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Non-suicidal self-injury (NSSI) in adult psychiatric outpatients – A nationwide study

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A B S T R A C T

Background: Non-suicidal self-injury (NSSI) is a highly prevalent behavioural problem among people with mental illness, yet many fundamental aspects of NSSI remain unknown. We studied the prevalence of NSSI, and its relationship with suicide ideation (SI) and suicide attempts (SA) among adult psychiatric outpatients, with a special focus on patients with personality disorders compared with patients with other disorders.

Method: During a 14-day period, data were collected on all available patients in all outpatient psychiatric clinics in Norway. This national clinical unselected cross-sectional dataset from 23,124 outpatients was used to generate proportional Venn diagrams of the prevalence of NSSI, SI and SA and their co-occurrence over the last four weeks. Differences in the risk for these behaviours across diagnoses were tested, both with and without adjustments for demographic and socio-demographic characteristics.

Results: Over the previous four-week period, 8.1% of the patients had experienced at least one episode of NSSI, 17.3% had SI and 0.6% had made at least one SA. Among patients with NSSI, 27.8% had co-occurring SI, and among patients with SI, 13% had co-occurring NSSI. The prevalence of SA was more than seven times higher among patients with NSSI behaviour than among patients without NSSI behaviour. Patients with a diagnosis of personality disorder had a significantly higher prevalence of SI, NSSI, and NSSI with co-occurring SI, than all other diagnostic groups; however, they were not systematically different from patients with other diagnoses in their prevalence of NSSI without co-occurring SI. These findings remained statistically significant even when controlling for socio-demographic variables.

Conclusions: The prevalence of recent NSSI is high in patients receiving outpatient psychiatric treatment in Norway. NSSI is significantly more prevalent in patients with personality disorders than in patients with other diagnoses, mainly due to the significantly higher prevalence of NSSI with co-occurring SI in patients with personality disorders. The co-occurrence of NSSI and SI is also prevalent in all diagnostic groups, but both NSSI and SI appear alone more often than together. The strong association between NSSI and SA calls for a more proactive focus on NSSI behaviour in mental health clinical settings as an important suicide preventive measure.

1. Introduction

Deliberate self-harm, or often simply referred to as self-harm, is commonly defined as self-poisoning or self-injury irrespective of the intent and includes suicide attempt (SA), non-suicidal self-injury (NSSI) and self-harm with unclear intent (Hawton et al., 2002).

A history of NSSI at least once during the lifetime was reported by 3.1% of all participants in a German population study, with higher lifetime prevalence rates in younger age groups (Paul L Plener et al., 2016). American adult population studies found the lifetime prevalence of NSSI to be 4–6% (E. Klonsky, 2011; E. D. Klonsky, Oltmanns and Turkheimer, 2003). Based on the 2007 Adult Psychiatric Morbidity Survey, the prevalence of NSSI in England was found to be 4.7% (Koyanagi et al., 2015).

NSSI is highly prevalent in people with borderline personality disorder (Mehlum, 2009), which is not surprising, because "recurrent suicidal behaviour, gestures, or threats, or self-mutilating behaviour" is one of the diagnostic criteria of the disorder. Patients diagnosed with eating disorders form another group in which NSSI is often studied. A meta-analyses of the association between eating disorders and NSSI found that the weighted average percentage of patients with a lifetime history of NSSI was 27.3% for eating disorders, and higher for those with bulimia nervosa (32.7%) than for those with anorexia nervosa (21.8%) (Cucchi et al., 2016). The prevalence of NSSI in clinical samples of adult patients with other psychiatric disorders is, however, less clear.

Individuals who have engaged in NSSI have been shown to be at increased risk of suicidal behaviour (Hamza et al., 2012) and suicide risk among self-harm patients is estimated to be hundreds of times higher

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than in the general population (Owens et al., 2002). Self-harm behaviour can occur at any age (Hawton et al., 2014; Preyde et al., 2012), yet there are very few studies on NSSI in psychiatric adult populations (Claes et al., 2010). We did not find any studies exploring the co-occurrence of NSSI and suicide ideation across all diagnostic categories in large clinical samples.

In this study, based on a large national clinical unselected cross-sectional dataset from 23,124 adult psychiatric outpatients, we addressed the following question: What is the prevalence rate of SI, NSSI and SA, and of NSSI with or without co-occurring SI, across diagnostic groups, adjusting for socio-demographic variables?

2. Method

2.1. Setting

In the Norway, as part of the welfare state concept, public authorities are responsible for providing and funding health services universally accessible to all citizens. The responsibility for specialist care lies with the state (administered by four Regional Health Authorities) and the municipalities are responsible for primary health care (Ringard et al., 2013). The 77 district psychiatric centres around the country are responsible for providing specialized mental health services in the form of outpatient, ambulatory, or inpatient treatment. Private healthcare does not play a major role in Norway; however, some private insurance companies offer complementary health insurance to those seeking to avoid hospital waiting lists or receive certain treatments not covered by the state such as some forms of cosmetic surgery. All outpatient psychiatric clinics in Norway are public.

2.2. Design

During a 14-day period, data were collected on all available patients in all outpatient psychiatric clinics in Norway. The patients' clinicians were asked to complete a four-page questionnaire for each patient.

