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# Vulnerability of personality disorder during COVID-19 crises: a multicenter survey of mental and social distress among patients referred to treatment

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**ABSTRACT**

**Background:** Relational and emotional problems, dysregulation, self-harming or substance abuse often characterize personality disorders (PD). In Norway, COVID-19 restrictions led to an abrupt shutdown of services from 12 March 2020 also including specialized PD treatments.

**Aims:** The objective of this study was to investigate social and mental distress among patients with PDs during the first COVID-19 wave.

**Design:** A survey was distributed after the first COVID-19 wave (June–October 2020) among 1120 patients from 12 PD treatment units.

**Results:** The response rate was 12% ($N = 133$). The survey reflected impairment of occupational activity (53% <50% activity last 6 months), life quality (EQ-5D-VAS: 56, SD 19), and personality functioning (LPFS-BF $\geq$12: 81%, 35% avoidant PD, 44% borderline PD) and high levels of depression and anxiety (PHQ-9 $\geq$ 10: 84%, GAD-7 $\geq$ 10: 68%), 49% with health-related anxiety. Problem increase was reported for anxiety (28%), depression (24%), aggression (23%), substance use (14%), and 70% of parents had more child-care difficulties. Self-destructive behaviors (26%) did not increase. The majority (78%) reported increased or unchanged social isolation and loneliness. Occupational activity declined with negative effects on part-time jobs/rehabilitation. Therapist contact was mainly telephone-based (63% $\geq$ weekly contact). More severe personality problems, current depressive symptoms, and self-harming before 12 March were associated with more frequent consultations.

**Conclusion:** The survey confirms severe, enhanced levels of mental distress among patients receiving telephone-based consultations as the main alternative to specialized PD treatment during the COVID-19 shutdown. The most vulnerable patients received more frequent consultations and self-destructive actions did not increase.

## Introduction

Personality disorders (PDs) are highly comorbid disorders that contribute to overall psychopathology among treatment-seeking patients [1]. During the COVID-19 pandemic, high levels of mental distress have been associated with a prior psychiatric history, mental disorder, and social stressors such as unemployment [2–4]. For patients with PDs, the consequences of the pandemic have received little attention. This study focuses on mental and social distress during the

COVID-19 outbreak in a clinically representative sample with PDs.

General population studies have demonstrated enhanced levels of depression and anxiety during the COVID-19 pandemic [5]. Comparing population rates during the pandemic and before, US-based and Norwegian surveys independently report three-fold increases of depressive states (US: from 9% to 28%, Norway: from 10% to 30%) [2,6]. Corresponding exacerbations have also been found in populations from Ireland (23% depression, 20% anxiety) [7], Cyprus (23% anxiety) [3], Hong Kong (19% depression, 14% anxiety) [8], and China (18% depression) [9]. The referred studies are all based on self-reported depression and anxiety, the Patient Health Questionnaire-9 [10,11] and Generalized Anxiety Disorder-7 [12]. Corresponding symptom enhancement in more vulnerable PD populations would represent considerable destabilization.

The population prevalence of PDs ranges 9–13% [12,13]. In community mental health services, frequencies of 40% are reported [1]. On referral to treatment, the most frequent comorbidities are depression (73%) and anxiety disorders (57%) [14]. Interestingly, in a comparison of depressed patients with and without PD, PD patients reported the more severe symptoms (moderate to severe depression: 79% versus 62%, moderate to severe anxiety: 54% versus 22%) [15].

Features of PD can be conceptualized within dimensions of self and interpersonal personality functioning [16,17], and personality problems include reduced capacities for regulating and differentiating emotional states [16,18], social inhibition and insecure attachment relationships [19–22]. Patients may have difficulties trusting and connecting to other people, or conversely, describe extreme dependency and easily activated fears of separation. PD-related behaviors may be impulsive, irresponsible, non-compliant, or aggressive, and self-destructive thoughts and actions are prevalent [23]. A broad range of PD features lead to maladaptive social functioning [24,25]. During a crisis, decompensations may include severe, high-risk situations. A recent review emphasizing the paucity of studies advanced that patients with PDs might be particularly and negatively affected by the pandemic [26].

Irregular treatment attendance, problems establishing a trustworthy alliance, or excessive use of crisis-related health services are often described among patients with PD [27–30]. Specifically structured treatments focusing on core aspects of personality functioning are therefore recommended [31–34]. Positive effects include improvement of destructive behaviors and mental distress [35]. However, across the world, COVID-19 outbreaks lead to societal restrictions and concern has been raised about the consequences for those in need of mental health care [36]. In Norway, the first wave of COVID-19 led to an abrupt shutdown of face-to-face outpatient consultations within specialized mental health services also including PD treatments. The official shutdown date was 12 March.

The primary aim of this study was to evaluate mental distress, maladaptive behaviors, social and occupational situation and perceived change for patients in a specialized PD treatment situation after the shutdown of regular service formats. Secondarily, the study aimed to investigate the relation between frequency of therapist contact after 12 March and aspects of mental health.

## Material and method

This study is based on an anonymous, cross-sectional survey performed in June-October 2020. The study material in this study is solely based on the survey.

