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Kunnskap for en bedre verden

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Forord

Vårt utgangspunkt for denne oppgaven var et ønske om å lære mer om suicidalitet- og selvmordsproblematikk. Gjennom forskningsprosjektet «Systematisk kvalitetssikring av helsetjenester ved Nidaros DPS og NTNU» fikk vi tilgang på datamateriale som tillot videre utforskning av denne tematikken. Vi har ellers hatt en selvstendig rolle gjennom prosjektet, og har selv utformet problemstillinger og tatt stilling til analyser, med aktiv bistand fra våre veiledere. Vi studentene har gjennom hele prosjektet jobbet tett sammen, og har som hovedregel sittet side om side. Dette har ført til en jevn fordeling av arbeidsoppgaver, der vi begge to har vært involvert i både litteraturgjennomgang, skriving av oppgaven og veivalg som ble tatt underveis. Prosessen har vært både lengre og mer utfordrende enn vi hadde forventet på forhånd. Det har vært fint å være sammen om oppturene og nedturene underveis, og vi ønsker i den anledning ønsker å takke hverandre for godt samarbeid og kameratskap. Vi ønsker også å rette en stor takk til vår hovedveileder Stian Solem og medveileder Martin Brattmyr, som gjennom sin fagkunnskap, tilgjengelighet og støttende holdning har vært til stor hjelp og inspirasjon for oss gjennom hele prosjektet. Deres bidrag har vært uvurderlig.

Henrik Buer Christensen og Andreas Halaas Michalsen

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Sammendrag

Introduksjon: målsettingen med studien er å beskrive forekomst av «suicidal ideation» (SI) i en heterogen gruppe av polikliniske pasienter, og karakteristikker ved pasienter som rapporterer SI. Videre undersøker studien effekten av «treatment as usual» (TAU) på SI, og karakteristikker ved de pasientene som opplever reduksjon av SI.

Metode: Deltakerne var polikliniske pasienter som mottok TAU ved et distriktspsykiatrisk senter (DPS). De fylte ut kartleggingsskjema for depresjon, angst, fungering og helserelatert livskvalitet før ($N = 2475$) og etter ($n = 559$) behandling.

Resultater: Mer enn halvparten av utvalget (53-57%) rapporterte SI før behandling. Blant personer med SI var det 55% som opplevde en reduksjon i SI, 38% som ikke hadde noen endring, og 7% som hadde økt SI (moderate til store effektstørrelser) etter behandling. SI før behandling var assosiert med mer symptomer på depresjon/angst, lavere fungering, lavere livskvalitet, å være mann, lav alder, og å ikke være i et parforhold. Reduksjon i SI var assosiert med høyere nivåer av SI før behandling og lavere nivåer av depresjon og angst etter behandling.

Konklusjon: SI er hyppig forekommende blant pasienter i poliklinisk psykiatrisk behandling. Funnene tydeliggjør viktigheten av årvåkenhet for SI ved psykiatriske poliklinikker, men gir håp om tilfriskning, uavhengig av pasientenes karakteristikker i forkant av behandling.

Abstract

Introduction: The aim of this study is to describe the rates of suicidal ideation (SI) in a heterogenous outpatient sample and the characteristics of patients who report SI. Furthermore, the study investigates the effect of treatment as usual (TAU) on SI and what characterizes patients with reduction in SI.

Methods: Participants were outpatients receiving TAU at a public mental health clinic. They completed measures assessing levels of depression, anxiety, functioning, and health related quality of life before ($N = 2475$) and after treatment ($n = 559$).

Results: More than half of the sample (53-57%) reported SI before treatment. For participants with SI, 55% experienced a reduction in SI, 38% reported no change, while 7% had increased SI (reflecting a moderate to large effect size). SI was associated with more symptoms of depression/anxiety, impaired functioning, lower quality of life, male sex, lower age, and not being in a relationship. Reduction in SI was associated with higher levels of SI before treatment and reduced levels of depression and anxiety after treatment.

Conclusion: In summary, SI was found to be common among psychiatric outpatients. The findings emphasize the need for vigilance for SI in psychiatric outpatient clinics, but give hope for recovery regardless of patient characteristics at pre-treatment.

Keywords: suicidal ideation; outpatients; treatment; anxiety; depression

Contents

Introduction

Suicide is among the leading causes of death worldwide, and the leading cause of death among people between the age of 15 and 49 in Norway (Folkehelseinstituttet, 2016; World Health Organization, 2021) (FHI, 2016; WHO, 2021). Suicidal ideation (SI) is associated with an elevated risk for subsequent suicide and constitutes a central component in numerous suicide theories (Jobes & Joiner, 2019; Klonsky et al., 2018). While there is no clear, generally accepted, consistent definition of the term SI, it generally refers to a range of wishes, contemplations, and preoccupations with death and suicide (Harmer et al., 2022). In the current study, SI lends its definition from the operationalization used in the 9th item of Patient Health Questionnaire-9 (PHQ-9), further described under "measures". Even though there are known associations between SI and suicide, discussions about SI should not be limited to the context of suicide. SI should also be regarded as a serious mental health problem in its own right. Having persistent thoughts, ideas or ruminations about ending one's own life is associated with considerable psychological pain and distress (Goldney et al., 2001).

Expanding the knowledge about the characteristics of individuals suffering from SI, and developing more precise interventions against it, is imperative for a number of reasons. Such knowledge could be helpful in directing appropriate health care services where it is most needed. Furthermore, increased knowledge about risk factors for SI could increase clinicians' sensitivity to patients who may be afflicted. This may be particularly relevant as there is much to suggest that about half of patients experiencing SI do not disclose this to their responsible practitioner (Obegi, 2021). Identifying characteristics of patients with different treatment outcomes can provide valuable prognostic information, as well as contribute to better adaptation of treatment interventions for specific patient groups.

SI has been subject to extensive research. A nationwide Norwegian study found that 17.3% of psychiatric outpatients were reported having SI by their responsible clinician (Ose et al., 2021). The data were collected by clinicians filling out forms. Studies from other countries investigating rates of SI among psychiatric outpatients using structured interviews, found numbers in the range of 18-40% (Naidoo & Collings, 2017; Ongeri et al., 2018). To our knowledge, only one previous study has investigated the rate of SI in a general outpatient sample using self-report questionnaires, in which SI was found to be present in 72.8% of the patients (Vera-Varela et al., 2022).

