The impact of the COVID-19 pandemic on mood symptoms in inpatient mood disorder patients and associated factors

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SUMMARY

Objective: The COVID-19 pandemic has adversely impacted mental health, with mood disorder patients at increased risk due to stress, isolation, and healthcare disruptions. While studies highlight rising depression and anxiety in these populations, comparisons of pre- and post-pandemic symptoms remain limited. This study examines the late-phase mental health effects of the pandemic on mood disorder patients and associated factors.

Method: In our study, 67 patients diagnosed with mood disorders who were hospitalized between March 2019 and March 2020 were evaluated in the ninth month of the pandemic. Data were collected through face-to-face or online interviews, and clinical information such as sociodemographic characteristics, illness severity, and fear of COVID-19 was recorded.

Results: Participants were 65.7% female and 34.3% male, with a mean age of 45.8±19 years. Of the patients, 32.9% had completed higher education, and 56.2% were unemployed. Interviews were face-to-face (44.8%) or telepsychiatric (53.7%). The mean pre-pandemic hospitalization duration was 41.6±24.8 days. No significant differences were found in HAM-D scores pre- and post-pandemic for major depressive or bipolar depressive patients. However, 55.2% had HAM-D ≥8 during the pandemic. Patients with a history of COVID-19 infection showed significantly higher depression severity.

Discussion: By the ninth pandemic month, over half of mood disorder patients had depressive symptoms. COVID-19 infection, lack of knowledge, and unmet psychological support needs were linked to depression. Restricted access to mental health services further increased depression rates. These findings highlight the psychosocial and biological impacts of the pandemic on mood disorders.

Key Words: COVID-19, Mood Disorders, Mental Health, Pandemic, Depression Severity

INTRODUCTION

Emerged in March 2020, the coronavirus infection (COVID-19) continues to affect various segments of societies in different countries. It can be estimated that the negative effects of the pandemic on the physical ad mental health of the people in vulnerable segments of society are more pronounced. People with chronic mental disorders are among these vulnerable groups (1). Factors that make patients with schizophrenia and bipolar disorder more susceptible to the negative effects of COVID-19 infection include being more vulnerable to stress, not being able to go to follow-up visits regularly, and the fact that risk factors related to diseases such as obesity and diabetes are more common in these groups (1,2). It is estimated that isolation and loneliness caused by protective measures such as social distancing rules may lead to an increase in the symptoms of these patients (3). It has been reported that patients with mood disorders have a higher awareness of environmental changes compared to patients with schizophrenia spectrum disorder. Therefore, they may experience stress symptoms associated with COVID-19 at a higher rate (4).

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It is suggested that patients with mood disorders and anxiety disorders have a risk of worsening symptoms during the pandemic period. It is thought that they will experience the fear of getting sick more and adapt to lifestyle changes related to quarantine and isolation more difficult (5). In studies conducted during the pandemic period, it was reported that patients with bipolar disorder and major depressive disorder experienced more anxiety, depression symptoms and stress than those without mood disorders (6). Again, in a study conducted in the Netherlands in the first 6 months of the pandemic, in which patients with schizophrenia and mood disorders were evaluated over the internet, it was shown that mood disorder patients were more negatively affected by the pandemic and restrictive measures than schizophrenia patients (7).

Studies investigating the impact of the COVID-19 pandemic on people with chronic mental illnesses are mostly cross-sectional studies, and in a few studies, the level and variety of symptoms of patients before the pandemic started were compared with those during the pandemic period (8,9,10,11,12). In this regard, the number of studies conducted in Turkey is quite low (13). In studies involving patients with mood disorders and schizophrenia conducted in the early period of the pandemic, it was observed that mood symptoms and psychotic symptoms remained stable (10,11). Similarly, it was observed that older adults who were followed up with a diagnosis of major depressive disorder before the pandemic did not have an increase in depressive symptoms in the early period of the pandemic (9). In a study conducted by collecting online data, which included patients who had major depression in the past, it was observed that the increase in symptom severity observed in the early period of the pandemic (April-May 2020) was not different from patients who had not been diagnosed with depression in the past (12). The fact that the severity of depressive symptoms did not increase in the early period in this study was explained by the fact that the study was conducted in a period when the financial and social effects of the pandemic and the disruptions related to access to treatment were not yet evident. In contrast to these findings, in another study conducted in the early period of the pandemic, it was found that patients who reported a diagnosis of mood disorder were in a higher level of psychological distress than patients who reported that they did not have any mental illness, and patients with bipolar disorder reported that they experienced more depressive symptoms and stress than patients with unipolar depression (11).

