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Real-World Outcomes of Long-Acting Injectable Antipsychotic Use in Community Mental Health Centers: A Mirror-Image Study from Türkiye

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ABSTRACT

Introduction: Long-acting injectable antipsychotics (LAIs) are widely recommended to enhance treatment adherence and reduce relapse among individuals with psychotic disorders; however, real-world evidence from community-based services in middle-income countries remains limited. This study examined the clinical characteristics, treatment patterns, and hospitalization outcomes associated with LAI use within Community Mental Health Centers (CMHCs) in Türkiye.

Methods: Using a retrospective observational cohort design with a mirror-image analytic approach, we evaluated 365 patients with schizophrenia, schizoaffective disorder, or atypical psychosis. Person-time-adjusted psychiatric hospitalization rates before and after LAI initiation were compared. Predictors of the transition time from diagnosis to LAI initiation were examined using a General Linear Model (GLM) with 1000-sample bootstrap confidence intervals.

Results: A total of 315 patients were eligible for mirror-image analysis. Median hospitalization rates decreased from 0.273 to 0.000 admissions per person-year following LAI initiation. Person-time–adjusted cohort-level rates decreased from 0.335 to 0.039 admissions per person-year, representing an 88.5% relative reduction (rate ratio: 0.115). This reduction was statistically significant ($Z=-13.664$, $p<0.001$) with a large effect size ($r \approx 0.83$). In GLM analysis, older age, a higher number of previous hospitalizations, and high school education were significantly associated with longer delays in LAI initiation. Among LAI formulations, risperidone was associated with significantly later initiation compared with haloperidol ($B=7.680$, $p=0.036$). The model explained a substantial proportion of variance in LAI initiation timing ($R^2=0.521$).

Conclusions: These findings indicate a substantial reduction in hospitalization burden following LAI initiation in real-world community settings. The results support reconsidering the tendency to reserve LAIs for later stages of treatment and suggest that earlier use within community-based care may deserve greater consideration. Integrating LAIs within structured CMHC frameworks may create a complementary effect that supports continuity of care and may contribute to long-term outcomes.

Keywords: Community mental health services; hospitalization; long-acting injectable antipsychotics; mirror-image study; real-world evidence; schizophrenia.

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INTRODUCTION

Schizophrenia and related psychotic disorders are among the leading contributors to the global burden of disease (1).

Long-acting injectable antipsychotics (LAIs) are increasingly emphasized in the treatment of schizophrenia due to their potential to improve adherence and reduce relapse and hospitalization rates (2–4). Beyond clinical stabilization, the integration of LAIs into community-based care is a strategic priority for maintaining treatment continuity and fostering social inclusion. However, the global use of LAIs remains suboptimal, a pattern attributed to clinicians' hesitations, patients' concerns, and structural barriers within mental health systems (5–7).

Evidence on the comparative effectiveness of LAIs versus oral antipsychotics varies according to study design. Randomized controlled trials have generally found no significant difference between LAIs and

Highlights

- **LAI initiation in CMHCs was associated with 88.5% reduction in hospitalization rates.**
- **Each patient served as their own control via a mirror-image design.**
- **Older age and prior hospitalizations predicted longer delays to LAI initiation.**
- **High school education was linked to later LAI initiation than university education.**
- **Findings support earlier LAI use rather than reserving it as a last-resort treatment.**

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oral antipsychotics in preventing relapse (2), whereas cohort and mirror-image studies have more consistently reported better clinical outcomes with LAIs, including reduced hospitalizations and improved functioning (8–10). This discrepancy is thought to partly reflect differences in real-world adherence and selection effects across study designs, underscoring the importance of naturalistic, real-world studies for evaluating the practical utility of LAI treatments (10).

Community Mental Health Centers (CMHCs) provide easy access to care, psychosocial support, and treatment monitoring for individuals with severe mental illness. In Türkiye, CMHCs were established as part of national mental health reforms and have since expanded across the country to deliver community-based services for individuals with schizophrenia and other serious mental disorders. As part of Türkiye's mental health reform, CMHCs operate as multi-disciplinary hubs that provide proactive follow-up, shifting the locus of care from institutional settings to local community environments.

The primary aims of CMHCs include enabling patients to receive medical and social support within their own environments, strengthening social functioning, improving adherence to treatment, and reducing hospital admissions —objectives supported by existing research (11).