Previous research has indicated low levels of agreement (kappa = 0.072) between patients' willingness to disclose SI in self-completion forms that are completed alone, and in interviews with therapists (Vera-Varela et al., 2022). Findings suggest that patients are generally much more reluctant to disclose SI in a face-to-face setting (Kaplan et al., 1994). In the study by Vera-Varela et al. (2022), SI in patients was assessed in an interview setting, by attending clinicians. Within 24 hours after the clinical evaluation, assessment was repeated by patients completing an online self-report questionnaire. In 56.4% of cases where clinicians reported no SI in a patient, the patient reported SI in the self-report questionnaire. A total of 19.3% of patients disclosed SI to their clinicians, whereas 72.8% reported SI in the self-report questionnaire.

The question of what characterizes individuals who report SI has also been addressed in previous research. Characteristics found to be associated with SI are psychiatric disorders, with depressive disorders and symptoms appearing to be the most common (Naidoo & Collings, 2017; Ose et al., 2021). Anxiety disorders and symptoms have also been found to be significant, yet weak, predictors for SI (Bentley et al., 2016). In addition, it has previously been assumed that more women than men report SI while more men commit suicide These findings have given rise to the so-called gender paradox in suicidal behavior (Canetto &

Sakinofsky, 1998). However, recent research investigating SI in a Norwegian outpatient sample revealed no significant association between SI and gender (Ose et al., 2021).

Moreover, previous research indicates that patient-related variables may influence treatment outcome, as cross-diagnostic patient characteristics may moderate or mediate response to treatment (APA Presidential Task Force on Evidence-Based Practice, 2006). One study investigating predictors of treatment response in a sample of adolescents with depression and SI found that patients with higher levels of depression symptoms pre-treatment had less reduction in both depression symptoms and SI after treatment compared to patients with lower levels of depression symptoms pre-treatment (Abbott et al., 2019). Similar patterns have been found in other studies investigating predictors and moderators of treatment response among depressed patients, where severity of the depression is among the factors moderating response to treatment (Asarnow et al., 2009; Curry et al., 2006; Sotsky et al., 2006). However, to our knowledge, no studies investigating patient characteristics as predictors of effectiveness in treating SI in an adult outpatient population have been conducted.

Previous research has also investigated the effect of therapeutic interventions on SI. In a review study investigating whether psychotherapy for adult depression also affects SI, Cuijpers and colleagues (2013) were able to identify only three studies meeting the inclusion criteria. The treatment interventions included in the review were mindfulness-based cognitive therapy, cognitive restructuring, existential humanistic cognitive therapy, and cognitive behavioral therapy, and a small ($g = 0.12$; 95% CI: −0.20–0.44) and non-significant treatment effect was found. The study discussed whether the samples, which did not specifically target patients with SI, could be a possible reason for the relatively low effect size found. Based on the limited statistical power and methodological limitations, the review concluded that there was insufficient research to draw any conclusions at the time.

A more recent study found a large effect size ($d = 1.5$, $p < .001$) on self-reported SI scores for adult patients with depression after short-term manual-based treatment. The treatment interventions were empirically supported treatment (ESTs), and included approaches such as cognitive-behavioral therapy, dialectical behavioral therapy, emotion-focused therapy, and interpersonal therapy (Schneider et al., 2020). In a meta-analysis comprising 11 RCT studies, the effect of treatment interventions on SI was compared to active controls for outpatients aged 12 to 19 (Kothgassner et al., 2020). It was found a significant difference between the groups, with specific treatment interventions being more effective ($d = 0.31$, 95% CI 0.12–0.50, $p = <.001$) in reducing SI than for active controls receiving routine clinical care. Notwithstanding, a significant reduction of SI ($d = 0.87$, 95 % CI 0.35-1.39, $p = .001$) was found from pre- to post-treatment in active controls receiving routine clinical care.

However, many studies that investigate the effect of treatment on SI, such as those mentioned above, are often specific, either with regard to the intervention, the patient group, or both. Previous research has established that there is not always a match between the treatment given in treatment studies and the treatment offered in clinical practice (Johnson et al., 2016). Thus, while such studies may show that a given intervention has a desirable effect, it is not certain that it provides a credible measure of the effect of the treatment offered in ordinary clinical practice. One way to overcome this methodological obstacle and thereby increase the external validity of one's findings is to conduct research that is less specific on both ends. This may be done by investigating the efficacy of treatment as usual (TAU) itself; non-specific treatment, provided in a real-world clinical setting to a non-specific patient population. To our knowledge, no studies have been conducted investigating the effect of TAU with SI as the treatment outcome measure, in a general, heterogeneous outpatient population.

Aims

The first aim of this study was to explore self-reported rates of SI in a heterogenous psychiatric outpatient sample. As far as we know, only one previous study has investigated the rate of SI in an outpatient sample, using a self-report method of assessment, in which a rate of 72.8% was found. Ose et al. (2021) investigated occurrence of SI in a sample very similar to the one in the current study, but assessment was done predominantly in the form of interviews. As previously shown, there are often low levels of agreement between rates found using interview- and self-report based methods of assessment, as different methods of assessment give very different rates of SI, even within the same sample and in a short timeframe (Vera-Varela et al., 2022). Given the considerable overlap in sample characteristics between the one in the current study, and in the study by Ose et al. (2021), the ratio between the rates found in interview- and self-report-based assessments in the study by Vera-Valera et al. (2022), was applied to the rate (17.3%) found by Ose et al. (2021). A rate of SI at around 60% was therefore hypothesized.

The second aim was to investigate changes in self-reported levels of SI following TAU. Considering that similar studies previously have found large effect sizes for treatment on SI, it was hypothesized that a large effect size ($d = 0.8$) would be found in the current study as well (Kothgassner et al., 2020; Schneider et al., 2020).

The third aim was to explore characteristics associated with SI when starting treatment. Based on previous findings, it was hypothesized that patients with symptoms of depression and anxiety would be significantly more prone to SI (Bentley et al., 2016; Naidoo & Collings, 2017).

The fourth and final aim was to explore variables associated with reduction in SI following TAU. Previous findings provided a basis for a hypothesis that low levels of SI and

depression at baseline, would predict a greater reduction in SI during treatment (Abbott et al., 2019; Asarnow et al., 2009; Curry et al., 2006; Sotsky et al., 2006).

