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COVID-19 and geropsychiatry: a retrospective study evaluating psychiatry referrals before and during the pandemic

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ABSTRACT

The COVID-19 pandemic had widespread effects on mental health, but limited research has examined its impact on elderly individuals—a particularly vulnerable population. This study aimed to determine whether the pandemic period was associated with changes in psychiatric symptoms, diagnoses, and consultation patterns among adults aged 65 years and older. We hypothesized that the pandemic period would show a distinct distribution of psychiatric presentations compared to the pre-pandemic period. The records of people over the age of 65 treated in the Mental Health and Diseases Outpatient Clinic of Balıkesir University Health and Application Research Hospital between March 2019 and March 2020 (routine period) were compared with the records of the patients between March 2020 and March 2021 (pandemic period). Sociodemographic data, clinical diagnoses, indications for requesting consultations, and follow-up attendance rates were compared. A total of 336 inpatient consultation records and 982 outpatient applications from individuals over 65 years of age were analyzed. The majority of psychiatric consultations 57% occurred before the pandemic, while 43% were conducted during the pandemic period. Requests for consultations due to delirium and agitation increased during the pandemic (33.2 % vs. 45.9 %), while those for depressive and anxiety-related complaints declined ($p=0.001$). Depression remained the most common outpatient diagnosis in both periods (~50%). However, the rate of attendance at second follow-up visits dropped significantly during the pandemic (62.7 % vs. 47.9 %, $p<0.001$). The COVID-19 pandemic affected psychiatric consultation patterns and service use among older adults. Increased agitation referrals and decreased follow-up attendance indicate the need for adapted care models during such periods.

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Introduction

The COVID-19 outbreak, which started in Wuhan, China at the end of 2019, has been declared as a state of emergency of international importance by the World Health Organisation (WHO) (WHO, 2020). Following the first COVID-19 case in Turkey in March 2020, many measures were taken to prevent the spread of the virus. Strict pandemic prevention measures, mandatory closure of schools, suspension of all non-essential commercial activities, and curfew restrictions have severely affected people's daily lives (Ayittey et al., 2020). In addition, health services have also been affected; especially, the number of visits to emergency services and outpatient clinics significantly decreased, and the reasons for seeking care also changed (Hartnett, 2020). In terms of mental health, it has frequently been stated that the COVID-19 outbreak has negatively affected the mental health and well-being of people all over the world (Kola et al., 2021). Especially between March and June 2020 (in some studies, this period is considered as the first wave and acute period of the COVID-19 disease), fear of infection despite psychiatric complaints was defined as the most important reason for the decrease in the number of applications to mental health services (Scaramuzza et al., 2020).

The COVID-19 pandemic lasted longer than anticipated and related restrictive measures have also had an impact on people's psychological well-being and emotional responses to the pandemic (Brooks et al., 2020). Among these, maladaptive behaviors, distress, and defensive reactions became particularly

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prominent and individuals affected by the pandemic described anxiety, fear, frustration, loneliness, anger, boredom, depression, stress and avoidance behaviors (Wang et al., 2020). In addition, the association between COVID-19 and neuropsychiatric symptoms is directly related to infection (Rogers et al., 2020; Picaza Gorrochategi et al., 2020). Although all age groups were affected by the pandemic, the deleterious effects of the pandemic seen in vulnerable age groups, including the elderly, children and individuals with mental illness, conveyed critical importance (Yang et al., 2020, Liu et al., 2020). An increase in the risk of medical conditions that may arise for various reasons in individuals with mental disorders has also been reported (Momen et al., 2020). New-onset psychiatric symptoms have been described in previously diagnosed cases, and worsening of existing symptoms has been reported (Chatterjee et al., 2020). Older adults are prone to contracting more serious illnesses due to the preexisting comorbid conditions such as hypertension, diabetes, coronary heart disease, chronic obstructive pulmonary disease, and renal failure. Moreover, the need for inpatient treatment and the risk of death due to COVID-19 have been found to be higher (Mueller et al., 2020; Zhou et al., 2020). Especially during the COVID-19 pandemic studies on mental health were frequently conducted online, which limited the evaluation of these vulnerable groups adequately due to the difficulties the patients experienced in accessing online healthcare services (Salari et al., 2020). Although studies conducted during the pandemic have identified a deterioration in mental health, the lack of comparative pre-pandemic data makes it difficult to determine whether these findings are specific to the pandemic. Therefore, there is a clear need for retrospective studies comparing the pre-pandemic and pandemic periods.