### Participants

All patients invited to the survey were admitted to one of 12 PD treatment units within the Network for Personality Disorders (the Network) before 12 March. The study had no further specified inclusion or exclusion criteria. The 12 treatment units participated by distributing questionnaires to 1120 patients mainly by mail. Responding patients ($N = 133$) sent the completed survey by prepaid mail to the research center (response rate 12%). Recruited responders represented different phases of treatment or pretreatment initial assessment.

### Treatment setting

The Network is a clinical research collaboration within specialist mental health services in Norway [37]. All therapists are trained in systematic interviews for diagnostic assessment: MINI for symptom disorders [38] and for PDs, SCID-5-PD [39]. Diagnostic assessments are performed in the first phase, after referral to treatment, before starting therapy (pretreatment). To supplement the diagnostic evaluation of patients, the Network provides a standard collection of self-reports. The Network advises open feedback procedures to patients on all assessments, including both self-reports and diagnostic interviews.

### The survey

The survey was developed in a multidisciplinary workgroup with researchers, clinicians, and users. The survey included self-reports from the Network's standard collection and new survey-specific items and modifications related to the COVID-19 situation. The survey as a whole provided quantitative and qualitative data and is the basis for several other studies [40–42]. Table 1 demonstrates all topics in the survey and those elaborated in this study. The survey is available in Norwegian language (Supplementary material).

### Assessment of mental distress, maladaptive behaviors, social and occupational situation

#### Mental distress: self-report questionnaires

1.  Health-related life quality (EuroQoL 5L - EQ-5D-5L) [43] is a five-item questionnaire that includes a visual analog scale (VAS), ranging health state from worst to best possible (scores 0–100). Mean VAS scores (burden of

**Table 1.** Overview of survey topics, survey-specific items and self-report instruments.

| | | Quantitative data | | | Qualitative data |
|---|---|---|---|---|---|
| | | Period after 12 March | Before 12 March | Perceived change after 12 March | Open fields for more elaboration |
| Sociodemographic data | Gender<br>Age<br>Living situation | Survey-specific items | | | |
| COVID-19 exposure, and health-related situation | COVID-19 exposure<br>Health-related anxiety<br>Mental health service need/use<br>Physical illness & need/use of medical services | Survey-specific items | | | Experiences<br>Experiences<br><br>Experiences |
| | Health-related life quality | EQ-5D | | | |
| Level of personality functioning | Personality problems | LPFS-BF | | | |
| Mental status | Depression<br>Anxiety<br>Aggression | PHQ-9<br>GAD-7<br>MOAS-3-item | Survey-specific items:<br>Pretreatment diagnoses | Survey-specific items | Most important mental health problems & experienced effects of the COVID-19 crises |
| Self-destructive behaviors and substance use | Non-suicidal self-harm<br>Suicide ideation<br>Suicide attempts | Survey-specific items | Survey-specific Items: Six-month period before | Survey-specific items | Reasons & changes<br>Experienced changes<br>Reasons for suicide attempts after 12 March |
| | Substance use | | | | Reasons for increased substance use & effects of the COVID-19 crises |
| Social factors | Occupational status | Survey-specific items | Survey-specific items: Six-month period before | Survey-specific items | Experienced changes in work or study situation |
| | Caring for children<br>Social contacts, isolation & loneliness<br>More initiative/energy | | | | Experienced changes<br>Experiences<br><br>Experiences |
| Treatment | *Reaction to shutdown* | *Survey-specific items* | | | *Conveyed information about the shutdown & immediate reactions* |
| | Treatment contact | Survey-specific items | *Survey-specific items* | *Survey-specific items* | *Experiences of alternative consultation formats (telephone, video, individual and group)* |
| | Treatment modality & implementation time | Survey-specific items | *Survey-specific items* | | |

This table demonstrates all topics in the survey including specific self-report instruments (see methods section for abbreviations). Topics covered in this study are indicated by gray shaded cells. Separate studies cover the other demonstrated topics (*italic*) on treatment and qualitative data.

disease) in general population studies range 80–89, in a PD population, 56 [44,45].

2. Levels of personality functioning brief form (LPFS-BF) [46] is a 12-item assessment of the DSM–5 Level of Personality Functioning Scale (Alternative Model of Personality Disorders), rated on a 0–3 response scale ('Very false or Often False' to 'Very true or often True'). In this study, on a basis of clinical decision-making, a mean total sum-score of LPFS-BF $\geq$12 was considered to indicate relevant personality problems.

3. Patient Health Questionnaire, depression (PHQ-9) assesses depressive symptoms by nine items (0–3 response scale, 'Not at all' to 'Nearly every day') [10,11] Recommended PHQ-9 total sum-score cut-points indicate depression-levels: None (0-4); Mild [5–9]; Moderate [10–13,47]; Moderately Severe [14–18]; and Severe [19–26]. In line with other population studies, including also COVID-19 studies [2,5], a dichotomous PHQ-9-variable indicated scores $\geq$ 10 for clinically relevant depressive states in this study.