Methods

Participants and procedure

Participants were outpatients receiving treatment at Nidaros District Psychiatric Center (DPC), a mental health division of St. Olavs Hospital, Trondheim, Norway, providing mental health services to a population of approximately 115000. The sample consisted of 2475 patients, of whom 63% were female, and the average age was 30.2 years ($SD = 10.49$). Patients were diagnosed with a range of psychiatric disorders (ICD-10), with depression (25.8%) and ADHD (21.0%) as the most prevalent. Comorbidity was common, as 17.6% of patients had two or more diagnoses. For other demographic and diagnostic characteristics, see Table 1. There were no exclusion criteria, but it should be noted that some patients with specific diagnoses, such as OCD and schizophrenia, were treated at other, specialized facilities.

Table 1

Demographic characteristics of the patients attending outpatient treatment

	n (%)
Age (*n* = 2475)	
<20	112 (4.5)
20-29	1405 (56.8)
30-39	533 (21.5)
40-49	238 (9.6)
50-59	141 (5.7)
>60	46 (1.9)
Sex (*n* = 2475)	
Male	910 (36.8)
Female	1565 (63.2)
Sick leave (*n* = 2246)	
Yes	725 (32.3)
No	1521 (67.7)
In a relationship (*n* = 2255)	
Yes	977 (43.3)
No	1278 (56.7)
Diagnoses (*n* = 1510)	
Depression	389 (25.8)
ADHD	309 (21.0)
PTSD	167 (11.1)
Personality disorders	160 (10.6)
Bipolar disorder	94 (6.2)
GAD	84 (5.6)
Social anxiety disorder	71 (4.7)
Autism	54 (3.6)
Somatization disorder	45 (3.0)
Eating disorders	33 (2.2)
Other	65 (4.2)

Note. ADHD = Attention deficit hyperactivity disorder. PTSD = Post-traumatic stress disorder. GAD = Generalized anxiety disorder.

In accordance with the Norwegian healthcare system, patients are typically referred to treatment at DPC by their GP, but some may also have been referred by other healthcare professionals. Patients under the age of 18 are not offered treatment at regular DPC but are referred to children and adolescent mental health services. Patients treated at public outpatient clinics such as Nidaros DPC, will normally pay a user fee. After a certain sum is paid, the

patients receive an exemption card for public health services. In 2022, this threshold was at NOK 2921 ($ 274.6). The treatment consisted of usual care provided at the DPC, and was delivered by mental health care professionals. In a survey by Gråwe and colleagues (2008), it was found that outpatient treatment at Norwegian DPCs typically included follow-up of psychopharmacological treatment (28.2%), crisis interventions (7.5%), counseling (13.9%), psychodynamic psychotherapy (12.9%), cognitive psychotherapy (22.3%), interpersonal psychotherapy (8.7%), supportive psychotherapy (48.8%) and other individual treatment (12.7%). In 2016, adult outpatients in Norwegian mental health care had an average of 11.3 consultations (Bremnes et al., 2017) (Helsedirektoratet, 2017).

Upon admission to treatment, patients were asked to complete computerized self-administered questionnaires to assess their symptoms and level of functioning. The patients were asked to repeat the questionnaires after treatment had ended. Patients were able to complete the assessments electronically at home. Of the 2475 that completed the pre-treatment assessments, 559 (22.60%) also completed the post-treatment assessment. The considerable difference in the number of pre- and post-treatment assessments is likely to be caused by the nature of the study design, as the data collection is a continuously ongoing process. The difference is likely to be at least partly caused by patients still receiving treatment at the time of data extraction. Participants were grouped into four different samples. The total number of patients who completed the initial assessment is referred to as *total sample* ($N = 2475$). Patients who completed both assessments are referred to as *completers* ($n = 559$). Some analyses required grouping of patients based on whether or not they reported some degree of SI on the initial assessment. To monitor changes in SI during the treatment period, patients from the completers sample were grouped into two sub-samples referred to as *SI-sample* ($n = 296$) and *no-SI-sample* ($n = 263$).

Data were collected electronically between February 2020 and March 2022. Information about the study and consent were also given electronically, and only the patients who provided consent for their responses to be used in the research were included in the sample. Data collected from pre- and post-treatment assessments were matched with the individual patients' mental health records to provide information about diagnosis, marital status, and sick leave. Approval from the Regional Committees for Medical and Health Research Ethics (REK) has been obtained (REK 2019/31836). The National Center for Research Data has also approved the project (NSD2020/605327).

Measures

PHQ-9 (Kroenke et al., 2001) was used to assess depression symptoms. PHQ-9 consists of nine items, each rated on a four-point scale. Hence, a total score will range from 0 to 27 with higher scores indicating a more severe depression. PHQ-9 is widely tested and has demonstrated satisfying psychometric properties as a screening tool for depression among psychiatric outpatients (Beard et al., 2016).

Item nine of PHQ-9 was used to assess SI. This item asks whether "thoughts that you would be better off dead or hurting yourself in some way" have been present within the last two weeks. The response options are "not at all" (0 points), "several days" (1 point), "more than half of the days" (2 points) and "nearly every day" (3 points). This item has previously demonstrated a good ability to detect SI in individuals. It has been found to have high convergent validity with other measures of the SI construct (Kim et al., 2021), and response to the item has been found to be a strong predictor of subsequent suicide attempts (Simon et al., 2013).

The General Anxiety Disorder-7 (GAD-7; Spitzer et al., 2006) was applied to assess anxiety symptoms. The GAD-7 includes seven items rated on a four-point scale and has been

shown to be a reliable and valid measure of anxiety in psychiatric outpatients (Johnson et al., 2019). Despite demonstrating high shared variance, previous studies have considered PHQ-9 and GAD-7 compatible and suitable both in context of research and clinical practice (Stochl et al., 2022).

