DOI: 10.14744/DAJPNS.2026.00338
Dusunen Adam J Psychiatr Neurol Sci
2026;39:212-226

RESEARCH ARTICLE

Symptom predominance, treatment delay, and four-year remission outcomes in first-episode schizophrenia: A single-center cohort from Turkiye

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ABSTRACT

Objective: This study aimed to estimate the rate and baseline predictors of symptomatic remission and to examine the association between symptom predominance during the untreated psychosis period and its duration in a diagnostically homogeneous cohort of individuals with first-episode schizophrenia treated under routine clinical conditions in Turkiye.

Method: This retrospective cohort study included 84 inpatients admitted with first-episode psychosis between 2020 and 2022 who subsequently received a longitudinally confirmed diagnosis of schizophrenia. Patients with affective, substance-induced, organic, or peripartum psychoses were systematically excluded. Follow-up assessments were completed for 39 participants (46.4%) after a mean follow-up of 48.5 months. Cross-sectional symptomatic remission was assessed according to the severity component of the Remission in Schizophrenia Working Group criteria using the eight specified Positive and Negative Syndrome Scale (PANSS) items. Exploratory associations between selected baseline variables and remission were examined using binomial logistic regression, and the association between symptom predominance (positive vs. negative) during the untreated psychosis period and duration of untreated psychosis (DUP) was examined in the full baseline cohort.

Results: At follow-up, 71.8% (28/39; 95% confidence interval, 56.2%–83.5%) of the 39 assessed participants met the symptomatic remission criterion. Remitters had a significantly older age at illness onset and shorter DUP than non-remitters; current living arrangement and medication adherence also differed significantly between groups. An exploratory multivariable logistic regression model including age at illness onset, sex, and DUP was significant overall (p=0.005), although no individual variable reached statistical significance. In the full baseline cohort (n=84), negative-symptom predominance during the untreated psychosis period was associated with a markedly longer DUP than positive-symptom predominance (median, 104.0 vs. 12.5 weeks; p<0.001).

Conclusion: Symptomatic remission was common approximately four years after first admission, although individual baseline predictors showed limited independent explanatory power in this modestly sized cohort. Negative-symptom predominance during the untreated psychosis period was strongly associated with prolonged treatment delay, highlighting a potential target for earlier detection efforts.

Keywords: First-episode schizophrenia, remission, duration of untreated psychosis, negative symptoms, early intervention

How to cite this article: Akbas I, Guclu O. Symptom predominance, treatment delay, and four-year remission outcomes in first-episode schizophrenia: A single-center cohort from Turkiye. Dusunen Adam J Psychiatr Neurol Sci 2026;39:212-226.

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Received: June 23, 2026; **Revised:** September 02, 2026; **Accepted:** September 05, 2026

INTRODUCTION

Schizophrenia most commonly emerges in late adolescence or early adulthood, frequently becoming clinically apparent with a first psychotic episode. First-episode schizophrenia represents the subset of first-episode psychosis (FEP) in which the eventual diagnosis is established as schizophrenia (1). Despite its widespread use, however, FEP lacks a universally accepted operational definition. Three principal approaches have been used in the literature, defining the first episode according to first clinical contact, minimal or absent previous antipsychotic exposure, or the duration since the onset of psychotic symptoms (2). Among these, onset-based definitions may offer particular conceptual advantages by locating patients according to the course of illness rather than solely according to their first contact with services, which may occur substantially after symptom onset (2). Recent literature also suggests that onset-based definitions are among the most commonly adopted operational approaches (3). Conceptualizing the first episode in relation to illness onset is particularly relevant within the critical-period framework of schizophrenia, according to which a disproportionate degree of clinical and functional deterioration occurs during the early years of illness, making this period an important window for timely intervention and potentially influencing longer-term outcomes (4).

The FEP umbrella, however, encompasses a diagnostically heterogeneous group of conditions that differ substantially in etiology, diagnostic stability, clinical course, and long-term outcome (5). Although the underlying disorder can be identified reliably at first presentation in some patients, in others the diagnostic picture evolves over time and becomes apparent only through longitudinal observation. Individuals initially presenting with psychosis may ultimately receive diagnoses including brief psychotic disorder, substance-induced psychotic disorder, affective disorders with psychotic features, schizoaffective disorder, or schizophrenia. Large longitudinal studies have consistently demonstrated substantial diagnostic instability among acute and transient, affective, and substance-induced psychoses, whereas schizophrenia and schizophrenia-spectrum disorders show comparatively high prospective diagnostic stability (1, 6, 7). Because symptomatic course, functional trajectory, and long-term prognosis differ substantially across these diagnostic groups, longitudinal diagnostic refinement is essential when estimating outcomes specifically attributable to schizophrenia.

Symptomatic remission and recovery have consequently become central but distinct constructs for evaluating the course of schizophrenia. The Remission in Schizophrenia Working Group (RSWG) operationalized symptomatic remission as maintaining no more than mild severity across eight core positive, negative, and disorganization-related symptoms for at least six months (8). Importantly, symptomatic remission does not necessarily imply functional recovery; the RSWG conceptualized recovery as a more demanding outcome encompassing symptomatic improvement together with restoration of social and vocational functioning (8). Meta-analytic evidence in first-episode psychosis indicates that symptomatic remission is attainable in a substantial proportion of patients, although estimates decline with longer follow-up and vary considerably across studies (9). Recovery is less consistently achieved, particularly when definitions require improvement across both clinical and social or functional domains (9, 10). This distinction becomes even more apparent over longer periods: a meta-analysis of studies with at least 20 years of follow-up estimated recovery in approximately one-quarter of patients with schizophrenia (10), while the 20-year OPUS follow-up reported symptomatic remission in 40% and clinical recovery in 18% of assessed participants (11).

Despite substantial research, reliable prediction of remission and recovery after first-episode psychosis remains challenging. In a recent meta-analysis, none of the examined demographic, clinical, or study-level variables significantly moderated symptomatic remission, whereas only male sex and greater baseline positive symptom severity were associated with recovery estimates (3). These findings should be interpreted in light of the considerable methodological heterogeneity in the literature. First, many studies comprise diagnostically heterogeneous FEP cohorts, combining schizophrenia with affective, brief, and other psychotic disorders that may have substantially different trajectories and outcomes. Second, definitions of remission and, particularly, recovery vary considerably across studies, including differences in symptom thresholds, functional requirements, and duration criteria, which can produce markedly different outcome estimates (3, 12). Treatment-related heterogeneity, including antipsychotic exposure, adherence and discontinuation, and access to psychosocial or specialized early-intervention services, further complicates comparisons across cohorts (12). Follow-up duration and attrition represent additional

concerns, particularly in long-term studies, in which selective loss to follow-up may compromise the representativeness of the retained sample (13). Finally, repeated longitudinal assessments demonstrate that symptomatic and functional outcomes may change substantially over time, underscoring that remission or recovery observed at a single follow-up point does not necessarily represent a stable long-term outcome (14).

Beyond estimating remission and its associated factors, another clinically relevant question is whether the phenomenology of the untreated illness itself contributes to variation in DUP. Negative symptoms commonly develop insidiously and may be less behaviorally salient to patients, families, and clinicians than florid positive symptoms. Previous first-episode studies have linked avolition, anhedonia, social withdrawal, and related negative-symptom presentations to delayed help-seeking and longer pathways to treatment, whereas more acute or behaviorally conspicuous presentations may facilitate earlier recognition and contact with psychiatric services (15–18). A predominantly negative-symptom presentation may therefore contribute to a longer interval before treatment initiation. Examining this relationship in the entire baseline first-episode schizophrenia cohort, rather than only among participants retained at long-term follow-up, also allows this aspect of DUP to be investigated independently of subsequent follow-up attrition.