4. Generalized Anxiety Disorder-7 (GAD-7) assesses anxiety symptoms by seven items (0-3 response scale, 'Not at all' to 'Nearly every day') [47]. Recommended GAD-7 total sum-score cut-points indicate anxiety-levels: None (0-4); Mild [5–9]; Moderate [10–14,47]; and Severe (>15). Scores $\geq$10 indicate a possible anxiety disorder, but scores $\geq$8 are also reported cut-offs [48]. Followingly, and in line with other COVID-19 population studies [5,8], in this study, a dichotomous variable indicated score levels $\geq$10 for clinically relevant anxiety states. For illustrative comparison with other Nordic studies [6,49], proportions with cut-offs $\geq$8 is depicted in Figure 1.

5. Aggression was assessed with three of four items from the Modified Aggression Scale [50]; verbal, against property, and physical aggression towards other people, each aspect rated on a three-point scale (0-2, 'Not at all', 'Sometimes', 'Quite often'). In further analyses, the sum-score of these three items was termed 'MOAS-3-items'. The remaining aspect, autoagression (self-harm) was addressed in survey-specific items.

Mental distress
PD survey versus Nordic population studies
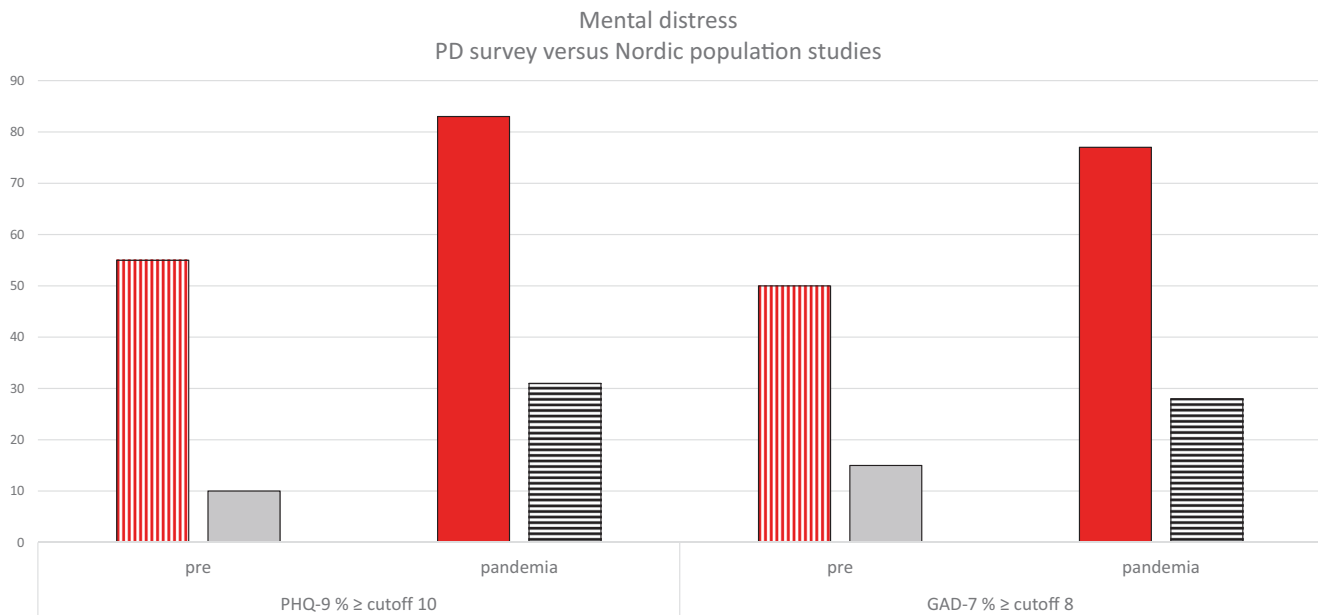


**Figure 1.** Frequencies of pretreatment diagnosed depression and anxiety in the study sample (column with vertical stripes) as compared to proportion reporting moderate to severe levels of depressive symptoms (PHQ-9) and anxiety symptoms (GAD-7) at the time of the survey (column with solid (red) dark color), normal pre-pandemic population levels in Norway (depression) and Sweden (anxiety) (light gray columns) (Ebrahimi [6]; Johansson [49]), and mean Norwegian population levels reported during the pandemic (column with horizontal stripes) (Ebrahimi [6]).

A survey-specific extra question was included to the PHQ-9, GAD-7 and MOAS-3-items: 'Regarding your answers to the questions above, how is your situation now – compared to before 12 March?' (Answer options: Better, the same, worse).

### Survey-specific items

1.  Pretreatment diagnoses (received in the initial evaluation phase):
    a.  PD (yes/no) and further specification of type (options: Avoidant PD, borderline PD, other PD, unknown). The options were based on data from other periods in the Network concerning the most frequently accounted PDs [14].
    b.  Symptom disorders (yes/no). If yes, further specification of type (options: Depressions, anxiety disorders, OCD, eating disorders, PTSD, substance use disorder, autism, psychosis, other, unknown).
2.  Maladaptive behaviors
    a.  Self-destructivity: Non-suicidal self-injury, suicide thoughts and attempts six months prior to and after 12 March (answer options: yes/no). Questions on self-harming acts included prior frequencies (options: daily, weekly, monthly or more) and experienced change after 12 March (options: less, same, more often, much more often).
    b.  Substance use: Current (answer option: yes/no), specification of substance and number of substances, and experienced change after 12 March (options: less, same, more often, much more often). Open questions included enquiry about reasons for