In the late phase of the COVID-19 pandemic, it can be hypothesised that patients with mood disorders may have adapted to pandemic conditions to some extent, similar to the rest of the population. However, it is expected that they may have encountered additional difficulties due to disruptions in health services, whereas arrangements for control examinations and drug supply are expected to facilitate access to treatment for some patients (14). On the other hand, the pandemic lasting longer than expected, the lack of an effective treatment of the infection, and the fact that different variants continue to emerge cause many people to witness the loss of their relatives and acquaintances and to continue their fears about COVID-19. In addition to all these, psychosocial difficulties such as unemployment, poverty, loss of support due to being away from social networks, loss of routine, uncertainties related to the near and distant future caused by prolonged isolation conditions are estimated to have a negative effect on mental status (15). However, there are no studies in the literature investigating the change in the symptoms of patients with mood disorders in the pre-pandemic period and the effect of factors associated with the change in the later stages of the pandemic (in the second/third wave).

Contributing to understanding the effects of the pandemic in its later stages is important in many ways. Identifying how patients with mood disorders have been affected by the pandemic may help to develop more effective support mechanisms in the face of similar global crises in the future. Moreover, analysing the effects of disruptions in access to treatment and ongoing uncertainties on symptoms of mental illness is critical for the planning of mental health services and the formulation of crisis intervention strategies. In this study, mood disorder patients who were hospitalised in the psychiatric ward in the last year before the onset of the pandemic were evaluated in the second wave of the

pandemic (9-11 months later). It was aimed to investigate how the patients were affected by the pandemic process, to examine the changes in the levels of mood symptoms before and after the pandemic, and to examine the relationships between the severity of mood symptoms during the pandemic period and sociodemographic and clinical characteristics. The hypotheses of the study were determined as follows: The pandemic process has an effect on the severity of depressive symptoms of patients with mood disorders and symptom severity is different in the pre-pandemic period than in the pandemic period; there are differences in sociodemographic and clinical characteristics of patients with mild or higher severity of depressive symptoms (HAM-D ≥8) and patients without depression (HAM-D <8) during the pandemic period; In the evaluation conducted in the second wave of the pandemic, there was a difference in depressive symptom severity between patients diagnosed with major depression and patients diagnosed with bipolar depression; pandemic-related stress factors (COVID-19 infection, quarantine history, psychiatry referral during the pandemic and expectation of psychiatric intervention, etc.) and depressive symptom severity.) and depressive symptom severity were assumed to have a significant relationship.

METHOD

This study is a cross-sectional observational and descriptive study. Approval for the study was obtained from the Hacettepe University Ethics Committee with registration number GO 20/804.

Participants

Information on patients who were hospitalised in the Psychiatry Service of Hacettepe University Faculty of Medicine Adult Hospital between March 2019 and March 2020 and discharged with the diagnoses of bipolar disorder and major depression was accessed from hospital records. The study sample consisted of 67 patients who were not defined any exclusion criteria, could be reached and accepted to participate in the study.

Data Collection

Patients who agreed to participate in the study and to be interviewed face-to-face were evaluated in the outpatient clinic, and patients who were absent at the outpatient clinic control time or who could not come to the hospital for routine evaluation were evaluated by online interview. During the evaluation, written informed consent was obtained from those evaluated in the outpatient clinic, and verbal consent was obtained from those evaluated by online interview and recorded. The application of the scales in the online interview was in the form of the researchers reading the scale items and recording the patients' responses. During the interviews, the research team filled out the patient evaluation form, which included sociodemographic information such as age, gender, marital status, education, occupation, and with whom the patients lived, drug treatments related to mental and physical illnesses, and information about the pandemic period such as whether they had COVID-19 disease and whether they were quarantined. In addition, the Clinical Global Impression Scale (CGI) (16), which is used to evaluate the medication(s) used at discharge from the hospital epicrisis, discharge diagnoses, additional psychiatric diagnoses, discharge dates, length of hospitalisation and severity of disease symptoms during hospital follow-up, Hamilton Depression Rating Scale (HAM-D) (17,18) for patients diagnosed with depression and Young Mania Rating Scale (YMRS) (19,20), which is routinely applied to bipolar disorder patients hospitalised during mania (19,20), were obtained and recorded on the same form.

