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Mood disorders in adolescents admitted to psychiatric units – risk factors

Zaburzenia nastroju u młodzieży hospitalizowanej psychiatrycznie – czynniki ryzyka

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Abstract

Introduction and objective: In recent years, there has been an increase in the prevalence of mood disorders in the developmental population. Their atypical nature, symptoms masking the diagnosis, and a high risk of auto-aggressive behaviours are also noticeable. The aim of the study was to determine the prevalence of mood disorders in the population of psychiatrically hospitalised adolescents. **Materials and methods:** The research material was an anonymous database of 1,311 patients aged 13–18 years, treated for 10 years (2006–2015) in a stationary youth ward. A group of patients with mood disorders was selected from the study population. **Results:** Mood/affective disorders were diagnosed in 13.5% of hospitalised adolescents. The mean age of patients with this diagnosis was 16 years. A statistically significant relationship was observed between the diagnosis of mood disorders and a history of suicide attempts (in >50%), self-injury (in >54%), learning difficulties, truancy, and repeating a grade. **Conclusions:** It was found that a history of suicide attempts, learning difficulties, truancy, repeating a grade, and a history of self-injury were risk factors for affective disorders in the study population.

Keywords: child and adolescent psychiatry, affective disorders, risk factors

Streszczenie

Wprowadzenie i cel: W ostatnich latach odnotowuje się wzrost rozpowszechnienia zaburzeń nastroju w populacji rozwojowej, jak również wskazuje się na ich atypowość, objawy maskujące rozpoznanie i wysokie ryzyko autoagresji. Główne cele pracy obejmowały określenie rozpowszechnienia zaburzeń nastroju w populacji młodzieży hospitalizowanej psychiatrycznie oraz wyłonienie istotnych czynników ryzyka wystąpienia tych zaburzeń, a ponadto ustalenie zaburzeń współwystępujących, w tym zachowań autoagresywnych. **Materiał i metody:** Materiałem do badań była anonimowa baza danych 1311 pacjentów w wieku 13–18 lat, leczonych w okresie 10 lat (w latach 2006–2015) na stacjonarnym oddziale młodzieżowym. Z badanej populacji wyłoniono grupę pacjentów z zaburzeniami nastroju. **Wyniki:** Rozpoznanie zaburzeń nastroju/afektywnych ustalono u 13,5% hospitalizowanych nastolatków. Średnia wieku pacjentów z tym rozpoznaniem wynosiła 16 lat. Zaobserwowano istotną statystycznie zależność między diagnozą zaburzeń nastroju a próbą samobójczą w wywiadzie (u >50%), występowaniem samouszkodzeń (u >54%), trudnościami w nauce, wagarowaniem i powtarzaniem klasy. **Wnioski:** Ustalono, że czynnikami ryzyka związanymi z wystąpieniem zaburzeń afektywnych w badanej populacji były próby samobójcze w wywiadzie, trudności w nauce, wagarowanie, powtarzanie klasy i samouszkodzenia w wywiadzie.

Słowa kluczowe: psychiatria dzieci i młodzieży, zaburzenia afektywne, czynniki ryzyka

INTRODUCTION

The increase in the prevalence of mental disorders among young people, which has become noticeable in the public space, is a disturbing phenomenon. According to Antosik-Wójcińska (2020), mental problems may affect about 10–20% of children and adolescents. This translates into research activity in the field of mental health risks in the developmental population. Epidemiological research and monitoring of factors preceding the development of specific mental disorders and their course, taking into account comorbidities, as well as evaluation of the efficacy of implemented therapeutic interventions, are of great importance. The crisis in child and adolescent psychiatry, which has persisted for several years despite the reform implemented in this field since 2018 by the Ministry of Health (Ministerstwo Zdrowia, 2023), is the result of the increasing number of suicidal behaviours and intentional self-harm among adolescents. It is important to highlight the escalation of this crisis during the COVID-19 pandemic in Poland, which was announced on 20 March 2020. The impact of the pandemic on the significant increase in the number of suicide attempts in the Polish adolescent population in the following years [708 in 2020 (lockdown), 1,286 in 2021, 1,858 in 2022] requires separate research (data from the Police Headquarters – statystyka.policja.pl, 2023; Rogers et al., 2021).