substance use. A count of mental or social problems as given reasons for current substance use was included in this study.
3.  Social and occupational situation
    a.  Current living, family and child-care situation (categorical answer options). For child-care, enquiry included change after 12 March (options: easier, unchanged, more difficult).
    b.  Social isolation, loneliness and current social situation: Current experience (yes/no) and change after 12 March (options: less/better, same, more/worse). Enquiry about more energy/initiative after 12 March (yes/no).
    c.  Occupational situation: The 6-month period before 12 March (months in at least 50% work/study), and current status of work/study, leave or pension (options: yes/no). Open questions included specification of COVID-19 crises related change in working activity after 12 March. A count of COVID-19 crises related negative effects on working activities was included in this study.
4.  Treatment situation
    a.  Treatment phase on 12 March
    b.  Consultation received after 12 March
    c.  Time from shutdown to first consultation (number of weeks)
    d.  Consultation frequency after the shutdown (options: twice weekly or more, weekly, every second week, monthly, less than monthly, no consultations).
5.  Exposure to COVID-19 infection (self or close relations), testing, risk group, health-related worries, and use of different health services (options: yes/no).

## Ethics

Data collection procedures were approved by the Norwegian Regional Ethics Committee (ID: REK SØ: 132084). Data security procedures at the survey center were approved by data protection officials at Oslo University Hospital. All contributing units had local approvals. Patients received written information on the project. Voluntary participants filled in the questionnaire and returned it directly, in anonymous form, to the project center.

## Statistics

Statistics were performed with the IBM SPSS Statistics for Windows, Release 27 [51]. Descriptive data are given as percentages (%) and mean values with standard deviations (SD). Pearson's chi-squared tests were performed for comparison of independent categorical variables and McNemar's test for paired comparisons of categorical data. Rates of current depressive states (PHQ-9 $\geq$ 10) and anxiety states (GAD-7 $\geq$ 10) were compared to the reported pretreatment diagnoses. Data used in statistical comparisons were approximately normally distributed (diagnoses, occupational functioning, PHQ-9, GAD-7, LPFS-BF: skewness $<$ 0.5, and self-harming, suicide thoughts, sum-score MOAS-3-items and consultation-number, skewness $<$ 1).

Linear mixed models [52] enables consideration of variation explained by the independent variable (fixed effect) and variation unexplained by the independent variable (random effects, residual variation) and was used to investigate associations between the frequency of therapist contact after 12 March and aspects of mental health. A continuous variable, termed 'consultation-number', based on the reported consultation frequency (1: 0 sessions, 2: less than monthly, 3: Monthly, 4: Every second week, 5: weekly, 6: twice or more weekly) reflecting the number of consultations over a 12-week period. The reference model had consultation-number as dependent variable, included fixed effects, no specified random effects, but an unstructured variance giving covariance estimates of residual variation in each model. Table 4 presents the open reference model with fixed effects, $p$-values, estimates of residual variance, and for further analyses of predictors, log-likelihood statistics indicating goodness of model fit (Akaike information criterion, AIC). Predictors included Model 1: MOAS-3-item sum-score, PHQ-9 sum-score and GAD-7 sum-score, Model 2: LPFS-BF sum score, and Model 3: Self-harming behaviors and suicide thoughts. Each predictor model is judged by the associated deviation of the dependent variable (fixed effects), change in estimated residual variation (covariance parameters), and log-likelihood statistics (Akaike's Information Criterion, AIC) (Table 4). The reduction of residual variation in a predictor model relative to the open reference model is given in the result section as % explained variance.

Due to multiple tests (six comparisons and three regression models), we report exact $p$-values for transparency, and in the mixed models $p$-values are supplemented with indices of model fit and variance estimates. A strict Bonferroni correction (0.05/9) would imply a significance level of $p < 0.006$.

## Results

### Sample description

Table 2 demonstrates sample characteristics, pretreatment diagnoses and current treatment status. The majority were females, 69% younger than 26 years. Comorbidity of mental disorders was frequent, the majority had previously received a PD diagnoses and were attending PD treatment on 12 March.

At the time of the survey, the study sample reported poor personality functioning (LPFS-BF $\geq$ 12: 81%), and a high burden of disease (mean VAS score 56, SD 20). Seven patients did not answer this part of the survey. Table 2 demonstrates low levels of COVID-19 exposure in the study sample during the first COVID-19 wave, but high levels of health-related anxiety (49%). Sixty-three per cent of the sample reported weekly or more frequent contact with therapists at the specialized treatment units, 84% had telephone consultations, and 38% digital individual sessions. Thirty-four percent had also contacted emergency mental health services (crises telephones, outpatient consultations, and psychiatric hospitals) after 12 March.

### Survey responders compared to PD samples

To investigate how well the survey responders represented a clinical sample of patients with PD we compared the study sample ($N = 133$) to former pretreatment assessments of Network patients (data collected 2017–2019, $N = 1609$) (Table 2). No significant differences were found for occupational impairment and levels of personality functioning ($p > 0.05$, independent samples T-tests). The study sample differed by recruiting older patients, more females, less frequent mood and substance use disorders, more frequent borderline PD and/or PTSD, and fewer living alone (all $p < 0.05$).