Depression and anxiety are among the most common psychological disorders, and co-occurrence of these disorders is also common. There is also considerable overlap between these disorders in regard to interventions, as certain interventions can be beneficial for both patients with anxiety and depression. Thus, the Patient Health Questionnaire Anxiety and Depression Scale (PHQ-ADS) was used as a composite measure for both anxiety and depression by summing the scores from PHQ-9 and GAD-7 to provide an aggregated score that jointly assessed symptoms of both depression and anxiety on a scale from 0 to 48. Cutpoints at 10, 20 and 30 have been suggested to represent thresholds for mild, moderate, and severe levels of depression-anxiety symptoms (Kroenke et al., 2019). Since suicidal ideation as measured by item 9 of PHQ-9 was used as a dependent variable in several analyses, this item was removed from this composite instrument. Hence, we were able to control for anxious-depressive symptomatology while investigating the separate effect of SI.

The Work and Social Adjustment Scale (WSAS) was employed as a measure for impairment in functioning. WSAS consists of five items, rated on a nine-point scale. The items address impairment in professional life, home management, social leisure activities, private leisure activities and close relationships. A WSAS sum score below 10 indicates low impairment and is associated with subclinical populations. Sum scores between 10 and 20 indicate moderate functional impairment, while sum scores above 20 indicate severe impairment (Mundt et al., 2002). Its reliability and validity among psychiatric outpatients are well-supported (Pedersen et al., 2017).

The EuroQol Visual Analog Scale (EQ-VAS; EuroQol Group, 2019) was used to provide a self-reported measure on current global health status. The EQ-VAS is a vertical scale, ranging from 0 to 100, with 100 indicating the best imaginable health and 0 indicating the worst imaginable health. EQ-VAS has proven to be a valid measure for health-related quality of life (Cheng et al., 2021).

Statistical analyses

Several of the demographic variables were dummy-coded to represent dichotomous aspects. Sick leave was measured on a 4-item scale (yes, no, work assessment allowance and other). The variable was dichotomized, with all other responses than "no" coded into sick leave. Diagnostic data were omitted from the analyzes, as it was only available for a smaller proportion of the post-treatment sample (59.7%, $n = 334$).

Eight paired samples t-tests along with calculations of Cohen's d were administered to examine the treatment effect on the study variables. Two binary regression analyses were conducted to investigate the characteristics of patients with SI and patients with change in SI during treatment. The first of whom aimed to identify characteristics of patients with SI upon admission by testing cross-sectional predictors of SI pre-treatment. A dichotomous variable was created to separate patients with and without SI upon admission. The second binary regression analysis was applied to identify characteristics of patients with an increase or decrease in SI following treatment. Patients who reported no SI pre-treatment or had stable scores in SI from pre- to post-treatment, were thus left out of this analysis.

To investigate the probability of attrition bias, attrition analyses were administered. These analyses included independent samples t-tests and calculations of Cohen's d comparing participants with complete data and patients with pre-treatment data only. The variables included in the analyses were sick leave, in a relationship, gender, age, and pre-treatment

scores from item 9 from PHQ-9, PHQ-ADS, WSAS and EQ-VAS. No significant differences between the samples with complete data and pre-treatment data only were found (p-values ranging from .110 to .851), indicating no clear attrition bias.

Results

Rates of suicidal ideation (SI)

Figure 1 presents distribution of scores on SI for both samples before and after treatment. There was an overall reduction in SI after treatment, with 43-47% (43% in total sample, 47% in the completers sample) reporting no SI before treatment, which increased to 61.2% post-treatment. There was a decrease in score for all pre-treatment levels of SI. For the more severe levels of SI, indicated by answering to have SI often and nearly every day, there was a reduction from 19.7% at pre-treatment to 13.8% after treatment.

Figure 1

Rates of SI at pre- and post-treatment
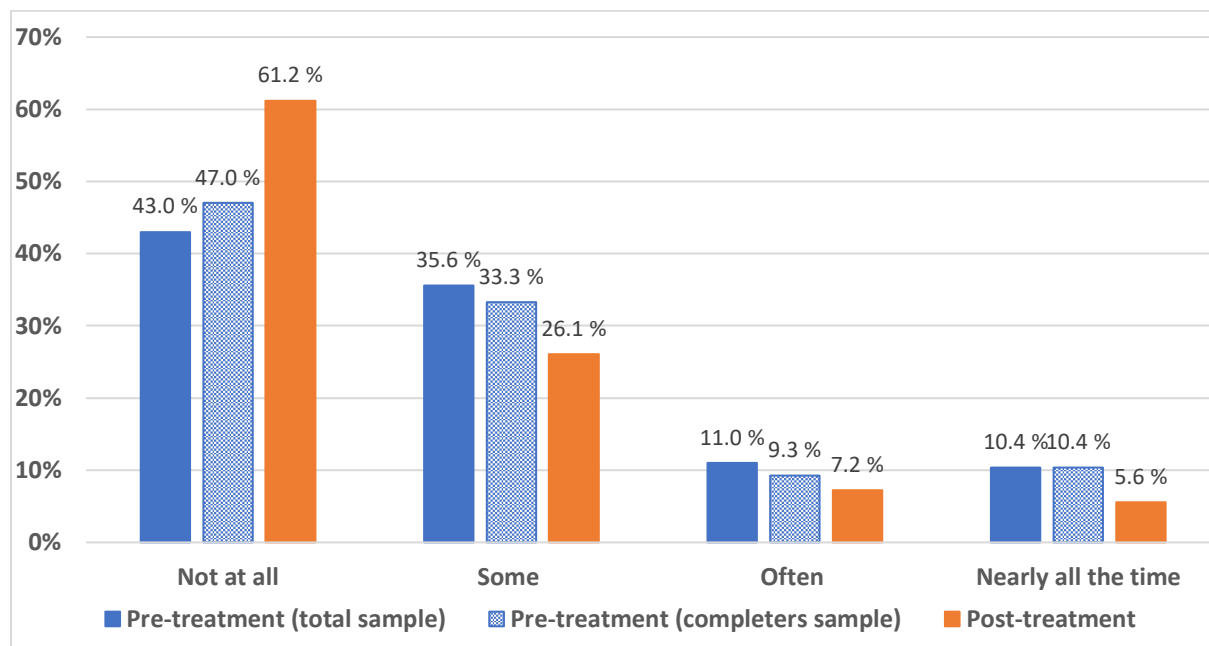
Note. Pre-treatment (total sample) represents pre-treatment scores from the total sample ($N = 2475$). Pre-treatment (completers sample) and Post-treatment represent pre- and post-treatment scores from the sample that completed the PHQ-9 at both times of assessment ($n = 559$).