2.3. Data collection

We targeted all patients who had received at least one treatment contact in a psychiatric outpatient clinic during the 14 days from 15 to 28th April 2013 for inclusion in the study. Prior to the data collection, managers and clinicians received information describing the project and the data collection procedures. This data collection has been completed every fifth year since 1979 in all psychiatric services in Norway by the independent research institute Sintef, on behalf of the Norwegian Directorate of Health, and covers a wide range of topics important to health authorities. The data collection embraces all Norwegian outpatient psychiatric clinics. All clinics received printed forms and each patient's clinician was asked to complete the forms, if possible, with participation from their patient. Direct personal information (i.e., names, personal identification numbers, home addresses) was not collected. The completed forms were returned by registered mail.

2.4. Sample

A total of 107 out of 110 eligible clinics participated in the data collection. Two of the three non-participating clinics were small units, and all three clinics gave shortage of time as their reason for not participating. Completed forms were returned for 23,167 patients. The overall coverage rate of 59.5% was calculated from the total number of eligible outpatients who had treatment contacts at all clinics during the 14 days (N = 38,904), according to the National Patient Register. Of the 23,167 patients included, 13,106 (56.6%) participated to some extent in the completion of their form, whereas in the remaining cases clinicians completed the forms without such participation. The sample analysed in this study comprised 23,124 patients, with the remaining 43 cases excluded because the patients were younger than 18 years old.

2.5. Variables

The form covered a wide range of topics including main and secondary psychiatric diagnoses (ICD-10) and socio-demographic variables (including gender, age, marital status, main source of income, education, country of birth and social network). Clinicians were asked to report their patients' suicidal behaviours over the last four weeks with the response categories 'no suicide risk behaviours', 'suicide thoughts', 'suicide threats' and 'suicide attempts'. We recoded the response alternatives 'suicide thoughts' and 'suicide threats' into 'suicide ideation' (SI).

Clinicians were also asked to report on their patients' possible non-suicidal behaviours over the last four weeks with the response categories 'NSSI behaviour', 'NSSI thoughts', 'NSSI threats' and 'NSSI attempts'. We recoded these responses into 'No NSSI' and 'NSSI' (NSSI behaviour and NSSI attempts). NSSI thoughts and threats were left out of the analyses because the study focused on NSSI behaviour rather than thoughts and threats.

We used the following diagnostic groups based on ICD-10: Bipolar disorder (F31), Mood disorders (F32–F34, and F39), Anxiety disorders (F40–F42), Schizophrenia (F20) Schizoaffective disorder (F25), Other psychotic disorders (F23, F29), Reaction to severe stress and adjustment disorders (F43), Hyperkinetic disorder (F90), Eating disorders (F50), Substance use disorders (F10–F15, and F19), Personality disorders (F60, F61), Other psychiatric disorders (all other valid F-diagnose codes), Other or unspecified (Z-diagnoses, other diagnoses, missing or invalid diagnose codes). Only main diagnoses were used.

2.6. Ethics

The study was approved by the Regional Committee for Medical and Health Research Ethics (2012/848/REK midt). Written consent was not obtained because directly identifying information was not collected and the sample size is large enough so that the potential combination of identifiers could describe several individuals and thus cannot be linked to only one person. We did not collect information of date and time of the consultation and date of birth, only the fourteen-day period and year of birth are known.

2.7. Data analysis

We aimed to identify the occurrence and co-occurrence of NSSI, SI and SA, and to explore the variation in the occurrence and co-occurrence of these phenomena across diagnostic groups with and without adjustment for socio-economic variables.

We used proportional Venn diagrams to illustrate the co-occurrence of NSSI, SI and SA. Proportional Venn diagrams make each of the zones (the circles, the outside rectangle and the set intersections) proportional to the size of the sub-sample assigned to the zone. The rectangle drawn outside all circles proportionally represents the sample size.

As the dependent variables in the regression analyses were binary variables, we estimated Logit models (Greene, 2003). The STATA software package was used for all analyses (Stata/SE 14.2 for Windows (32-bit); StataCorp, College Station, TX). The code for the proportional Venn diagrams was written by Gong and Osterman at the Center for Health Policy and Inequity Research at Duke University, Durham, NC (Gong and Ostermann, 2011).

3. Results

3.1. Sample characteristics

As shown in Table 1, mood disorders were the most common diagnostic group in the sample (23%), followed by anxiety disorders (12%),

Table 1
Descriptive statistics of SI (suicide ideation), NSSI (Non-suicidal self-injury) and SA (suicide attempts), (N = 23,124).

