Chronic Suicidality in Borderline Personality Disorder: What Predicts Acute Psychiatric Readmissions?

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Abstract

Individuals diagnosed with Borderline Personality Disorder (BPD) often struggle with chronic suicidal thoughts and behaviors and have frequent acute psychiatric admissions. Prevention of serial admissions and disruptions in long-term treatment strategies is needed. This study explored predictors of how *frequently* and how *quickly* patients diagnosed with BPD will be readmitted after an index psychiatric admission. We identified self-harming behavior as predictor of readmission frequency, whilst depression and hallucinations and delusions predicted time between the index admission and the first readmission. We recommend that predictors of readmissions should be carefully monitored and treated following index admission.

Introduction

Borderline personality disorder (BPD) affects around 1% of the general population (Samuels et al., 2002; Torgersen, Kringlen, & Cramer, 2001). Its symptomatology is complex and is often described in terms of dysregulation of cognitive, behavioral, emotional and interpersonal functions (Linehan, 1993). Self-harming and suicidal behaviors, frequently observed in individuals diagnosed with BPD (Linehan, 1993), are one of the main reasons for their frequent presentation at acute mental health services (Goodman, Roiff, Oakes, & Paris, 2012; Mellesdal et al., 2014; National Institute for Health and Clinical Excellence [NICE] 2009). Specifically, while 50-80% of individuals diagnosed with BPD engage in self-harming and suicidal behaviors (Oumaya et al., 2008), completed suicide rates are found to be around 10% (Black, Blum, Pfohl, & Hale, 2004; Oldham, 2006).

Although the boundary between these phenomena is not clear, it is important to distinguish between suicidal and non-suicidal self-harming behaviors, as they may serve different functions and have very different implications for treatment (Paris, 2016). While suicidal behaviors in individuals diagnosed with BPD involve at least some suicide intent and are often linked to feelings of hopelessness and depression (Linehan, 1993), non-suicidal self-harming behaviors entail no suicide intent but often serve to regulate negative emotions, communicate distress or to gain a sense of control (Paris, 2004, 2016).

Similarly, it is important to distinguish between acute and chronic suicidality, as the required clinical management will differ. Specifically, hospitalization of chronically suicidal individuals is still a rather common treatment approach, although guidelines suggest that hospitalization of individuals diagnosed with BPD should be avoided if possible (NICE 2011; Norwegian Directorate of Health, 2008). Specifically, hospitalization may reinforce the behaviors that outpatient treatment is trying to reduce (Linehan, 1993; Sansone, 2004), and may overstimulate these individuals' attachment systems (Fonagy & Bateman, 2006).

Unfortunately however, BPD is still a significant predictor of acute psychiatric admissions and readmissions (e.g. Mellesdal, Mehlum, Wentzel-Larsen, Kroken, & Jorgensen, 2010). One dilemma is the clinical management of psychotic symptoms in BPD, as recommendations of avoiding acute psychiatric hospitalization of individuals diagnosed with BPD may be surpassed if psychotic experiences are considered as symptoms of an acute psychotic episode that warrants hospitalization (NICE 2018). In fact, psychotic symptoms are one of the most common reasons for why individuals diagnosed with BPD are hospitalized (Hull, Yeomans, Clarkin, Li, & Goodman, 1996). If hospitalization is considered necessary, careful consideration is required in terms of medication treatment and length of stay (Paris, 2002).

Interestingly though, although longitudinal data (see Gunderson et al., 2000 for more information on the Collaborative Longitudinal Personality Disorders Study; CLPS) suggest that BPD patients receive extensive pharmacological and psychosocial treatment, as compared to patients with Major Depressive Disorder (MDD) for instance (Bender et al., 2001), other longitudinal findings (see Zanarini, Frankenburg, Hennen, & Silk, 2003 for more information on the McLean Study of Adult Development) have suggested that even though BPD patients do poorly symptomatically in the short run, they do well symptomatically in the long run. Specifically, about 75% of BPD inpatients experienced remission within the first six years of the follow-up and, once meeting criteria for remission, the likelihood of recurrences were small (Zanarini, Frankenburg, et al., 2003).