A thorough psychiatric examination, with particular emphasis on mood/affective disorders, in which suicidal thoughts and attempts are one of the diagnostic criteria, is a key step in determining the causes of these behaviours (which are already considered separate categories in the International Classification of Diseases 11th Revision, ICD-11).

According to the ICD-10 classification (Klasyfikacja zaburzeń psychicznych i zaburzeń zachowania w ICD-10, 1997), mood disorders include manic episode, bipolar affective disorders (bipolar disorder, BD), depressive episode (including a mild, moderate, severe episode without psychotic symptoms and with psychotic symptoms, other depressive episodes, unspecified depressive episode, recurrent depressive disorders, persistent mood disorders, cyclothymia, dysthymia). However, it should be remembered that symptoms of mood/affective disorders also occur in somatogenic, behavioural and emotional disorders, as well as in response to severe stress and adaptation, as well as they may be induced by psychoactive substances (ICD-10).

The diagnostic criteria for depression and BD in children and adolescents are the same as in adults. However, due to ongoing developmental changes in this group, diagnostic and therapeutic challenges are noticeable. Adolescents may present an atypical course of affective disorders (Antosik-Wójcińska, 2020).

The risk of suicidal thoughts and attempts, as well as self-destructive behaviour increases significantly in the course

of affective disorders in adolescents (Gmitrowicz, 2015). Cognitive disorders in this group are usually related to attention problems and, consequently, academic failures. They may be the first symptoms of the disease that go unnoticed (Bomba, 2012). Depressed adolescents may exhibit irritability, mood swings, low frustration tolerance, somatic symptoms, outbursts of anger, and social withdrawal (Antosik-Wójcińska, 2020). There may also be behavioural disorders, risky sexual or self-aggressive behaviours. The review of publications shows that the above-mentioned symptoms, as well as fatigability, difficulties in initiating activities, boredom, anhedonia, going to bed late, and neglect of hygiene, may “mask” the disease (Pużyński, 2009; Radziwiłłowicz, 2020).

Considering the difficulties in diagnosing mood disorders in this group, we decided to investigate a population of adolescents receiving inpatient psychiatric treatment over a period of 10 years. The study assessed the prevalence of depressive disorders, various risk factors for depression and BD, as well as risk factors and comorbidities, including self-aggressive behaviour.

EPIDEMIOLOGY OF MOOD DISORDERS IN THE LIGHT OF RESEARCH

Looking at the last decades, an increasing incidence of depression in the group of children and adolescents, especially when adjustment disorders with depressed mood are taken into account, may be observed (Wendołowska, 2017). According to Carr (2004), depression affects 2 to 8% of adolescents. Other studies show that up to 20% of teenagers are diagnosed with a depressive episode by the age of 18 years (McCauley et al., 2001).

The EZOP II study, published at the end of 2021 (Moskalewicz and Wciórka, 2021), showed that depression occurred in approximately 3.85% of the adult population of Poland throughout their lives. However, in the case of developmental population aged 12–17 years, 4% have ever suffered from depression in their lives (with a slightly higher prevalence in boys), and 1.5% experienced “current” depression in the last 2 weeks (in this case, the proportions of genders are similar). Any “current” affective disorders were diagnosed in 2.4%. Suicidal tendencies (thoughts, attempts) at any time in life were confirmed by up to 5.7% of adolescents.

In other studies, BD was diagnosed in approximately 1.8% of children and adolescents (Radziwiłłowicz, 2020). The author also pointed out that 20% of patients (including adults, adolescents and children) report the peak age at onset between 15 and 19 years.

Similar data were reported by the American Psychiatric Association (APA) (Galecki et al., 2018), with 1.5–3 times higher rates in women than in men, starting from early adolescence. It is assumed that the likelihood of depression increases with the child’s age (it positively correlates with puberty). Due to the increase in prevalence

and significant consequences, it is one of the most serious problems of the developmental age.