	SI (%)	NSSI (%)	SA (%)	NSSI with co-occurring SI (%)	NSSI without co-occurring SI (%)	Number of patients	Percent of all patients
Bipolar disorder	17.59	7.54	0.38	1.19	6.34	1592	6.88
Mood disorder	22.83	7.45	0.56	2.20	5.25	5221	22.58
Anxiety disorder	10.33	6.29	0.26	0.92	5.37	2719	11.76
Schizophrenia	8.26	7.16	0.31	0.80	6.36	1635	7.07
Schizoaffective disorder	17.70	7.58	1.40	2.25	5.34	356	1.54
Other psychotic disorder	12.28	9.36	2.34	0.58	8.77	171	0.74
Reaction to severe stress and adjustment disorder	18.51	8.44	0.77	2.10	6.34	2712	11.73
Hyperkinetic disorder	9.26	7.45	0.32	0.96	6.49	940	4.07
Eating disorder	13.83	10.90	0.13	3.19	7.71	752	3.25
Substance use disorder	18.86	6.84	2.00	2.84	4.01	599	2.59
Personality disorder	27.64	14.36	1.15	6.85	7.52	1650	7.14
Other psychiatric disorder	15.46	8.78	0.79	2.94	5.83	1766	7.64
Other or unspecified	16.37	7.01	0.63	2.19	4.82	3011	13.02
Women	17.02	9.04	0.63	2.84	6.19	14,416	63.10
Men	17.95	6.42	0.64	1.22	5.20	8431	36.90
18–23 years	23.21	11.63	1.12	5.51	6.12	3576	16.04
24–29 years	18.55	9.50	0.67	3.08	6.41	4022	18.04
30–39 years	15.51	8.04	0.60	1.84	6.20	5649	25.34
40–49 years	16.70	6.35	0.38	1.07	5.28	4694	21.06
50–59 years	16.70	6.33	0.38	0.92	5.42	2622	11.76
60–69 years	13.58	6.32	0.41	0.31	6.01	965	4.33
70+ years	9.19	2.89	0.79	0.13	2.76	762	3.42
Married/cohabitant/partner	14.20	6.75	0.38	1.22	5.53	9021	39.60
Separated/divorced/widow/widower	19.16	5.65	0.53	1.12	4.54	3043	13.36
Single/never married	19.56	9.93	0.89	3.45	6.48	10,717	47.04
Income from labour	15.22	7.17	0.47	1.30	5.87	6163	27.65
Health-related benefits	17.89	8.39	0.66	2.37	6.02	12,116	54.36
Other economic support	18.91	8.56	0.70	3.34	5.21	4008	17.98
Born in Norway	16.8	8.2	0.6	2.3	5.9	20,342	87.97
Born outside Norway	20.9	7.0	0.7	2.0	5.0	2782	12.03
Network: Family							
Very good	11.77	7.37	0.35	1.11	6.25	6924	33.05
Good	17.78	7.79	0.64	2.10	5.69	10,010	47.78
Poor	25.70	9.60	1.09	4.17	5.43	3020	14.42
Very poor	30.32	12.85	1.20	6.33	6.53	996	4.75
Network: Friends							
Very good	11.99	7.56	0.25	1.42	6.15	5156	25.73
Good	17.62	8.07	0.62	2.38	5.70	10,564	52.72
Poor	23.50	8.35	0.99	3.03	5.32	3234	16.14
Very poor	25.90	10.14	0.83	3.69	6.45	1085	5.41
All patients	17.30	8.07	0.63	2.24	5.82	23,124	100

reaction to severe stress and adjustment disorder (12%), bipolar disorder (7%) and personality disorder (7%). Female patients constituted 63% of the sample and the age spread followed a right-skewed normal distribution. Almost half of the patients in the sample were single/never married (47%) and 13% had previously been married. The main income source for 54% of the patients was a health-related benefit, and 12% of the sample were born outside Norway. The family network was assessed as good or very good for 81% of the patients, while the network of friends was assessed as good for 79% of the sample.

3.2. Prevalence of NSSI, SI and SA

The prevalence of NSSI, SI and SA and the co-occurrence of these phenomena are shown in Fig. 1. A total of 8.07% of the patients had NSSI behaviour, 17.3% had SI and 0.63% had made at least one SA during the previous four weeks. Co-occurrence of NSSI and SI was found in 2.24% of the patients (i.e., among 27.82% of all patients with NSSI behaviour, compared with 16.37% of patients without any NSSI behaviour). Co-occurrence of NSSI and SA was found in 0.25% of all patients (n = 58) (i.e., among 3.1% of patients with NSSI behaviour). Among patients with no NSSI behaviour, 0.41% of the patients had made a SA.

The prevalence rate of NSSI was 11.6% among the youngest patients and reduced with increasing age (Fig. 2). Much of the same age pattern was observed for SI and SA, with the exception of SA in patients 70 years and older, who had a prevalence of 0.8% (6 of 762 persons), more than twice the rate found in patients aged 40–69 years with prevalence of 0.38% (32 of 8281 persons).

The prevalence rates for NSSI without co-occurring SI were, however, more similar across age groups except in the oldest patient group, which had a significantly lower rate. Chi-square tests of the age differences show that the youngest age group had significantly higher rates of SI [$\chi^2(6) = 150.58$, $p < .01$], NSSI [$\chi^2(6) = 136.76$, $p < .01$] and SA [$\chi^2(6) = 20.65$, $p < .01$] than all other age groups, except the oldest age group with respect to SA. For NSSI without co-occurring SI, only the oldest age group differed significantly from the youngest age group [$\chi^2(6) = 23.99$, $p < .01$].