Figure 2 presents change in SI from pre- to post-treatment categorically for both the total sample and for those who reported SI before treatment. It was found that for the total sample, 29.2% had a reduction in SI, 60.8% had no change, and 10% had increased SI after treatment. Note that the group who had SI at neither admission nor discharge made up a large proportion of the no-change group. It is also worth noting that 6.1% of those reporting no SI before treatment reported SI after treatment. For the SI sample, 55.1% experienced a reduction in SI, 37.5% had no change, and 7.4% had increased SI. The most frequent change was from a score of 1 to 0 in both samples.

Figure 2

Distribution of changes in SI-scores from pre- to post-treatment for patients with and without SI at baseline.
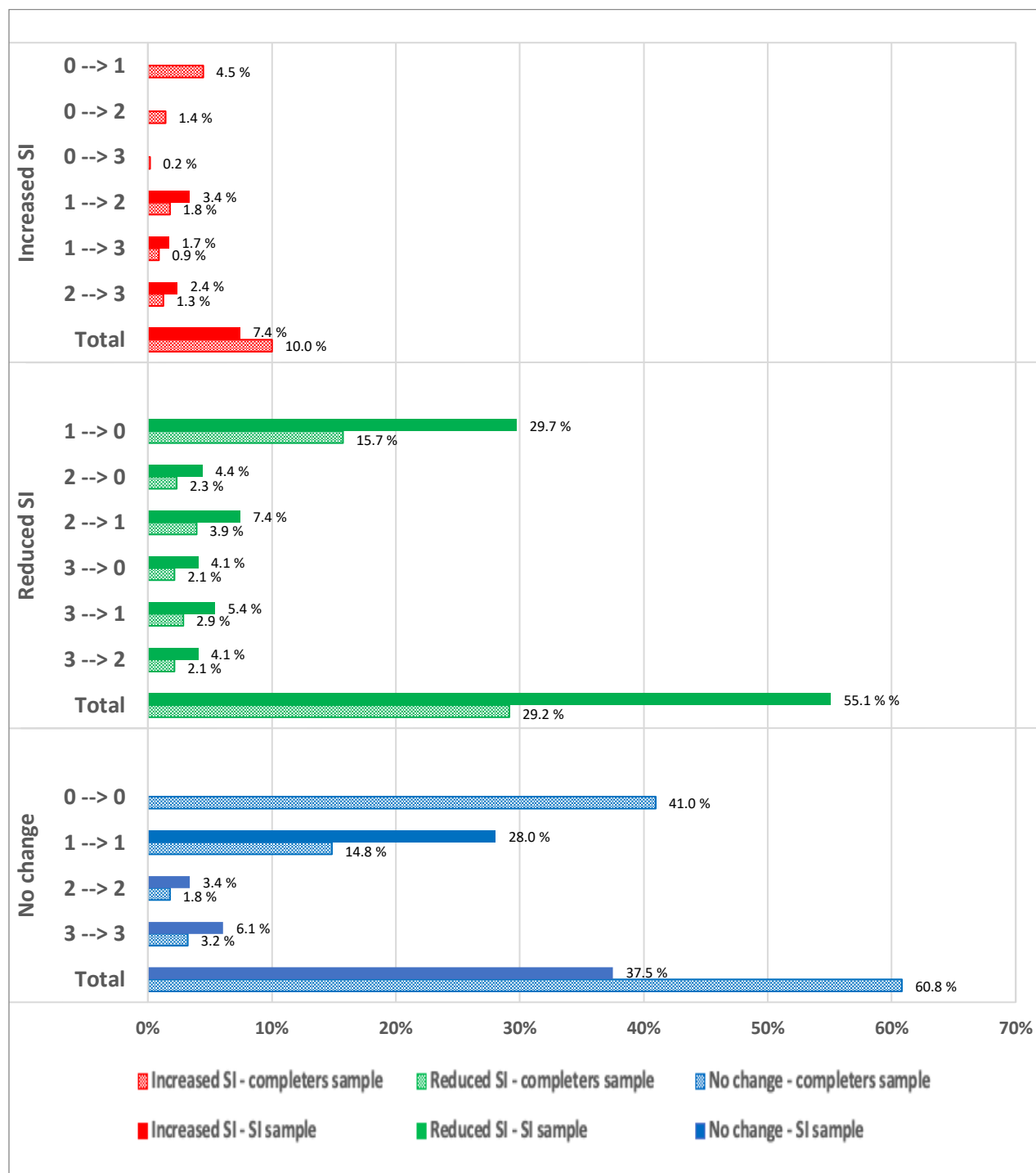
Note. Horizontal dividing lines and color differences distinguish categorically between increased (red), reduced (green), and no changes in SI (blue). Numbers on the vertical axis represent the specific change in SI scores, with associated bars corresponding to the percentage of that particular change. Full-colored bars reflect scores of the SI sample, whereas shaded bars reflect scores of the total sample. The bottom bar in each category represents the total share of patients in the respective category.

Table 2 presents results from the paired sample *t*-test exploring changes in SI, symptoms, quality of life, and functioning from pre- to post-treatment. In addition to reporting lower general quality of life, the SI-group reported more symptoms across the board, compared to the total sample and the group without SI pre-treatment (no SI-sample). The *t*-tests found significant improvement from pre- to post-treatment on all measures, with effect sizes ranging from small to moderate-large. The effect sizes were largest on all measures for the SI-sample.

Changes in SI (item 9 of PHQ-9) indicated small, moderate, and moderate-large effect sizes for the total sample, the no SI-sample, and the SI-sample, respectively. However, the effect size was negative for the no SI-sample, indicating an increase in SI. Changes in WSAS were small for all samples, but slightly larger for the SI-sample. Although there were significant reductions for all samples on WSAS, it should be noted that all groups reported a considerable amount of impairment after treatment. The mean post-treatment scores on WSAS in the total sample and the no SI-sample were in the 10-20 range, suggested to indicate significant impairment, while the score in the SI-group was above 20, which is suggested to indicate moderate-severe to severe impairment (Mundt et al., 2002).