An important focus in managing symptom complexity and chronic suicidality in BPD during the time they do poorly symptomatically is thus to identify predictors of acute psychiatric admissions. We recently explored the predictive value of the nine BPD criteria (as outlined in the Zanarini Rating Scale for Borderline Personality Disorder [Zan-BPD]; Zanarini, Vujanovic, et al., 2003) for self-harm related general hospital admissions in a cohort

of patients who had previously been discharged from acute psychiatric hospitalization (Mellesdal et al., 2015). Findings indicated that the underlying factor of 'dysregulation' predicted the number of self-harm related general hospital admissions. A limitation of this study, however, was that data on potential predictors for admission were limited to the diagnostic BPD criteria, whilst important clinical dimensions such as cognitive problems, hallucinatory experiences or problems with daily living were lacking. Building on our previous findings, we wanted to explore potential predictors of admission in patients diagnosed with BPD at a more general level, assessing four key areas of functioning: behavior, impairment, symptoms and social functioning (Wing et al., 1998).

Our aim was thus to examine whether problems at different areas of functioning are predictive of how *frequently* and how *quickly* patients diagnosed with BPD will have an acute psychiatric readmission after discharge from an index acute psychiatric admission. Specifically, we examine which of the areas of functioning are predictive of 1) number of acute psychiatric admissions, and 2) the temporal unfolding of admissions, i.e. time between the index admission and subsequent readmissions in individuals diagnosed with BPD. Based on our previous findings (Mellesdal et al., 2015) it was hypothesized that variables related to emotion dysregulation would significantly predict both number and time to readmissions in this patient group. It was also hypothesized that readmissions would be associated with hallucinations and delusions, as psychotic symptoms have been found to be a common predictor of acute hospitalization (Hull et al., 1996).

Methods

The current study is part of a larger open prospective cohort study (Suicidality in Psychiatric Emergency Admissions [SIPEA], e.g. see Kroken et al., 2014; Mellesdal et al., 2015) conducted at Haukeland University Hospital, Psychiatric Division, Bergen, Norway, in

collaboration with the National Centre for Suicide Research and Prevention, University of Oslo, Norway. The overall aim of the study was to increase our understanding of suicidality in patients with acute psychiatric hospitalization as a basis for development of more differentiated treatment measures to those admitted. The cohort consisted of 7,000 consecutively admitted patients with a total of 18,910 admissions and the inclusion period was from May 2005 to June 2014. In addition, after the inclusion period ended, data were still collected from participants entering the study at a late stage. This follow-up period (until 31.12.2015) was used to ensure that a reasonable amount of data was collected for all participants, not only those included at an earlier stage. The psychiatric department at Haukeland University Hospital covers a catchment area of approximately 400,000 inhabitants. Study approval was obtained from the Regional Committee for Medical Research Ethics and the Norwegian Social Science Data Service. The Norwegian Directorate of Health Care authorized use of patient information.

Participants and Procedures

All patients admitted to the acute psychiatric department at Haukeland University Hospital, Norway, who were diagnosed with BPD during at least one admission within the inclusion period, were eligible for inclusion (N=334, equivalent to 4.7% of all patients admitted in the inclusion period). This sub-group of patients accounted for 3,184 (16.8%) of the 18,910 admissions. Additional diagnoses were given when appropriate and the diagnostic distribution of comorbidity patterns is presented in Table 1. Diagnoses were given by the clinician in charge of the patient's treatment, and was given according to the International Classification of Diseases, version 10 (ICD-10; World Health Organization [WHO], 1992). The minimum follow-up time was 8 months while the maximum follow-up time was 9.9 years. The mean (median) follow-up time was 5.8 years (6.1 years) (SD=2.8).

[PLEASE INSERT TABLE 1 HERE]

Measures

During each admission, trained research assistants recorded sociodemographic and treatment-related information and the clinician who assessed the patient at admission completed the Health of the Nation Outcome Scale (HoNOS; Wing et al., 1998). HoNOS consist of 12 items assessing clinically relevant symptoms, behaviors, impairments and level of social functioning (Wing et al., 1998) over the last two weeks. Each HoNOS item is rated on a 0–4 scale of severity based on a glossary containing a definition at each rating point that is unique for all 12 items (Wing, Curtis, & Beevor, 1999). A review of psychometric properties of HoNOS suggested moderately high internal validity and reasonably good predictive validity, as well as fair to moderate test-retest and inter-rater reliability (Pirkis et al., 2005).

Descriptive data for individual HoNOS-items are presented in Table 2. As can be seen in the table, the percentage of missing data was especially evident on HoNOS item 8 (other mental and behavioral problems) so this item was excluded from further analysis. It should be noted that when clinicians rated self-harm, as captured by HoNOS item 2, they used the definition of self-harm outlined in the guidelines (NICE, 2011, p. 4): "any act of self-poisoning or self-injury carried out by an individual irrespective of motivation. This commonly involves self-poisoning with medication or self-injury by cutting. There are several important exclusions that this term is not intended to cover. These include harm to the self arising from excessive consumption of alcohol or recreational drugs, or from starvation arising from anorexia nervosa, or accidental harm to oneself".