The prevalence and co-occurrence of SI, NSSI and SA in patients grouped according to their main diagnosis are shown in Fig. 3. The variation in the prevalence of SI across diagnostic groups was considerably larger (range = 8.3–27.6) than for NSSI (range = 7.0–14.4), as

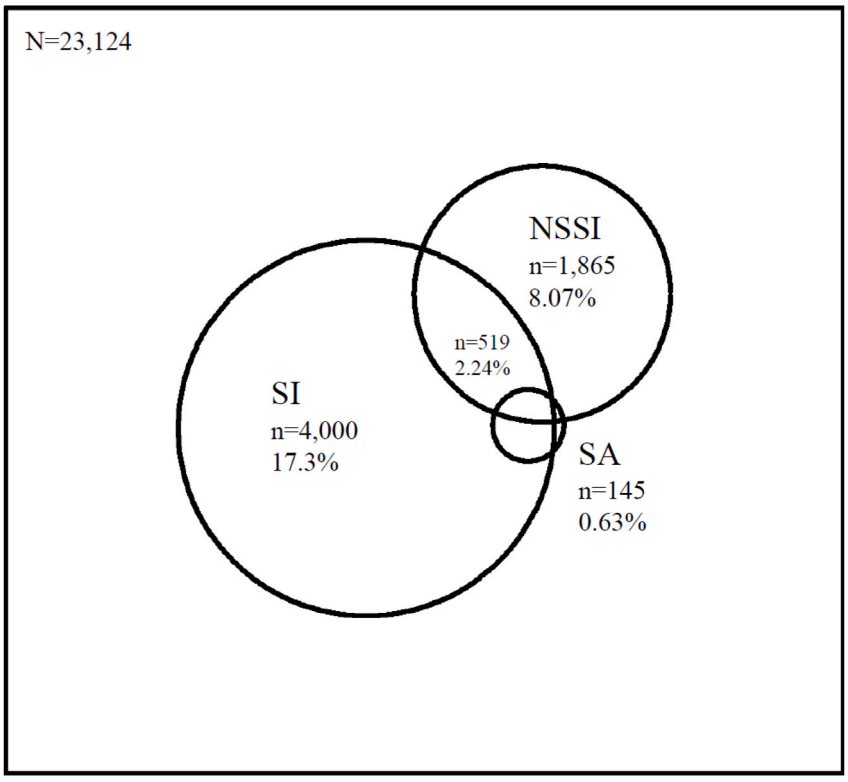

Fig. 1. Proportional Venn diagram of last four weeks' prevalence rates of SI (suicide ideation), NSSI (Non-suicidal self-injury), SA (suicide attempts) and their co-occurrence among all study participants.

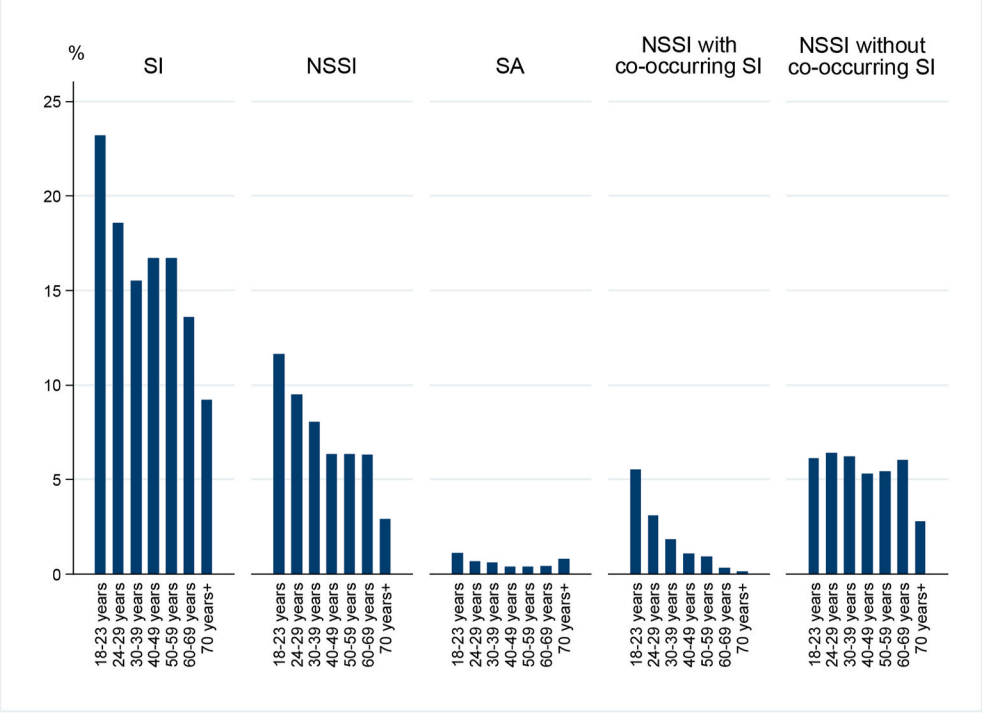

Fig. 2. Prevalence rates (%) of SI (suicide ideation), NSSI (Non-suicidal self-injury) and SA (suicide attempts) in different age groups.

shown by the difference in circle sizes. The highest prevalence rates for both SI and NSSI were found in patients with a personality disorder diagnosis, whereas the highest prevalence of SA was found in patients with other psychotic disorders and substance use disorders. NSSI with co-occurring SI was most prevalent in patients with personality disorders. However, the variation across diagnoses was considerably lower in NSSI without co-occurring SI (range = 4.0–8.8).