Given these limitations, further studies using diagnostically homogeneous samples and standardized outcome measures are needed to characterize the early course of schizophrenia and clarify how illness presentation during the untreated period may contribute to treatment delay. In Turkiye, schizophrenia-specific longitudinal outcome data remain limited, and much of the frequently cited first-episode evidence derives from cohorts established considerably earlier (19–24). The present study therefore examined a diagnostically homogeneous cohort restricted to patients whose diagnosis of schizophrenia was confirmed longitudinally and evaluated symptomatic remission using the RSWG framework. Specifically, we aimed to estimate the proportion of patients meeting symptomatic remission criteria approximately four years after first admission, explore baseline factors associated with remission, and examine whether positive- versus negative-symptom predominance during the untreated psychosis period was associated with DUP. By providing contemporary naturalistic data from a tertiary-care setting in Turkiye, this study also seeks to update the limited regional evidence on early-course schizophrenia outcomes and inform further investigation of factors that may contribute to delayed recognition and treatment.

METHODS

Study Design, Setting, and Participants

This retrospective cohort study was conducted in the Department of Psychiatry of a tertiary-level hospital in Turkiye. The hospital provides psychiatric services to a defined catchment area and also receives referrals from other parts of the city because of its tertiary-care capacity. The source cohort was identified through a systematic search of the hospital's electronic medical records for all patients admitted to the adult inpatient psychiatry units with a first episode of psychosis between January 2020 and December 2022.

Eligibility criteria were: (i) presentation with an acute first psychotic episode; (ii) inpatient psychiatric treatment at the study hospital during the recruitment period; (iii) age between 15 and 50 years; and (iv) a diagnosis of schizophrenia established either during the index hospitalization or subsequently during longitudinal follow-up, as documented by the study institution or another psychiatric facility. For participation in the follow-up assessment, patients were additionally required to have sufficient attention and ability to cooperate with a face-to-face or telephone interview and to have a first-degree relative, preferably one living with or providing regular care for the patient, available for informant-based assessment of functioning.

A first psychotic episode was operationally defined by the absence of a previous diagnosis of an affective or non-affective psychotic disorder, previous exposure to antipsychotic medication, and previous psychiatric hospitalization. Patients were excluded if they were diagnosed at the index admission or during subsequent follow-up with organic psychosis, major depressive disorder with psychotic features, bipolar disorder with psychotic features, peripartum psychosis, or substance- or alcohol-induced psychosis. Current or previous alcohol or substance use disorder and medical or neurological conditions considered capable of contributing to psychotic symptoms or substantially confounding clinical outcomes were also exclusion criteria.

Application of these criteria yielded an initial cohort of 84 patients with a longitudinally confirmed diagnosis of schizophrenia. Although participants

had initially presented with first-episode psychosis, the final study cohort therefore comprised only those whose subsequent illness course supported a diagnosis of schizophrenia.

Data Collection and Follow-up Procedure

The study was conducted in two stages. In the first stage, demographic and clinical information relating to the index episode was extracted retrospectively from the electronic medical records of all 84 participants and recorded using standardized data collection forms developed by the research team. Variables included sex, age at illness onset, duration of first hospitalization, duration of untreated psychosis (DUP), number of psychiatric hospitalizations following the index admission, cumulative duration of subsequent hospitalizations, predominant symptom profile during the untreated psychosis period, marital status, educational level, employment status and living arrangement at illness onset, receipt of electroconvulsive therapy (ECT) during the index admission, smoking status at illness onset, and regular follow-up at the study institution after the first hospitalization.

The predominant symptom profile during untreated psychosis was classified as positive- or negative-symptom predominance based on clinical descriptions recorded for the untreated phase. DUP was defined as the interval, in weeks, between the onset of the first identifiable positive psychotic symptom and the index psychiatric hospitalization, which coincided with the first initiation of antipsychotic treatment. The onset of psychosis was determined using a best-estimate approach incorporating information from contemporaneous electronic medical records together with patient and family reports obtained during follow-up.

In the second stage, 39 of the original 84 participants (46.4%) were successfully contacted and reassessed. Loss to follow-up was primarily attributable to changed or discontinued registered telephone numbers and nonresponse despite repeated contact attempts. Four participants underwent face-to-face assessment, and 35 were assessed by telephone. Each interview lasted approximately 25–35 minutes. Written and/or verbal informed consent was obtained from participants and their relatives according to the mode of assessment.

At follow-up, current demographic, clinical, and functional characteristics were recorded using a second standardized data collection form. Variables included current marital status, educational level, employment status, living arrangement, medication adherence, smoking status, lifetime history of suicide attempts, newly diagnosed general medical conditions, forensic events occurring during the illness course, symptomatic remission status, and current World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0) total score.

Current medication adherence during the preceding month was assessed based on information obtained from both the patient and caregiver, supplemented by available medical records when accessible. Adherence was classified dichotomously as adherent or nonadherent on an overall clinical assessment of consistency with the prescribed medication regimen rather than a predefined quantitative threshold. No validated medication-adherence instrument was administered.

Assessment of Symptomatic Remission

Symptomatic remission at follow-up was assessed according to the severity component of the Remission in Schizophrenia Working Group (RSWG) criteria using the relevant items of the Positive and Negative Syndrome Scale (PANSS). The eight core items were delusions (P1), conceptual disorganization (P2), hallucinatory behavior (P3), mannerisms/posturing (G5), unusual thought content (G9), blunted affect (N1), passive/apathetic social withdrawal (N4), and lack of spontaneity and flow of conversation (N6). A score of 3 or lower on each item was considered to satisfy the symptomatic severity criterion for remission. Only the PANSS items specified by the RSWG criteria were rated, rather than the complete 30-item scale. The PANSS and its Turkish adaptation have previously demonstrated established psychometric properties (25, 26).

Because symptom severity was assessed at a single follow-up time point and continuous item-level PANSS ratings covering the preceding six months were not available, the present analysis focused on cross-sectional symptomatic remission according to the RSWG severity criterion rather than independently verified sustained remission.

Functional Assessment

Functional disability was assessed using the 12-item proxy-reported World Health Organization Disability Assessment Schedule 2.0 (27, 28). The scale evaluates disability across six domains of functioning, with each item scored from 0 to 4 according to difficulties experienced during the preceding 30 days. A first-degree relative, preferably one living with or regularly caring for the participant, served as the informant. The scale was administered with interviewer assistance,

and only the total WHODAS 2.0 score was used in the analyses, with higher scores indicating greater functional disability.

WHODAS 2.0 was analyzed as a continuous measure of functional disability. No sample-derived WHODAS threshold was used to define functional recovery.

Statistical Analysis

Statistical analyses were performed using jamovi version 2.6.45.0. Continuous variables were examined for normality using the Shapiro–Wilk test together with inspection of skewness and kurtosis. Because the principal continuous variables did not meet the prespecified assumptions of normality, they were summarized using medians, interquartile ranges, and ranges. Categorical variables were summarized using frequencies and percentages.