Accordingly, this study aimed to examine the medical records of individuals aged 65 years and older who either presented to psychiatric outpatient clinics or received inpatient psychiatric consultations during hospitalization in other departments, covering a 1-year period both before and after the onset of the COVID-19 pandemic. We hypothesized that the pandemic period would be associated with a shift in symptom presentations, referral diagnoses, and follow-up patterns compared to the pre-pandemic period.

Materials and methods

This retrospective study was conducted using medical records from Balikesir University Health and Application Research Hospital. The study included patients aged 65 years and older, covering two distinct 1-year periods: March 2019–2020 (pre-pandemic period) and March 2020–2021 (pandemic period). Data were collected from both psychiatric outpatient admissions and inpatient psychiatric consultations requested by other hospital departments. Although the sample was selected retrospectively, patients who continued psychiatric follow-up in both periods were excluded from the study to prevent data overlap between groups. Patients with missing or incomplete records were also excluded from the analysis. The following variables were extracted from patient files: sociodemographic characteristics (age, sex, and marital status), departments requesting consultation (internal medicine, surgical departments, and intensive care unit), indications for psychiatric consultation, follow-up attendance status, diagnoses made, and pharmacological treatments initiated (monotherapy, combination therapy, or no medication).

When the indications for consultations were screened in general, the frequently used symptoms were classified into six groups, and categorized according to the primary indication for consultation as follows: presence of depressive complaints (unhappiness, desire to cry, pessimism, etc.), anxiety-related symptoms (restlessness, anxiety, boredom, state of panic, etc.), sleep problems (difficulty falling asleep, frequent awakening, etc.), agitation-delirium (new-onset orientation problems, disorganized-aggressive, agitated behavior, new onset psychotic symptoms, etc.), regulation of psychiatric medication and other issues (conversion, pre-operative evaluation, somatic complaints, suicide attempt, memory problems, etc.).

Psychiatric diagnoses were evaluated among themselves in six groups according to the frequency of diagnosis considering the diagnostic criteria defined in the DSM-V as follows: Depressive Disorder and Related Disorders, Anxiety Disorders, Delirium, Dementia, Adjustment Disorders and Other (Bipolar Disorder, Fibromyalgia, Drug Abuse, Obsessive Compulsive Disorder, Somatoform Disorders, Sleep Disorders and undiagnosed cases due to evaluation limitations). Symptoms and diagnostic data were independently reviewed and categorized by two experienced psychiatrists.

Ethical statement

Ethical approval for this study was obtained from the Balıkesir University Medical Faculty Clinical Research Ethics Committee on 22 June 2022, with decision number 2022/80.

Statistical analysis

Data were analyzed using Statistical Package for Social Sciences for Windows (SPSS) version 22.0 (SPSS Inc., Chicago, IL) and Jamovi (The Jamovi Project, 2024. Jamovi. (version 2.6) computer software. <https://www.jamovi.org>). Descriptive statistics were presented as mean (\pm) standard deviation, frequency distribution, and percentage. The normality of data distribution was evaluated using the Kolmogorov–Smirnov test. For categorical variables, such as gender, marital status, departments consulted, primary diagnoses, etc., the distribution rates were compared using the Chi-square test. To identify independent predictors of delirium symptoms among inpatients, we conducted a multivariate binary logistic regression analysis including variables significant in bivariate tests: age, gender, marital status, and pandemic period. A separate multivariate binary logistic regression model was also constructed to evaluate the relationship between follow-up attendance and the pandemic period which was significant in bivariate analyses. Prior to regression analysis, the assumption of multicollinearity was checked by calculating the variance inflation factor (VIF). A VIF value below 2.5 was found for all variables. The level of statistical significance was set at $p < 0.05$.