### Levels of mental distress: depression

Fifty-six percent had received a pretreatment diagnosis of depression (Table 2). Table 3 demonstrates self-reported depressive symptoms (PHQ-9) and indicates high levels at the time of the survey. The comparison of depressive states before (pretreatment diagnoses) and after 12 March (PHQ-9 sum-score $\geq$ 10) suggested an increase ($p < 0.001$). Among patients with no pretreatment depression diagnosis, 76% had PHQ-9 $\geq$ 10 after 12 March. Table 3 demonstrates experienced change after 12 March with 24% reporting more symptoms. Figure 1 illustrates levels of depression as compared to population studies.

### Levels of mental distress: anxiety

Fifty percent reported a pretreatment diagnosis of anxiety (Table 2). Table 3 demonstrates self-reported symptoms of

**Table 2.** Characteristics of the study sample.

| | Study sample | | Comparison to other PD sample | |
|---|---|---|---|---|
| | Survey responders N = 133 | | Network for personality disorders Pretreatment (2017–19), N = 1609 | |
| | Mean (SD) | % | Mean (SD) | % |
| Age | 33 (11)* | | 30 (9) | |
| Gender female | | 87 | | 77 |
| *Reported pretreatment diagnoses* | *Before 12 March* | | | |
| Do not know if symptom disorder | | 6 | | |
| Depression | | 56* | | 70 |
| Anxiety disorder | | 50 | | 49 |
| OCD | | 9* | | 5 |
| Eating disorder | | 11 | | 8 |
| PTSD | | 27* | | 13 |
| Substance use disorder | | 2* | | 10 |
| Psychosis | | 2 | | 1 |
| Autism | | 0 | | 1 |
| Other | | 12 | | |
| Do not know if PD diagnoses | | 10 | | |
| Borderline PD | | 44* | | 33 |
| Avoidant PD | | 35 | | 36 |
| Other PD | | 12 | | 23 |
| *Treatment situation* | *Before 12 March* | | | |
| Pretreatment assessment | | 14 | | 100 |
| Attending psychotherapy for PD | | 83 | | 0 |
| Receiving psychotropic medication | | 50 | | 37 |
| Planning psychotherapy termination | | 20 | | 0 |
| Months since referred to unit | 16.3 (14) | | | |
| *Self-harm/suicide last 6 months* | *Before 12 March* | | | |
| Suicidal ideation | | 56 | | |
| Non-suicidal self-injury | | 33 | | 36 |
| Suicide attempts | | 5 | | 12 |
| *Occupational status last 6 months* | *Before 12 March* | | | |
| Mean months in > 50% work/study | 2.4 (2.8) | | 2.3 (2.6) | |
| No months in > 50% work/study | | 53 | | 49 |
| *Personality functioning* | *Time of survey, after first COVID-19 wave* | | | |
| LPFS-BF total sum-score | 18(7) | | 17 (7) | |
| *Current living situation* | *Time of survey, after first COVID-19 wave* | | | |
| Living alone or with parents | | 48 | | 47 |
| Partner/spouse/cohabiting | | 46* | | 32 |
| Living alone with children in care | | 3 | | 8 |
| *COVID-19 exposure in first COVID-19 wave* | | | | |
| Been in quarantine | | 13 | | |
| Tested for COVID-19 infection | | 0 | | |
| Positive COVID-19 test | | 0 | | |
| Believed had been infected | | 8 | | |
| COVID-19 health-risk group | | 18 | | |
| Knew someone with COVID-19 illness | | 7 | | |
| Close relation died of COVID-19 | | 1 | | |
| Strong concern about own or other people's health after 12 March | | 49 | | |

Comparison statistics: * indicates $p < 0.05$.

anxiety (GAD-7) and indicates high levels of anxiety at the time of the survey. The comparison of anxiety states before (pretreatment diagnoses) and after 12 March (GAD-7 sum-score $\geq$10) suggested an increase ($p = 0.001$). Among patients with no pretreatment anxiety diagnoses, 60% reported GAD-7 $\geq$ 10 after 12 March. Table 3 demonstrates experiences of change after 12 March with 28% reporting more symptoms. Figure 1 illustrates levels of anxiety as compared to population studies.

Two patients did not respond to questions on pretreatment diagnoses of symptom disorder. One did not answer questions in PHQ-9 and GAD-7.

### Levels of mental distress: aggression

Fifty-four percent reported current episodes of verbal aggression, 18% throwing or destroying things, and 6% violent behaviors towards other people. Among those with current aggression problems, 39% (24% of the total sample) reported more aggression after 12 March (Table 3).

### Self-harming behaviors, suicide thoughts and attempts

Self-harming, suicide thoughts and suicide attempts were reported for the period 6 months before 12 March (Table 2) and at the time of the survey, after 12 March (Table 3).

Self-harming behaviors were less frequent after 12 March ($p = 0.006$). Among self-harming patients after 12 March, the majority reported unchanged activity (52%). One patient with no former self-harming behaviors developed self-harming after 12 March.

Suicide thoughts were less frequent after 12 March ($p = 0.001$). Five patients without former reported suicide thoughts reported such after 12 March.