The dynamic development of research on BD among children and adolescents is therefore fully justified (Fristad and Nick, 2017). Recently, there has been an increase in the frequency of BD diagnosis among children and adolescents (Cichoń et al., 2020); however, reports on this subject vary depending on the country and type of research. In the majority of publications, 30–60% of adult patients report the onset of BD symptoms before the age of 20 years (Antosik-Wójcińska, 2020). There has been an increase in the number of adolescents' medical appointments due to this disorder (0.0025% in 1994–1995, 1% in 2002–2003) (Moreno et al., 2007). Other studies have found an increase in the number of hospital admissions of adolescents diagnosed with broadly understood affective disorders (including bipolar I disorder – BDI, bipolar II disorder – BDII, unspecified bipolar disorder and cyclothymic disorder) (Harpaz-Rotem et al., 2005). The authors described an increase in the rates of BD diagnoses from 11% in 1995 to 18% in 2000. Holtzman et al. (2015) indicated BD symptom onset before the age of 12 years, or even earlier, in 21.9% of patients. Among the affected individuals, 43% of patients noticed their symptoms at the age of 13–18 years (Holtzman et al., 2015). Up to 25–40% of patients pointed out that the first episode occurred during childhood or adolescence.

CO-OCCURRING RISK FACTORS FOR DEPRESSION IN THE LIGHT OF RESEARCH

Strzyżewski and Nowakowska (1983) define stressful life events as those that are associated with loss or a sense of being overloaded. Combined with personality traits, they may promote the development of depressive symptoms or significantly affect the clinical picture of an already diagnosed disease. The authors pointed to events that are of particular importance, such as marital/family conflicts, death of a loved one, emotional disappointments, interpersonal conflicts, changes in financial status, and chronic diseases. According to Hammen et al. (2000), negative childhood life events may also be such factors.

Sexual, psychological and physical abuse play an important role in the development of depression (Pine et al., 2002).

Wise et al. (2001) assessed the impact of traumatic childhood events on the risk of depression in adulthood in a population of women with this diagnosis. It was found that any history of traumatic events was associated with 2.5-fold increase in the risk of depression. Furthermore, a 3.3-fold increase in this risk was observed in individuals with a history of physical and sexual abuse in childhood. Physical abuse alone increased this risk 2.4 times (Rajewska-Rager and Rybakowski, 2008).

Baldessarini and Tondo (2003) found that 70–91% of individuals experiencing suicidal thoughts or attempts were

diagnosed with mental illnesses or disorders. Mood disorders (BD, depressive disorders), substance abuse, anxiety disorders, and behavioural disorders were the most common diagnoses. As emphasised by the cited researchers, the risk of a suicide attempt is highest in bipolar disorder. Other studies in the general population diagnosed with affective disorders reported that the percentage of individuals at high risk of suicide attempts was over 60% (Bottlender et al., 2000; Jeon et al., 2010; Raja and Azzoni, 2004).

A 2017 meta-analysis assessing the risk of suicide attempts in the population of children and adolescents with mood disorders showed the highest rates in those diagnosed with BD. A depressive episode came second, followed by manic/hypomanic episodes (De Crescenzo et al., 2017). However, American research has confirmed that depressive disorder is the most common diagnosis among adolescents attempting suicide (McManama et al., 2012).

Analysing the functions of self-injury (such as reducing tension, resolving interpersonal conflict) and, among others, the severity of depressive symptoms, Radziwiłłowicz and Lewandowska found (2017) that the strength of correlation between the severity of depression and self-harm functions was at a low or moderate level. The severity of depressive symptoms is associated with an increase in the significance of the mutilation function.

Warzocha et al. (2008) conducted a study to determine the relationship between the use of self-harm and diagnoses of mental disorders, past suicide attempts, experiencing violence, and family situation in adolescents admitted to psychiatric inpatient units. There was no relationship between self-harm and the type of diagnosis in patients.

The presented research suggests that affective disorders in the adolescent population are an important phenomenon. A proper diagnosis is a prerequisite for initiating therapy. Any mistake may have serious consequences for the health and life of a young patient. Therefore, it is crucial to determine factors that may contribute to the development of affective disorders and other, usually co-occurring, disorders.

OBJECTIVES

Specific objectives were as follows:

- to assess the prevalence of affective disorders in the study population of psychiatric inpatients;
- to determine the mean age at onset of affective disorders in the study group;
- to identify patients with a diagnosis of affective disorder in the study group:
 - the prevalence of suicide attempts,
 - the prevalence of self-injury;
- to identify risk factors for affective disorders in the study group;
- to show how family and school situations affect the risk of developing affective disorders.