The differences in prevalence rates across diagnostic groups are

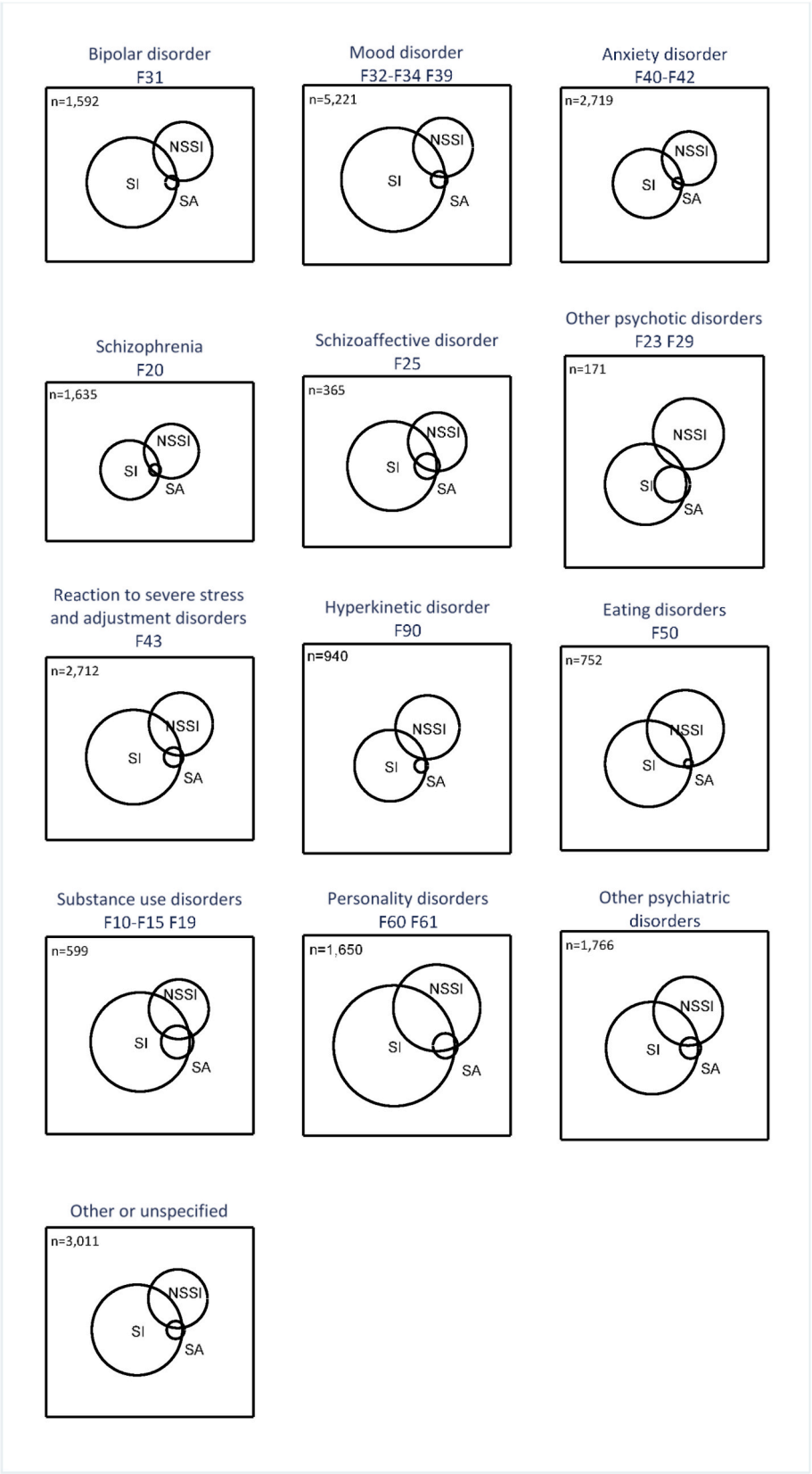

Fig. 3. Proportional Venn diagram of last four weeks' prevalence rates of SI (suicide ideation), NSSI (Non-suicidal self-injury), SA (suicide attempts) and their co-occurrence among all study participants by diagnosis group (N = 23,124).

shown in Fig. 4. Patients with a personality disorder diagnosis had the highest prevalence of SI, NSSI and NSSI with co-occurring SI. The prevalence of SA in subjects with personality disorders was among the highest, but not significantly higher than in patients with schizoaffective disorders, other psychotic disorders and substance use disorders. Patients with major depression, anxiety disorders and substance use disorders had a significantly lower prevalence of NSSI without co-occurring SI than all other subgroups.

To analyse whether differences between diagnostic groups in the prevalence of SI, NSSI, SA, NSSI with co-occurring SI and NSSI without co-occurring SI could be associated with socio-demographic variables, regression analyses were conducted. The analyses showed that variables did not alter the differences between diagnostic groups significantly (Fig. 5).