Frequencies of suicide attempts were unchanged. All seven patients with prior suicide attempts reported new suicide attempts after 12 March. No patients with no prior attempts reported suicide attempts after 12 March.

Two patients did not respond to survey questions on self-destructive acts, three patients lacked responses to questions on suicide thoughts, and four lacked responses to questions on suicide attempts.

**Table 3.** Mental distress, maladaptive behaviors, social and occupational situation.

| Survey self-report | % | % score $\geq$ 10 | Mean (SD) |
|---|---|---|---|
| **Depressive symptoms** | | | |
| PHQ-9 | | 84 | 16 (7) |
| *Experienced change* | | | |
| Improved | 25 | 61 | 11,9 (6,4) |
| Unchanged | 51 | 87 | 16,6 (6,4) |
| Increased | 24 | 100 | 19,5 (4,4) |
| **Anxiety symptoms** | | | |
| GAD-7 | | 68 | 12 (5) |
| *Experienced change* | | | |
| Improved | 18 | 29 | 8,2 (4,8) |
| Unchanged | 53 | 68 | 12,0 (4,8) |
| Increased | 28 | 97 | 15,6 (3,3) |
| **Aggressive behaviors** | | | |
| Verbal | 54 | | |
| Against property | 18 | | |
| Physical against other people | 6 | | |
| *Experienced change among cases:* | | | |
| More frequent | 39 | | |
| Not more frequent | 61 | | |
| **Self-harming/suicide** | | | |
| Suicide ideation | 25 | | |
| Suicide attempts | 5 | | |
| Non-suicidal self-harm | 26 | | |
| *Experienced change among cases:* | | | |
| Less frequent | 18 | | |
| Unchanged | 52 | | |
| More frequent | 30 | | |
| **Substance use** | | | |
| SUD/substance use most days a week | 7 | | |
| Substance use (any) | 25 | | |
| *Experienced change among cases:* | | | |
| Less frequent | 21 | | |
| Unchanged | 27 | | |
| More frequent | 52 | | |
| **Social situation** | | | |
| Being more alone | 50 | | |
| *Experienced change among cases:* | | | |
| Less difficult | 24 | | |
| Unchanged | 36 | | |
| More difficult | 40 | | |
| More initiative/energy | 38 | | |
| Caring for children | 18 | | |
| *Experienced change among cases:* | | | |
| Less difficult | 8 | | |
| Unchanged | 22 | | |
| More difficult | 70 | | |
| Occupational activity < 50% | 58 | | |

### Substance use

Two patients reported a pretreatment diagnosis of substance use disorder (SUD) (2%) (Table 2). Table 3 demonstrates substance use at the time of the survey with 33 patients confirming current substance use after 12 March (25%). Among these, 18% used two or more substances, 26% daily or most days a week, 41% twice a week, and 33% weekly. Fifty-three percent (14% of total sample) reported increased use after 12 March. Eighteen per cent related use of alcohol/other substances to mental or social problems. A majority of patients with daily/almost daily substance use reported an increase after 12 March, and related substance use to mental or social problems (both 71%, $p < 0.001$). Both SUD patients acknowledged use of several substances and one reported increased substance use.

Two patients did not answer this part of the survey.

### Social isolation

Fifty percent were more alone than usual after 12 March (Table 3). The majority experienced the restricted social situation as more demanding (being alone, feeling isolated or more lonely), but variation was considerable (Table 3). More than a third of the sample reported an unchanged social situation and 24% described a less demanding social situation. Thirty-eight percent experienced more energy and initiative during the shutdown (Table 3).

### Child care

A small proportion (18%) had a family situation with child responsibility (Table 3). Among these, a majority (70%) found childcare more difficult after 12 March. Three did not answer this part of the survey.

### Occupational activity

Before 12 March, 53% of the whole sample reported work/study activity <50% the prior 6 months (Table 2). Fifty-two patients did not respond to questions on work/study status after 12 March. Among responders, 58% had work/study activity <50% after 12 March (Table 3). The reduction in occupational activity before and after 12 March was significant ($p < 0.001$). All responding patients with prior activity <50%, were still inactive after 12 March. Among patients reporting prior activity >50%, 28% reported activity <50% after 12 March. In the whole sample, 27% specified COVID-19 crises related negative effects on any working activity after 12 March including temporary and permanent discharges, losing part time jobs and/or work training situations.

### Frequency of consultations and aspects of mental health

In Model 1, combining PHQ-9, GAD7, MOAS-3-items, and in separate investigation of each independent variable, only PHQ-9 was a significant predictor of consultation-number.