MATERIALS

The study population included 1,311 patients of the Department of Adolescent Psychiatry of the Central Clinical Hospital of the Medical University of Lodz. A database* of patients aged 13–18 years was used as research material. The database contained records of patients treated in an inpatient unit over a period of 10 years (2006–2015). The bioethics committee approved the use of the anonymous database.

METHODS

Descriptive methods and statistical inference methods were used in the statistical analysis of the collected material. Structure indices were calculated in the analysis of qualitative characteristics in order to describe the study group of patients and its subgroups. The conformity of the distributions of quantitative traits with the normal distribution was assessed using the Shapiro–Wilk test. Due to the lack of conformity of the distribution of quantitative variables with the normal distribution, non-parametric methods were used in the analyses. The median (*Me*) was calculated to characterise the average value for quantitative traits. The interquartile range was used as a measure of dispersion. The Mann–Whitney *U* test was used to assess the significance of differences in average values in two independent groups. For features expressed on a nominal scale, the structure was analysed and the frequency of occurrence of individual classes was assessed. Comparisons between groups for data expressed as proportions were assessed using the chi-square test of independence (χ^2). For all analyses, the maximum acceptable value of the probability of committing a type I error (i.e. rejecting the true null hypothesis) was $\alpha = 0.05$.

RESULTS

Women and men accounted for 60.8% and 39.2% of the study population, respectively. The mean age was 16.04 years (standard deviation, *SD* 1.49). Neurotic, stress-related and somatoform disorders were the most common diagnosis in this population (28.9% of patients). A total of 177 patients were diagnosed with affective disorders (F30–F39), which accounted for 13.5% of all primary diagnoses. The frequency distribution of diagnoses in the study population is presented in Tab. 1.

The study group of patients with affective disorders included 130 women (73%) and 47 men (27%). The mean age of patients with F30–F39 diagnoses was 16 years (15–17 years). The gender and age distribution in the study population is presented in the Tab. 2.

* The anonymous database of patients was collected as part of statutory research of the Department of Child and Adolescent Psychiatry of the Medical University of Lodz. It was also used for other research purposes.

Diagnosis (range)	<i>n</i>	%
F00–09	32	2.4
F10–19	51	3.9
F20–29	206	15.7
F30–39	177	13.5
F40–48	379	28.9
F50–59	48	3.7
F60–61	6	0.5
F70–79	76	5.8
F80–89	24	1.8
F90–98	280	21.4
Other	32	2.4
Total	1,311	100.0

n – number of patients assigned to specific diagnostic groups;
% – percentage distribution in the total population.

Tab. 1. Frequency distribution of diagnoses made in the study population of hospitalised adolescents

Variable	Affective disorders		Test value (<i>df</i>)	<i>p</i>
	No <i>n</i> = 1,134	Yes <i>n</i> = 177		
Age (years), median (IQR)	17 (16–17)	16 (15–17)	4.264*	<0.0001
Sex – <i>n</i> (%): • females • males	667 (58.8) 467 (41.2)	130 (73.4) 47 (26.6)	13.797 (1)**	0.0002

IQR – interquartile range; *df* – number of degrees of freedom for χ^2 ;
p-value – the value of the two-sided asymptotic test probability, the relationships were significant in each case.
* Mann–Whitney *U* test value for groups *n* > 20. ** statistics for χ^2 (*df*).

Tab. 2. Characteristics of the study population

Variable	Affective disorders		Test statistics*	<i>p</i>
	No	Yes		
Number of hospitalisations, median (IQR)	1 (1–2)	1 (1–2)	0.456	0.6485

IQR – interquartile range; *p*-value – the value of the two-sided asymptotic test probability.
* Mann–Whitney *U* test value for groups *n* > 20.

Tab. 3. Distribution of the number of hospitalisations in the study group (quantitative variables)

Patients with F30–F39 diagnoses were hospitalised on average once. The number of admissions was 1–2. The difference was not statistically significant. The distribution of the number of hospitalisations is presented in Tab. 3. Patients diagnosed with affective disorders were assessed for the risk of suicide attempts. A statistically significant relationship was found between the primary diagnosis (affective disorders) of hospitalised patients and a likely history of suicide attempt ($\chi^2 = 92.793$, *p* < 0.001). There was also a statistically significant relationship between the primary diagnosis and a likely history of learning difficulties, truancy, repeating a grade, and self-harm (*p* < 0.001) (Tab. 4).