[PLEASE INSERT TABLE 2 HERE]

Data analysis

Descriptive statistics were calculated to provide an overview of the characteristics of patients diagnosed with BPD, including an exploration of common comorbidities. To account for the reasonably high level of missingness in the other HoNOS items, multiple imputation method was employed to avoid loss of precision and power (Sterne et al., 2009). This approach was selected due to its ability to deal with uncertainty of missing values (Schafer, 2002).

A Poisson regression was initially conducted to explore whether frequency of admissions could be predicted by ratings on the HoNOS items obtained during index admission. The number of admissions was regressed on all HoNOS items. However, skewness analysis and visual inspection of the data suggested positively skewness (see Table 1 for information on median and interquartile range). The goodness-of-fit statistics also suggested that the model was overdispersed, as the ratio of the deviance to its degrees of freedom was large (Pearson Chi-Square value/df = 23.54) (Norušis, 2012). Due to this, negative binomial regression was selected (Pearson Chi-Square value/df = 1.869) (Hilbe, 2011). Due to the highly variable follow-up timeframe across patients the data was trimmed to include number of readmissions within the first 12 months post index admission to ensure similar follow-up time.

To explore the temporal unfolding of readmissions in patients diagnosed with BPD survival analyses were conducted. Kaplan-Meier survival analysis was used to estimate the proportion of patients being readmitted after their index admission and to estimate the elapsed time between index admission and their first readmission. Multivariate Cox regression analysis was then conducted to study whether HoNOS items could predict the time elapsed between index admission and first readmission. Proportional hazard assumption was

examined (Norušis, 2012) by analyzing whether the hazard ratio (HR) was dependent on time as indicated by statistical significant time-dependent covariates. The interaction terms were removed and the model re-estimated until all included interaction terms were statistically significant.

Results

Of the 334 patients diagnosed with BPD, 278 patients were readmitted during the study period. The median number of admissions was 4 (see Table 1) and the estimated median time until readmission was found to be 27 weeks (189 days). The survival function is displayed in Figure 1.

Figure 1. Kaplan-Meier plots for the probability of being readmitted to the acute psychiatric ward during the study period.

[PLEASE INSERT FIGURE 1 HERE]

Predicting frequency of readmissions

A statistically significant positive association was found between self-harming behaviors (HoNOS item 2) at index admission and number of readmissions, B=.13, *p*=.005. No other associations were found between HoNOS items and number of readmissions.

Predicting time to readmission

The multivariate Cox regression findings are presented in Table 3. Two HoNOS items were statistical significantly associated with *quicker* readmission in patients diagnosed with BPD. Specifically, patients who scored higher on symptoms of hallucination and delusion (HoNOS item 6), HR=1.13, 95% confidence intervals (CI) =1.01-1.26, *p*=.038, and on symptoms of depression (HoNOS item 7), HR=1.18, 95% CI=1.04-1.35, *p*=.013 were readmitted to the acute psychiatric ward more quickly.

[PLEASE INSERT TABLE 3 HERE]

Discussion

The overall aim of the study was to explore how *frequently* and how *quickly* patients diagnosed with BPD will be readmitted to the acute psychiatric ward after discharge from an index acute psychiatric admission, and further to assess whether HoNOS items could predict patterns of readmissions. Although patients diagnosed with BPD represented a very small subgroup of all patients admitted to the acute psychiatric ward, they still accounted for about one out of six admissions. Also, even though it is questionable whether hospital admissions are beneficial for this patient group (Paris, 2004, 2016), individuals diagnosed with BPD tended to have very frequent acute psychiatric readmissions.

Predictors of *how frequently* patients diagnosed with BPD are admitted to the acute psychiatric ward

Frequency of readmissions was predicted by higher scores on self-harming behaviors. This fits with our predictions and the literature in general, in which self-harming behaviors has been found to be an important predictor of both psychiatric and somatic admissions (Carroll, Metcalfe, & Gunnell, 2014; Gunnell et al., 2008; Mellesdal et al., 2015). Importantly, self-harming behaviors in many cases represent a way of communicating exacerbation of stressors and symptoms in the individual's life (Linehan, 1993) and the explicit and implicit nature of these behaviors must be carefully assessed and met with appropriate interventions (Linehan, 1993) to prevent further escalation and potential readmission.

