., 2014
USA & Germany: NSSI

USA:
- Representative sample of adolescents
- 2015 CDC Youth Risk Behavior Surveillance System
  - 11 US States (n=64,671, 14-18y)
- 12m prevalence rates:
  - ♂: 6.4%-14.8%
  - ♀: 17.7%-30.8%
- Declining 12m prevalence with age

Germany:
- Representative sample (n=10,638, mean age: 14.91)
- 12m prevalence of NSSI: 17.8%
- Higher rates of adolescents with migration background

Monto et al., 2018; Donath et al., 2019
UK general population: nonsuicidal self-harm

- **UK:**
  - Adult Psychiatric Morbidity Surveys: 2000 (n=7243), 2007 (n=6444), 2014 (n=6477): 16-74 y: household interviews
  - Most notable increase: f: 16-24y (8.5% - 19.7%)

- **Scotland:**
  - Interview study: n=3,508 (18-34y)
  - Lifetime NSSH: 16.2%, age of onset of NSSH: 16.5y

McManus et al., 2019; McManus & Gunnell, 2019; O´Connor et al., 2019
UK: self-harm

- Multicentre Study of Self-harm in England
- data from hospital records or specialist assessment (2000-2012): three cities
- ♀: declining rates: IRR: 0.98
- ♂: first decline (IRR: 0.98), increase since 2008: IRR: 1.05
- Over 75%: self-poisoning
- Increase in self-injury in latter years
- Self-poisoning alone: 74.6%
- Self-injury alone: 21.0%
- Combination: 4.4%

<table>
<thead>
<tr>
<th>n (%)</th>
<th>Males</th>
<th>Females</th>
<th>Total*</th>
</tr>
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<tbody>
<tr>
<td>All episodes</td>
<td>34,932 (41.4)</td>
<td>49,421 (58.6)</td>
<td>84,353</td>
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<tr>
<td>Individuals</td>
<td>20,285 (43.1)</td>
<td>26,738 (56.8)</td>
<td>47,023</td>
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</table>

<table>
<thead>
<tr>
<th>Individuals by age group (years)</th>
<th>All episodes</th>
<th>Females</th>
<th>Total*</th>
</tr>
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<tbody>
<tr>
<td>15–24</td>
<td>6,482 (32.0)</td>
<td>11,585 (43.3)</td>
<td>18,067 (38.4)</td>
</tr>
<tr>
<td>25–34</td>
<td>5,373 (26.5)</td>
<td>5,790 (21.7)</td>
<td>11,163 (23.7)</td>
</tr>
<tr>
<td>35–54</td>
<td>6,906 (34.0)</td>
<td>7,678 (28.7)</td>
<td>14,584 (31.0)</td>
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<tr>
<td>55+</td>
<td>1,524 (7.5)</td>
<td>1,685 (6.3)</td>
<td>3,209 (6.8)</td>
</tr>
</tbody>
</table>

Geulayov et al., 2016
UK: self-harm: midlife

- Multicentre Study of Self-harm in England
- Midlife: 40-59 years: data from hospital records or specialist assessment (2000-2013)
- 26% of self-harm presentations
- ♂: Incidence rates increased (after 2008): IRR: 1.07
- ♀: relatively stable: IRR: 1.00
- 12 month repetition: 25% (m, f)
- FU suicide: m: 2.8%, f: 1.2%

Clements et al., 2019
Methods of Self-harm

• Ireland: self-harm presentations to hospital ED (2010-2016): National Self-Harm Registry Ireland
  • 65,690 self-harm presentations (n=46,661 individuals)

• Most common methods:
  • Intentional drug overdose: 68.3%
  • Self-cutting: 23.8%
  • Attempted hanging: 6.6%

• Highest risk of repetition: <15y

• Increased repetition rate:
  • Minor self-cutting (adj. HR: 1.38)
  • Severe self-cutting
  • Multiple drugs overdose
  • Self-harm by blunt object

Cully et al., 2019
Epidemiology: NSSI DSM-5 criteria

• Psychiatric patients
  • Adult psychiatric patients (n= 571; US): 11%
  • Adolescent psychiatric patients (n=198, US; n=125, Germany): 50%
  • Adolescent psychiatric patients (n=110, Switzerland): 37%

• Community
  • Swedish adolescents (n=3060): 6.7%
  • Systematic review: adolescent community samples: 1.5-5.6%
  • Adult representative sample (n=2509; Germany): 0.3% (Criterion A)