For the total cohort of 84 patients, descriptive statistics were calculated for baseline demographic and clinical characteristics. Age at illness onset, duration of first hospitalization, and DUP were compared between patients with predominantly positive and predominantly negative symptoms during the untreated psychosis period using the Mann–Whitney U test. Rank-biserial correlation was reported as the effect-size measure for these comparisons.

Among the 39 participants who completed the follow-up assessment, exploratory bivariate comparisons were performed between participants who met and those who did not meet the symptomatic remission criterion. Continuous variables were compared using the Mann–Whitney U test. Categorical variables were compared using Pearson's chi-square test or Fisher's exact test when expected cell frequencies were small. Effect sizes were reported as rank-biserial correlations for continuous comparisons and Cramér's V for categorical comparisons, where appropriate. Variables measured concurrently at follow-up, including current WHODAS 2.0 score, medication adherence, current employment status, and current living arrangement, were interpreted as concurrent correlates of remission rather than temporally antecedent predictors.

An exploratory binomial logistic regression analysis was conducted to examine the independent associations of selected baseline variables with symptomatic remission. Remission was specified as the modeled outcome. To limit model complexity given the small follow-up sample, the model included three temporally antecedent variables: age at illness onset, sex, and DUP. Regression results were expressed as regression coefficients, odds ratios, 95% confidence intervals, and p values.

Potential attrition-related differences were examined by comparing participants who completed the follow-up assessment (n=39) with those who did not (n=45) across baseline demographic and clinical characteristics available for the original cohort. Continuous variables were compared using the Mann–Whitney U test, whereas categorical variables were compared using the chi-square test or Fisher's exact test, as appropriate.

All statistical tests were two-sided, and statistical significance was defined as $p<0.05$.

Ethical Considerations

The study protocol (protocol no. 2025-288) was conducted in accordance with the Declaration of Helsinki and approved by the Cam ve Sakura City Hospital Clinical Research Ethics Committee on September 24, 2025. Written or verbal informed consent was obtained from all participants and their relatives in accordance with the mode of follow-up assessment.

RESULTS

A total of 84 patients with first-episode schizophrenia were included in the initial cohort. Of these, 59 (70.2%) were male and 25 (29.8%) were female. At illness onset, 18 patients (21.4%) were married and 22 (26.2%) were employed, while most participants were living with their parents and/or siblings (75.0%). Positive symptoms predominated during the untreated psychosis period in 64 patients (76.2%), whereas 20 (23.8%) had predominantly negative symptoms. Fifty-four patients (64.3%) maintained regular follow-up at our outpatient services after the index hospitalization. The median age was 27.0 years (interquartile range [IQR], 22.8–33.0), the median duration of untreated psychosis was 26.0 weeks (IQR, 4.0–52.0), and the median duration of the index hospitalization was 28.5 days (IQR, 21.0–38.0) (Table 1).

When the initial cohort was examined according to the predominant symptom profile during the untreated psychosis period, patients with predominantly negative symptoms had a markedly longer DUP than those with predominantly positive symptoms (median, 104.0 vs. 12.5 weeks; Mann–Whitney U=242, $p<0.001$; rank-biserial correlation=0.623; median difference=-78.0 weeks, 95% confidence interval [CI], -103.0 to -44.0). In contrast, the groups did not differ significantly in age at illness onset (median, 24.0 vs.

Table 1: Baseline demographic and clinical characteristics of the first-episode schizophrenia cohort (n=84)

	n	%
Sex (n=84)		
Male	59	70.2
Female	25	29.8
Marital status at illness onset (n=84)		
Single	66	78.6
Married	18	21.4
Education level (n=73; data unavailable for 11 participants)		
No formal education	4	5.5
Primary school	13	17.8
Middle school	18	24.7
High school	23	31.5
University	15	20.5
Employment status at illness onset (n=84)		
Employed	22	26.2
Unemployed	62	73.8
Living arrangement at illness onset (n=84)		
With parents and/or siblings	63	75.0
With spouse	16	19.0
Alone	5	6.0
Symptom predominance during untreated psychosis (n=84)		
Positive-symptom predominance	64	76.2
Negative-symptom predominance	20	23.8
Regular outpatient follow-up after index hospitalization (n=84)		
Yes	54	64.3
No	30	35.7
Tobacco use at illness onset (n=84)		
Yes	43	51.2
No	41	48.8
ECT during index hospitalization (n=84)		
Yes	10	11.9
No	74	88.1

	Median (min–max)	IQR (Q1)	IQR (Q3)
Age at illness onset (years) (n=84)	27.0 (18.0–48.0)	22.8	33.0
Duration of untreated psychosis (weeks) (n=84)	26.0 (1.0–312.0)	4.00	52.0
Duration of index hospitalization (days) (n=84)	28.5 (4.0–87.0)	21.0	38.0

IQR: Interquartile range; ECT: Electroconvulsive therapy. Statistical significance was set at $p<0.05$.

27.0 years; p=0.383) or duration of first hospitalization (22.5 vs. 29.0 days; p=0.409) (Table 2).

Follow-up assessment was completed in 39 of the 84 patients, of whom 28 met the cross-sectional symptomatic remission criterion and 11 did not, corresponding to a remission proportion of 71.8% (95% CI, 56.2%–83.5%). Remitters had an older median age at illness onset than non-remitters (28.5 vs. 23.0 years; U=69.5, p=0.009; median difference=6.0 years, 95% CI, 2.0–11.0; rank-biserial correlation=0.549). Functional disability differed substantially between the groups: the median current WHODAS 2.0 score was 3.5 among remitters compared with 26.5 among non-remitters ($p<0.001$; median difference=-23.0, 95% CI, -26.0 to -16.0; rank-biserial correlation=-0.975). DUP was significantly shorter among remitters than

Table 2: Comparison of age at illness onset, duration of index hospitalization, and duration of untreated psychosis according to symptom predominance during untreated psychosis (n=84)

	n	Median	U	p	Rank-biserial r	Median difference	95% CI	
							Lower	Upper
Age at illness onset (years) (n=84)			557	0.383	-0.130	1.75	-2.00	5.00
Positive-symptom predominance	64	27.0						
Negative-symptom predominance	20	24.0						
Duration of index hospitalization (days) (n=84)			561	0.409	-0.123	3.00	-5.00	10.00
Positive-symptom predominance	64	29.0						
Negative-symptom predominance	20	22.5						
Duration of untreated psychosis (weeks) (n=84)			242	<0.001	0.623	-78.00	-103.00	-44.00
Positive-symptom predominance	64	12.5						
Negative-symptom predominance	20	104.0						

CI: Confidence interval. Statistical significance was set at p<0.05.

among non-remitters (median, 16.5 vs. 52.0 weeks; U=83.0, p=0.027; rank-biserial correlation=-0.461). Duration of the index hospitalization, number of subsequent hospitalizations, and cumulative duration of subsequent hospitalizations did not differ significantly between groups (Table 3).

Several categorical characteristics showed nominal associations with remission status. Current living arrangements differed between groups (Fisher's exact p=0.025; Cramér's V=0.414); 32.1% of remitters were living with a spouse and/or children compared with none of the non-remitters. Current medication adherence showed the strongest categorical association with remission: 22 of 28 remitters (78.6%) were adherent compared with 2 of 11 non-remitters (18.2%; Fisher's exact p<0.001; Cramér's V=0.559). No statistically significant differences were observed for sex, symptom predominance, marital status at illness onset, current marital status, educational level, employment status at illness onset, current employment, living arrangement at illness onset, ECT during the index admission, suicide attempts, smoking status, newly diagnosed general medical conditions, or forensic events (Table 3).