**Table 4.** Relation between frequency of consultations and different aspects of distress

| | | Intercept Mean estimate (SE) | p | Residual variance | Goodness of model fit (AIC) |
|---|---|---|---|---|---|
| **Open reference model** | Sessions per 12 weeks | 10.2 (0.5) | | 27.2 (3.4)*** | 778 |
| **Model 1** | MOAS-3-items | 0.66 (0.5) | 0.16 | 26.0 (3.3) | 777 |
| | PHQ-9 | 0.21 (0.1) | 0.04 | | |
| | GAD-7 | −0.14 (0.1) | 0.30 | | |
| **Model 2** | LPFS-BF | 0.15 (0.07) | 0.02 | 25.8 (3.2) | 767 |
| **Model 3** | Self-harming pre 12 March | 2.8 (0.9) | 0.005 | 22,9 (2,9) | 742 |
| | Suicide thought pre 12 March | 1.7 (0,9) | 0.07 | | |

This table shows linear mixed models estimations of associations between consultation-numbers and Model 1: Aggression (MOAS-3-items), anxiety (GAD7) and depression (PHQ9), Model 2: Personality functioning (LPFS-BF), Model 3: Self-harming/suicide thoughts. Goodness of model fit (the smaller the better) was evaluated by Akaike's Information Criterion (AIC). In the open reference model with consultation number as dependent variable, but no added predictors, significant residual variation was indicated by $p < 0.001$ (***).

Higher scores were associated with more frequent sessions (Table 4). Model 1 explained 4% variance. There were no significant associations between consultation-number and different experiences of change in symptoms of depression, anxiety or aggression after 12 March (for all $p > 0.05$). In Model 2, more severe LPFS-BF scores were significantly associated with more frequent sessions. Explained variance was 6%. The addition of LPFS-BF improved model fit (Table 4). In Model 3, prior self-harming behaviors were strongly associated with receiving more frequent sessions after 12 March (Table 4). Prior suicide thoughts were below levels of significance, but the model including both variables explained most variance (16%). Current self-harm and current suicide ideation did not improve model fit, nor yield significant estimates ($p > 0.05$).

## Discussion

This study evaluated mental and social consequences in a sample of poorly functioning patients recruited from specialized PD treatment units. Their self-reported burden of disease corresponded to levels reported in a study of 1651 patients in PD specialized psychotherapy units in the Netherlands [53]. The main findings in the present study were the following:

1. Mental distress was severe and increased after 12 March in a notable proportion.
2. Self-harming behaviors, suicide ideation, and attempts did not increase.
3. Substance use was infrequent, but increased among a minority of users.
4. Isolation and child-care difficulties increased and occupational activity declined.
5. Experiences included symptom improvement and mastery.
6. Higher levels of depression, poorer personality functioning and prior self-harming behaviors were associated with more therapist contact after 12 March.

### Severe mental distress

As expected in a clinical sample, pretreatment rates of diagnosed depression and anxiety assessed before the shutdown were well above general population rates [6]. Although at a considerably higher level, the suggested increase in our study after 12 March is in line with general population studies comparing anxiety and depression before and during the pandemic [2,6]. In our sample, the picture was heterogeneous. Nonetheless, approximately one-fourth experienced more anxiety and depression, and symptoms on a moderate-to-severe level were apparent in a large proportion with no former depression or anxiety diagnoses. In addition, nearly half the sample reported strong health-related anxiety due to the pandemic. It is notable, that levels of both anxiety and depression were severe among patients who reported deterioration and patients with a stagnated (no change) situation, and that the majority of improved patients, still qualified for a depressive state. We included aggression among measures of mental distress, as it is a central PD vulnerability with extensive social and personal consequences [54,55]. Exacerbation of aggression after the shutdown was as frequent as increased anxiety and depression. We therefore emphasize the high symptom levels in the study population and significant indications of an extraordinary burden of mental distress during the shutdown.

### No increase of self-harming behaviors

Neither self-harming behaviors nor suicide thoughts increased after 12 March. These results are surprising and encouraging. Exacerbation of self-harming behaviors among PD patients was seen as a major risk in the face of the COVID-19 crises [26,56], and studies have also confirmed an increase of deliberate self-harm during COVID-19 (57). The present finding is all the more noteworthy taking into account the high levels of depressive symptoms in the sample.

However, for some patients the crises may have contributed to repeated, high-risk situations. All patients with suicide attempts within 6 months before the shutdown, confirmed new attempts after 12 March and some previously non-suicidal patients developed suicidal thoughts during the shutdown. An early report from the national suicide register, however, indicates that frequencies of committed suicides in the general population declined during the first wave of COVID-19 in Norway [57].

### Increased substance use among users

A large proportion did not use substances during the shutdown. Excessive substance use may render a patient

ineligible for the treatment programs. Although the survey was anonymous, it is possible that patients could have underreported substance use. Nonetheless, low availability of social environments and street drug markets, lesser overall substance use, but varying user patterns have been documented in early phases of the COVID-19 pandemic [58]. However, in our study, half of the substance using patients used more after 12 March. Most of the intensive users related their increased consumption to mental and social problems. Similarly, cited reasons for increased use in the trend spotter study were relief of boredom, anxiety, or fatigue [58]. Extensive substance use in an early phase of a pandemic with recurrent waves represents a relevant concern in a vulnerable population.

### Social challenges

The COVID-19 shutdown included a range of public, social, occupational, and family arenas. As in the general population, the study sample also reflected declining occupational activity, being more alone, and among those who were parents, child-care challenges. Considering the degree that many poorly functioning patients depend on external support structures, such an abrupt shutdown can be a severe destabilizer facilitating further social marginalization. However, experiences of positive energy and mastery were also apparent. It is conceivable that survey patients could also feel less marginalized as many COVID-19 related issues were common to all citizens. Taken together with the reports from patients who experienced improvement of mental distress, the findings underline the importance of further enquiry on mechanisms for short-term crises management and adaptation to difficult situations as well as regaining social structures on a longer-term perspective.

