

The Use and Evaluation of Long-acting Injectable Antipsychotic Medications in Community-Dwelling Patients with Schizophrenia in Guangdong Province, China

Schizophrenia is a chronic, severe mental disorder with high disability and high recurrence, causing a serious burden to patients, their families, and society, and is an important public health problem. Most of the patients with schizophrenia live in the community, and antipsychotic maintenance treatment is essential to prevent recurrence. However, non-adherence to antipsychotic medications is one of the most important factors increasing relapses in schizophrenia, and nearly 60% of patients with schizophrenia are non-adherent to antipsychotic medications.¹ A systematic review and meta-analysis showed strong superiority of long-acting injectable antipsychotics (LAIs) in improving medication adherence and preventing recurrence compared to oral antipsychotics.² In the past decade, developed countries like Canada, Australia, and the United States have widely used LAIs for patients with schizophrenia in communities, showing that they can improve patients' treatment compliance and social function and reduce violence and readmission rates.³ However, a study using data from 15 Asian countries/regions showed that the rate of use of LAIs to treat patients with schizophrenia in China is only 0.66%, far lower than the average of 15 countries/regions (17.9%).⁴ The regional variances in healthcare systems, such as availability of drugs, pharmaco-economics, and prescribing habits of psychiatrists, may play a role in the low rate of use of LAIs. In China, health insurance does not fully cover the cost of LAIs, so the higher price, poorer accessibility of LAIs, and lower socioeconomic level of the patients with schizophrenia could hinder using LAIs.⁵

Recommendation and Policy Support of Long-acting Injectables in China

According to the Guidelines for the Management and Treatment of Severe Mental Disorders (2018 edition) issued by the Chinese National Health Commission, LAIs were recommended for patients with poor treatment compliance, poor home care or no caregiver, or high risk of suicides and accidents.⁶ The Chinese Schizophrenia Coordination Group, Chinese Society of Psychiatry, and Chinese Society of General Practice established an expert group and developed a consensus on LAIs in the treatment of community-dwelling patients with schizophrenia in 2020, and put forward evidence-based recommendations on their clinical use.⁷ However, most psychiatrists and general practitioners still lack training on using LAIs antipsychotics in China and worry that the side effects of injection treatment may impede their spread and application.

The "Guangdong Model" of Promoting Use of LAIs

Guangdong province is an economically developed province located in southern China, with the largest population of 128 million among the provinces. According to the Guangdong Mental Health Information System, there were 5 922 psychiatrists in the province (4.6 psychiatrists per 100 000 population), but there were 377 524 registered patients with schizophrenia. During 2023, a total of 44 280 (11.73%) of them used LAIs. Both the quantity and rate were the highest in all the provinces of China. The "Guangdong Model" could be summarized as five points. Firstly, the Guangdong provincial government actively coordinated relevant departments to introduce the "Implementation Plan for the Use of LAIs for Schizophrenia Patients." Secondly, the Guangdong Medical Insurance Bureau included the LAIs in the list of drugs with the maximum payment limit of the fund. Medical insurance for patients pays for most of the cost



Shi-Bin Wang^{1,2} 

Wenyan Tan¹ 

Xiao-Yang Fu³ 

¹Guangdong Mental Health Center, Guangdong Provincial People's Hospital (Guangdong Academy of Medical Sciences), Southern Medical University, Guangzhou, Guangdong Province, China

²School of Health, Zhuhai College of Science and Technology, Zhuhai, Guangdong Province, China

³School of Computer Science, Zhuhai College of Science and Technology, Zhuhai, Guangdong Province, China

Corresponding author:

Shi-Bin Wang

✉ spiriorwang@126.com

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of LAIs, and the government appropriates funds to cover the unpaid portion of the cost. At the same time, the government inspected the insurance coverage of patients with schizophrenia and assisted all the patients insured with medical insurance. So most of the registered patients with schizophrenia could apply for the “free” LAIs. Thirdly, the government established a service network of 1650 medical institutions carrying out the implementation of LAIs in Guangdong province to ensure the accessibility of paliperidone palmitate 1 month (PP1M) and paliperidone palmitate 3 month (PP3M). Fourthly, Guangdong Mental Health Center has set up a team of experts to train clinical staff in primary medical institutions to use LAIs, including standardizing the implementation process of patient screening, informed consent, disease assessment, injection treatment, adverse reactions treatment, and community follow-up. Lastly, Guangdong Mental Health Center evaluates the effect of the implementation of the use of LAIs annually and sets it as an important indicator of the assessment of the prefecture-level city's social governance.

Evaluating the Implementation of the Use of Long-acting Injectables in Guangdong

Based on the framework of implementation science, researchers studied the effect of community treatment and management of schizophrenia patients using LAIs. Before prescribing LAIs each time, psychiatrists were required to assess the patients' conditions, such as psychotic positive symptoms, insight, and self-care ability. Psychotic positive symptoms were measured using items derived from the Positive and Negative Syndrome Scale (PANSS). Insight was measured by asking the patients, “Can you recognize that you suffer from schizophrenia and ask for treatment?” Patients who answered “fully recognize” were regarded as having “good insight,” and those who answered “can't or partially recognize” were regarded as “impaired insight.” Self-care ability was measured by asking the patients, “Can you take care of yourself in daily life?” Patients could choose the answer as “good,” “fair,” or “poor.” The conditions were recorded on the Guangdong Mental Health Information System. A comparative analysis of 30 334 patients before and after using LAIs between May 2022 and June 2023 was conducted. Among these patients who used LAIs during this period, the rehospitalization rate decreased from 8.3% to 5.2%. The rate of psychotic positive symptoms decreased from 20.1% to 17.5%. The rate of impaired insight decreased from 40.8% to 38.1%. The proportion of patients with good self-care ability increased from 49.4% to 53.6%. However, the data should be interpreted carefully because the Guangdong Mental Health Information System could not cover all the community-dwelling patients with schizophrenia who used LAIs, and selection bias may exist.

We also conducted a cross-sectional study on the satisfaction of the mental health professionals who took part in the program from March 2023 to May 2023. A stratified random sampling method was used to select 287 mental health professionals from 14 prefecture-level cities, including 14 municipal mental health managers, 144 psychiatrists, and 129 general practitioners. A self-designed questionnaire was used by asking questions like, “How satisfied are you with the LAIs implementation program?” Overall, 62.1% of the mental health professionals reported that they were satisfied with the LAIs implementation, and 89.5% were willing to introduce LAIs to patients with schizophrenia. In terms of the impact on personal income, 9.3% of the professionals felt the program reduced their income because the

use of oral medication decreased, but 88.6% of them reported no impact. In terms of obstacles, 58.2% of the mental health professionals thought that poor skill on doctor–patient communication skills may lead the patients to be unwilling to use LAIs, and 49.8% of the respondents thought that they need more training on dealing with the adverse reactions to LAIs.

Recommendations for Improvements on Implementation of Long-acting Injectables in China

Policy makers should pay attention to the coordinating actions of all the relevant departments, including medical institutions, the medical insurance department, the government finance department, mental health centers, and communities. It is very necessary to strengthen training for medical staff, especially on doctor–patient communication regarding the instructions and benefits of using LAIs. Psychiatrists and nurses need more training on dealing with the adverse reactions of LAIs. Evaluation based on the framework of implementation science should also be introduced for optimizing the program. Future studies should use a large-scale cohort design to explore the efficacy and cost-effectiveness of LAIs in China.

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

Ethics Committee Approval: This study was approved by the Research Ethics Committee of the Guangdong Provincial People's Hospital, Guangdong Academy of Medical Sciences (Approval number No: KY-Q-2022-494-02; Date: 2022.05.13).

Informed Consent: Written informed consent was obtained from the patients/patient who agreed to take part in the study.

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