An exploratory binomial logistic regression model was subsequently fitted with remission as the modeled outcome and age at illness onset, sex, and DUP as baseline explanatory variables. The overall model was statistically significant (χ^2=13.0, df=3, p=0.005; Nagelkerke R^2=0.407). However, none of the individual variables was independently statistically significant. Age at illness onset was associated with an odds ratio (OR) of 1.176 per year (95% CI, 0.982–1.41; p=0.078), female sex relative to male sex with an OR of 2.656 (95% CI, 0.342–20.63; p=0.350), and DUP with an OR of 0.978 per additional week (95% CI, 0.956–1.00; p=0.059) (Table 4).

To examine potential attrition-related differences, baseline characteristics of the 39 participants who completed the follow-up assessment were compared with those of the 45 participants who did not. No statistically significant differences were identified between completers and non-completers in sex (p=0.505), age at illness onset (p=0.914), duration of first hospitalization (p=0.812), DUP (p=0.746), regular outpatient follow-up after the index hospitalization (p=0.974), predominant symptom profile (p=0.240), marital status at illness onset (p=0.159), educational level (p=0.344), employment status at illness onset (p=0.696), living arrangement at illness onset (p=0.574), receipt of ECT during the first hospitalization (p=0.745), or smoking status at illness onset (p=0.194) (Table 5).

DISCUSSION

In this retrospective cohort of patients with first-episode schizophrenia, we examined symptomatic remission approximately four years after first admission and explored baseline factors associated with remission, while also investigating the relationship between symptom predominance during the untreated psychosis period and DUP. Among participants who completed follow-up, symptomatic remission was observed in a substantial proportion, whereas negative-symptom predominance during the untreated phase was strongly associated with a markedly longer duration of untreated psychosis in the full baseline cohort. An important strength of the study is its use of a diagnostically homogeneous sample restricted to individuals with a longitudinally

Table 3: Comparison of participants meeting and not meeting the cross-sectional symptomatic remission criterion at follow-up (n=39)

	Remission group (n=28)	Non-remission group (n=11)	
Sex (male/female)	17/11	9/2	Fisher's exact p=0.276, Cramer's V=0.201
Age at illness onset – years (median)	28.5	23.0	U=69.5, p=0.009, MD=6.000, 95% CI=2.0-11.0, Rank-biserial r=0.5487
Duration of index hospitalization – days (median)	30.5	28.0	U=151.0, p=0.938, MD=1.000, 95% CI=-11.000-11.00, Rank-biserial r=0.0195
Duration of untreated psychosis – weeks (median)	16.5	52.0	U=83.0, p=0.027, MD=-23.329, 95% CI=-72.00-0.0000154, Rank-biserial r=-0.4610
Number of hospitalizations after index hospitalization (median)	0.0	0.0	U=125.5, p=0.600, MD=-0.0000596, 95% CI= -1.000-0.0000206, Rank-biserial r=0.1036
Total duration of hospitalizations after index hospitalization – weeks (median)	0.0	0.0	U=130.5, p=0.739, MD=-0.0000346, 95% CI= -3.000-0.000689, Rank-biserial r=0.0679
Current WHODAS 2.0 score (median)	3.50	26.5	U=3.50, p<0.001, MD=-23.000, 95% CI= -26.0-16.0, Rank-biserial r=-0.9750
Negative-symptom predominance during untreated psychosis, %	10.7% (3/28)	36.4% (4/11)	Fisher's exact p=0.083, Cramer's V=0.301
Married at illness onset, %	35.7% (10/28)	9.1% (1/11)	Fisher's exact p=0.130, Cramer's V=0.266
Currently married, %	25.0% (7/28)	9.1% (1/11)	Fisher's exact p=0.400, Cramer's V=0.177
Education level - % (n) (no formal education/primary school/middle school/high school/university)	7.1% (2/28)/21.4% (6/28)/21.4% (6/28)/28.6% (8/28)/21.4% (6/28)	0.0% (0/11)/36.4% (4/11)/9.1% (1/11)/36.4% (4/11)/18.2% (2/11)	Fisher's exact p=0.800, Cramer's V=0.245
Employed at illness onset - % (n)	25.0% (7/28)	36.4% (4/11)	Fisher's exact p=0.694, Cramer's V=0.114
Currently employed - %	32.1% (9/28)	9.1% (1/11)	Fisher's exact p=0.228, Cramer's V=0.238
Living arrangement at illness onset - % (n) (with parents/with spouse and/or children/alone)	64.3% (18/28)/28.6% (8/28)/7.1% (2/28)	81.8% (9/11)/9.1% (1/11)/9.1% (1/11)	Fisher's exact p=0.511, Cramer's V=0.208
Current living arrangement - % (n) (with parents/with spouse and/or children/alone)	67.9% (19/28)/32.1% (9/28)/0.0% (0/28)	90.9% (10/11)/0.0% (0/11)/9.1% (1/11)	Fisher's exact p=0.025, Cramer's V=0.414 (adjusted residual non-remission x with spouse and/or kids=-2.176)
Received ECT during index hospitalization - %	7.1% (2/28)	18.2% (2/11)	Fisher's exact p=0.562, Cramer's V=0.164
Currently adherent to medication - %	78.6% (22/28)	18.2% (2/11)	Fisher's exact p<0.001, Cramer's V=0.559
History of suicide attempt during the illness course - %	17.9% (5/28)	27.3% (3/11)	Fisher's exact p=0.663, Cramer's V=0.105
Tobacco use at illness onset - %	39.3% (11/28)	54.5% (6/11)	χ^2=0.748, df=1, p=0.387, Cramer's V=0.138
Current tobacco use - %	50% (14/28)	63.6% (7/11)	Fisher's exact p=0.497, Cramer's V=0.123
Newly diagnosed general medical condition during the illness course - %	3.6% (1/28)	0.0% (0/11)	Fisher's exact p=1.000, Cramer's V=0.0982
New forensic event during the illness course - %	17.9% (5/28)	45.5% (5/11)	χ^2=3.15, df=1, p=0.076, Cramer's V=0.284

Continuous variables are presented as medians. Continuous variables were compared using the Mann-Whitney U test. Categorical variables were compared using Pearson's χ^2 test or Fisher's exact test, as appropriate. Effect sizes are reported as rank-biserial correlations for continuous variables and Cramér's V for categorical variables. MD: Median difference; CI: Confidence interval; WHODAS 2.0: World Health Organization Disability Assessment Schedule 2.0; ECT: Electroconvulsive therapy. Statistical significance was set at p<0.05.