At this point, the coexistence of LAIs with CMHC services offers a significant opportunity for improving outcomes among individuals with severe mental disorders. Although most research has focused on schizophrenia, studies in other diagnostic groups illustrate the potential of integrating LAIs into community-based care. For example, among bipolar disorder patients followed in CMHCs, LAI treatment has been associated with reductions in hospitalization rates (12). Similarly, LAI use in schizoaffective disorder has been linked to decreases in both hospital admissions and treatment costs (13).

Despite these findings, scientific evidence regarding the sociodemographic and clinical characteristics of LAI use among CMHC patients in Türkiye — as well as their treatment transition processes and the factors influencing this transition— remains limited. More research is needed to understand how real-world conditions and mental health reforms in middle-income countries shape these processes. Specifically, investigating the 'transition time' to LAI treatment is critical to understanding which patient profiles remain underserved or encounter delays in accessing evidence-based pharmacological interventions within structured community frameworks.

The present study aimed to describe the sociodemographic and clinical characteristics of CMHC patients receiving LAI treatment, to evaluate changes in hospitalization rates before and after LAI initiation using person-time–adjusted analyses, and to identify factors influencing the time between diagnosis and the initiation of LAI treatment. Through these objectives, we sought to provide real-world evidence on hospitalization outcomes associated with LAI treatment and on clinical factors related to its initiation within a community-based mental health system in a developing country context.

METHODS

This retrospective observational cohort study employed a mirror-image (pre–post) design and was conducted across four CMHCs affiliated with Erenköy Mental and Nervous Diseases Training and Research Hospital in Istanbul, Türkiye. The study adhered to STROBE guidelines in its design, analysis, and reporting. The use of a mirror-image design in a community setting is particularly advantageous as it allows each patient to serve as their own control, effectively reducing stable individual-level confounders such as genetic factors, personality traits, and long-term socio-economic status.

For each patient, the mirror-image interval was defined individually by identifying the exact date of LAI initiation and extracting an equivalent duration of pre-LAI follow-up. Because the mirror-image intervals were defined within individuals and matched in duration, each patient served as their own control, thereby minimizing the potential influence of calendar-time effects or center-level service variations. The pre-LAI interval was calculated as the period extending backward from the LAI initiation date, matching the length of the post-LAI observation period. Patients were required to have at least 12 months of available records after LAI initiation; thus, pre-LAI intervals shorter than 12 months were excluded. Patients whose diagnosis and LAI initiation occurred within the same calendar year (resulting in ≤0 years of observable pre-LAI exposure) were excluded from the mirror-image analysis to ensure an adequate pre-treatment observation period and avoid bias associated with insufficient baseline exposure.

Participants

A total of 365 patients met the inclusion criteria and were included in the descriptive analyses. All participants were diagnosed with schizophrenia, schizoaffective disorder, or atypical psychosis according to DSM-5 criteria and were under regular follow-up in one of the four participating CMHCs. Of these, 315 patients had a definable pre-LAI interval and were therefore eligible for the mirror-image (pre–post) hospitalization analyses.

Inclusion criteria were: 1) active follow-up in a CMHC for at least 6 months; 2) a confirmed diagnosis of a chronic psychotic disorder; and 3) treatment with any LAI formulation administered within the CMHC system.

To preserve the real-world nature of the cohort, comorbid medical illnesses (e.g., diabetes, hypertension) and alcohol or substance use disorders were not grounds for exclusion, ensuring that the findings are generalizable to the complex patient populations typically managed in community settings.

Patients for whom a valid mirror-image interval could not be defined — such as those whose LAI initiation occurred in the same calendar year as their diagnosis, resulting in ≤0 years of pre-LAI exposure— were excluded from the pre-post hospitalization analyses.

Data Sources and Measurement

Clinical records of patients followed in the participating CMHCs between 1 January 2023 and 31 December 2024 were reviewed retrospectively. All data were extracted from existing electronic health records and national digital registries. A structured data form developed by the research team was used to systematically record sociodemographic variables (age, sex, marital status, education level, employment status, and diagnosis) and clinical variables (duration of illness, psychiatric hospitalization history, time since LAI initiation, and current LAI formulation). Hospitalization data were verified through a dual-source extraction process using both the National Health System database (a centralized nationwide electronic health record system) and the Hospital Information Management System of the participating centers to ensure accuracy and minimize missing data. This cross-verification method was employed to capture hospitalizations occurring outside the parent institution, thereby addressing one of the common limitations of single-center retrospective studies. Sociodemographic information was obtained from routine clinical intake records. Patients for whom hospitalization records or sociodemographic data could not be reliably retrieved from either source (n=23) were excluded from the study cohort, and only patients with complete data on these variables were included in the final analytic sample of 365 patients.