Changes in PHQ-ADS indicated moderate effect sizes for the total sample and the no SI-sample. For the SI-sample the effect size was moderate-large, approaching large. Since item 9 served as a dependent variable for several analyses in the current study, it was not included in the PHQ-ADS sum score. Thus, the general cutoffs for PHQ-ADS scores do not apply, and interpretation should be done carefully. It is worth noting that the post-treatment scores for both the total sample and the SI-sample were close to 20, which would normally suggest moderate levels of depression-anxiety symptoms (Kroenke et al., 2016). EQ-VAS measures current global health status on a scale from 0-100. Changes in EQ-VAS indicated small effect sizes for the total sample and the no SI-sample and moderate effect size for the

SI-sample. Changes in scores were about 6, 8 and 10, resulting in post-treatment scores of 55, 58 and 60 for the SI sample, the total sample, and the no SI-sample, respectively.

Table 2

Changes in symptoms and functioning for the total sample, SI-sample, and No SI-sample.

	Pre-treatment		Post-treatment				
Variable	*M*	*SD*	*M*	*SD*	*t*	*p*	*d*
PHQ-9 Q9	0.83	0.98	0.57	0.85	7.14	<.001	0.28
PHQ-9 Q9 (SI)	1.57	0.80	0.93	0.95	11.65	<.001	0.73
PHQ-9 Q9 (NO SI)	0.00	0.00	0.17	0.47	-5.74	<.001	-0.51
WSAS	21.17	8.17	18.20	9.60	7.61	<.001	0.33
WSAS (SI)	23.83	7.28	20.17	9.58	7.12	<.001	0.43
WSAS (NO SI)	18.16	8.08	15.97	9.15	3.70	<.001	0.25
PHQ-ADS	26.06	9.01	19.71	10.13	14.85	<.001	0.66
PHQ-ADS (SI)	29.15	8.08	21.90	10.12	12.71	<.001	0.79
PHQ-ADS (NO SI)	22.59	8.75	17.24	9.56	8.36	<.001	0.58
EQ-VAS	49.37	18.91	57.60	20.05	-9.68	<.001	-0.42
EQ-VAS (SI)	45.22	18.13	55.09	20.32	-8.57	<.001	-0.51
EQ-VAS (NO SI)	54.04	18.71	60.43	19.39	-5.10	<.001	-0.34

Note. Sample sizes: $N = 546$-559 (completers sample), $N = 289$-296 (SI-sample) and $N = 257$-263 (NO SI-sample). PHQ-9 Q9 = The Patient Health Questionnaire, item 9. WSAS = Work and Social Adjustment Scale. PHQ-ADS = Patient Health Questionnaire Anxiety and Depression Scale. EQ-VAS = EuroQol Visual Analog Scale. SI = suicidal ideation sample.

Characteristics associated with SI upon admission

A Pearson correlation coefficient was computed to assess the relationship at pre-treatment between PHQ-ADS, WSAS, and EQ VAS. There was a strong positive correlation between PHQ-ADS and WSAS, $r(2393) = .61$, $p <.001$. Also, there were moderate negative correlations between EQ VAS and both PHQ-ADS, $r(2391) = -.51$, $p <.001$ and WSAS, $r(2416) = -.53$, $p <.001$.

Table 3 presents results from the logistic regression analysis. The overall model was found to be statistically significant ($\chi^2(7) = 526.69$, $p < .001$), with a Nagelkerke *R*-squared of

.30. Results indicated that reporting more symptoms of depression/anxiety was strongest associated with reporting SI, followed by more severe impairment of functioning, and lower quality of life. It was also found that demographic factors such as being male, of lower age, and not currently in a relationship were characteristics associated with reporting SI. There was no significant association between being on sick leave and SI.

Table 3

Characteristics associated with SI at pre-treatment.

Variable	*B*	*SE*	Wald's X^2	*df*	*p*	Exp*(B)*
Female	-0.45	0.11	17.03	1	<.001	0.64
Age	-0.02	0.01	7.25	1	.007	0.99
In a relationship	-0.72	0.11	47.19	1	<.001	0.49
Sick leave	-0.04	0.12	0.14	1	.712	1.05
PHQ-ADS pre	0.09	0.01	132.85	1	<.001	1.09
WSAS pre	0.03	0.01	15.00	1	<.001	1.03
EQ VAS pre	-0.46	0.46	11.98	1	.001	0.99

Note. Dependent variable: Q9 PHQ-9 pre, dichotomized (0 = no SI, 1 = SI), *N* = 2083. Dichotomized variables: female (0 = male, 1 = female), in a relationship (0 = no, 1 = yes) and sick Leave (0 = no, 1 = yes). PHQ-9 Q9 = The Patient Health Questionnaire, item 9. WSAS = Work and Social Adjustment Scale. PHQ-ADS = Patient Health Questionnaire Anxiety and Depression Scale. EQ-VAS = EuroQol Visual Analog Scale. Pre = pre-treatment.

Characteristics of patients reporting change in SI

A Pearson correlation test of post-treatment variables found a strong positive correlation between WSAS and PHQ-ADS ($r(541) = .70$, $p < .001$) and strong negative correlations between EQ VAS and the other variables, respectively PHQ-ADS ($r(541) = -.57$, $p < .001$), and WSAS ($r(544) = -.63$, $p < .001$).

Table 4 shows factors associated with a change in SI during treatment. The overall model was found to be statistically significant ($\chi^2(11) = 155.56$, $p < .001$), with a Nagelkerke *R*-squared value of .83. Note that only patients who experienced a change in SI during

treatment were included in the analysis. There was a strong association between reporting

higher levels of SI before treatment and having a relatively reduced level of SI after treatment.

The results also indicated that reporting lower levels of depression and anxiety after treatment

is associated with reduction of SI during treatment. None of the other variables were

significantly associated with change in SI.

Table 4

Variables associated with a decrease in SI after treatment.

Variable	*B*	*SE*	Wald's X^2	*df*	*p*	Exp*(B)*
Q9 PHQ9 pre	2.97	0.65	20.88	1	<.001	19.58
Female	0.31	0.81	0.15	1	.700	1.37
Age	-0.05	0.04	1.56	1	.212	0.95
In a relationship	-0.96	0.76	1.60	1	.205	0.38
Sick leave	-0.93	0.97	0.93	1	.336	0.39
PHQ-ADS pre	0.10	0.63	2.73	1	.099	1.11
PHQ-ADS post	-0.27	0.07	13.09	1	<.001	0.77
WSAS pre	-0.08	0.08	1.11	1	.293	0.92
WSAS post	-0.00	0.07	0.00	1	.992	1.00
EQ-VAS pre	-0.07	0.03	3.37	1	.037	0.93
EQ-VAS post	0.04	0.04	1.56	1	.212	1.05

Note. Dependent variable: change in SI, dichotomized (0 = increased SI, 1 = decreased SI), *N* = 190. Dichotomized variables: female (0 = male, 1 = female), In a relationship (0 = no, 1 = yes) and Sick Leave (0 = no, 1 = yes). PHQ-9 Q9 = The Patient Health Questionnaire, item 9. WSAS = Work and Social Adjustment Scale. PHQ-ADS = Patient Health Questionnaire Anxiety and Depression Scale. EQ-VAS = EuroQol Visual Analog Scale. Pre = pre-treatment. Post = post-treatment.