In the evaluation performed during the study, HAM-D, CGI and COVID-19 Fear Scale (21,22) were given to all patients. Patients who were found to have mania/hypomania symptoms during the interview were given the YMRS. Treatment adherence of the patients was determined from the hospital epicrisis, outpatient clinic notes, medication level follow-up patterns, if any, and clinical interviews and classified as high and medium-low. In addition to the services available and accessible to patients during the pandemic process, health services that patients requested but could not be met, such as being able to make appointments more frequently, being evaluated by online interview, being

Table 1. Clinical Characteristics of the Participants

Clinical Features Related to the Hospitalisation Period Before the Pandemic	N (%)
Diagnosis of Discharge	
Major Depression	39 (58,2)
BAD-Depressive Period	16 (23,9)
BAD-Manic/Hypomanic Period	12 (17,9)
Psychotic symptoms accompanying affective symptoms	28 (41,8)
Psychiatric comorbidity	15 (22,4)
Physical comorbidity	35 (52)
Non-drug treatment modality used during hospitalisation	
TMS	1 (1,5)
ECT	22 (32,8)
Treatments accompanying oral drug therapy at discharge	
Long-acting AP	3 (4,5)
ECT	3 (4,5)
Drug therapy requiring blood level monitoring at discharge	38 (56,7)
Treatment adherence before the pandemic	
High	52 (77,6)
Medium-Low	15 (22,4)
Clinical Characteristics of the Participants during the Pandemic Period	**Average±SD**
Time between pandemic onset and evaluation	273,5± 17,7
COVID-19 Fear Scale	15,3± 5,3
CGI-Pandemic	7,7 ± 3,4
HAM-D- Pandemic	9,4 ±6,9
	N (%)
HAM-D 8 points and above (clinical depression)	37 (55,2)
The level of knowledge about the pandemic	
High	42 (62,7)
Medium	19 (28,4)
Bad	6 (8,9)
Use of psychiatric services during the pandemic	
Yes	52 (77,6)
No	15 (22,4)
New physical symptom in the pandemic process	
Yes	11 (16,4)
No	56 (83,6)
Current Body Health Perception	
High	35 (52,2)
Medium-Bad	34 (47,8)
Having COVID-19 infection	7 (10,4)
Quarantine due to contact	12 (17,9)
Perception of mental state during the pandemic	
Not Changed	33 (49,3)
Worsened	25 (37,3)
Improved	9 (13,4)
Failure to take medication during the pandemic	18 (26,9)
Failure in drug level monitoring (n=38)	20 (52,6)
Notification of exacerbation of disease symptoms	33 (49,3)
Suicidal thoughts/plans during the pandemic	4 (6)
New mental symptoms emerging during the pandemic	11 (16,7)
Unmet expectation of additional intervention during the pandemic period	23 (34,3)
Smoking-alcohol-substance use	
Smoking	32 (42,8)
Alcohol	10 (14,1)
Substance	4 (6)

SD: Standard Deviation; BAD: Bipolar Affective Disorder; DDD: Mood Regulator

examined by their doctors whom the patients were previously followed up but could not see due to pandemic conditions, were defined as unmet additional intervention expectations.

In the study, patients were firstly divided into diagnostic groups and the scale values of the post-discharge, i.e. pre-pandemic period and post-pandemic period were compared. In addition, the scale scores of the patients in the post-pandemic period were evaluated and the relationships between the severity of mood symptoms and sociodemographic and clinical characteristics were examined.

Statistical Analysis

SPSS.23 software for Windows was used for statistical analysis. Numerical variables are summarised as mean±standard deviation and median [25th-75th percentile] values. Categorical variables are shown with numbers and percentages. For compar-

isons between groups with and without exacerbation of disease symptoms, chi-square test or Fisher's exact test was used for categorical variables and Mann Whitney U test was used for continuous variables. Wilcoxon test was used to compare the change in HAM-D scores over time. Significance level was accepted as $p<0.05$ for all analyses.