Selby et al., 2012; Glenn & Klonsky, 2013; Kaess et al., 2013; In-Albon et al., 2013; Zetterqvist et al., 2013; Zetterqvist 2015; Plener et al., 2016
Course of NSSI
Age of onset

- N=957 (Mage: 20.7) with ≥1 lifetime NSSI event
- Average age of onset: 13.9y (range: 5-27y)
- Average #of NSSI acts: 172 (range: 1-20.000), 10/ last year

- Earlier age (12years):
  - NSSI frequency ↑ (most informative split: 11y)
  - NSSI methods ↑ (most informative split: 16y)
  - NSSI-related hospital visits ↑ (most informative split: 10y)
Self-harm: course

- Australian cohort study (n=1802)
- 7 FU waves (15.9y-29y)
- Any self-harm: 5.1%-0.5%

Moran et al., 2012
NSSI: Course

Plener et al., 2015
**NSSI: Course**

- N=513, 15-17a, 2 year FU
- SIB, substance misuse, suicidal behavior
- High risk: 80-90% overlap: 77.4% all 3 high risk clusters

Nakar et al., 2016
Cutting once: does it matter?

- N=945, age 14: FU to age 17
- Sporadic NSSI: once
- Recurrent NSSI: ≥2 times/year

- Recurrent NSSI: predictor for:
  - total disorders (OR: 2.93)
  - depression (OR: 2.79)
  - eating disorders (OR: 9.96)

- Sporadic NSSI: predictor for anxiety disorders (OR: 2.93)

Wilkinson et al., 2018
Integrated theoretical model of NSSI

Distal Risk Factors
- Genetic predisposition for high emotional/cognitive reactivity
- Childhood abuse/maltreatment
- Familial hostility/criticism

Intrapersonal Vulnerability Factors
- High aversive emotions
- High aversive cognitions
- Poor distress tolerance

Interpersonal Vulnerability Factors
- Poor communication skills
- Poor social problem-solving

Stress Response
- Stressful event triggers over- or under-arousal
- Stressful event presents unmanageable social demands

NSSI-Specific Vulnerability Factors
- Social learning hypothesis
- Self-punishment hypothesis
- Social signaling hypothesis
- Pragmatic hypothesis
- Pain analgesia/opiate hypothesis
- Implicit identification hypothesis

Regulation of affective experience

Regulation of social situation

NSSI

Nock, 2010
Four function model

„automatic“ intrapersonal

+ automatic positive reinforcement
- automatic negative reinforcement

„social“ interpersonal

+ social positive reinforcement
- Social negative reinforcement

Nock & Prinstein 2004, 2005
Meta-analyses of functions

Functions of NSSI

Intra-personal
- Emotional regulation (71%)
- Self-punishment (51%)

Inter-personal
- Communicate distress (42%)
- Interpersonal influence (28%)
- Punish others (18%)

Escape negative state (70%)
Induce positive state (50%)

Meta-analysis of functions: N=46 studies
Benefits and barriers model

**Benefits**
- Affect↑
- Gratifies self-punishment desires
- Provides peer support affiliation
- Communicates distress or strength

**Barriers**
- Lack of exposure or awareness
- Desire to avoid physical pain
- Aversion to NSSI stimuli
- Social norms
- Positive view of the self

- Affect
- Gratifies self-punishment desires
- Provides peer support affiliation
- Communicates distress or strength

Hooley & Franklin, 2018
Benefits and barriers model

Distal Risk Factors for NSSI
- Abuse, Maltreatment, & Victimization
- Peer Group NSSI

Proximal Risk Factors for Initial NSSI Episode
- Negative Self-Assoc.
- Comm. Motivation
- Affiliation Motivation

Specific and Universal Benefits of NSSI
- Self-Punish. Benefit
- Comm. Benefit
- Affiliation Benefit

“Affective Engine” of Repeated NSSI

Lowered Barriers to NSSI

Treatment target

Affective Motivation

Hooley & Franklin, 2018
Discussion

• Tremendous increase in our knowledge about NSSI in the past 10 years: what it is and what it isn’t

• Unresolved issues in terminology hinder comparison (treatment research!)

• Non-suicidal self-poisoning not implemented

• What we could gain:
  • improved communication by joint understanding
  • promotion of research
  • better assessment and treatment (including early identification of those at risk for BPD)
Welcome to Vienna

Conference of the

ISSS

INTERNATIONAL SOCIETY FOR THE STUDY OF SELF-INJURY

26th-27th of June 2020

Vienna

www.itriples.org