Results

A total of 358 inpatient psychiatric consultation records and 1007 outpatient psychiatric admissions were reviewed. After excluding 22 consultation records and 25 outpatient records due to missing or incomplete data, 336 inpatient consultations and 982 outpatient admissions were included in the analysis. Of all inpatient consultations (reflects the number of distinct psychiatric consultation requests received from different hospital departments) 57% ($n = 190$) were conducted during the routine period and 43% ($n = 146$) during the pandemic. Although the mean age and sex distribution were similar in both periods, there was an increase in the rates of consultations requested for married patients during the pandemic period (54% vs. 68%) ($p = 0.012$). Among outpatient admissions, 54% ($n = 533$) occurred in the pre-pandemic period and 46% ($n = 449$) during the pandemic. The mean age and sex distribution were similar in both periods, and there was an increase in the number of psychiatric admissions of unmarried people during the pandemic period (30% vs. 37%) ($p = 0.025$). Sociodemographic data of the participants are presented in Table 1.

There was a significant shift in the distribution of consultation indications between the two periods ($p = 0.001$), with delirium and agitation-related referrals increasing, and depressive and anxiety complaints decreasing. However, no significant differences were observed in the distribution of primary psychiatric diagnoses ($p = 0.491$). Table 2 provides a comparative summary of the departments requesting consultations, the primary reasons for referral, and the psychiatric diagnoses recorded during each study period. A multivariate binary logistic regression analysis was conducted to evaluate the independent factors influencing the development of delirium symptoms among inpatients, based on variables found to be significant in the bivariate analysis. Delirium symptoms was included as the dependent variable,

Table 1. Sociodemographic characteristics of the participants.

	Consultation data			Outpatient clinic data		
	Routine period	Pandemic period	<i>p</i>	Routine period	Pandemic period	<i>p</i>
<i>N</i> (%)	190 (56.5)	146 (43.5)		533(54.3)	449(45.7)	
Age (mean \pm SD)	75.12 \pm 6.7	76.6 \pm 7.7	0.058	72.02 \pm 5.7	72.2 \pm 6.1	0.472
Gender <i>N</i> (%)	107 (56.3)	75 (51.4)	0.367	360 (67.5)	281 (62.6)	0.104
Female	83 (43.7)	71 (48.6)		173 (32.5)	168 (37.4)	
Male						
Marital status <i>N</i> (%)	103 (54.2)	99 (67.8)	0.012	371 (69.6)	282 (62.8)	0.025
Married	87 (45.8)	47 (32.2)		162 (30.4)	167 (37.2)	
divorced, single						

Table 2. Evaluation of the consultations requested.

Clinical variables		Routine period N (%)	Pandemic period N (%)	<i>p</i>
<i>N</i> (%)		190 (56.5)	146 (43.5)	
Consultations requested from:	Internal disease departments	103 (54.2)	75 (51.4)	0.747
	Surgical departments	48 (25.3)	36 (24.6)	
	Intensive care unit	39 (20.5)	35 (24.0)	
Indications for requesting consultations	Depressive mood	36 (19.5)	8 (5.5)	0.001
	Anxiety	32 (16.8)	18 (12.3)	
	Sleeping problems	25 (13.2)	26(17.8)	
	Agitation-delirium	63 (33.2)	67 (45.9)	
	Regulation of drug therapy	17 (8.9)	19 (13.0)	
	Other	16 (8.4)	8 (5.5)	
	Primary diagnoses	Depressive disorder	42 (22.1)	
	Anxiety disorder	26 (13.7)	26 (17.8)	
	Adjustment disorder	22 (11.6)	16 (11.0)	
	Delirium	70 (36.8)	61 (41.8)	
	Other	30 (15.8)	30 (15.8)	

Table 3. Multiple binary logistic regression analysis to assess the independent factors affecting the development of delirium symptoms.

Predictors	Estimate β	Wald	<i>p</i>	Odds ratio	%95 CI lower	%95 CI upper
Age	0.031	3.385	0.066	1.032	0.998	1.067
Gender	1.086	19.128	0.000	2.963	1.821	4.820
Marital status	-0.594	5.462	0.019	0.552	0.335	0.909
Pre/post pandemic period	0.562	5.206	0.023	1.754	1.082	2.842

Table 4. Evaluation of the patients referred to outpatient clinics.