RESULTS

The data of 94 patients were accessed for the study. Nine of the patients could not be reached and it was learnt that two patients died as a result of suicide. Of the 83 patients who were contacted by telephone, 16 patients refused to participate in the study, and 67 patients who accepted to participate were included in the study. Of the 67 patients who participated in the study, 44 (65.7%) were found to be female and the mean age was 45.8±19. Of the participants, 23.9% were literate-primary school graduates, 43.2% were secondary school-high school graduates, and 32.9% were at least higher education graduates. Of the participants, 16 (23.9%) were working, 16 (23.9%) were retired and 35 (56.2%) were not working. Among the participants, 52.2% were married, 23.9% were single, 14.9% were divorced or separated, and 9% were widowed. Of a total of 67 patients, 30 (44.8%) were interviewed face-to-face in the outpatient clinic, 36 (53.7%) were interviewed via telepsychiatry methods, and 1 (1.5%) was interviewed face-to-face while hospitalised in the inpatient ward with a new diagnosis of a mood episode. The mean time elapsed since the diagnosis of mood disorder was 144.5 ±123.9 months, while the mean duration of hospitalisation before the pandemic was 41.6 ±24.8 days. The clinical characteristics of the patients in the pre-pandemic hospitalisation period and during the evaluation during the pandemic period are shown in Table 1.

The median and interquartile range (IQR) of the HAM-D scale scores of patients discharged with a diagnosis of major depression (n=39) during the discharge period (before the pandemic) were 7.0 (5.0-10.0), while their scores during the pandemic period were 9.0 (3.0-13.25), and no statistically significant difference was found between the two periods (Z=-1.186, p=0.236). The median HAM-D scores of patients discharged with a diagnosis of Bipolar Affective Disorder Depressive Episode (n=16) were calculated as 7.0 (3.0-13.0) in the discharge period (before the pandemic) and 10.0 (4.5-20.5) in the pandemic period, but no statistically significant difference was found (Z=-1.016, p=0.310). None of the patients diagnosed with Bipolar Affective Disorder had mania/hypomania.

When the HAM-D scores applied to all patients during the pandemic period were analysed, it was observed that the proportion of patients with a score of 8 and above (clinical depression of mild or higher severity) was 55.2% (n= 37) (Table 1). The comparison of patients with mild or higher severity depression (HAM-D ≥8) and patients without depression in terms of clinical and sociodemographic characteristics during the pandemic period is shown in Table 2.

DISCUSSION

The severity of the disease symptom determined by the scales applied in the evaluation made 9 months after the onset of the pandemic was compared with the symptom severity determined by the same scales at the time of discharge; the relationship between the severity of mood symptoms in the second wave of the pandemic and factors such as the level of fear of COVID-19, access to treatment, treatment compliance, and having COVID-19 disease was investigated.

In the last 1 year before the onset of the pandemic, 58.2% of mood disorder patients who were hospitalised in a psychiatric service were discharged with a diagnosis of major depression and 41.8% with a diagnosis of bipolar affective disorder, and in 41.8% of the patients, the affective period was accompanied by psychotic symptoms (psychotic depression: 10 patients, 14.9%; psychotic bipolar depression: 6 patients, 9.0%; psychotic mania: 12 patients, 17.9%), 56.7% were planned to be followed up with a mood stabiliser requiring blood level monitoring. Of a total of 38 patients using mood stabilisers requiring blood level monitoring, 20 patients reported that they experienced problems in having their blood levels checked in the first nine months of the pandemic. The percentage of

Table 2. Comparison of patients who scored 8 and above on the HAM-D scale in terms of clinical and sociodemographic characteristics during the pandemic period