Discussion

It was found that SI is common among patients receiving psychiatric outpatient treatment. Demographic variables such as male gender and not being in a relationship were associated with reporting SI, along with symptoms of depression and anxiety, impairment of functioning, and lower health-related quality of life. In accordance with the hypothesis, a decrease in SI during treatment was observed, along with decreased symptoms of anxiety and depression, impairment of functioning, and an increase in health-related quality of life. The treatment produced larger effect sizes on all measures for patients who reported SI upon admission, compared to the sample as a whole. A higher level of SI upon admission was the strongest predictor for reduction in SI during treatment, followed by reporting lower levels of

anxiety and depression after treatment. Reduction in SI during treatment was not significantly associated with any other variable.

Rates of SI

More than half (53-57%) of patients reported SI, slightly below the hypothesized rate of around 60%. The hypothesized rate was derived from an application of the ratio between rates of SI found using different assessment methods found in the study by Vera-Varela et al. (2022), to the rate found by Ose et al. (2021), who studied a sample very similar to the one in the current study. The rate found by Ose et al. (2021) stems from a combination of structured interviews with patients, and the clinician's assessment of the patient. The clinician's own assessment is likely to also be based on an interview, as it is common practice in Norway for suicide risk to be assessed by the clinician by asking the patient verbally. It was expected that the difference in assessment method would be reflected in the rates found. The fact that different rates have been found in two such similar samples, indicates that the difference may be a function of the way the data was collected. A clinical implication of this is that self-reporting seems to be a good supplement to an ordinary, face-to-face assessment of suicide risk.

Only one other study where the rate of SI was assessed using a self-report questionnaire was found, in which 72.8% of patients reported having SI (Vera-Varela et al., 2022). Although matching in method of data collection, the study conducted by Vera-Varela et al. (2022), and the current study differ somewhat in the way SI was operationalized. In the interview setting, SI was assessed using the suicidality module of the MINI v. 6.0.0, which includes the question "Have you ever thought that you would be better off dead or wish you were dead?". This construct was rephrased for the self-report questionnaire, and patients were asked "Have you ever felt that you had no desire to live?". Patients responded using a 6-point

Likert scale, offering the following alternatives: "all the time", "most of the time", "more than half of the time", "less than half of the time", "occasionally", and "never." Presence of SI was confirmed if a patient chose any other option than "never".

It is difficult to draw conclusions as to whether the difference in rates should be attributed to differences in operationalization or to other factors, such as sample characteristics, as the study offers limited information about participants, beyond their status as outpatients (Vera-Varela et al., 2022). On the other hand, the rates found in the current study may be inflated by overreporting. While interview-based assessment of SI may be vulnerable to underreporting, it is reasonable to assume that assessment based on self-report is equally vulnerable to overreporting. The actual rate of SI may be somewhere in between. It is beyond the scope of the current study to ascertain the actual rate of SI in a psychiatric outpatient population.

Changes in SI after treatment

The second aim was to explore the changes in self-reported SI following TAU. The present study demonstrated a significant reduction in SI from baseline to post-treatment. A total of 55% of patients with SI at baseline experienced a reduction during treatment, in which a moderate-large effect ($d = 0.73$) was found for the SI-sample. Thus, the finding was close to the proposed hypothesis of a strong effect ($d > 0.80$). The treatment effect on SI found in the present study was respectively smaller ($d = 1.50$, Schneider et al., 2020) similar ($d = 0.87$, Kothgassner et al., 2020), and bigger ($g = 0.12$, Cuijpers et al., 2013) than the effect sizes that have been found in previous studies.

In addition, both Kothgassner and colleagues (2020) and Schneider and colleagues (2020) reported effect sizes for the treatment of depressive symptoms. Kothgassner et al. (2020) found moderate to moderate-large treatment effects on depressive symptoms within

the group for specific interventions ($d = 0.73$) and active controls ($d = 0.51$), while Schneider et al. (2020) found large effect sizes for both patients with ($d = 1.59$) and without ($d = 1.69$) SI at baseline. In comparison, the present study found moderate (no SI-group, $d = 0.58$) and moderate-large (SI-group, $d = 0.79$) treatment effects on symptoms of anxiety and depression, as measured with PHQ-ADS. As the treatment intervention for the active controls in the study by Kothgassner et al. (2020) was more similar to that in the current study, it is not surprising that the effect size was similar as well, despite the relatively lower mean age in the sample. In the study conducted by Schneider et al. (2020), the age of participants in the sample was more similar to the present study, but differed in that the sample was limited to patients with depressive symptoms. The relatively higher effect size may thus suggest that outpatients with depressive symptoms are treated more effectively with regard to SI than in a heterogenous outpatient sample. This is in accordance with findings from previous studies, where an association between reduction of SI and depressive symptoms has been found (Keilp et al., 2018). Alternatively, the differences in effect sizes may reflect that the potential for recovery was bigger in the sample in Schneider et al. (2020) than in the present study, as the initial level of depressive symptoms and SI was higher.

The effect size found in the meta-analysis by Cuijpers and colleagues (2013) stands out as clearly lower than the other studies (Kothgassner, 2020; Schneider et al., 2020). Despite concluding that the findings were not statistically significant, it is worth noting that the studies included in the meta-analysis had considerably lower effect sizes than what has been found in other previous studies, as uncontrolled effect sizes of 0.43 (Duarte et al., 2009) and 0.5 (Barnhofer et al., 2009) were found. This gap in effect sizes may be partially attributed to differences in samples, as patients with recurrent or chronic depression and SI (Barnhofer et al., 2009), and hemodialysis patients (Duarte et al., 2009) were examined,

respectively. Moreover, the treatment interventions given were less extensive and more short-term than other previous studies and the current study.