Clinical variables		Routine period N (%)	Pandemic period N (%)	<i>p</i>
<i>N</i> (%)		533 (54.3)	449 (45.7)	
Rates of attendance to the second control visit		334 (62.7)	215 (47.9)	<0.001
Types of pharmacotherapy recommended	Monotherapy	318 (59.7)	268 (59.7)	0.009
	Combined therapy	204 (38.2)	176 (39.2)	
	No medication	11 (2.1)	5 (1.1)	
Primary diagnoses	Depressive disorder	268 (50.3)	232 (51.7)	0.456
	Anxiety disorder	175 (32.8)	139 (31.0)	
	Adjustment disorder	15 (2.8)	15(3.3)	
	Dementia	21 (3.9)	20 (4.5)	
	Delirium	0 (0)	3 (0.7)	
	Other	54 (10.1)	40 (8.9)	
Comorbidity	Comorbid disease (+)	311(58.3)	192(42.8)	<0.001
	Comorbid disease (-)	222(41.7)	257(57.2)	

while age ($p = 0.042$), sex ($p < 0.001$), marital status ($p=0.001$), and the time period (pre-pandemic vs. post-pandemic; $p = 0.018$) were included as independent variables. According to the results of the logistic regression analysis, the effect of age was no longer significant, whereas gender, marital status, and the time period remained significant predictors of delirium symptoms (Table 3).

Depression remained the most frequent outpatient diagnosis (~50%) in both periods, followed by anxiety disorders (~30%). Monotherapy was the most common pharmacological treatment initiated in both groups. Notably, attendance to the second follow-up visit decreased significantly during the pandemic (from 63% to 48%, $p < 0.001$), suggesting reduced continuity of care. Table 4 summarizes outpatient clinical characteristics, including follow-up attendance rates, types of pharmacological treatments initiated, and primary psychiatric diagnoses across both periods. When the rates of attending second follow-up visit among outpatients were examined, variables including age ($p = 0.472$), gender ($p = 0.035$), marital status ($p = 0.104$), primary diagnosis ($p = 0.085$), period of admission (routine vs. pandemic period, $p < 0.001$), and comorbid medical conditions ($p < 0.001$) were compared between the routine and pandemic periods. A multivariate binary logistic regression analysis was performed to evaluate the independent factors affecting follow-up attendance, based on the variables that were found to be significant in bivariate analyses. In this model, follow-up attendance was defined as the dependent variable, while gender, presence of comorbidities, and admission period (pre- vs. post-pandemic) were entered as

Table 5. Multiple binary logistic regression analysis to assess the independent factors affecting control attendance.

Predictors	Estimate β	Wald	p	Odds ratio	%95 CI lower	%95 CI upper
Gender	-0.262	3,646	0.056	0.769	0.588	1.007
Pre/post pandemic period	0.523	15,615	0.000	1.688	1.302	2.188
Comorbidity	0.490	13,742	0.000	1.632	1.260	2.115

independent variables. Logistic regression analysis indicated that both post-pandemic presentation and the presence of comorbidities were independent predictors of reduced follow-up attendance ($p < 0.001$) (Table 5).

Discussion

In this study, we examined how the COVID-19 pandemic affected psychiatric consultations and follow-up attendance in individuals aged 65 and older. We found that during the pandemic, referrals due to agitation and delirium increased, while referrals for depression and anxiety decreased. Additionally, fewer patients attended their follow-up appointments, and the presence of comorbidities was associated with lower follow-up rates, regardless of the pandemic. These findings reflect changes in mental health needs and service use among older adults during the pandemic.