Truancy was confirmed by 43.5% of patients. Other significant educational problems included learning difficulties

Variable	Level	Affective disorders		χ^2 (df)	p-value
		No	Yes		
Conflicts, <i>n</i> (%)	Yes	745 (65.9)	126 (71.2)	1.942 (1)	0.1634
	No	386 (34.1)	51 (28.8)		
Parental financial support, <i>n</i> (%)	Yes	231 (20.4)	31 (17.5)	0.79 (1)	0.3742
	No	902 (79.6)	146 (82.5)		
Lack of support, <i>n</i> (%)	Yes	712 (62.9)	123 (69.5)	2.879 (1)	0.0897
	No	420 (37.1)	54 (30.5)		
Sexual abuse, <i>n</i> (%)	Yes	95 (8.4)	11 (6.2)	0.986 (1)	0.3207
	No	1035 (91.6)	166 (93.8)		
Physical abuse, <i>n</i> (%)	Yes	320 (28.3)	38 (21.5)	3.607 (1)	0.0575
	No	810 (71.7)	139 (78.5)		
Peer rejection, <i>n</i> (%)	Yes	617 (54.5)	84 (47.5)	3.054 (1)	0,0805
	No	515 (45.5)	93 (52.5)		
Emotional disappointment, <i>n</i> (%)	Yes	385 (34.0)	63 (35.6)	0.170 (1)	0.68
	No	747 (66.0)	114 (64.4)		
Parental divorce, <i>n</i> (%)	Yes	482 (42.6)	72 (40.7)	0.236 (1)	0.6274
	No	649 (57.4)	105 (59.3)		
Truancy, <i>n</i> (%)	Yes	634 (56.0)	77 (43.5)	9.638 (1)	0.0019
	No	498 (44.0)	100 (56.5)		
Repeating a grade, <i>n</i> (%)	Yes	335 (29.6)	32 (18.1)	10.011 (1)	0.0016
	No	798 (70.4)	145 (81.9)		
Learning difficulties, <i>n</i> (%)	Yes	833 (73.6)	108 (61.0)	11.957 (1)	0.0005
	No	299 (26.4)	69 (39.0)		
Interrupting education, <i>n</i> (%)	Yes	282 (24.9)	49 (27.7)	0.632 (1)	0.4265
	No	851 (75.1)	128 (72.3)		
History of suicide attempts, <i>n</i> (%)	Yes	398 (35.1)	89 (50.3)	15.602 (1)	0.0001
	No	736 (64.9)	87 (49.1)		
History of self-harm, <i>n</i> (%)	Yes	476 (42.0)	96 (54.2)	–	0.0023
	No	657 (58.0)	81 (45.8)		

χ^2 – chi-square statistic; *df* – number of degrees of freedom for χ^2 ;
n – group size, differences in total numbers in cross tables are due to missing data; *p* – significant relationships are highlighted.
 * Differences in total numbers are due to missing data.

Tab. 4. Differences in the distribution of variables in the study groups (qualitative variables)*

in 61% and repeating a grade in 10% of patients. As shown in Tab. 4, 71.2% of patients with F30–F39 diagnoses declared family conflicts, and 17.5% were financially supported by their parents. About 40.7% of patients experienced parental divorce. Lack of family support was reported by 69.5% of adolescents. Sexual abuse was reported by 6.2% of patients. Peer rejection was experienced by 47.5%. Physical violence and emotional disappointment were reported by 21.5% and 35.6% of patients, respectively. Interrupted education was reported by 27.7% of hospitalised adolescents. However, the relationships mentioned above did not achieve statistical significance.

DISCUSSION

The presented research clearly shows that the diagnosis of affective disorders was not highly prevalent in the study population. The majority of psychiatrically hospitalised adolescents (28.9%) suffered from neurotic, stress-related and somatoform disorders. The diagnosis of affective disorders (F30–F39) was made in 13.5% of patients. These

values are lower than those obtained by Harpaz-Rotem et al. (2005). By 2000, they observed an increase in the number of hospital admissions of young people diagnosed with broadly understood affective disorders (including BDI and BDII, unspecified bipolar disorder and cyclothymia) from 11% of diagnoses in 1995 to 18% in 2000.