Predictors of *how quickly* patients diagnosed with BPD are admitted to the acute psychiatric ward

Depression and hallucinations and delusions were associated with *how quickly* patients were readmitted. This may suggest that the time *after* discharge from the acute psychiatric ward is a critical time to attend to these symptoms to prevent readmissions. The fact that depressive symptoms are linked to readmissions in this and other patient group(s) is not surprising. Depression is linked to suicidal ideation in a range of psychopathologies (Henriksson et al., 1993). Also, considering the rapid and intense swings in mood that individuals diagnosed with BPD tend to experience, it is not surprising that comorbid depressive symptoms are linked to quicker readmissions (Eaton, 2011).

Further, as predicted, symptoms of hallucination and delusion were also significant predictors of quicker readmissions in this patient group. Psychotic symptoms of brief duration are frequently seen in individuals diagnosed with BPD (Paris, 2002) and increase in psychotic symptoms is often a sign of increased distress (Glaser, Van Os, Thewissen, & Myin-Germeys, 2010). These findings are in line with other longitudinal studies arguing that hallucinations in BPD is quite common (Clarke, Hafner, & Holme, 1995; Hull et al., 1996).

It has been emphasized that the time after discharge is a particularly vulnerable time for patients (Geddes & Juszczak, 1995; Goldacre, Seagroatt, & Hawton, 1993; Gunnell et al., 2012; Meehan et al., 2006; Qin & Nordentoft, 2005). We suggest careful monitoring of depressive and psychotic symptoms during times when individuals diagnosed with BPD experience exacerbation of stressors and symptoms and when engagement with self-harming behaviors increases. In line with previous findings, monitoring may be particularly important after discharge from an inpatient psychiatric admission.

Current management of chronic suicidality in BPD and suggestions for service improvement

Our findings are in line with studies demonstrating that self-harm and psychotic symptoms are the most common reasons for hospitalization in individuals diagnosed with BPD (Hull et al., 1996). Monitoring and management of self-harming behaviors and symptoms of hallucination and delusion is thus of high importance in community mental health treatment to prevent readmissions in this patient group. In addition, focus on monitoring and managing depressive and psychotic symptoms right after discharge from an inpatient stay is crucial to prevent readmissions. We recommend conducting continuous, more elaborate assessment of risk and exacerbation of stressors and symptoms (American Psychiatric Association, 2003; Bryan & Rudd, 2006; NICE, 2011) following index admission and to focus on treating symptoms of self-harm, depression and hallucination and delusion to prevent readmissions. Future studies should also explore whether the communication and cooperation between acute inpatient treatment and community mental health services can be improved to enable a more comprehensive treatment plan for the patients that presents with repetitive self-harming and suicidal behaviors. Other studies have also emphasized the important role of post-discharge planning (e.g. Clarke et al., 1995).

Strengths, limitations and future research suggestions

Among strengths of the current study are the use of longitudinal data and the large sample size drawn from a catchment area serving all socio-economic classes, which ensures that findings can be generalized to a wider population. It should however be noted that as the present study was part of a larger open cohort study with a wider aim to explore suicidality in psychiatric emergency admissions, some variables of particular relevance to BPD was not included in the design. For instance, measures of trauma, attachment styles and emotion regulation (see Lieb, Zanarini, Schmahl, Linehan, & Bohus, 2004 for an extensive review of

BPD relevant variables) could potentially have provided important information regarding pattern of readmission. Future studies should continue to explore potential predictors of acute psychiatric admissions for individuals diagnosed with BPD in more detail.

Another limitation is the potential under-diagnosing of BPD within our cohort due to diagnosis being given based on clinical interviewing rather than relying on structured interviewing. It is possible that patients displaying many and more frequently observed borderline symptoms and behaviors, such as mood instability and self-harming behaviors, are more often correctly diagnosed with BPD, as compared to patients displaying more subtle BPD characteristics. This could potentially result in an under-estimation of the BPD prevalence within our cohort, as compared to other studies identifying a much higher prevalence of BPD within inpatient psychiatric services (e.g. Widiger & Weissman, 1991).

The use of HoNOS items only can also be a potential limitation, as these items are very general and do not assess details related to these ratings. In addition, these items are clinician rated and the clinician's perception of the patient's main presenting problem is not necessarily representative of the patients' perception of their experienced difficulties. Future studies should explore this in more depth, including qualitative data on the patient's experiences of predictors of admission.

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