Table 4: Exploratory binomial logistic regression analysis of baseline factors associated with symptomatic remission

		95% CI						95% CI	
Predictor	**Estimate**	**Lower**	**Upper**	**SE**	**Z**	**p**	**OR**	**Lower**	**Upper**
Intercept	-2.6399	-7.3296	2.050	2.3927	-1.103	0.270	0.0714	0.00656	7.77
Age at illness onset (years)	0.1625	-0.0185	0.343	0.0923	1.759	0.078	1.1764	0.982	1.41
Sex: Female vs. male	0.9766	-1.0735	3.027	1.0460	0.934	0.350	2.6555	0.342	20.63
Duration of untreated psychosis (weeks)	-0.0221	-0.0451	0.00564	0.0117	-1.887	0.059	0.9781	0.956	1.00
		Model fit		Overall model test					
Model	Deviance	AIC	R^2N	χ^2	df	p			
1	33.4	41.4	0.407	13.0	3	0.005			

Estimates represent the log odds of remission versus non-remission. The model was estimated using a sample of N=39. CI: Confidence interval; SE: Standard error; OR: Odds ratio; AIC: Akaike information criterion; df: Degrees of freedom; R^2N: Nagelkerke's R^2. Statistical significance was set at $p<0.05$.

confirmed diagnosis of schizophrenia and examined within routine clinical practice at a tertiary psychiatric center in Turkiye.

The observed proportion of participants meeting the symptomatic remission criterion at follow-up was 71.8%, which is higher than the central estimates reported in earlier systematic reviews of first-episode schizophrenia (3, 9, 29). In the systematic review by AlAqeel and Margolese (29), remission rates ranged widely from 17% to 78%, but the median and weighted mean were only 40.0% and 35.6%, respectively, underscoring substantial heterogeneity across studies in follow-up duration, remission definitions, intervention exposure, and attrition. Our estimate should nevertheless be interpreted cautiously because only 39 of the original 84 participants were reassessed. Although no significant differences were detected in the measured baseline characteristics of completers and non-completers, selection based on unmeasured clinical characteristics remains possible and may have inflated the observed remission proportion. These observations also raise the question of whether differences in remission estimates across studies might partly reflect the era in which patients received treatment. However, relatively high remission proportions have been reported in both earlier and more contemporary cohorts. In the TIPS (Early Treatment and Intervention in Psychosis) cohort, recruited between 1997 and 2000, approximately 71% of participants were in symptomatic remission at two years (30), while Jaracz et al. (31), studying a schizophrenia cohort recruited between 1998 and 2002, demonstrated considerable longitudinal variability, with only 17.2% remaining in stable remission and 57.8% showing an unstable remission course over 7–11 years. More contemporary cohorts have likewise reported relatively favorable short-term remission outcomes. For example, the Korean Early Psychosis Cohort, based on data collected between 2014 and 2018, reported symptomatic remission in 67.3% of participants at 12 months (32), while Kim et al. (33) reported a six-month remission rate of 77.7% in a first-episode schizophrenia cohort. These findings caution against equating publication date with treatment era and, more importantly, do not suggest a straightforward temporal relationship between advances in schizophrenia care and observed remission rates. This interpretation is also consistent with very-long-term meta-analytic evidence suggesting limited historical change in the overall prognosis of schizophrenia despite major developments in treatment (10). Thus, although improvements in contemporary schizophrenia care may have contributed to the relatively high remission proportion observed in our cohort, comparisons with earlier studies do not allow this effect to be disentangled from substantial methodological and clinical differences between cohorts, including diagnostic composition, follow-up duration, remission criteria, treatment setting, and attrition. Nevertheless, the present cohort provides an updated estimate from a Turkish tertiary-care setting, where the principal disease-specific first-episode schizophrenia outcome data available in the literature originate from cohorts established in the 1990s, such as the Üçok et al. (19, 21) follow-up project.

In exploratory bivariate analyses, later age at illness onset and shorter DUP were associated with symptomatic remission. Later age at onset has been associated with more favorable outcomes in some first-episode studies, although findings across cohorts have been inconsistent, and age at onset has not

Table 5: Comparison of baseline characteristics between follow-up completers and non-completers

	Completers (n=39)	Non-completers (n=45)	
Sex (male/female)	26/13	33/12	χ^2=0.444, df=1, p=0.505
Age at illness onset – years (median)	26.0	27.0	U=865, p=0.914, MD=−0.000033, 95% CI=-3.00-3.00
Duration of index hospitalization – days (median)	30.0	27.0	U=851, p=0.812, MD=1.000, 95% CI=-6.00-7.00
Duration of untreated psychosis – weeks (median)	26.0	26.0	U=841, p=0.746, MD=−0.00005, 95% CI= -20.00-8.00
Regular outpatient follow-up after index hospitalization (yes)	64.1% (25/39)	64.4% (29/45)	χ^2=0.00106, df=1, p=0.974
Negative-symptom predominance during untreated psychosis - %	17.9% (7/39)	28.9% (13/45)	χ^2=1.38, df=1, p=0.240
Married at illness onset - %	28.2% (11/39)	15.6% (7/45)	χ^2=1.99, df=1, p=0.159
Education level - % (n) (no formal education/primary school/middle school/high school/university) [completers n=39; non-completers n=34, data were unavailable for 11 non-completers]	5.1% (2/39) 25.6% (10/39) 17.9% (7/39) 30.8% (12/39) 20.5% (8/39)	5.9% (2/34) 8.8% (3/34) 32.4% (11/34) 32.4% (11/34) 20.6% (7/34)	Fisher's exact p=0.344
Employed at illness onset - % (n)	28.2% (11/39)	24.4% (11/45)	χ^2=0.153, df=1, p=0.696
Living arrangement at illness onset - % (n) (with parents/with spouse and/or children/alone)	69.2% (27/39) 23.1% (9/39) 7.7% (3/39)	80% (36/45) 15.6% (7/45) 4.4% (2/45)	Fisher's exact p=0.574
Received ECT during index hospitalization - %	10.3% (4/39)	13.3% (6/45)	Fisher's exact p=0.745
Tobacco use at illness onset - %	43.6% (17/39)	57.8% (26/45)	χ^2=1.68, df=1, p=0.194

Statistical significance was set at p<0.05. ECT: Electroconvulsive therapy; CI: Confidence interval; df: Degrees of freedom.

emerged as a robust predictor of remission in meta-analytic evidence (34). Üçok et al. (21) previously identified age at onset or first admission among variables associated with remission in first-episode schizophrenia, whereas the more recent meta-analysis by Catalan et al. (3) found no significant overall effect of sociodemographic or clinical predictors on symptomatic remission. In the present cohort, DUP was also shorter among remitters in exploratory bivariate analysis, although the corresponding association did not reach statistical significance in the multivariable model. This finding should therefore be interpreted cautiously and as hypothesis-generating rather than as evidence of an independent prognostic effect. Current living arrangement and medication adherence were also associated with remission. The latter is consistent with previous longitudinal evidence, including the Turkish first-episode schizophrenia cohort of Üçok et al. (21), in which medication adherence during the first six months of follow-up was higher among patients who subsequently achieved remission and remained independently associated with remission status in multivariable analysis. More broadly, antipsychotic discontinuation has been associated with increased relapse risk after first-episode psychosis, further supporting the clinical relevance of continued treatment engagement (12). However, adherence in the present study was assessed concurrently with remission rather than prospectively. Its temporal direction therefore cannot be established (35): sustained adherence may facilitate symptom control (36), whereas remission itself (37), or associated factors such as greater insight, treatment engagement, and medication tolerability (38), may in turn facilitate adherence. Current living arrangement and medication adherence should consequently be

regarded as correlates of remission status rather than antecedent predictors. In the multivariable analysis of our sample, restricted to age at onset, sex, and DUP, none of these variables independently predicted remission, despite the overall significance of the model. Given the small follow-up sample and only 11 non-remitters, the estimates were imprecise and should not be considered confirmatory. This uncertainty is consistent with the broader first-episode literature, in which individual prognostic factors have shown considerable heterogeneity (3).