The regression results are shown in the Supplement, Table S1. Table S2 shows that 13% of the NSSI sample (n = 1844) had personality disorders and 21% had mood disorders. Even NSSI prevalence was lower in patients with mood disorders; the number of patients with mood disorders was much higher than the number of patients suffering from personality disorders. Table S2 also shows that the gender difference was high in schizophrenia (3% of all female and 13% of all male patients with NSSI behaviour), eating disorders (6% of all female and 1% of all male patients with NSSI behaviour), substance use disorders (1% of all female and 5% of all male patients with NSSI behaviour) and personality disorders (15% of all female and 6% of all male patients with NSSI behaviour).

4. Discussion

The prevalence of NSSI is well-studied in both clinical and non-clinical samples of adolescents and students, in non-clinical samples of adults, and in some diagnostic groups, such as borderline personality disorder and eating disorders. However, studies of the prevalence of NSSI in a cross-sectional sample of adult patients receiving psychiatric treatment are lacking.

In this study, based on a large and unselected national cohort of adult psychiatric outpatients, we found high prevalence rates of both SI (17.3%) and NSSI (8.07%). Although prevalence of SA in the previous four weeks was relatively low (0.63%), it was strongly associated with NSSI; the prevalence of SA was more than seven times higher among patients with NSSI behaviour (3.1%) than among patients without NSSI behaviour (0.41%). NSSI without co-occurring SI was more prevalent (5.82%) than NSSI with co-occurring SI (2.24%). NSSI without co-occurring SI was evenly distributed across diagnostic groups. Patients with personality disorders had the highest prevalence of NSSI with SI.

One of the few previous studies from clinical samples of adults found that self-mutilation was reported by 21% of the patients, and 8% stated that they mutilated themselves often (Briere and Gil, 1998). This is similar to our finding that prevalence within the previous four weeks was 8% among adult outpatients.

The youngest age group (18–23 years) had the highest prevalence of NSSI in our sample, and the prevalence was lower for the older age groups. This is consistent with previous population studies that shows an

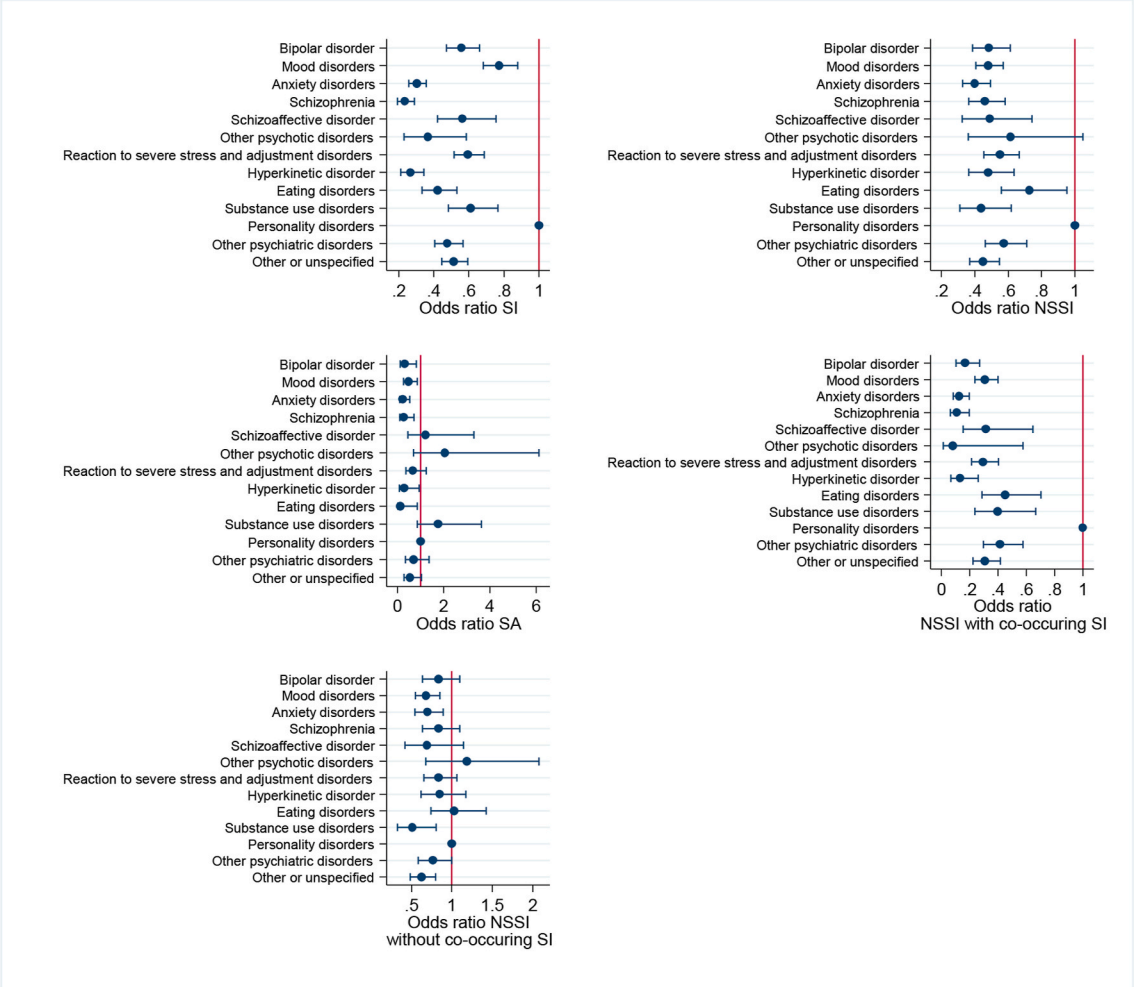

Fig. 4. Test of the difference in prevalence rates of SI (suicide ideation), NSSI (Non-suicidal self-injury), SA (suicide attempts) with and without co-occurring SI across diagnostic groups with personality disorders as reference.