Dropout from treatment is another factor that may have affected the analysis. It is reasonable to assume that a proportion of patients with high levels of SI might have been transferred to inpatient units during treatment, due to an increased risk of suicide or self-harm. These patients will thus get their course of treatment terminated or postponed, which in turn may affect the results from the analysis. In summary, the changes in self-reported SI found in the current study appear to partially align with previous findings. This implies that patients with SI generally experience reduction in SI during treatment. However, it cannot be concluded how much of the reduction was due to TAU and how much was due to other factors, such as spontaneous remission and regression towards the mean (Morton & Torgerson, 2003).

Noteworthy, patients from the SI-sample still reported having considerable amount of SI post-treatment. A share of 38.8% reported to still have SI after treatment. In addition, 7.4% of patients from the SI-sample (10.0% from the total sample) experienced an increase in SI during treatment. These findings can be related to the fluctuating nature of mood disorders. Another possible explanation is that patients were transferred to other mental health care facilities as the level of SI was reduced.

Patients with SI reported a greater decrease in symptoms on all measurements compared to the patients without SI upon admission. For the SI-sample, there was a moderate-high reduction of anxiety and depression ($d = 0.73$), a moderate reduction of impairment of functioning ($d = 0.43$), and a moderate increase in health-related quality of life ($d = -0.51$). In comparison, for patients without SI upon admission, there was a moderate reduction of anxiety and depression ($d = 0.58$), and small effect sizes for reduction of impairment of functioning ($d = 0.25$) and increase in health-related quality of life ($d = -0.34$). These findings

may suggest that patients with SI benefit more from treatment, contrasting with previous studies' findings (Nobile et al., 2022). One possible explanation is that patients with SI receive more comprehensive care due to the severe nature of the symptoms. The findings may also be influenced by regression towards the mean.

Patient characteristics associated with reporting SI

In accordance with the hypothesis, it was found that a higher score on the composite measure for symptoms of anxiety and depression was associated with reporting SI at baseline. Furthermore, significant associations were also found between SI and impairment of function and low health-related quality of life. The relationship between psychological symptoms and SI is previously established in the field of suicide research, and the present findings provide further support for this connection (Goldney et al., 2001). Nevertheless, the findings emphasize the importance of being aware of SI in psychiatric outpatient populations.

There was also an association between SI and being male. This finding is notable as it breaks with the traditional notion that women report more SI than men, and because no significant gender differences were found in a similar population (Canetto & Sakinofsky, 1998; Ose et al., 2021). Also, a negative association was found between SI and being in a relationship. The direction of causality cannot, however, be determined with certainty. On the one hand, the social support associated with being in a relationship may serve as a protective factor against SI (Endo et al., 2014). On the other hand, SI can be thought to affect the likelihood of being in a relationship.

Patient characteristics related to reduction in SI during treatment

Finally, the hypothesis that lower levels of SI, anxiety and depression at baseline would predict a greater reduction in SI during treatment, was not confirmed. Conversely, the current study rather found that high levels of SI were associated with a reduction in SI during

treatment. This unexpected finding may be due to the fact that patients with high scores on SI have a greater potential for reduction.

In contrast to the sample in the current study, which included patients with symptoms of varying type and severity, several of the previous studies examined patients with high baseline levels of depression and SI (Abbott et al., 2019; Asarnow et al., 2009; Curry et al., 2006). An implication of this is that a patient group that was considered having less severe symptoms in a previous study may have similar symptoms to a group that is considered more severe in the current study. As the characterization of severity is relative within the studies, and different measuring instruments were used, the treatment effect of the different patient groups can thus hardly be compared across different studies. This may serve as a possible explanation for the conflicting findings.

Previously mentioned factors such as higher priority for patients with high SI and the regression towards the mean effect may also have influenced the findings. No other variables included in the analysis were found to be significantly associated with reduction in SI. The inconsistency with previous findings may be related to differences in samples and treatment interventions. However, these findings suggest that access to desirable treatment outcomes is not limited to any type of patient or patient characteristic, such as gender, age, relationship status or level of functioning. The type of symptoms and their severity seem to be the only significant determinants of treatment outcome.

Limitations

There are some limitations to consider in the current study. Firstly, SI was operationalized and assessed using PHQ-9. While PHQ-9 has shown to be a reliable screening tool for SI in clinical practice, the small scale on which each item is rated may limit sensitivity to change during the treatment period. One viable alternative assessment

instrument is the Beck Scale for Suicidal Ideation (BSS). BSS is a self-report instrument that can be completed independently by the patient. Unlike PHQ-9, BSS is intended to identify and measure SI among patients specifically, and while administration requires only around 5-10 minutes, it provides a much more comprehensive assessment of SI in a patient. The total score can range from 0 to 38, with higher values indicating higher risk of suicide, allowing a more nuanced assessment with greater sensitivity to change (Erford et al., 2018). A clinician's assessment of SI could also increase the specificity of the measure.

Another limitation is the lack of information available concerning the amount of treatment given to patients and treatment received both before and after the treatment period examined in this study. Participants may have been patients at Nidaros DPC for years prior to this timeframe and may have been transferred to other mental health departments during, or after the treatment period studied. The fact that the treatment/intervention provided to patients in the current study is not specified, and is rather simply classified as TAU, can be considered both a strength and a weakness. While it may increase the ecological validity of findings, the findings do not indicate what works and what does not work to lower SI in patients. Furthermore, SI was assessed at two points in time; before and after treatment. More frequent assessments would give a more precise picture of how SI changes over time and be less prone to effects of chance. Also, the lack of follow-up data inhibits the possibility of capturing delayed treatment effects.

Summary and conclusion

In summary, it was found that SI is common in this heterogeneous sample of psychiatric outpatients. Furthermore, patients who report SI tend to report more psychiatric symptoms and impairment of function compared to patients who do not report SI. SI was also found to be somewhat more common among male patients and patients who are not in a

relationship. Treatment as usual proved to be efficient in lowering SI, as more than half of patients with SI at baseline experienced a decrease in SI during treatment. Higher levels of SI and depression/anxiety at baseline were the only factors associated with reduction in SI, indicating that reduction in SI following treatment is equally realistic for all patients, with regard to demographic variables.

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