Statistical Analysis

Statistical analyses were performed using IBM Statistical Package for the Social Sciences (SPSS) program version 26 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize sociodemographic and clinical characteristics. Continuous variables were presented as means and standard deviations or medians and ranges, depending on distribution, while categorical variables were summarized as frequencies and percentages. Distributional assumptions for continuous variables were assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests.

Person-time–adjusted hospitalization rates were calculated separately for the pre-LAI and post-LAI periods, and rate ratios were obtained using aggregated person-time data. Person-time was calculated for each patient by dividing the total number of days in the pre-LAI and post-LAI intervals by 365.25. Hospitalization rates were then computed using the formula rate=number of hospitalizations / person-years. Aggregated cohort-level rate ratios were derived from the sum of all pre-LAI person-years and the sum of all post-LAI person-years, consistent with established mirror-image methodology. Poisson regression was initially considered; however, the pre–post hospitalization data did not meet the distributional assumptions required for Poisson regression, and a nonparametric approach was therefore preferred. The rate ratio was calculated from the total number of hospitalizations and total person-time in the pre-LAI and post-LAI periods; 95% confidence intervals were derived on the log-rate-ratio scale and then exponentiated. This approach was chosen to provide a more precise estimation of clinical events by accounting for individual variations in the duration of illness exposure. Because the distribution of pre-post hospitalization differences deviated from normality, the Wilcoxon signed-rank test was used as the primary inferential method to compare paired observations.

To examine determinants of the time elapsed between diagnosis and initiation of LAI treatment, a multivariable General Linear Model (GLM) was constructed, incorporating age, sex, education level, number of prior psychiatric hospitalizations, and LAI formulation as predictors. Categorical predictors were dummy-coded using predefined reference categories (university education and haloperidol as reference groups). A two-tailed p value of <0.05 was considered statistically significant. Model assumptions (linearity, homoscedasticity, normality of residuals, and multicollinearity) were evaluated through residual plots, Q–Q inspection, and variance inflation factors (all <2). Because the residual distribution deviated from normality, 1000-sample bias-corrected bootstrap confidence intervals and p-values were reported to enhance the reliability of the findings and to account for any potential violations of parametric assumptions in our real-world dataset.

Sample Size

Because this was a real-world study including all eligible patients within a predefined time frame, no a priori sample size calculation was performed. The study utilized a comprehensive clinical sample from four different centers, which may enhance the external validity of the results. Consistent with recommendations for observational cohort designs, precision was conveyed through effect sizes and confidence intervals rather than post hoc power analyses, ensuring that the clinical significance of the findings was prioritized alongside statistical probability.

Ethical Approval

Ethical approval was obtained from the ethics committee of Erenköy Mental and Nervous Diseases Training and Research Hospital (approval no: 89, 16.10.2025) prior to data extraction and analysis. Due to the retrospective nature of the study and the use of de-identified secondary data, the requirement for informed consent was waived by the ethics committee. The research involved a retrospective review of routinely collected clinical records, with no direct patient contact or intervention.

RESULTS

Sociodemographic Characteristics

The sample consisted of 365 individuals followed in CMHC. The mean age was 45.4±11.8 years (range: 19–74). The distribution of sex, marital status, educational attainment, employment status, and diagnostic categories represented the clinical cohort of the participating centers. Detailed sociodemographic characteristics are presented in Table 1.

Clinical Characteristics

Clinical characteristics are summarized in Table 2. Patients demonstrated substantial variability in illness duration, prior hospitalization history, and treatment trajectories, consistent with the chronic course of psychotic disorders followed in community-based services. The most commonly used LAI was paliperidone (45.5%), followed by aripiprazole (36.2%), zuclopenthixol (9.0%), risperidone (7.9%), and haloperidol (1.4%).

Mirror-Image Analysis of Hospitalizations

Of the 365 patients included in the descriptive cohort, 315 had a definable pre-LAI interval and were therefore included in the mirror-image analysis. The within-subject distribution of person-time–adjusted hospitalization rate differences deviated significantly from normality (W=0.177, p <0.001); therefore, the Wilcoxon signed-rank test was applied.