The effects of the COVID-19 pandemic, which started in China in 2019, on the mental health of adults with or without psychiatric diagnoses have been reported in many studies, and studies in the field of mental health have been evaluated as a subheading by countries in the management of the pandemic (Moreno et al., 2020; Xiong et al., 2020). Older adults are at risk of serious illness and death following COVID-19 infection and are more vulnerable to social isolation and loss of access to social and health services than the adults (Williamson et al., 2020). Contrary to what is expected, there are also studies in the literature suggesting that older individuals might be more resistant to anxiety, depression, and stress-related mental disorders than the younger population, especially in the initial phase of the COVID-19 pandemic (Xiong et al., 2020; Vahia et al., 2020). In a cohort study examining pre- and post-COVID-19 periods, individuals with an average age of 68 years, reduced mobility were found to have higher rates of major depressive disorder and anxiety during the pandemic. Mental health deterioration was reported more frequently among women than men, and among individuals with poorer financial status both before and during the pandemic. Interestingly, those with better economic status were more likely to report declines in quality of life and increased feelings of loneliness. Additionally, the prevalence of loneliness was higher among individuals living alone without a partner (Zaninotto et al., 2022). In our study, both the consultation and outpatient clinic groups were comparable in terms of age and gender distribution across the two periods. However, among outpatient admissions, there was an increase in the proportion of individuals who lived alone or had lost their partners during the pandemic. This may suggest that the adverse effects of social isolation and loneliness were more pronounced in this group, potentially exacerbating pre-existing or newly emerging symptoms of depression and anxiety. Our interpretation is supported by a 2025 scoping review by Mulla et al., which found that several studies reported a strong association between loneliness, isolation, and depression in older adults without severe dementia during the COVID-19 pandemic (Mulla et al., 2025).

In previous studies, consultation reports requested for older adult inpatients from liaison psychiatry services before the COVID-19 pandemic indicated the presence of psychopathological conditions up to an incidence rate of 60% including mental illnesses, most commonly delirium and depression (Psychiatrists RCo, 2005). Similarly, in our study, the most common indication for requesting inpatient consultations in both periods was delirium-like symptoms (agitation, hallucination, aggression, orientation problems, etc.). The increase in consultation rates due to the prediagnosis of delirium was found to be significantly higher in the post-pandemic period. However, no significant difference was observed in the actual diagnosis of delirium, suggesting that some post-pandemic agitation-related referrals may have stemmed from other conditions such as anxiety, adjustment disorders, or medication side effects. COVID-19 has been associated with a difficult-to-treat entity, and the treatment of delirium in older people is further complicated by the necessary isolation protocols, sensory impairments, cognitive impairments, and lack of access to many non-pharmacological options (O'Hanlon & Inouye, 2020). Therefore, it is even more

important to recognize delirium and not overlook it because it is a frequent cause of mortality in the elderly. In our study, the relationship between COVID-19 and delirium could not be clearly explained. Very few cases of COVID-19 positivity were encountered in the clinical data of inpatient consultations which was considered as a limitation of our study. Given the diagnostic uncertainty surrounding post-pandemic agitation symptoms and the limited availability of confirmed COVID-19 status in our dataset, future research should prioritize the inclusion of biological data and structured assessments to better clarify the relationship between COVID-19 and neuropsychiatric outcomes such as delirium. Interestingly, despite the well-known psychological stressors of the pandemic, consultation requests due to depression- and anxiety-related symptoms were less frequent during this period. This paradox may be explained by limited access to in-person consultations, communication challenges among elderly patients, and a tendency to prioritize acute symptoms like delirium in referral decisions. In another study, 18 weeks before and after the pandemic period were evaluated and the most common reason for psychiatry consultations in both time periods was found to be depressed mood (48% in routine, and 41% in pandemic period). In addition, there were significantly greater numbers of referrals for assessment of behavioral disorder (31% vs. 15%) and confusion (12% vs. 9%). In the same study, the most common diagnosis made during the pandemic period was delirium (45%), followed by Behavioral and Psychological Symptoms of Dementia (28%), depression and adjustment disorders (15%). Consistent with our study, an increase in the number of consultations related to the regulation of psychotropic drug treatment during the pandemic period was reported (Wallace et al., 2023). This fact suggests that the decrease in physician visits, especially in elderly patients with the pandemic, may cause compliance problems with drug treatments, such as forgetting, mixing and overuse of drugs.