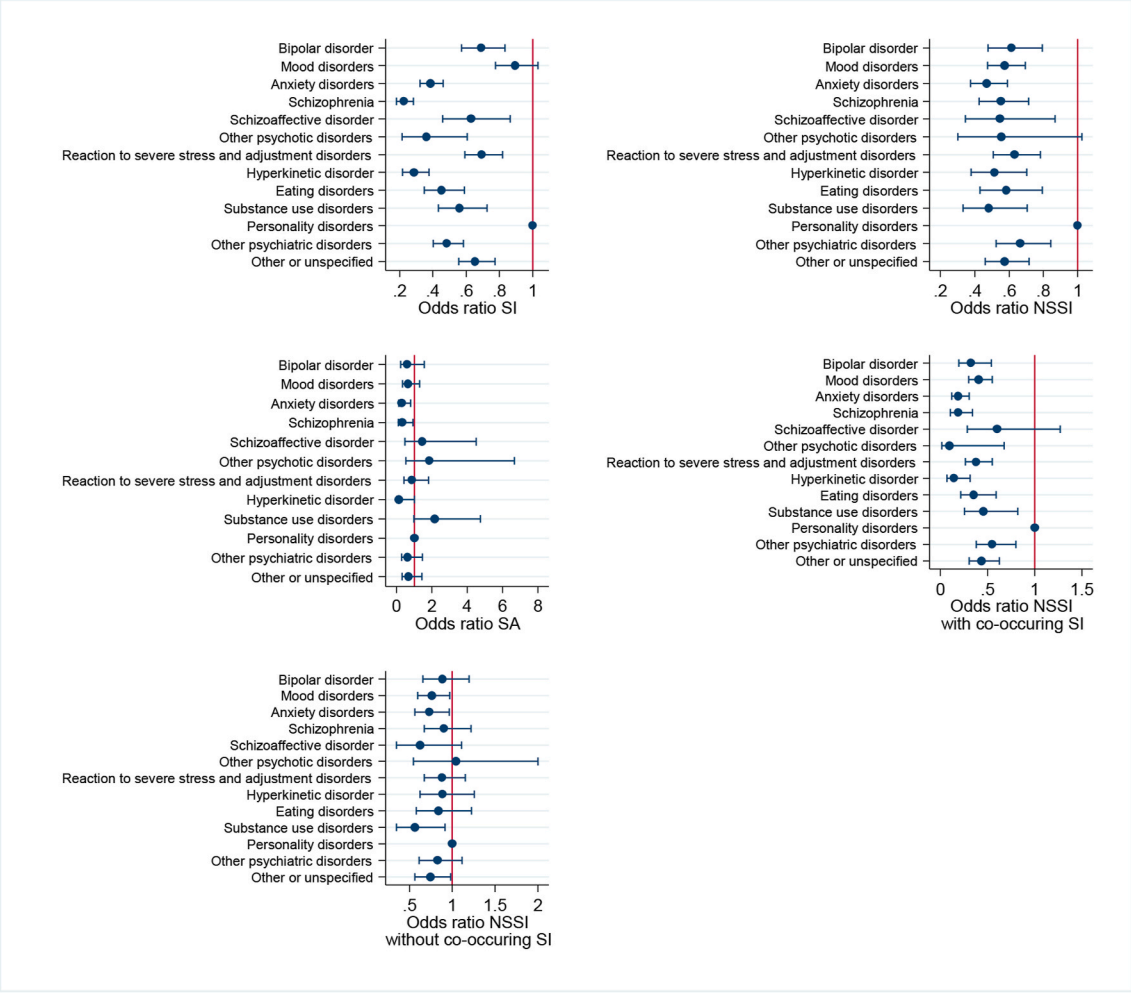

Fig. 5. Test of the difference in prevalence rates of SI (suicide ideation), NSSI (Non-suicidal self-injury), SA (suicide attempts) with and without co-occurring SI across diagnostic groups with personality disorders as reference. Adjusted for gender, age, marital status, main source of income, place of birth and quality of network of family and friends.

increase in rates of NSSI in adolescence with a decline in young adulthood (Plener et al., 2015b). However, we did not find different prevalence rates in the three age groups spanning 40–69-year-olds.