Interestingly, symptom predominance during the untreated psychosis period was not associated with subsequent remission status in our sample, despite our expectation that negative-symptom predominance during the initial period of illness would be associated with a less favorable course. Previous longitudinal evidence has consistently implicated negative symptoms in poorer outcomes after first-episode psychosis. Gee et al. (39) identified distinct trajectories of negative symptoms during the first year of treatment and found that patients with elevated negative symptoms at baseline, whether these symptoms subsequently remained stable or decreased, were more likely to follow a persistently poor social-functioning trajectory. Similarly, in a seven-year follow-up of first-episode psychosis, Wunderink et al. (40) found that greater baseline negative-symptom severity independently predicted both relapse and poorer functional outcome, with baseline negative symptoms representing the strongest predictor of relapse in their model. Several considerations may account for the apparent discrepancy with our findings. First, our classification captured the relative predominance of positive versus negative symptoms only during the untreated phase rather than the severity or longitudinal persistence of negative symptoms. This distinction is important because negative symptoms may fluctuate substantially during the early course of psychosis. In the cohort of Gee et al. (39), only a small subgroup exhibited persistently high negative symptoms, whereas a substantial proportion of patients presenting with elevated negative symptoms showed improvement during the first year of treatment. Thus, an early negative-symptom-predominant presentation may not be equivalent to a persistent negative-symptom burden and may carry different prognostic implications (41, 42). Second, the substantial loss to follow-up in our cohort may have attenuated an underlying association, although baseline symptom predominance did not differ significantly between completers and non-completers; therefore, selective attrition according to negative symptom predominance cannot be demonstrated from the present data. Nevertheless, differential disengagement remains plausible in long-term naturalistic follow-up. Of particular relevance, Wunderink et al. (40) reported that patients not included in their longitudinal cohort generally had poorer clinical and social profiles and that many had prematurely lost contact with mental health services, illustrating how long-term samples may preferentially retain patients with more favorable engagement and functioning. Prominent negative symptoms, particularly avolition and social withdrawal, may contribute to difficulties in sustained treatment engagement through their effects on motivation and social functioning (39, 40). Accordingly, the absence of an association between symptom predominance during untreated psychosis and remission in the present cohort should not be interpreted as evidence against the prognostic importance of negative symptoms. Rather, it may reflect the distinction between an early symptom-predominance phenotype and the severity and persistence of negative symptoms over time, compounded by the potential influence of selection and engagement processes inherent in long-term naturalistic follow-up. Lastly, family and caregiver attitudes, involvement, and willingness to facilitate continued treatment may independently influence service engagement; thus, even a patient with prominent negative symptoms may remain in regular care when relatives are actively involved in maintaining treatment contact. Conversely, limited caregiver involvement may increase the likelihood of disengagement irrespective of symptom profile.

A central finding of the present study, derived from the full baseline cohort (n=84) and therefore not subject to follow-up attrition, was that patients whose untreated psychosis phase was characterized by a predominance of negative rather than positive symptoms had a markedly longer duration of untreated psychosis (median, 104.0 vs. 12.5 weeks; $p<0.001$). This finding is clinically plausible because the phenomenology of emerging psychosis may itself influence the timing of help-seeking and treatment initiation. Negative symptoms such as avolition, social withdrawal, and loss of motivation may evolve insidiously and be less likely to prompt recognition by patients or their families, whereas disruptive and behaviorally salient psychotic symptoms may lead to earlier contact with psychiatric services. Indeed,

an earlier Turkish first-episode schizophrenia study by Üçok et al. (43) described DUP as the product of multiple patient-, family-, and illness-related factors, including withdrawal, social isolation, loss of motivation, and family responses to emerging illness. More recently, Drake et al. (15) explicitly proposed a "confounded presentation" mechanism, whereby severe excitement, hostility, and behavioral dysfunction may alarm patients and those around them and thereby accelerate presentation for treatment. Nevertheless, the direction of the association observed in our study cannot be established: negative-symptom predominance may prolong the pathway to care, prolonged untreated illness may alter the clinical presentation, or both may reflect an underlying insidious illness phenotype. This distinction is important when interpreting DUP as a prognostic factor. Longer DUP has repeatedly been associated with poorer symptomatic and functional outcomes after first-episode psychosis, but the mechanisms underlying this relationship remain debated (44, 45). In a previous diagnostically homogeneous Turkish first-episode schizophrenia cohort, Üçok et al. (43) found that shorter DUP was associated with greater improvement in overall and positive symptoms during the first hospitalization, although the magnitude of these associations was modest and improvement in negative symptoms was unrelated to DUP. In substantially larger first-episode cohorts, Drake et al. (15) subsequently demonstrated a curvilinear association between treatment delay and response across symptom dimensions, with longer DUP predicting poorer treatment response and the greatest apparent deterioration occurring early in the untreated period. However, observational associations between DUP and outcome do not necessarily establish that treatment delay itself is causal. Insidious onset and other unmeasured illness characteristics may contribute both to delayed presentation and to poorer subsequent outcomes, thereby confounding this relationship. Jonas et al. (45) further proposed a lead-time explanation, showing that patients with long and short DUP followed similar trajectories of psychosocial decline when illness course was aligned with psychosis onset rather than first hospitalization; they therefore suggested that DUP may partly index how far illness has progressed by the time of clinical detection rather than independently determining subsequent course. Importantly, however, lead-time bias does not fully account for the available evidence. In a prospective first-episode psychosis incidence cohort followed sequentially for 20 years, O'Keeffe et al. (44) found that shorter DUP remained associated with more favorable trajectories across psychopathology, functioning, and quality of life, with effects persisting for up to two decades and not fully explained by premorbid characteristics or lead-time bias. Thus, rather than viewing DUP exclusively as either a causal treatment delay or an epiphenomenon of illness severity, the available evidence supports a more nuanced interpretation. DUP may simultaneously reflect a potentially reducible delay in access to effective treatment and characteristics of the underlying illness phenotype that influence recognition, help-seeking, and progression. Importantly, reducing this delay should not necessarily be equated with modification of the long-term illness trajectory. Although earlier treatment and specialized early-intervention services may improve outcomes during the early course of psychosis, long-term findings from trials such as OPUS (11) suggest that these initial advantages may diminish after specialized intervention is discontinued, cautioning against interpreting shorter DUP as evidence of durable modification of the underlying illness course.

Strengths and Limitations

Several strengths and limitations of the present study should be considered when interpreting the findings. A key strength is the use of a diagnostically homogeneous first-episode schizophrenia cohort treated under routine clinical conditions, allowing a naturalistic examination of symptomatic remission in real-world practice. The exclusion of comorbid substance use disorders and other psychotic disorders further enhanced sample specificity and reduced clinical heterogeneity, strengthening the study's focus on schizophrenia-related illness trajectories.