The test yielded Z=−13.664 (p <0.001), with an effect size of approximately r ≈ 0.83. Negative ranks totaled 255, positive ranks 18, and ties 42.

Given the right-skewed and zero-inflated distribution of post-LAI hospitalization rates, both median and mean values were reported. Median rates decreased from 0.273 to 0.000 admissions per person-year, and mean rates decreased from 0.450 to 0.045. When aggregated across the cohort, the pre-LAI hospitalization rate was 0.335 admissions per person-year, compared with 0.039 in the post-LAI period, corresponding

Table 1. Sociodemographic characteristics of the sample

Variable	n (%)
Gender	
Female	118 (32.3%)
Male	247 (67.7%)
Marital status	
Married	70 (19.2%)
Single	235 (64.4%)
Divorced	41 (11.2%)
Widowed	19 (5.2%)
Education	
Primary education	233 (63.8%)
High school	92 (25.2%)
Associate degree	14 (3.8%)
University	26 (7.1%)
Employment	
Employed	78 (21.4%)
Unemployed	201 (55.1%)
Never worked	86 (23.6%)
Diagnosis	
Schizophrenia	211 (57.8%)
Atypical psychosis	145 (39.7%)
Schizoaffective disorder	9 (2.5%)

Values are presented as n (%).
Percentages are calculated based on available data.

Table 2. Clinical characteristics of the sample

Variable	Mean ± SD / Median (min–max)
Duration of illness (years)	16.9±9.0 (1–45)
Psychiatric hospitalizations (lifetime)	Median=2 (0–30)
Hospitalizations under CMHC care	Median=0 (0–5)
Time since LAI initiation (years)	7.0±2.5 (1–25)
Hospitalizations before LAI	Median=2 (0–30)
Hospitalizations after LAI	Median=0 (0–7)

LAI: long-acting injectible antipsychotics; CMHC: community mental health center. Values are presented as mean ± SD or median (min–max).

Table 3. General linear model predicting time from diagnosis to LAI initiation

Predictor	B (Years)	95% CI	p-value
Age	0.473	0.409–0.537	**<0.001**
Sex (Female)	-0.497	-1.987–0.993	0.512
Primary education (ref=University)	2.487	-0.352–5.326	0.086
High school	3.678	0.610–6.745	**0.019**
No. of prior hospitalizations	0.306	0.129–0.483	**0.001**
Aripiprazole (ref=Haloperidol)	6.078	-0.813–12.969	0.084
Paliperidone	6.230	-0.687–13.148	0.077
Risperidone	7.680	0.491–14.870	**0.036**
Zuclopenthixol	4.375	-2.871–11.620	0.236

LAI: long-acting injectible antipsychotics; CI=confidence interval. B coefficients represent the estimated change (in years) in time from diagnosis to LAI initiation. For medication type, haloperidol was the reference category.

to an 88.5% reduction in the hospitalization rate. The rate ratio was 0.115 (95% CI: 0.104–0.146).

Determinants of Time to LAI Initiation

A GLM was used to identify predictors of the time elapsed between diagnosis and initiation of LAI treatment, and the results are presented in Table 3. All confidence intervals reported for this model are bias-corrected bootstrap estimates based on 1000 resamples. Age (B=0.473, 95% CI [0.409–0.537], p <0.001) and the number of prior hospitalizations (B=0.306, 95% CI [0.129–0.483], p=0.001) were significantly associated with longer time to LAI initiation. Regarding educational level, only individuals with a high school education initiated LAI treatment significantly later than university graduates (B=3.678, 95% CI [0.610–6.745], p=0.019), whereas the effect for primary education did not reach statistical significance (p=0.086). Other demographic and clinical variables—including sex, marital status, employment status, and diagnosis type—were not significantly associated with initiation timing.

When current LAI type was included in the model, risperidone LAI was associated with a significantly longer duration from diagnosis to initiation compared with haloperidol (B=7.680, 95% CI [0.491–14.870], p=0.036). The estimates for aripiprazole, paliperidone, and zuclopenthixol LAIs also suggested later initiation relative to haloperidol, although these associations were not statistically significant (all p >0.05). The model explained a substantial proportion of variance in LAI initiation timing (R^2=0.521; adjusted R^2=0.468).