### Relation between mental distress and therapist contact

The study addressed the relation between mental distress and therapist contact. A recent Italian study of lock-down impacts emphasized a negative association between mental distress and personality vulnerability and recommended mental health support aided by communication technologies [59]. In the survey setting, quarantine regulations, restrictions, and health concerns hampered treatment teams, and therapists and patients were challenged with unfamiliar contact formats. It is likely that a first and major concern was to ensure an ongoing contact between therapists and patients as quickly and regularly as possible. In this situation, it reflects a considerable effort that nearly all survey patients received therapist contact after the shutdown.

The study indicates that more disturbed personality functioning and more severe symptoms of depression after 12 March were associated with more frequent therapist contact, whereas problems of aggression or anxiety and patients' experiences of increased distress were unrelated to frequency of contact. This may indicate that therapist availability was differentiated, prioritizing greater intensity for the most depressed patients with poorest personality

functioning. Furthermore, self-harming behaviors before the shutdown were strongly associated with higher frequencies of consultations. Representing specialized PD treatments [60,61] it is likely that therapists and patients would be aware of such risk when the shutdown occurred and that organization of contact focused on preventing further enhancement. However, the study also indicates that the emergence of new self-harming behaviors and suicidal thoughts after 12 March did not impact the frequency of sessions. Detection and management of new behaviors developed during the shutdown may have been more challenging.

Poor emotional containment may be reflected in use of emergency mental health services. However, the survey level of 34% seeking extra health services is low compared to a former (non-pandemic) study of patients in specialized PD treatment where 45% reported using emergency services the first eight months of treatment versus 82% the year before treatment [62]. The survey sample generally, revealed low levels of other health issues, mild direct exposure to COVID-19, and few seeking other medical treatment. A report on emergency mental health service use in Oslo during the first COVID-19 wave likewise indicated a 40% reduction of consultations [63]. In a larger study, during a COVID-19 outbreak in Utah, patients with PDs were within the group with the largest declines of emergency service consultations [64]. Contrastingly, an emergency-service study from Birmingham, reported increased self-harming behaviors despite overall reduction of service use [65].

### Strengths and limitations

Few have investigated experiences of the COVID-19 shutdown among patients with PD in specialized treatment. A study based on an ad hoc, extraordinary data collection within an established collaborative clinical research network represents a unique opportunity. A clinical sample counting 133 patients is a noteworthy effort. The survey was conducted as soon as possible after the decline of the first wave in order to ensure valid experiences. For practical, economical, and time-saving reasons, a simple paper-based survey with response based on postal systems (non-digital) was chosen.

A drawback of the survey timing was that the clinics still had considerable COVID-19 related extra administrative pressure and due to summer vacations, less available resources. Use of non-digital paper systems may have heightened the threshold for patient response and increased possibilities of missing data due to inaccurate addresses on several levels. Although there was generally high motivation to participate, such may have contributed to low response rate.

As the conducted survey was anonymous, data for direct comparison of survey responders with those originally invited were unavailable. Pretreatment data within the Network provided possibility for comparing survey responders to a large clinical cohort of patients with PD. This comparison generally supported the survey as a clinical representation of patients with PD. However, pretreatment

data are not fully comparable to the survey's mixture of patients in different treatment phases.

Diagnoses prior to the shutdown were based on patients' recollection of the pretreatment assessment whereas the diagnoses after 12 March were based on self-report questionnaires. In units associated with the Network, diagnostic procedures are structured and systematic. Communication of diagnoses is strongly recommended and it is plausible that most survey responders had detailed information on their diagnoses. The small proportion without such information corresponds to the proportion patients in an early, pretreatment phase, with incomplete diagnostic evaluation. Moreover, the two different methods for acquiring diagnostic information are not strictly comparable as self-reported symptoms may not be equivalent to diagnostic assessments. Unfortunately, the study could not include PHQ-9 and GAD-7 ratings before 12 March for better comparison. However, the proportion of patients' who reported an experience of symptom increase is in line with the comparison.

The survey covers the first wave of COVID-19. Compared to many other nations, contagion was mild. The recruitment of patients referred to specialized treatment may limit the generalizability of the situation for PD patients across nations, contexts, and availability of PD health services.

## Conclusion

The survey indicates severe levels of mental distress and considerable social vulnerability among patients with PDs during the first COVID-19 shutdown in Norway. The study demonstrates that therapist contact was largely maintained through the shutdown. The most vulnerable patients received more frequent consultations and self-destructive actions did not increase. However, on a longer-term basis, the quality of alternative contact formats needs more consideration, in particular the capacity to alleviate severe distress, address current self-destructive impulses, and a broader range of PD problems.

We also acknowledge the efficient research assistance of Elise Bynander, Outpatient Clinic for Specialized Treatment of Personality Disorders, Section for Personality psychiatry and specialized treatments, Oslo University Hospital, Oslo

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## Data availability statement

Data set can be made available on special request, but will require specific ethical approval for data sharing.

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