	Group 1 (N=30) HAM-D <8	Group 2 (N=37) HAM-D>=8	Statistical analysis
Variables	Average±SD	Average±SD	
Age	44,3 ±17,3	47,0±20,4	p=0.570* Z=-2.679
COVID-19 Fear Scale	14.1±4.6	16.3±5.8	p=0.131* Z=-1,510
	N (%)	N (%)	
Diagnosis of Discharge Major Depression BAD depression BAD mania	 16 (53) 6 (20) 8 (27)	 23 (63) 10 (27) 4 (10)	p=0.236+ χ^2=2.89
Gender Female Male	 20 (45,5) 10 (43,5)	 24 (54,5) 13(56,5)	p=1.000+ χ^2=0.024
Additional psychiatric diagnosis	3 (10)	12 (33)	p=0,058+ χ2=4.798
Additional physical disease	14 (47)	21 (57)	p=0,564+ χ2=0.676
Those who have had COVID-19 themselves	0 (0)	7 (43,2)	p=0,014+ χ^2=6.388
Those whose relative have had COVID-19	4 (13)	11 (30)	p=0.191+ χ^2=2,563
Quarantine	3 (11)	9 (32)	p=0.230+ χ^2=2,312
The level of knowledge about the pandemic High Medium-Bad	 24 (80) 6 (20)	 18 (48,6) 19 (51,4)	P =0,017+ χ^2 =6,962
Disruption in drug treatment	8 (26,6)	10 (27)	p=1.000+ χ^2=0,001
Mental complaints leading to the use of psychiatric services in the early period of the pandemic	18 (60)	34 (94)	p=0.005+ χ^2=9,698
Expectation of additional psychiatric intervention	4 (13,3)	19 (51,4)	P =0,002+ χ^2 =10,622
Medication requiring blood monitoring	17 (57)	21 (57)	P =1,000+ χ^2 =1,000

*: Mann Whitney U Testi, +: Chi-square test of Fisher s Exact Test
SD: Standard Deviation, HAM-D: Hamilton Depression Rating Scale

patients whose medication use was reported to be disrupted during the pandemic period was 26.9%, which was not higher than the rate of patients (22.4%) whose treatment compliance was reported as moderate-low before the pandemic. Although 77.6% of the patients reported that they used mental health services in the first 9 months of the pandemic, the expectation of additional intervention that was not met during the pandemic period was reported as 34.3%. It was thought that a significant percentage of patients were able to prescribe the psychotropic drugs they were using in the first nine months of the pandemic, but they could not reach a mental health professional and benefit from an effective intervention regarding their emerging or exacerbated mental symptoms.

In the clinical interview conducted with patients who were re-evaluated for various clinical features 9 months after the onset of the pandemic, no signs of mania/hypomania were detected in any patient. The HAM-D scale was administered to all patients and it was observed that the mean scores obtained from the scale were 9.4 ±6.9 and the proportion of patients who scored 8 and above on the HAM-D scale was 55.2%. Accordingly, it was determined that more than half of the patients had clinical symptoms of depression during the pandemic period. In order to determine the factors determining the high proportion of patients who were observed to be unstable in terms of mood symptoms during the pandemic period, patients with clinical depression were compared with patients without depression (those who scored below 8 points on the HAM-D scale) in terms of various sociodemographic and clinical characteristics. The rate of ha-

ving clinical symptoms of depression in those with an additional diagnosis of a psychiatric illness was statistically significantly higher than those without an additional diagnosis (p=0.058, $\chi 2=4.798$). Publications in the literature showing that the coexistence of major depression and anxiety disorder diagnoses before the pandemic during the COVID-19 period is associated with more worsening in symptoms than the presence of these disorders alone supports this finding in our study (23,24).

According to the mean scores obtained from the COVID-19 Fear Scale, the group with clinical depression did not differ from the group without depression (Table 2), while the rate of scoring 8 and above on the HAM-D scale was found to be statistically higher in people who had COVID-19 infection compared to those who did not have infection (Table-2). Increased proinflammatory cytokines (IL-6, CRP) and triggered neuroinflammation during COVID-19 infection may lead to cognitive, emotional and behavioural changes associated with depression. Oxidative stress and activation of the hypothalamus-pituitary-adrenal (HPA) axis may trigger depressive symptoms by causing neurotransmitter imbalances (25, 26). In addition to these biological processes, psychological stress, social isolation and trauma caused by infection further increase the risk of depression (27,28). The biological and psychosocial effects of COVID-19 may play a role in the development of depression. Therefore, it can be argued that the high rate of HAM-D scores of 8 and above in people with COVID-19 in our study is related to the biological and social effects of infection. People who reported being in quarantine because they or a contact person was diagnosed with COVID-19 infection did not have different rates of depression than those who were not in quarantine. The percentage of people whose level of knowledge about the pandemic was determined as moderate-poor was found to be statistically significantly higher in the group with clinical depression (respectively: 51.4%, 20.0%; P =0,017,$\chi 2$ =6,962)). During the COVID-19 pandemic, it has been shown that information provided through telephone calls alleviated symptoms of depression and anxiety (28), while misinformation (29) or excessive exposure to information (30) was associated with negative outcomes such as increased depression, feeling of helplessness and overwhelm. In the light of this information and the finding in our study, it can be said that lack of accurate and sufficient information about COVID-19 is related to an increase in the frequency of depression.