DISCUSSION

In this study, we aimed to present important findings on the use of LAIs among patients with schizophrenia and related disorders followed at four CMHCs in Istanbul, Türkiye. Our results indicated a marked reduction in psychiatric hospitalization rates after the initiation of LAI treatment. When quantified, this corresponded to an approximately 88.5% decrease in person-time–adjusted hospitalization rates, which is a larger magnitude of improvement than what has been typically reported in previous mirror-image studies (2,8,9,14). This larger reduction may reflect characteristics of the CMHC model, including structured follow-up, continuous patient–clinician contact, and a care environment that may support adherence and early intervention. Unlike traditional outpatient clinics, the multi-disciplinary nature of CMHCs may allow for closer monitoring of treatment response, which could plausibly contribute to fewer hospitalization-requiring crises; however, as the present study did not directly measure the effect of CMHC care, did not include a non-CMHC comparison group, and did not quantify the intensity of psychosocial interventions provided, this explanation remains speculative and cannot be confirmed by our data.

A reduction in hospitalizations is closely linked to improvements in quality of life of individuals, but is also critically important for the health-care system and associated costs. Previous studies have also reported that LAI treatment reduces hospitalization frequency and duration and thereby lowers costs, contributing significantly to health-care systems (13).

Sociodemographic and Clinical Determinants

In our study, descriptive patterns suggested differences in LAI use across sociodemographic groups; however, multivariable analyses suggested that most demographic factors, including sex, were not independently associated with LAI initiation. Educational level exhibited a more nuanced relationship: only individuals with a high school education experienced a significantly longer delay in initiating LAI treatment compared with university education, whereas primary education was not associated with later initiation. Although health literacy, treatment awareness, and system navigation were not directly assessed in this study, this pattern may be consistent with broader literature suggesting that such factors can influence engagement with long-term psychiatric care (5,7,15); however, this interpretation remains speculative and would require direct measurement in future research. Although these contextual factors were not directly measured in our study, these findings may nonetheless point to the potential value of targeted education and outreach strategies within community mental health settings to ensure equitable access to evidence-based treatments —a hypothesis that warrants direct investigation in future research.

That age and the number of hospitalizations prior to LAI treatment were among the strongest determinants of the transition time may suggest that clinicians tend to initiate LAI treatment in more severe cases, in patients with poor adherence, or in more challenging clinical presentations; however, clinician intent and decision-making processes were not directly assessed in this study, and this interpretation should be regarded as hypothesis-generating. The tendency to delay LAI initiation among older patients and those with multiple past hospitalizations is consistent with the broader literature describing LAIs as often perceived as a 'last resort' treatment option (6), although this perception was not directly measured in our sample. International guidelines emphasize that LAIs should not be considered only as a last resort and can be recommended in earlier treatment phases (16); accordingly, our findings may point to a potential gap between guideline-concordant care and real-world prescribing patterns in community settings, consistent with trends reported in other countries (6,15), though this remains a hypothesis warranting further investigation.

Given the small size of some medication subgroups, these findings should be interpreted with caution; indeed, recent real-world and naturalistic

cohort studies have shown that differences between various LAI agents in terms of hospitalization, relapse, or treatment failure are generally modest or inconsistent (2,9,17,18).

Differences Between Medication Groups

The marked predominance of paliperidone and aripiprazole, together with the limited use of other LAI formulations, may reflect contemporary prescribing preferences, perceived tolerability, availability, and clinicians' familiarity within CMHC practice. This heterogeneous distribution provides important context for understanding the medication-specific patterns observed in the study.

In our study, patients receiving haloperidol LAI transitioned to long-acting treatment earlier than those receiving aripiprazole, suggesting that clinicians may favor earlier initiation of typical formulations in certain clinical contexts, possibly due to perceived potency or lower cost. Risperidone was initiated significantly later than haloperidol, while paliperidone showed a similar but non-significant trend. However, as the haloperidol subgroup used as the reference category included only five patients, these comparisons should be interpreted with caution. These exploratory differences may reflect practical prescribing considerations, such as clinician familiarity, accessibility, or perceived tolerability within CMHC services (3,4,7).