However, several limitations warrant acknowledgment. First, the retrospective design precluded prospective assessment of the stability and duration of remission, limiting conclusions regarding its maintenance over time. Relatedly, sampling bias cannot be excluded, as patients who remained in contact with treatment services may represent those with more favorable outcomes. However, baseline comparisons between completers and non-completers revealed no statistically significant differences across the available demographic and clinical variables, providing some evidence against systematic attrition bias, although unmeasured differences cannot be excluded. Second, PANSS scores at discharge following

the first hospitalization were unavailable, preventing assessment of whether remission criteria were met at the end of the initial inpatient episode. Third, detailed data on antipsychotic type, dosage, and the use of long-acting injectable formulations or clozapine could not be reliably collected, largely because of recall difficulties among patients and caregivers, and therefore could not be examined as potential confounders. The lack of prospective, repeated symptom assessments also limited evaluation of early treatment response as a predictor of outcome. Additionally, the distribution of diagnostic subtypes within schizophrenia (e.g., disorganized, paranoid, and catatonic subtypes) and the exclusion of other psychotic disorders may have influenced the observed associations between duration of untreated psychosis and outcomes, potentially limiting generalizability. Fourth, most follow-up assessments were conducted by telephone. Although this approach facilitated reassessment of participants who might otherwise have remained unreachable, some PANSS items included in the RSWG severity criterion, particularly blunted affect and mannerisms/posturing, depend partly on direct behavioral observation and may therefore have been less reliably assessed than during face-to-face evaluation. The remission estimate should consequently be interpreted with this measurement limitation in mind. Fifth, inter-rater reliability was not formally assessed, and raters were not blinded to baseline records. Sixth, this was a single-center study, which may limit the generalizability of the findings to other clinical settings. Seventh, given the number of bivariate comparisons performed, no correction for multiple testing was applied; these findings should therefore be interpreted with this in mind. Eight, the index admissions occurred between 2020 and 2022, overlapping substantially with the coronavirus disease 2019 (COVID-19) pandemic. Pandemic-related disruptions in healthcare access and help-seeking may have influenced DUP and hospitalization patterns and should be considered when comparing this cohort with earlier samples. Finally, remission was assessed at a single time point rather than as a dynamic trajectory. Given that achieving and maintaining remission are distinct processes, future studies should prioritize longitudinal, trajectory-based approaches and examine early clinical phenotypes, including paranoid and hebephrenic presentations, alongside factors such as insight, attitudes toward medication, and premorbid functioning, which may more accurately capture long-term outcome processes.

Ethical Approval: This study was approved by the Cam ve Sakura City Hospital Clinical Research Ethics Committee (Decision date: 24.09.2025 Number: 288).

Informed Consent: Written and verbal informed consent was obtained from participants and their relatives according to the mode of assessment.

Conflict of Interest: The authors declare that there is no conflict of interest.

Financial Disclosure: The authors declared that this study has received no financial support.

Use of AI for Writing Assistance: The authors declared that artificial intelligence was not used in the study.

Contribution Categories		Author Initials
Category 1	Concept/Design	I.A., O.G.
	Data acquisition	I.A.
	Data analysis/Interpretation	I.A.
Category 2	Drafting manuscript	I.A.
	Critical revision of manuscript	O.G.
Category 3	Final approval and accountability	I.A., O.G.
Other	Technical or material support	I.A.
	Supervision	O.G.

Acknowledgments: We would like to express our sincere gratitude to Dr Duygu Aslan Kunt for sharing the tested Turkish version of 12-item proxy version of WHODAS 2.0. We also extend our sincere thanks to all the patients and their relatives who generously took the time and effort to participate in the follow-up interviews, without whom this study would not have been possible.

Peer-review: Externally peer-reviewed.

REFERENCES

1. Fusar-Poli P, Cappucciati M, Rutigliano G, Heslin M, Stahl D, Brittenden Z, et al. Diagnostic Stability of ICD/DSM first episode psychosis diagnoses: meta-analysis. Schizophr Bull 2016; 42:1395-1406. [CrossRef]
2. Breitborde NJ, Srihari VH, Woods SW. Review of the operational definition for first-episode psychosis. Early Interv Psychiatry 2009; 3:259-265. [CrossRef]
3. Catalan A, Richter A, Salazar de Pablo G, Vaquerizo-Serrano J, Mancebo G, Pedruzo B, et al. Proportion and predictors of remission and recovery in first-episode psychosis: Systematic review and meta-analysis. Eur Psychiatry 2021; 64:e69. [CrossRef]
4. Lewandowski KE, Cohen BM, Ongur D. Evolution of neuropsychological dysfunction during the course of schizophrenia and bipolar disorder. Psychol Med 2011; 41:225-241. [CrossRef]
5. Griffiths SL, Lalousis PA, Wood SJ, Upthegrove R. Heterogeneity in treatment outcomes and incomplete recovery in first episode psychosis: does one size fit all? Transl Psychiatry 2022; 12:485. [CrossRef]
6. Pelizza L, Plazzi E, Leuci E, Leucci AC, Quattrone E, Azzali S, et al. Diagnostic shift in adolescents with first episode psychosis: findings from the 2-year follow-up of the "Parma Early Psychosis" program. Soc Psychiatry Psychiatr Epidemiol 2025; 60:375-385. [CrossRef]