Considering the mental health services in our country during the pandemic period, it was observed that the number of admissions to emergency psychiatry outpatient clinics and hospitalizations in psychiatry services decreased significantly, especially in the acute period. While a narrowing in the indications for hospitalizations was observed, the number of face-to-face services provided at community mental health centers decreased (Sağlam et al., 2022). In addition to restrictive measures, this unfavorable condition is considered to be related to the inclusion of psychiatric beds in the general service in some hospitals during the acute period and the ease of purchasing medications with a medical report from pharmacies. In our study, when outpatient admissions to the psychiatric outpatient clinic were analyzed, the most common diagnosis in both periods was depressive disorder, followed by anxiety disorders. Similarly, a systematic review from China reported relatively high detection rates of depression (13.8–58.7%) and anxiety (4.9–48.6%) symptoms among older adults during the pandemic, indicating that mood and anxiety-related complaints remained prominent issues in this population across different settings (Liu et al., 2022). Anxiety/depression may increase the likelihood of non-compliance with warnings and measures taken among elderly individuals in general. This phenomenon suggests that the decline in cognitive abilities seen both with age and as a result of these disorders may adversely affect comprehension, judgment, and working memory processes (Piotrowicz et al., 2016). In addition, non-compliance with precautions may be partly related to self-neglect, which is more common in depression (Papaioannou et al., 2012). Therefore, new approaches that can support adaptation to isolation in individuals with depressive disorder are necessary. In our outpatient data, the proportion of older adults with comorbid medical conditions significantly decreased during the pandemic period. This finding may suggest that individuals with chronic illnesses were less likely to seek psychiatric care, possibly due to heightened vulnerability to COVID-19, increased fear of infection, or greater difficulty accessing services during lockdown. The attendance rates of second follow-up visits to outpatient clinics decreased to a greater extent during the pandemic period. As far as we have searched, the attendance rates of second follow-up visits to outpatient clinics among geriatric population have not been reported in the literature so far. In addition, our multivariate analysis showed that the presence of comorbid medical conditions independently predicted lower follow-up attendance, regardless of the pandemic period. This finding further emphasizes the potential vulnerability of chronically ill older adults in maintaining continuity of psychiatric care. The reasons for lower rates of attendance at second follow-up control visits may be summarized as follows: patients postponing their follow-up psychiatric examinations to reduce the risk of exposure to the virus, experts advising older adults to apply to hospitals only in emergencies, inability to make appointments due to the limitation of the number of face-to-face visits in many psychiatric clinics, and

scheduling follow-up appointments for a longer period of time compared to the pre-COVID-19 period (Naharci et al., 2020). In this context, training older adults on issues such as teleconferencing and online examination will contribute to ensuring continuity of treatment during periods of restrictions. When addressing the mental health of elderly patients, it is also essential to consider the psychological well-being of their caregivers. The pandemic may also increase the stress of caregivers of individuals who need help because of physical or cognitive limitations. Behavioral and psychological symptoms such as anxiety, panic attacks, depression and delirium may negatively affect the mental and physical health of caregivers and increase the risk of abuse and neglect of an older adult (Naharci et al., 2020). This adverse context may have contributed to an elevated risk of developing psychopathological conditions among older adults during the pandemic period.

This study has several limitations. First, the retrospective design, the use of data from a single center, and the lack of standardized clinical assessment scales limited the depth of psychiatric evaluation and may affect the generalizability of the findings. Additionally, only a small number of patients were documented as COVID-19 positive, and COVID-19 diagnoses were generally underreported in the clinical records. This may have led to an underestimation of the pandemic's direct impact on patients' mental health. Despite some limitations, the superior aspects of our study are the indication of patient follow-up rates, the comparison of data before and during the COVID pandemic, and the inclusion of late pandemic data in the study.

In conclusion, our findings indicate that during the COVID-19 pandemic, there was a shift in psychiatric service utilization patterns among older adults, with increased consultation requests for agitation-related symptoms and reduced follow-up attendance in outpatient settings. These changes underscore the need for adaptable mental health service models tailored to the elderly population, including proactive delirium screening and strategies to enhance continuity of care during public health emergencies.

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Credit author statement

Merve ŞAHİN CAN: Conceptualization, Methodology, Writing – Reviewing and Editing.

Rıza Gökçer Tulacı Software, Data curation.

Nazan DOLAPOĞLU: Visualization, Investigation.

Deniz Alçı: Visualization, Investigation.

Hayriye Baykan: Supervision.

Tunay Karlıdere: Supervision.

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Data availability statement

The data that support the findings of this study are available from the corresponding author, [Merve ŞAHİN CAN], upon reasonable request.

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