Subgroups and Additional Clinical Outcomes

Although our study focused on patients with schizophrenia, the literature shows that LAIs have been associated with substantial benefits in bipolar disorder (12) and schizoaffective disorder (13). Although studies in other diagnostic groups suggest that LAIs may also be beneficial beyond schizophrenia-spectrum disorders, the present findings should be interpreted within the context of psychotic-spectrum disorders included in this study. Additionally, previous studies have reported that LAI treatment not only reduces hospitalizations but also decreases suicide attempts (4).

Community-Based Services and Policy Perspective

CMHC services have been associated with better social functioning and fewer hospitalizations by ensuring that individuals receive care within their own living environments. Our findings suggest that LAI treatment delivered within CMHC follow-up may be associated with favorable hospitalization outcomes. However, because this study did not include a comparison group outside the CMHC model, the independent contributions of LAI treatment and community-based follow-up cannot be distinguished. In this context, our findings highlight the potential value of integrating pharmacological treatment within structured community-based mental health frameworks, consistent with Türkiye's ongoing mental health reform efforts.

This study has several limitations. First, the research was conducted only in CMHCs located in Istanbul; therefore, the generalizability of the findings to other regions of Türkiye is limited. Furthermore, only patients who were using LAIs without concomitant oral antipsychotic treatment were included, which excludes combined treatment cases frequently encountered in real-world clinical practice. Although only patients receiving LAIs at the time of the study were selected, past variations in antipsychotic treatment were not considered; thus, the clinical context of transitioning to LAI treatment cannot be fully assessed. Similarly, only patients who remained in active CMHC follow-up and continued LAI treatment were captured; those who discontinued treatment or were lost to follow-up were not included, which may introduce a completer bias and lead to an overestimation of treatment effectiveness.

The retrospective design does not allow causal inferences, and clinical outcomes were based solely on hospitalization data. Specifically, the mirror-image design, while robust for real-world evidence, is susceptible to several sources of bias inherent to this methodology. Regression to the mean may partly explain the observed reduction, as LAI treatment is often initiated during or shortly after periods of clinical instability or frequent hospitalizations, meaning that some decline in hospitalization rates could have occurred even in the absence of treatment. Confounding by indication is also a concern, since the decision to initiate LAI treatment is itself influenced by clinical severity, prior treatment response, and prognosis, which may bias the comparison between pre- and post-LAI periods. Additionally, because clinical and psychosocial circumstances may change over the course of follow-up, time-varying confounders —such as changes in psychosocial support, comorbid conditions, or engagement with services— could not be accounted for in this analysis. The lack of symptom severity or functional assessment scales means that treatment outcomes were evaluated only through hospitalization rates. Furthermore, as CMHC follow-up involves concurrent psychosocial interventions, case management, and family support, the independent contribution of LAI treatment to the observed reduction in hospitalizations cannot be isolated. The specific contribution of the CMHC care model itself was not directly measured, no non-CMHC comparison group was available, and the intensity of psychosocial interventions received by individual patients was not quantified in our dataset; therefore, the potential role of CMHC-related factors discussed above should be regarded as hypothesis-generating rather than an empirically supported finding. Potential gaps in records and variations in CMHC implementation may have further influenced the results.

Finally, the study included only psychotic disorders (schizophrenia, atypical psychosis, and schizoaffective disorder); bipolar disorder and other diagnostic categories were excluded. Thus, findings must be interpreted within the context of psychotic spectrum disorders. The small size of certain medication subgroups — particularly haloperidol (n=5) — also limits the reliability of between-group comparisons regarding time to LAI initiation. Furthermore, unmeasured psychosocial variables such as stigma, family support, patient–clinician relationships, and treatment access were not evaluated, and these factors may play an important role in understanding the transition to and continuation of LAI treatment.

In conclusion, this study highlights the sociodemographic and clinical determinants of LAI use in CMHC settings, differences among medications, and the impact of LAI treatment on hospitalization rates. Our findings suggest that LAIs should not be considered only as a late-stage option and support further consideration of their earlier use within community-based care. Strengthening community-based mental health services and integrating LAI treatment will contribute to favorable outcomes at both individual and health-system levels.

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Ethics Committee Approval: Ethical approval was obtained from the ethics committee of Erenköy Mental and Nervous Diseases Training and Research Hospital (approval no: 89, 16.10.2025) prior to data extraction and analysis. The study was conducted in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed Consent: Due to the retrospective nature of the study and the use of de-identified secondary data, the requirement for informed consent was waived by the institutional ethics committee.

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Data Availability: The data that support the findings of this study are available from the corresponding author upon reasonable request.

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