Women accounted for the majority of patients with affective disorders (73%). The mean age of patients with diagnoses F30–F39 was 16 years (15–17 years). This coincides with the fact that 20% of patients report the peak period of onset between the ages of 15 and 19 years (Radziwiłłowicz, 2020). Holtzman et al. (2015) showed that 43% of affected individuals observed the symptoms at the age of 13–18 years, but these researchers referred only to the diagnosis of BD.

The study found a statistically significant relationship between the primary diagnosis (affective disorders) of hospitalised patients and a likely history of a suicide attempt. People diagnosed with mood disorders (F30–F39) were most likely to involve in suicide attempts and self-harm. Half of the respondents (50.6%) had at least one suicide attempt in their history. This percentage was 66% in the general population diagnosed with affective disorders (Bottlender et al., 2000; Jeon et al., 2010; Raja and Azzoni, 2004). It is important to note the difference in this percentage for both of these populations. Despite the high risk of suicide attempts in the population of children and adolescents with affective disorders, the calculated risk is lower compared to studies in the general population.

A statistically significant relationship was observed between the primary diagnosis and the likelihood of learning difficulties, truancy, repeating a grade, and a history of self-harm. Self-harm occurred in more than half of the hospitalised adolescents. These data differ from the analyses of Radziwiłłowicz and Lewandowska (2017), in which the strength of correlation between the severity of depression and self-harm functions was at a low or moderate level. Warzocha et al. (2008) found no relationship between self-harm and the type of diagnosis. The time in which the research was conducted may be one of the reasons for these discrepancies. In the first decade of the 21st century, the first signs of a crisis in developmental age psychiatry began to appear in the form of a growing number of admissions due to suicidal behaviour and/or self-harm, which resulted in limited access to inpatient psychiatric services for children with other mental problems. Specialisation in the field of child and adolescent psychiatry was not reactivated in Poland until 2006 (Gmitrowicz and Janas-Kozik, 2018).

Furthermore, the study provided data on the frequency of risk factors in the study group of adolescents with F30–F39 diagnoses. Family conflicts were declared by 71.2% of patients with F30–F39 diagnoses; 17.5% were financially supported by their parents; 40.7% experienced a parental divorce; 69.5% reported a lack of family support; 6.2% reported past sexual abuse; and 47.5% of patients reported

peer rejection. Physical violence, emotional disappointment, and interrupted education were reported by 21.5%, 35.6%, and 27.7% of patients, respectively. However, these relationships were not statistically significant. Such significance was, on the other hand, achieved by Rajewska-Rager and Rybakowski (2008) for factors such as marital/family conflicts, death of a loved one, emotional disappointments, interpersonal conflicts, changes in financial status, and chronic diseases. The data obtained do not correspond with current knowledge (Pine et al., 2002; Wise et al., 2001) due to the lack of significance for factors such as sexual, mental or physical abuse.

CONCLUSIONS

1. The diagnosis of mood/affective disorders (ICD-10 F30–F39) was found in 13.5% of patients. These rates are lower than expected based on the literature.
2. The average age of patients with F30–F39 diagnoses was 16 years (15–17 years), which is consistent with literature reports.
3. Suicide attempts, learning difficulties, truancy, repeating a grade, and self-harm was found to be risk factors for affective disorders in the study population. The risk of a suicide attempt in the group diagnosed with mood disorders was higher in women.

4. Past sexual abuse was reported by 6.2% of patients. Physical violence was reported by 21.5% of patients with F30–F39 diagnoses. However, these relationships were not statistically significant.
5. Suicide attempts and self-harm were reported by 50.6% and 54.2% of patients diagnosed with mood disorders, respectively.

The described relationships should be assessed in future research, with the study group divided into the following diagnoses: manic episode, bipolar disorder, depressive episode with or without psychotic symptoms, other depressive episodes, unspecified depressive episode, recurrent depressive disorder, persistent mood disorders, cyclothymia, and dysthymia.

Conflict of interest

The authors do not report any financial or personal connections with other persons or organisations which might negatively affect the contents of this publication and/or claim authorship rights to this publication.

Author contribution

Collection, recording and/or compilation of data: AG, RS. Writing of manuscript: MAW, AG.

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