7. Gale-Grant O, Dazzan P, Lappin JM, Donoghue K, Reininghaus U, Croudace T, et al. Diagnostic stability and outcome after first episode psychosis. J Ment Health 2021; 30:104-112. [CrossRef]
8. Andreasen NC, Carpenter WT Jr, Kane JM, Lasser RA, Marder SR, Weinberger DR. Remission in schizophrenia: proposed criteria and rationale for consensus. Am J Psychiatry 2005; 162:441-449. [CrossRef]
9. Lally J, Ajnakina O, Stubbs B, Cullinane M, Murphy KC, Gaughran F, et al. Remission and recovery from first-episode psychosis in adults: systematic review and meta-analysis of long-term outcome studies. Br J Psychiatry 2017; 211:350-358. [CrossRef]
10. Molstrom IM, Nordgaard J, Urfer-Parnas A, Handest R, Berge J, Henriksen MG. The prognosis of schizophrenia: A systematic review and meta-analysis with meta-regression of 20-year follow-up studies. Schizophr Res 2022; 250:152-163. [CrossRef]
11. Hansen HG, Starzer M, Nilsson SF, Hjorthøj C, Albert N, Nordentoft M. Clinical recovery and long-term association of specialized early intervention services vs treatment as usual among individuals with first-episode schizophrenia spectrum disorder: 20-year follow-up of the OPUS trial. JAMA Psychiatry 2023; 80:371-379. [CrossRef]
12. Béchard L, Desmeules C, Bachand L, Huot-Lavoie M, Corbeil O, Anderson E, et al. The effects of antipsychotic discontinuation or maintenance on the process of recovery in remitted first-episode psychosis patients - A systematic review and meta-analysis of randomized controlled trials. Eur Psychiatry 2024; 67:e13. [CrossRef]
13. Tramazzo S, Lian W, Ajnakina O, Carlson G, Bromet E, Kotov R, et al. Long-term course of remission and recovery in psychotic disorders. Am J Psychiatry 2024; 181:532-540. [CrossRef]
14. Lee R, Leighton SP, Thomas L, Gkoutos GV, Wood SJ, Fenton SH, et al. Prediction models in first-episode psychosis: systematic review and critical appraisal. Br J Psychiatry 2022; 220:179-191. [CrossRef]
15. Drake RJ, Husain N, Marshall M, Lewis SW, Tomenson B, Chaudhry IB, et al. Effect of delaying treatment of first-episode psychosis on symptoms and social outcomes: a longitudinal analysis and modelling study. Lancet Psychiatry 2020; 7:602-610. [CrossRef]
16. Malla AK, Takhar JJ, Norman RM, Manchanda R, Cortese L, Haricharan R, et al. Negative symptoms in first episode non-affective psychosis. Acta Psychiatr Scand 2002; 105:431-439. [CrossRef]
17. Larsen TK, Johannessen JO, Opjordsmoen S. First-episode schizophrenia with long duration of untreated psychosis. Pathways to care. Br J Psychiatry Suppl 1998; 172:45-52. [CrossRef]
18. Naqvi HA, Hussain S, Zaman M, Islam M. Pathways to care: duration of untreated psychosis from Karachi, Pakistan. PLoS One 2009; 4:e7409. [CrossRef]
19. Uçok A, Polat A, Cakir S, Genç A. One year outcome in first episode schizophrenia. Predictors of relapse. Eur Arch Psychiatry Clin Neurosci 2006; 256:37-43. [CrossRef]
20. Aktaş S, Kirli U. Association between symptom dimensions and psychosis risk factors with functioning in first episode psychosis: a six months prospective study. Turk Psikiyatri Derg 2025; 36:15. [Article in Turkish]
21. Üçok A, Serbest S, Kandemir PE. Remission after first-episode schizophrenia: results of a long-term follow-up. Psychiatry Research 2011; 189:33-37. [CrossRef]
22. Yıldızhan E, Türkcan A, İnan S, Erenkuş Z, Yalçın Ö, Erdoğan A. İlk psikoz atağı: belirtiler, tedavi başlangıcı ve klinik yanıt ilişkisi. Turk Psikiyatri Dergisi 2015; 26:77-86. [Article in Turkish]
23. Gündoğmuş İ, Aydin MB, Öz S, Taşçi AB, Uzun Ö. Clinical and demographic factors associated with early relapse in patients with schizophrenia: a naturalistic observation study. Int Clin Psychopharmacol 2021; 36:288-295. [CrossRef]
24. Alptekin K, Erkoç S, Göğüş AK, Kültür S, Mete L, Uçok A, et al. Disability in schizophrenia: clinical correlates and prediction over 1-year follow-up. Psychiatry Res 2005; 135:103-111. [CrossRef]
25. Kay SR, Fiszbein A, Opler LA. The positive and negative syndrome scale (PANSS) for schizophrenia. Schizophr Bull 1987; 13:261-276. [CrossRef]
26. Kostakoğlu AE, Batur S, Tiryaki A, Göğüş A. Pozitif ve Negatif Sendrom Ölçeğinin (PANSS) Türkçe uyarlamasının geçerlik ve güvenirliği. Turk Psikoloji Dergisi 1999; 14:23-32. [Article in Turkish]
27. Üstün TB, Kostanjsek N, Chatterji S, Rehm J. Measuring health and disability: manual for WHO Disability Assessment Schedule (WHODAS 2.0). Geneva: World Health Organization; 2010.
28. Aslan Kunt D, Dereboy F. Validity and Reliability of the World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0) in Turkish Psychiatry Patients and Healthy Controls. Turk Psikiyatri Derg 2018; 29:248-257. [CrossRef]
29. AlAqeel B, Margolese HC. Remission in schizophrenia: critical and systematic review. Harv Rev Psychiatry 2012; 20:281-297. [CrossRef]
30. Ottesen A, T V Hegelstad W, Joa I, Opjordsmoen SE, Rund BR, Røssberg JI, et al. Childhood trauma, antipsychotic medication, and symptom remission in first-episode psychosis. Psychol Med 2023; 53:2399-2408. [CrossRef]
31. Jaracz K, Górna K, Kiejda J, Grabowska-Fudala B, Jaracz J, Suwalska A, et al. Psychosocial functioning in relation to symptomatic remission: A longitudinal study of first episode schizophrenia. Eur Psychiatry 2015; 30:907-913. [CrossRef]
32. Kang SH, Piao YH, Li L, Kim SW, Kim JJ, Lee BJ, et al. Symptomatic and full remission rates in first-episode psychosis: A 12-month follow-up study in Korea. Early Interv Psychiatry 2022; 16:760-769. [CrossRef]
33. Kim H, Baek SH, Kim JW, Ryu S, Lee JY, Kim JM, et al. Inflammatory markers of symptomatic remission at 6 months in patients with first-episode schizophrenia. Schizophrenia (Heidelb) 2023; 9:68. [CrossRef]
34. Immonen J, Jääskeläinen E, Korpela H, Miettunen J. Age at onset and the outcomes of schizophrenia: A systematic review and meta-analysis. Early Interv Psychiatry 2017; 11:453-460. [CrossRef]
35. Elowe J, Ramain J, Solida A, Conus P, Golay P. Dynamics between insight and medication adherence in first-episode psychosis: Study of 3-year trajectories. Eur Psychiatry 2022; 65:e49. [CrossRef]
36. Colizzi M, Carra E, Fraietta S, Lally J, Quattrone D, Bonaccorso S, et al. Substance use, medication adherence and outcome one year following a first episode of psychosis. Schizophr Res 2016;170:311-317. [CrossRef]

37. Steger KA, Cassidy C, Rabinovitch M, Joober R, Malla A. Impact of symptom resolution on medication adherence in first episode psychosis. Psychiatry Res 2012; 196:45-51. [CrossRef]

38. Sendt KV, Tracy DK, Bhattacharyya S. A systematic review of factors influencing adherence to antipsychotic medication in schizophrenia-spectrum disorders. Psychiatry Res 2015; 225:14-30. [CrossRef]

39. Gee B, Hodgekins J, Fowler D, Marshall M, Everard L, Lester H, et al. The course of negative symptom in first episode psychosis and the relationship with social recovery. Schizophr Res 2016; 174:165-171. [CrossRef]

40. Wunderink L, van Bebber J, Sytema S, Boonstra N, Meijer RR, Wigman JTW. Negative symptoms predict high relapse rates and both predict less favorable functional outcome in first episode psychosis, independent of treatment strategy. Schizophr Res 2020; 216:192-199. [CrossRef]

41. Phahladira L, Asmal L, Lückhoff HK, du Plessis S, Scheffler F, Smit R, et al. The trajectories and correlates of two negative symptom subdomains in first-episode schizophrenia. Schizophr Res 2022; 243:17-23. [CrossRef]

42. de Winter L, Vermeulen JM, Couwenbergh C, van Weeghel J, Hasson-Ohayon I, Mulder CL, et al. Short- and long-term changes in symptom dimensions among patients with schizophrenia spectrum disorders and different durations of illness: A meta-analysis. J Psychiatr Res 2023; 164:416-439. [CrossRef]

43. Uçok A, Polat A, Genç A, Cakir S, Turan N. Duration of untreated psychosis may predict acute treatment response in first-episode schizophrenia. J Psychiatr Res 2004; 38:163-168. [CrossRef]

44. O'Keeffe D, Kinsella A, Waddington JL, Clarke M. 20-year prospective, sequential follow-up study of heterogeneity in associations of duration of untreated psychosis with symptoms, functioning, and quality of life following first-episode psychosis. Am J Psychiatry 2022; 179:288-297. [CrossRef]

45. Jonas KG, Fochtmann LJ, Perlman G, Tian Y, Kane JM, Bromet EJ, et al. Lead-Time Bias Confounds Association Between Duration of Untreated Psychosis and Illness Course in Schizophrenia. Am J Psychiatry 2020; 177:327-334. [CrossRef]