Gender differences in the prevalence of SI and SA were small in this sample; the prevalence of NSSI was 9% in female outpatients and 6.4% in male outpatients. The prevalence of NSSI with co-occurring SI was, however, more than double in female patients (2.84%) than in male patients (1.22%). This is consistent with findings from a meta-analysis of 120 studies that concluded that women were slightly more likely than men to engage in NSSI and that the gender difference was larger in clinical samples than in both community and college samples (Bresin and Schoenleber, 2015). As suggested by the authors, the latter might be explained by gender differences in help-seeking behaviour for NSSI causing men to be under-represented in clinical samples compared with college/community samples. Studies of non-clinical samples of adolescents have found no gender difference in the prevalence of NSSI (Andover et al., 2010; Muehlenkamp and Gutierrez, 2004; Swannell et al., 2014).

In the present study, NSSI prevalence within the previous four weeks varied from 7% to 14.4% across all main diagnoses. This is consistent with previous studies that have reported self-injurious behaviour in a wide range of other disorders, such as post-traumatic stress disorder, dissociative disorder, conduct disorder, obsessive-compulsive disorder, intermittent explosive disorder, anxiety and mood disorder, substance use disorder, bulimia, and dissociative identity disorder (Cipriano et al., 2017).

Furthermore, 12% of the outpatients in the sample were born outside Norway. The prevalence of SI was higher among patients born outside Norway (20.9%) than patients born in Norway (16.8%), with SA prevalence of 0.7% and 0.6%, respectively. However, NSSI prevalence was slightly higher among patients born in Norway (8.2%) than patients born outside Norway (7%). Only SI differed significantly between patients born in Norway and patients born outside Norway when clinical and socio-demographic variables were controlled for (see Table S1). Population studies of adolescents in Germany found that adolescents with a migration background had a higher prevalence of SI, SA and NSSI behaviour (Donath et al., 2019; Plener et al., 2015a). This difference between clinical and population studies might be explained by lower utilization of specialist mental health services among immigrants, as found in Norway (Abebe et al., 2017).

The most important finding in this study is that it seems necessary to distinguish between NSSI with and without co-occurring SI. NSSI without co-occurring SI is considerably more prevalent (5.8%) than NSSI with co-occurring SI (2.2%), and small differences in the prevalence of NSSI without SI are found across diagnostic groups. The prevalence of NSSI with co-occurring SI is in line with previous research, where it is highest among patients suffering from personality disorders and eating disorders. Our study approach did not allow us to compare prevalence rates of NSSI and SI in different types of personality disorder. In the majority of cases where specific personality disorders were

specified, the patient had Borderline personality disorder. That this group of patients had a high prevalence of NSSI is not surprising, since recurring self-harming behaviours constitute a diagnostic criterion for this disorder.

It can be argued that personality disorders are present as secondary diagnoses for many patients with other primary diagnoses. Secondary diagnoses were provided for 6683 patients (28.9%). Of these, 581 patients had a personality disorder diagnosis (F60, F61) and 73 of these patients (12,6%) had NSSI. This prevalence of NSSI in patients with a personality disorder diagnosis is about the same as those with F60 and F61 as main diagnoses (14.4% see Table 1). This means that 96% of the patients with NSSI did not have personality disorder diagnoses as secondary diagnosis.

Our findings indicate that NSSI is a highly prevalent problem across diagnostic groups and age segments, except the elderly, and it should be targeted for treatment through evidence based clinical approaches. So far treatment methods for NSSI have been made available primarily for patients with personality disorders where approaches found to be effective include dialectical behaviour therapy, transference-focused psychotherapy, mentalization based therapy, or schema therapy with medium to large effect sizes and remission achievable in a high percentage of cases (Cristea et al., 2017; Stoffers et al., 2012). Our findings suggest there is a strong need to develop, adapt or adopt similar treatment approaches for other major patient groups as well.

4.1. Strengths and limitations

This study is among the first to investigate NSSI prevalence with and without co-occurring SI in outpatient adults. A strength of the study is the large and representative sample of clinical data on outpatients from nearly all adult psychiatric outpatient clinics in Norway. Among the limitations are that structured interviews were not used to assess psychiatric diagnoses and that neither the diagnostic data nor other assessments were checked for interrater reliability. Our approach did not allow us to compare different types of personality disorders for their prevalence of SI, SA and NSSI. When interpreting our finding that patients with personality disorder had a high prevalence of NSSI and SI, it should be borne in mind that such behaviours constitute a diagnostic criterion for Borderline personality disorder, which was commonly recorded in the group of patients with personality disorders.

5. Conclusions

The prevalence of NSSI without co-occurring SI does not differ significantly between patients suffering from personality disorders and other patients. This suggests that NSSI should be a distinct diagnostic entity and not a symptom of borderline personality disorder, as it is currently categorised in the ICD-10. The co-occurrence of NSSI and SI is prevalent in all diagnostic groups, but both NSSI and SI appear alone more often than they appear together. The high co-occurrence of NSSI and SA calls for greater attention to be given to NSSI behaviour in mental health treatment.

Availability of supporting data

The data can be made available by agreement with the first author.

CRediT authorship contribution statement

Solveig Osborg Ose: Conceptualization, Methodology, Software, Formal analysis, Resources, Data curation, Writing - original draft, Visualization, Project administration, Funding acquisition. **Tone Tveit:** Validation, Investigation, Writing - review & editing. **Lars Mehlum:** Validation, Investigation, Writing - review & editing, Supervision.

Declaration of competing interest

No conflict of interest exists.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jpsychires.2020.11.031.

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