During the evaluation conducted in the late period of the pandemic, patients were asked whether they had mental complaints that led to the use of psychiatric services in the early period of the pandemic, and it was observed that 94% of patients with clinical depression in the ninth month of the pandemic had elevated mental symptoms at a level to seek treatment in the early period. Although this rate was also high (60%) in patients without clinical depression, it was found to be statistically significantly higher in patients with clinical depression (p=0.005, $\chi 2=9,6$8). It is known that there are significant obstacles related to access to mental health services as well as disruptions in all health services during the pandemic period (31). For this reason, patients were also asked whether they had any unmet expectations for psychological intervention in addition to the mental health services they were able to receive. It was also observed that this expectation was statistically significantly higher in the group of patients with clinical depression (frequency in the clinical depression group: 51.4%; frequency in the other group: 13.3%, p=0.002, $\chi 2$ =10.622). It was thought that the lack of access to mental health services since the early stages of the pandemic may have contributed to the high rate of patients with clinical depression in the ninth month of the pandemic. Although there is no clear literature information on this issue, some studies have been found to associate the worsening of the symptoms of patients with various mental disorders in the pre-pandemic period with the inability to access mental health services during the pandemic period (31, 32). Similar to our study, in a study conducted in the first 8 months of COVID-19, an increase of 37% and 29% in anxiety and depression symptoms was observed, and it was stated that this increase may be associated with difficulties in accessing mental health services (33).

In many studies evaluating the level of psychopathology and related factors in patients with mood disorders during the pandemic, mental symptoms and sociodemographic and clinical characte-

ristics were examined through self-report scales and questionnaires. The strength of this study is that the level of mental symptoms was determined with clinical interviews and structured scales, and there are limited studies in the literature on pre-pandemic and post-pandemic evaluation. However, the limitations of the study include the relatively small sample size, the fact that the severity of mental symptoms of a small number of patients diagnosed with mood disorders who were discharged with mania/hypomania symptoms before the pandemic could not be compared between the pre-pandemic period and the pandemic period, the relatively short follow-up period, the limited objectivity of the assessment of treatment compliance before the pandemic, the determination of treatment compliance and use of health services during the pandemic period based on the statements of the patients, and finally, some of the data obtained in the interviews were based on the subjective statements of the patients.

In conclusion, it was observed that the patients who were hospitalised for the treatment of mood disorder symptoms before the pandemic and discharged after their symptoms responded to the treatment continued to have mood symptoms at the clinical level in the evaluation made in the ninth month of the pandemic, the symptoms detected were depressive, and the factors associated with the presence of depressive symptoms at the clinical level were characteristics such as having COVID-19 infection, having limited knowledge about the pandemic, and having an unmet expectation of medical intervention related to mental complaints in the first 9 months of the pandemic.

In the later stages of the COVID-19 pandemic, patients with mood disorders can be considered to have adapted to pandemic conditions to a certain extent, like the general population. However, while arrangements for follow-up examinations and drug supply facilitate access to treatment for some patients, it is anticipated that disruptions in health services may cause additional difficulties (14). On the other hand, the fact that the pandemic continued for a longer period of time than expected and that there is not yet an effective treatment for the infection has caused many people to witness the loss of their relatives and acquaintances and to continue to fear COVID-19. In addition to all these, psychosocial difficulties such as unemployment, poverty, loss of support due to being away from social networks, loss of routine, and uncertainties related to the near and distant future caused by the pandemic may be considered to have a negative effect on the mental state (15). Considering the findings in the literature and the results of our study, additional interventions and measures to address the needs of vulnerable groups, such as patients with mood disorders, will contribute to protecting the well-being of patients during future epidemics. Future research that overcomes the limitations of our study will increase our knowledge about these interventions and measures.

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